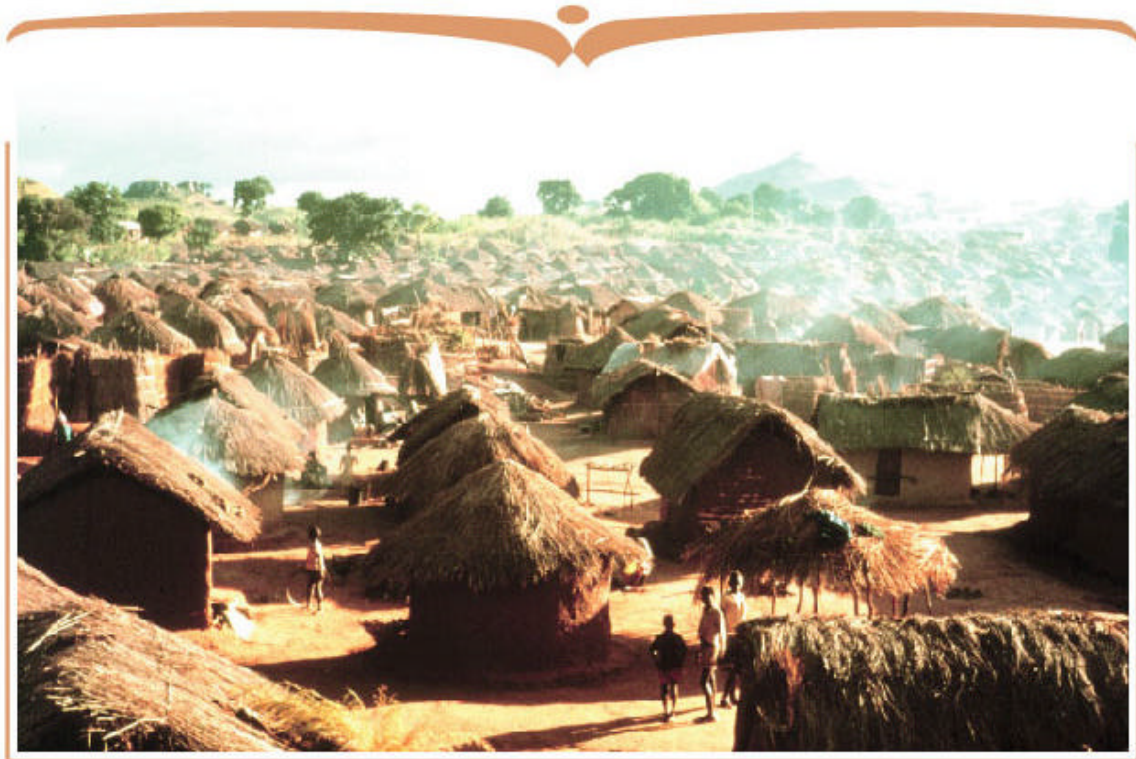The Johns Hopkins and Red Cross / Red Crescent

PUBLIC HEALTH GUIDE FOR EMERGENCIES

F I R S T   E D I T I O N

Saade Abdallah, MBChB, MPH

Gilbert Burnham, MD, PhD

editors

The Johns Hopkins School of Hygiene and Public Health

The International Federation of Red Cross and Red Crescent Societies

The **Johns Hopkins Center for Refugee and Disaster Studies**, established in 1998, is based in the Division of Community Health and Health Systems of the Department of International Health. The Center has primary responsibility for emergency health related courses taught within the Department and provides a Certificate in Humanitarian Assistance for qualified degree program students. Each summer, the Center offers the Health Emergencies in Large Populations (HELP) course sponsored by the International Committee of the Red Cross (Geneva), the American Red Cross and the Pan American Health Organization (WHO).

In addition to its teaching responsibilities, the Center carries out operational research in partnership with other universities and implementing organizations better meet the health needs of persons displaced by conflict and disasters. The Center also provides technical assistance to implementing organizations in areas, such as planning, monitoring and evaluation of the impact of services. The Center places special emphasis—in its research and technical assistance—on populations trapped in "permanent crises," returning home or repatriating, and/or during rehabilitation.

The **International Federation of Red Cross and Red Crescent Societies** is the world's largest humanitarian organization, providing assistance without discrimination as to nationality, race, religious beliefs, class or political opinions.

Founded in 1919, the International Federation comprises 176 member Red Cross and Red Crescent societies, a Secretariat in Geneva and more than 60 delegations strategically located to support activities around the world. There are more societies in formation. The Red Crescent is used in place of the Red Cross in many Islamic countries.

The Federation's mission *is **to improve the lives of vulnerable people by mobilizing the power of humanity***. Vulnerable people are those who are at greatest risk from situations that threaten their survival, or their capacity to live with an acceptable level of social and economic security and human dignity. Often, these are victims of natural disasters, poverty brought about by socio-economic crises, refugees, and victims of health emergencies.

The Federation, together with National Societies and the International Committee of the Red Cross, make up the International Red Cross and Red Crescent Movement.

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Research and editing for this entire guide has been a huge undertaking by two individuals who were also the Principal Authors of the following chapters:

<u>Chapter 2</u> – **Management,** <u>Chapter 4</u> – **Disaster Epidemiology,** <u>Chapter 8</u> – **Primary Health Care,** <u>Chapter 9</u> – **Health Services, and** <u>Chapter 12a</u> – **Needs of Children and Adolescents**

Dr. Gilbert M. Burnham, MD, MSc, PhD, is an Associate Professor in the Department of International Health, Division of Community Health and Health Systems, School of Hygiene and Public Health, Johns Hopkins University. He is also the director of the Centre for Refugee and Disaster Studies at Johns Hopkins. He has extensive experience in emergency preparedness and response, particularly in humanitarian needs assessment, program planning and evaluation that address the needs of vulnerable populations, and the development and implementation of training programs. He also has extensive experience in the development and evaluation of community-based health program planning and implementation, health information system development, management and analysis, and health system analysis. He is currently involved with numerous humanitarian and health development programs for multilateral and non-governmental organisations, regional health departments, ministries of health (national and district level) and communities in sub-Saharan Africa, Asia, and Eastern Europe.

Dr. Saade A. Abdallah has a Masters in International Health from Johns Hopkins School of Public Health and a medical degree from the University of Nairobi. She also has an International Diploma in Humanitarian Assistance from the Royal College of Surgeons, Ireland, and the Hunters College of New York. She has worked for the Kenyan Red Cross refugee project where she directed health care for five camps, supervised health workers and organised and/or conducted training courses for all categories of staff on management and stress management. She also worked as the health co-ordinator for the International Federation of the Red Cross and Red Crescent Society in the Garissa Flood Project where she established a cholera surveillance and treatment centre and initiated the investigation of a haemorrhagic fever outbreak in north-eastern Kenya and southern Somalia. In response to the Mozambique Flood, she worked as a health specialist for the OFDA (US Office of Foreign Disaster Assistance) team. She is currently developing new disaster management training techniques for humanitarian agencies at the Centre for Refugee and Disaster Studies, Johns Hopkins School of Public Health.

Design, Layout, and Additional Editing:

LearnWare International Corporation (a licensee of the Johns Hopkins University)
2400 Boston Street, Suite 312
Baltimore, Maryland 21224 USA
Website: www.learnwarecorp.com

Contributing Authors:

<u>Chapter 1</u> – **Disaster Dimension and <u>Chapter 13</u> – New Technologies in Humanitarian Emergencies**

Keith Holtermann is currently the Director of Emergency Health Services Programs at The George Washington University, School of Medicine and Health Sciences. Keith has been in the EMS field for over 25 years. His past positions include: Director of EMS for Jersey City, NJ; Forensic Investigator for Hudson County, NJ; Director of EMS for the country of Costa Rica; Health Officer in Central America for the US Department of State; Inspector and Monitor for the START and INF treaties in Russia; and has been on faculty at multiple colleges and universities. He is certified as a Paramedic, Registered Nurse, Certified Emergency Nurse, Trauma Nurse Team Leader, and Basic and Advanced Cardiac Life Support Instructor. His formal degrees include a BS in Nursing, MBA, MPH, and Dr PH from Johns Hopkins University. He has worked clinically as a paramedic in New Jersey, and as an Emergency or Trauma Nurse Team Leader in New Jersey, San Diego, Baltimore, and the District of Columbia. His research interests are in 911 call screening, Domestic Terrorism Preparedness, EMS and managed care partnerships, and EMS systems design for developing countries.

Erik S. Gaull is the Director of Local Government Studies for TriData Corporation. In that capacity, he oversees projects in local government public safety management consulting, as well as a number of contracts with the Federal Emergency Management Agency. He co-ordinates teams of consultants in advising municipalities and counties on improving service delivery by public safety agencies. Previous and current clients include Chicago, the District of Columbia, Anchorage, BWI Airport, Houston, Calvert County (MD), Nashville, Des Moines, Omaha, Wake County (NC), and Prince William County (VA).

Mr. Gaull is an Adjunct Assistant Professor at the George Washington University Medical Center (where he teaches strategic planning) and an Instructor for the National Fire Academy (where he teaches management classes). He has a co-appointment with the National Institutes of Justice and the National Fire Academy to teach a class on emergency response to terrorism. He has made numerous presentations at regional, state, national, and international conferences and has had a number of publications in both peer-reviewed and trade publications. He sits on the Editorial Advisory Board of *Emergency Medical Services* and the Editorial Review Boards of both the *Journal of EMS* and *Prehospital and Disaster Medicine*. Mr. Gaull has a Master of Business Administration and a Master of Public Policy, both from Georgetown University. He has a baccalaureate from Columbia University. Mr. Gaull speaks German and some American Sign Language.

Ray Lucas is Assistant Professor of Emergency Medicine at the George Washington University Medical Center. He gained his MD from University of South Florida, 1990 and did his residency training in Emergency Medicine at The University of Cincinnati between 1990-1994. Ray has special interests in out-of-hospital and disaster medicine and has certification in emergency medicine.

Chapter 3 – Human Resource Management

Dr. R. G. A. Boland, formerly an FCA/CPA and management consultant for Arthur Andersen, was trained at Harvard Business School to become a professor of management at Cranfield, INSEAD, UCT/GSB, Columbia etc. and completed a doctorate in learning systems at Stellenbosch University. Subsequently, he trained in medicine at the Medical School in Juarez (Mexico) and became a resident in internal medicine at St. Agnes Hospital in Baltimore. Then he joined Johns Hopkins School of Public Health for a residency in preventive medicine and public health residency, with a specialisation in international health. This included work for Baltimore public health clinics, International Rescue Committee in Thailand, AID, WB, APHA, WHO, Peace Corps. He also developed health training packages in primary health care, maternal child health, and nutrition.

He worked for United Nations/ILO (Geneva), as senior research officer in the management development branch, took part in development projects for finance, environment, health and training systems; WHO expert committees and missions to India and Russia for health manpower management; development of ILO/WHO hospital and health centre management projects; WHO expert committee consultation on water development; International missions in developing countries in Asia, Africa and Latin America for project design, management and evaluation for ILO, WHO, World Bank, WFP etc. Dr. Boland currently works as consultant in Geneva engaged in management training and more recently, in intensive training and research into the potential of hypnotherapy and self-hypnosis, as cost effective functions for health care in developing countries.

Chapter 5 – Environmental Health

Les Roberts, BS, MSPH, PhD, is an Associate at Johns Hopkins University in the Department of International Health and a lecturer in the Whiting School of Engineering. He worked as a consultant epidemiologist for WHO in Northern Rwanda and Goma, where he established disease surveillance systems and assisted in epidemic responses. As an EIS Fellow for the Center for Disease Control and Prevention in Atlanta, he conducted assessments in Southern Africa and Bosnia, a survey in Armenia, and diarrhoea control interventions in Malawi. He has assisted other agencies on projects in Asia, Latin America, and Africa. He is now focusing on humanitarian emergencies.

Chapter 5a – Vector Control

Michael Macdonald, ScD is an Associate at Johns Hopkins University, School of Hygiene and Public Health. Dr. Macdonald has worked with malaria, dengue, and refugee health programs for more than 20 years. He is currently the Technical Officer, Malaria for the BASICS Project, a large USAID funded child survival project, and the Senior Technical Advisor for the NetMark Project: a USAID funded public/commercial sector partnership project to build a sustainable market for insecticide treated materials for malaria control throughout Africa. He has worked for a number of years in environmental health in complex emergencies with the International Rescue Committee, the United Nations Border Relief Organisation (Thailand), UNHCR, and WHO.

Chapter 6 – **Food and Nutrition**

Steve Hansch is pursuing his doctorate at Tufts University, School of Nutrition. He received a Masters in Public Health from Boston University, School of Public Health in 1982, focusing on epidemiology and environmental health. He was a technical consultant in health, food, and nutrition for USAID, CARE, FAO, the Academy for Educational Development (AED), Marine Overseas Services, and Datex. He has extensive experience in developing, managing, and evaluating projects associated with humanitarian field operations, including health, nutrition, and economic analyses in Malawi, Kenya, Mozambique, Sudan, Somalia. He has authored articles in various journals and written analytical reports on nutrition needs in crises and evaluations of food aid programs of different NGOs and WFP. He led various projects and Refugee Policy Group missions to Rwanda, Zaire, Somalia, Burundi, Uganda, Tanzania, and Panama; co-ordinating all research and publications related to improving co-ordination among relief and development agencies with regard to food aid, nutrition, and food security.

Steve is presently the President of Cuny Centre for the Study of Societies in Crisis, the Director of International Humanitarian Programs for the Congressional Hunger Centre, and a Consultant Analyst for InterWorks. He also serves as an ongoing advisor to various foundations and non-governmental relief organisations, including Relief International, ARC, IMC, Partners for Development and Project Concern. He is a regular lecturer in several universities and training courses for NGOs and has initiated, organised, and co-chaired five conferences on different humanitarian aid issues, including food security, micronutrient deficiencies, psycho-social disabilities, early warning, human rights, and basic education.

Chapter 7 – **Control of Communicable Diseases and Chapter 7b – Emergency Immunisation Programs**

Elisabeth "Isis" Pluut is presently working towards her DrPH degree in International Health at the Johns Hopkins School of Public Health. She obtained her Masters in Public Health from Johns Hopkins. She has worked with the Emergency Preparedness and Disaster Relief Co-ordination Program of the Pan American Health Organisation, regional office for the Americas of the World Health Organisation. Prior to this, Isis worked in Mexico with the World Food Programme assisting Guatemalan refugees, and with DHV consultants in Pakistan in a women's training and research program, which was financed by the Netherlands Ministry of Foreign Affairs.

Chapter 7a – **Diarrhoeal Disease Control**

Ronald J. Waldman, MD MPH, is with the Program on Health Consequences of Forced Migration, Joseph L. Mailman School of Public Health, Columbia University, 60 Haven Ave, B2, New York, NY 10032 (e-mail: rw178@columbia.edu).

Chapter 10 – Incident Management System (IMS)

Paul M. Maniscalco (shown left), BS MPA Ph.D.(c) EMT/P, is an Adjunct Assistant Professor with George Washington University School of Medicine and Health Sciences and a Deputy Chief, FDNY Emergency Medical Services Command in New York City. Chief Maniscalco has over 20 years of emergency response and management experience. Paul's experiences range from moderate-scale/impact disasters to being the EMS Incident Commander for the NYC World Trade Centre Bombing. He has published numerous academic and peer journal articles as well as lecturing extensively. Paul is also co-author, with Hank Christen, of a textbook titled *The EMS Incident Management System – EMS Operations for Mass Casualty and High Impact Incidents* (Brady 1998) and the forthcoming *Understanding Terrorism and Managing Its' Consequences* (Brady 2000).

Chief Maniscalco is an appointee to the US Department of Defense - Defense Science Board - Transnational Threats Study and Panel to Assess the Capabilities for Domestic Response to Terrorist Acts Involving Weapons of Mass Destruction. Paul serves as an adjunct faculty member with the National Emergency Training Centre, National Fire Academy and, in an advisory capacity, assisted many federal agencies and organisations on issues revolving around emergency incident response/management and safety. Paul M. Maniscalco is also a past president of the National Association of Emergency Medical Technicians.

Hank T. Christen (shown on right in above picture), BA MPA EMT/B, is Director of Emergency Services, Okaloosa County, FL and is a veteran emergency response manager with over 20 years experience. He is a retired battalion chief and Chief of Training for the Atlanta Fire Department. Hank is also currently a Disaster Medical Assistance Team (DMAT) Commander and has responded to numerous hurricanes and the 1996 Atlanta Olympics. Mr. Christen is a Member of the Department of Defense, Defense Science Board on Transnational Threats. He is also co-author, with Paul Maniscalco, of a textbook titled *The EMS Incident Management System – EMS Operations for Mass Casualty and High Impact Incidents* (Brady 1998) and the forthcoming *Understanding Terrorism and Managing Its' Consequences* (Brady 2000).

Paul M. Maniscalco and Hank T. Christen can be contacted via e-mail at IMS4EMS@hotmail.com

Chapter 11 – Reproductive Health Care

Rachel K. Jones is presently working as Reproductive Health Project Manager with the Women's Commission for Refugee Women and Children. Before coming to work with the Women's Commission, Rachel worked for the San Francisco AIDS Foundation and Amnesty International's National Refugee Office while getting her masters in women's studies and human rights. Rachel also worked with CARE in the population and family planning unit before serving for two years as a Peace Corps Volunteer in Cameroon, Central Africa.

Elizabeth A. Rowley received a Masters in Population and Family Sciences from Johns Hopkins School of Public Health and a Masters of International Affairs from Columbia University in New York. She has worked in Africa, Latin America, and Asia, where she managed and evaluated humanitarian projects for USAID, Catholic Relief Services, Associacion Salvadorena de Apoyo Integral, and Save the Children USA. In 1993, as a program assistant for Family Care International, she researched reproductive health issues in the Andean region and worked on two Safe Motherhood advocacy and planning conferences in Latin America to address problems of maternal morbidity and mortality. She is currently assisting districts in Northern Uganda to use quality design planning methodology to integrate refugee health care into district services.

Chapter 12 – Emergency Mental Health Care

Susan M. George received her doctorate in Clinical Psychology from Northwestern University in Chicago in 1993. Since that time she has worked in the USA and Africa developing, implementing, and evaluating mental health services for children and families. She worked in Liberia in 1993-1994 for UNICEF and was involved in a program jointly administered by UNICEF and the International Red Cross to provide an alternative prisoner of war camp for child soldiers. In 1997 she was part of an international team that was asked by UNICEF to evaluate their mental health program in Rwanda. She is currently a Child and Family Fellow in the School of Public Policy at the University of Chicago.

Chapter 14 – Media and Public Affairs

International Federation of the Red Cross and Red Crescent Societies is an international humanitarian organisation with a unique world-wide network. The Federation provides humanitarian relief to people affected by disasters or other emergencies and development assistance to empower vulnerable people to become more self-sufficient. The organisation commands an immense potential because it can mobilise local volunteers through National Societies world-wide.

Wherever we live there are constant reminders of the suffering brought on by humanitarian emergencies — through direct impact on our communities, by stories our friends tell, or through newspaper, radio, and television accounts. Although emergencies occur world-wide, Africa continues to have more than its share, particularly from emergencies associated with conflict. Many institutions of civil society that mediate conflicts within populations have weakened. This means that those people excluded may see no recourse other than violence to claim a place in their society. Once violence becomes a common conflict-resolution method in a society, it brings about further breakdown of civil order. It may take several generations to reverse this course.

As urban areas continue to grow rapidly, the population at risk from natural or technological disasters in these areas of dense population rises. Few cities in Africa, and elsewhere in the developing world, have the infrastructure or the municipal organisation to provide a ready response to emergency needs. Organising the capacity for emergency response is a major challenge facing many developing cities. The need for emergency planning and policies that will prevent an emergency is beginning to take hold in much of Africa, as well as elsewhere.

Responding to the needs of more diverse societies, often in unstable environments, is a challenge not only to national and local governments, but to voluntary and non-governmental groups as well. Increasingly, the responsibility of responding to emergencies is falling on groups outside the public sector. Governmental bodies simply are stretched too thin because of population growth and movement of people to cities and larger towns. Although international relief organisations, such as the International Committee of the Red Cross, Medecins sans Frontiers, Oxfam, and others have played a noticeable role in emergency response, these groups lack roots in local societies, and seldom are able to assist in rehabilitation and reconstruction once the emergency is over. Increasingly, there is a role for local non-governmental relief organisations and National Red Cross Societies.

Emergencies have more complex roots today than in the past when flooding or famines were the most common causes. Therefore, the skills needed for an effective response have also become more complex. To build these skills, efforts are needed at many levels within a country. Community volunteers need skills to improve the capacity of their communities to cope. First level health workers need skills to immediately respond to disease outbreaks in their areas. Hospital personnel must know how to triage the injured. Public health managers and planners need the ability to plan and carry out an appropriate response to any type of emergency, and then evaluate this response to identify areas of improvement. Building these skills requires not only the technical health training but also further learning in emergency preparedness and response. This guide is designed to serve as a reference for such training for government, Red Cross, and local non-government groups. Although the focus is on emergency situations, extensive coverage is given to pre- and post-emergency activities for which many local organisations are taking an increasing responsibility. The primary focus has been emergencies in Africa, yet the principles and methods are equally suitable for most parts of the developing world.

This reference guide is divided into fourteen chapters, a glossary, and an index. Each chapter contains the following information:

- **Chapter 1 — Disaster Dimension** considers the characteristics and trends of disasters and their consequences on displaced and host populations. It also deliberates on the future of humanitarian assistance in terms of disaster preparedness and developmental relief.

- **Chapter 2 — Management** focuses on the management tools needed to design, implement, and evaluate more effective emergency health services for displaced populations, based on identified needs and available resources. It emphasises the community-based approach and the use of Sphere Project's minimum standards and other standards in disaster response.

- **Chapter 3 — Human Resource Management** is a major issue in most emergencies. This chapter looks at the key concerns for relief workers in humanitarian emergencies. It aims for a better understanding of the human resource management concepts and provides practical ways for improving the overall performance of relief workers.

- **Chapter 4 — Disaster Epidemiology** explains the basic principles of epidemiology needed to improve rapid assessment and program monitoring. It provides practical tools for monitoring and reporting the progress of public health programs.

- **Chapter 5 — Environmental Health** discusses the general principles of environmental health and the relationship between environmental conditions and the health of displaced populations in humanitarian emergencies. This chapter also describes basic steps for managing and monitoring water supply, sanitation, and vector-control programs. As a part of environmental issues the additional sub-chapter on **Vector Control** gives an overview of the unique factors that influence the spread of vector-borne diseases in disasters and appropriate vector control strategies.

- **Chapter 6 — Food and Nutrition** explains the impact of disasters on food security and nutrition. The principles of food aid are also covered. This chapter describes short- and long-term strategies for reducing malnutrition and micronutrient deficiency among displaced populations. In addition, it describes practical ways of assessing food security and nutritional status during humanitarian emergencies.

- **Chapter 7 — Control of Communicable Diseases** covers common and emerging communicable disease threats among displaced populations. General and disease-specific strategies for preventing, monitoring, and controlling disease outbreaks are discussed. A sub-chapter on **Diarrhoeal Disease Control** focuses on the prevention, preparedness, and control of diarrhoeal diseases that cause high morbidity and mortality among displaced populations. Another sub-chapter on **Emergency Immunisation Programs** describes the role of vaccines in preventing outbreaks of vaccine-preventable diseases in emergencies. It can serve as an aid for planning, organising, and evaluating emergency immunisation programs.

- **Chapter 8 — Primary Health Care (PHC)** discusses how health care delivery in emergencies must be based on the PHC framework. In humanitarian emergencies, a thorough understanding of the principles of Primary Health Care is needed for implementing emergency health care at the district level and for planning the restoration of a damaged health infrastructure.

- **Chapter 9 — Health Services** focuses on the establishment of emergency health services. It gives an overview of the consequences of emergencies on the health system, including mass casualty incidents, and describes how to build the capacity of local health facilities, as well as the affected community, to provide basic health care.

- **Chapter 10 — Incident Management System (IMS)** is a proven tool for co-ordinating the relief response, which may be used in the future by many agencies responding to disasters in developed countries. This chapter covers the structure and function of the IMS and how it can bring together humanitarian agencies and military forces in a way that will be useful in planning emergency services in developing countries.

- **Chapter 11 — Reproductive Health Care** reviews the role of reproductive health care in emergency health care and focuses on the priority reproductive health needs of displaced populations. This chapter describes the systematic approach to setting up reproductive health services during the emergency and post-emergency phase.

- **Chapter 12 — Emergency Mental Health Care** describes the psychological problems of people exposed to violence and other stressors. Using lessons learned from previous mental health programs, this chapter provides practical guidelines for setting up mental health programs for displaced populations in developing countries. A sub-chapter on the **Needs of Children and Adolescents** discusses how children and adolescents have experiences in emergencies that create special needs. It describes how to increase psychological support and set up educational and social services in order to meet these needs.

- **Chapter 13 — New Technologies in Humanitarian Emergencies** explains how many technologies can greatly improve the emergency response. This chapter reviews the use of appropriate technology in emergencies. It also reviews various technologies and tools that can enhance the effectiveness of disaster operations.

- **Chapter 14 — Media and Public Affairs** covers the role of the media in humanitarian emergencies. It also describes how to build good media relations to benefit the relief response.

We hope that local and international humanitarian workers at every level will find this guide helpful for improving their skills as well as of those whom they have planning and management responsibility. We would very much appreciate comments from readers on the usefulness of this guide in disaster preparedness and response and any suggestions for future improvements.

Gilbert M. Burnham, MD, PhD

Saade Abdallah, MB ChB, MPH

DISASTER DIMENSION

Description

This chapter reviews the impact of disasters on displaced and host populations and how to build the capacity of vulnerable communities to cope with disasters despite social, political, economic, and cultural constraints.

Learning Objectives

- To describe different disasters, their trends and consequences on displaced populations.
- To define IHL and Human Rights Law and their application in humanitarian emergencies.
- To describe the long-term solutions for refugees and internally displaced persons.
- To describe the major political, economic, social, and cultural processes surrounding humanitarian emergencies.
- To discuss the role of humanitarian assistance in disaster prevention, mitigation, and preparedness.
- To define the strategies for strengthening community participation in developmental relief programs.

Key Competencies

- To analyse current trends and consequences of large, displaced populations following major disasters.
- To apply the IHL and Human Rights Law to conflict and non-conflict situations.
- To understand the impact of long-term solutions on refugees and internally displaced persons.
- To recognise the political, economic, social, and cultural issues surrounding humanitarian emergencies.
- To identify appropriate disaster prevention, mitigation, and preparedness measures.
- To understand the critical role of community participation in new relief programs.

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OVERVIEW OF DISASTERS

"Disasters... are all too often regarded as unusual events, not part of "normal life." In reality, however, the opposite is true. Disasters and emergencies are a fundamental part of normal life. They are consequences of the ways societies structure themselves, economically and socially; the ways that societies and states interact; and the ways that relationships between the decision makers are sustained."[1]

Disasters happen when the forces of a hazard (an extreme event that disrupts the lives of people) exceed the ability of a community to cope on its own. Not all communities are at risk of every type of disaster, but every community is at risk of some particular disaster. The United Nations Disaster Relief Organisation (UNDRO) defines a disaster as:

"a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources."

The most important points in this definition are the following:

1. A disaster interrupts the **normal** function of a community.
2. The affected population cannot cope with the effects of the disaster.
3. Normal function cannot be resumed without external assistance.

Disasters do not occur every time a community is exposed to a drought, fire, conflict, etc. The consequences of a disaster will depend on the nature of the hazard as well as the *vulnerability* and level of disaster preparedness of the population at risk. Certain groups of people have very low capacity to cope with the harmful effects of disasters on their lives and livelihoods. Declining health, education, and other social services and environmental degradation all contribute to increased vulnerability and exposure to risks, shocks, and stress.

Table 1-1: Terms and Definitions

Acute Emergency Phase	Begins immediately after the impact of the disaster and may last for 0-3 months. Characterised by initial chaos and a high crude mortality rate (CMR). Ends when CMR drops below 1/10,000 people/day.
Asylum	Giving sanctuary, refuge, shelter or protection from seizure to a refugee from another country.
Camp	A place where a group of displaced people temporarily lodge in tents, huts, or other makeshift shelters. A camp setting may vary as follows: • Tented cities relying wholly on external support. • Small, open settlements where the refugee communities have been able to maintain a village atmosphere. • Larger, more crowded settlements where its inhabitants are more dependent on external aid. Level of control exercised by national and international authorities.
Complex Humanitarian Emergency	• A major man-made disaster that may be complicated by natural disaster(s), and loss of life. It often requires the support of a multinational military peace operation. • A humanitarian crisis in a country or region where there is a total or considerable breakdown of authority resulting from internal and/or external conflict, which requires an international response that goes beyond the mandate and capacity of any single agency (UNDHA).
Complex Political	Situations in which the capacity to sustain livelihood and life is threatened primarily by

Disaster	political factors, and, in particular, by high levels of violence.
Disaster	Regardless of the cause, disasters have the following characteristics: • A great or sudden misfortune • Beyond the normal capacity of the affected community to cope, unaided • The interface between vulnerable human conditions and a natural hazard
Hazard	Extreme event (natural, man-made) that may disrupt the lives of people, particularly vulnerable people, exposing them to loss of property or livelihood, injury, or death.
Integration	Neighbouring country of asylum allowing refugees to settle permanently with the host population without restrictions.
Internally Displaced Person (IDP)	• Persons who have been forced to flee their homes suddenly or unexpectedly in large numbers, as a result of armed conflict, internal strife, systematic violations of human rights, or natural or man-made disasters, and who are within the territory of their own country (UN Secretary General 1992). • Persons or groups of persons who have been forced or obliged to leave their homes or places of habitual residence, in particular as a result of, or in order to avoid the effects of, armed conflict, situations of generalised violence, violations of human rights, or natural human-made disasters, and who have not crossed an internationally recognised state border (Inter-Agency Standing Committee Guiding Principles 1998).
Post-Emergency Phase	Begins when the CMR drops below 1/10,000 people/day and may last 1-6 months or longer. Characterised by improvement and expansion of relief activities.
Refugee	• Any person who, owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it (UNHCR 1951). • Every person who, owing to external aggression, occupation, foreign domination, or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality (OAU).
Relief	Assistance given to people in need after a disaster. The initial assistance in an emergency is usually provision of food, clean water, shelter and protection.
Rehabilitation or Reconstruction Phase	After the relief phase, reconstruction begins. This should lead to restoration of pre-disaster conditions (repaired facilities, functioning services, self-reliance).
Repatriation	Returning to the country of birth or citizenship. May be forced or voluntary.
Resettlement	Allowing refugees to settle in a third country when repatriation or integration is not possible. Usually offered as a temporary solution.
Vulnerability	The defencelessness, insecurity, and exposure to risks, shock, and stress—and having difficulty coping with them. Living on an "edge" such that if something goes wrong, or if part of the situation changes, then the ability to sustain life is endangered. The potential that when something destructive happens, people will not be able to handle the consequences by themselves.

Types of Disasters and Trends

There are many types of disasters. Most of them arise due to the forces of nature or man. A large part of the world's population is subject to natural disasters. Between 1971 and 1995, natural disasters caused, on average, more than 128,000 deaths and affected the lives of 136 million people each year. This decade has seen more "complex political emergencies" involving large-scale population movements, displaced people and refugees. Between mid-1996 and mid-1997, an estimated 5.57 million people were killed as a result of "high-intensity" conflicts world-wide.[2]

Some disasters strike very rapidly, while other disasters begin with low-levels of violence or deteriorating social conditions. The following table classifies disasters into five major categories: *sudden-onset disasters, slow-onset hazards, industrial/technological events, armed conflict,* and *epidemics.*

Table 1-2: Classification of Disasters

NATURAL DISASTERS	MAN-MADE DISASTERS
Sudden Impact — earthquakes, tropical storms, tsunamis, volcanic eruptions, etc.	**Industrial/Technological** — pollution, fires, spillages, explosions, etc.
Slow-Onset — drought, famine, pest infestation, deforestation, etc.	**Complex Emergencies** — wars, civil strife, armed aggression, etc.
Epidemic Diseases — water-borne, food-borne, vector-borne, etc.	**Others** — transportation accidents, material shortages.

1. **Sudden-onset disasters** include floods, earthquakes, tsunamis, or tidal waves, tropical storms, volcanic eruptions, and landslides. As their name implies, sudden-onset disasters occur swiftly and often without any warning. Floods are the most frequent type of natural disaster associated with sudden migration of large populations and food shortages. Other types of disasters generally occur more frequently in Asia, Latin America, and the Caribbean rather than in Africa. When these disasters occur, they frequently cause thousands of deaths and casualties. Earthquakes cause the greatest number of deaths and overwhelming infrastructural damage. Communities at risk of these types of disasters should recognise and respond to threats posed by local weather patterns and the shape and contours of the land.

2. **Slow-onset disasters** include droughts, famine, environmental degradation, deforestation (loss of trees and vegetation), pest infestation and desertification (conversion of arable lands to deserts). These disasters are usually the result of adverse weather conditions combined with poor land use. Traditionally, African communities, particularly the poor, have been at increased risk of these types of disasters because of poverty and social inequality, environmental degradation from poor land use and rapid population growth. Slow-onset disasters can be prevented because they happen over a long period of time and human decisions contribute to (or cause) problems. Early warning systems can be easily put in place to lessen or even prevent the disaster.

3. **Industrial/technological disasters** result from a society's industrial and technological activities that lead to pollution, spillage, explosions, and fires. They may occur because of poor planning and construction of man-made facilities (buildings, factories, etc.) or from neglect of safety procedures. Sudden-onset disasters such as earthquakes, floods, and terrorist acts may trigger secondary disasters such as fires or pollution. Industrial events have the potential to cause large-scale loss of life and infrastructural damage, especially in developing countries with unregulated industrialisation, and inadequate safety standards and disaster response capacity. Wherever there is a man-made facility, there is the potential for an industrial or technological disaster to occur. Reducing the occurrence and effects of industrial disasters requires a multi-sectoral approach.

4. **Complex emergencies** are usually man-made, with multiple contributing factors. They often follow wars between states, internal conflict, and, increasingly, terrorist acts. Massive population displacements may occur due to lack of food, insecurity, and increasing death rates. Poverty and risk of conflict go hand in hand. Civilians that are not part of the conflicts end up bearing the majority of casualties because they are often targets of both sides of the conflict.

5. **Epidemic diseases** are those diseases that normally do not occur in stable communities but have the potential to spread under certain conditions. This can cause frequent and severe outbreaks. These diseases may be spread by contaminated water or food, person-to-person contact, or through animals or insect vectors. Examples of epidemic diseases that commonly threaten displaced populations include cholera, measles, dysentery, respiratory infections, malaria, and, increasingly, HIV. After a major disaster, the risk of epidemic diseases increases mainly as a result of overcrowding and unhygienic conditions.

Consequences of Disasters

Disasters have massive human and economic costs. They may cause many deaths, severe injuries, and food shortages. Most incidents of severe injuries and deaths occur during the time of impact, whereas disease outbreaks and food shortages often arise much later, depending on the nature and duration of the disaster. Anticipating the potential consequences of disasters can help determine the actions that need to be started before the disaster strikes to minimise its effects. The following table summarises the potential consequences of some common disasters.

Table 1-3: Potential Consequences of Disasters

Consequences	Floods	Earthquakes	Droughts	Complex Emergencies
Deaths	Few	Many	Many	May be many
Severe injuries	Few	Overwhelming	Few	May be many
Disease outbreaks	Possible (water-borne)	Possible	Possible (due to malnutrition)	Common (all types)
Food shortages	Common	Rare	Overwhelming	Common
Mass displacement	Common	Not common	Common	Common

Phases of Disasters

Disaster situations are dynamic, always changing and demanding a change in response. There are six phases of disasters. Even though the evolving situation may appear continuous, recognising the end of a particular phase may help predict new needs and plan better responses. Each phase is described below.

- Pre-Emergency phase
- Impact and Flight phase
- Acute Emergency phase
- Post-Emergency phase
- Repatriation phase
- Rehabilitation or Reconstruction phase

1. **Pre-Emergency Phase** — The period before the disaster strikes may be used to assess how often a particular community is exposed to different risks (risk mapping), and how good is their preparedness. Protective actions can be undertaken based on the disaster warnings and the available resources, e.g., identifying temporary shelters, stocking basic supplies, planning evacuation routes, monitoring trends, etc.

2. **Impact and Flight Phase** — When a disaster strikes, the hazard (fire, earthquake, floods, conflict, etc.) may trigger the displacement of large numbers of people from their homes. How long this phase lasts depends on the type of disaster, the number of people affected and the distance they must travel to find sanctuary. Search and rescue and other assistance, e.g., providing transportation, shelter and basic supplies to affected people may be carried out to reduce the loss of lives.

3. **Acute Emergency Phase** — This phase begins immediately after the impact of the disaster and is marked by intense, often reactive activities by many humanitarian agencies responding to media reports of very high death rates (may be 5-60 times the normal death rates). The priority is to keep the affected population alive. Security may be a major concern in complex emergency situations. Critical services such as providing food, water, sanitation, basic health care, and protection from violence and harassment are quickly organised. This phase ends when crude death rates fall below 1/10,000 persons/day.

   Note: *The Crude Mortality Rate (CMR) for stable populations in Africa is about 0.5 deaths/10,000 persons/day.*

4. **Post-Emergency Phase** — The population movement usually slows down. This enables critical services to be properly established and maintained. During this phase, the cause of the displacement may be evolving. The displaced people wait for "something to happen" so that they can either return home, integrate with the local community or relocate elsewhere. As international support declines, the emphasis shifts to building the local capacity and promoting community participation. Tracing, reproductive health care, mental health care, and other services may be initiated, based on the epidemiological information.

5. **Repatriation Phase** —After the emergency situation is over, displaced people are expected to return to their place of origin either on their own or with the help of relief agencies. Repatriation may be either forced or voluntary.

6. **Rehabilitation or Reconstruction Phase** — Once a permanent solution is found, the focus shifts from relief to development. The aim is to help the affected community become self-reliant. The responsibility of providing assistance is handed over to the affected community, the local authorities, development agencies, and other non-governmental organisations. Because humanitarian and development technicians have different approaches to providing assistance and the infrastructure for relief is inadequate for development, the programs are re-oriented and redesigned.

HUMAN RIGHTS LAWS AND INTERNATIONAL HUMANITARIAN LAW (IHL)

The **Human Rights Laws** and the **International Humanitarian Law (IHL)** are designed to guarantee individuals the right to a life of physical and mental well being. Both have their foundation in centuries old beliefs about the respect for human life and welfare. However, these laws apply in different circumstances and have different mechanisms for enforcement.

Human Rights Laws

Human Rights Laws are international legal instruments that are designed to protect individuals, and groups of individuals, from having their rights (civil, political, economic, social, and cultural) violated by a government. These laws are adopted through treaties that are signed by nations. These treaties guarantee citizens the right to life, humane treatment, freedom from slavery and from *ex post facto* laws (laws passed to punish people for activities that were previously legal). Human Rights Laws generally apply during peacetime, although they could be applied during times of war as well. However, they do not specifically address the means and methods of warfare. Because the *government* of a country is the signatory to the treaty, groups outside the government, such as rebels or terrorists, are not punishable by International Human Rights Laws, but instead by the laws of the nation in which they are operating.

The following table lists some of the Human Rights Laws designed to keep governments from violating the human rights of their own citizens.

Table 1-4: Common Human Rights Laws

Common Human Rights Laws

1. Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment

2. Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages

3. Convention on the Elimination of All Forms of Discrimination Against Women

4. Convention on the Prevention and Punishment of the Crime of Genocide

5. Convention on the Rights of the Child

6. Convention Relating to the Status of Refugees and its Protocol

7. Declaration on the Elimination of All Forms of Intolerance and of Discrimination Based on Religion or Belief

8. Declaration on the Protection of Women and Children in an Emergency and Armed Conflicts

9. ILO Convention Concerning Indigenous and Tribal Peoples in Independent Countries

10. International Convention on the Elimination of All Forms of Racial Discrimination

11. International Covenant on Civil and Political Rights

12. International Covenant on Economic, Social, and Cultural Rights

13. Standard Minimum Rules for the Treatment of Prisoners

14. Universal Declaration of Human Rights

In order for Human Rights Laws to be enforced, the oppressed or injured party must bring suit, either in a national court or in an international body against a government. Therefore, enforcing Human Rights Laws can become very political and is often not based purely on humanitarian principals and neutrality, as is IHL.

International Humanitarian Law (IHL)

> *Definition*: IHL is the part of international law designed to protect victims during warfare. It applies to both soldiers and civilians, wounded, sick, and shipwrecked members of the armed forces and prisoners of war. Medical workers, military chaplains, and civilian support workers are also protected. IHL applies to all parties in armed conflicts.[3]

The principle legal documents of the IHL are the **four Geneva Conventions of 1949** and the **two Additional Protocols of 1977**, which are based on the principals of *humanity, impartiality*, and *neutrality*. The founding of the modern IHL began after Henry Dunant, a Swiss businessman witnessed the suffering of wounded and dying soldiers in Solferino, Italy in 1859 after a battle between French and Austrian armies. He called for an international conference to draft agreements on how to deal with battlefield casualties. He also proposed the formation of volunteer relief groups, which were protected from harm, to care for the wounded. As a result, the Geneva Conventions were negotiated and the **International Committee of the Red Cross (ICRC)** was formed. The symbol of a red cross was identified as the universal protective emblem for those assisting the wounded and civilians in conflict areas.

The purpose of using IHL is to help resolve conflicts and return to a state of peace. IHL is enforced by a system of **Protecting Powers**. Under this system, these Protecting Powers appoint certain neutral countries to safeguard the interest of the parties in conflict in enemy countries. If no appointments have been made, the International Committee of the Red Cross will offer to the parties in conflict its help as the designated Protecting Powers.[4]

IHL is enforced in many ways. Almost all nations have ratified the Geneva Conventions, and over one hundred nations have ratified one or both Additional Protocols. Nations that ratify the Geneva Conventions have a legal obligation to uphold them. They are required to enact domestic laws that provide legal actions against violators. Legal action against violators may be brought before an international tribunal, such as those that occurred in Nuremberg after the fall of Nazi Germany. The most effective means of obtaining respect for these laws is to provide education during times of peace.[5]

The Geneva Conventions and Additional Protocols

The IHL is comprised of four Geneva Conventions and two Additional Protocols. All Geneva Conventions contain a **Common Article 3**. The conventions and protocols specify rules that safeguard combatants (members of armed forces) who are out of battle, prisoners or war, civilians accompanying the armed forces, and the civilian population. Each document applies to different situations:

- The four Geneva Conventions and the Additional Protocol I apply to all situations of declared war or armed conflict *between nations.*

- The Additional Protocol II and Article 3, which is common to the four Geneva Conventions, apply to situations of *internal conflict* (excluding internal disturbance and isolated acts of violence).

The following tables summarise who is protected and the mandate of the Geneva Conventions, the Additional Protocols, and Common Article 3.

Table 1-5: Protected Persons and Mandate of the Geneva Conventions

	Protected Persons	**Mandate**
First Geneva Convention	Provides protection to the following: • Soldiers who are out of battle • Soldiers who are wounded or sick • Medical personnel, facilities and equipment • Military chaplains • Wounded civilians in a military support role • Civilians who spontaneously take arms to fight an invasion [6]	• They shall be free from discrimination on the basis of sex, race, nationality, religion, political beliefs, or other criteria. • They are not to be murdered, exterminated, or subjected to torture or biological experiments. • They are to receive adequate care. • They are to be protected against pillage and ill-treatment. • All parties must search for and collect the wounded and sick after battle, and inform the Central Tracing Agency.
Second Geneva Convention	Adapts the First Geneva Convention to conditions at sea: • Armed force members who are wounded, sick, or shipwrecked • Medical personnel • Civilians accompanying armed forces	• All parties will aid in their rescue and care. • Neutral ships such as merchant ships can be called on for aid and given protection as neutral parties. • Hospital ships cannot be used for any military purpose. • A ship's religious, medical, and hospital personnel on combat ships cannot be captured. • Warships can hold the wounded, sick, and shipwrecked as prisoners of war, on condition they respect the Third Geneva Convention.
Third Geneva Convention	Sets out specific rules for the treatment of prisoners of war (POWs). May include: • Members of the armed forces • Volunteer military forces, including resistance movements • Civilians accompanying armed forces	• POWs are required only to give their name, rank, date of birth, military number. • Names of POWs must be sent immediately to the ICRC, and they should be allowed to correspond with their families. • POWs are not to be subject to torture, experimentation, discrimination or public display. • POWs should be housed in clean shelter and given food, water, and medical care. • POWs are subject to the laws of their captors and can be tried in their captors' courts. • Seriously ill POWs are to be repatriated. • All POWs to be released without delay once conflict ends.
Fourth Geneva Convention	Protects the rights of civilian populations living in areas occupied by armed forces.	• To be allowed to lead a "normal life" and should not be deported or detained except for security reasons. • To be protected from murder, torture, brutality, and discrimination. • Safety, honour, family life, religious practices and customs are to be respected. • Orphans are to be cared for and ICRC tracing agency to transmit family news and facilitate family reunification. • Hospitals and safety zones are to be established. • Available hospitals & medical personnel are to be protected. • Civilians cannot be forced into military-related labour, and they are to be paid for any work. • Public officials may retain their post and powers unless they present a security risk. • The occupying power must ensure food, medical, and

| | | public health facilities for the civilian population or allow relief organisations to assist them. |
| | | • Detainees to receive adequate care/protection as POWs; children & pregnant women not to be detained too long. |

Table 1-6: Protected Persons and Mandate of Additional Protocols and Common Article 3

	Protected Persons	**Mandate**
The 1977 Protocol I	Expands the protection for civilians, the military and medical workers in international armed conflict.	• It outlaws indiscriminate attacks on civilian populations and necessary infrastructures, such as food and water. • Protects dams, dikes, nuclear plants, and places of cultural or religious worship. • Weapons that cause superfluous injury, unnecessary injury, or long term damages to the natural environment are outlawed. • Gives special protections to women, children, civilian medical workers, and journalists. • Forbids the recruitment of children less than 15 years of age into the armed forces. • Use of the protective emblems of the ICRC for deceit is illegal.
The 1977 Protocol II	Contains more protection for victims of high intensity internal conflicts such as civil wars. Does not apply to internal disturbances and isolated acts of violence.	Offers protection to parties who do not take direct part in the conflict: • Evacuation of children to safe areas, where possible, and eventual reunification with families. • Forbids attacks on civilians and "objects indispensable for survival" such as crops, water supplies, and religious buildings. • Persons detained during internal conflicts are to be afforded the same rights as POWs by the Third Geneva Convention. • Impartial relief organisations are to be permitted to continue humanitarian services. • Strengthens protection of wounded, sick, shipwrecked, medical and religious personnel.
Common Article 3	Extends coverage to *non-international conflicts* for soldiers who have put down their arms or are out of the conflict due to injury or sickness.	To ensure that non-combatants get humane treatment, it prohibits the following: • Violence to life or person — murder, mutilation, cruel treatment, torture • Taking hostages • Outrages against dignity — humiliating or degrading treatment • Passing of sentences and carrying out executions

Conclusion — Human Rights Laws and IHL

Human Rights Laws and IHL have a common goal — to protect humans from inhuman acts and to promote their fundamental rights in all circumstances. These laws have been developed in different ways and are embodied in different treaties. Human rights apply in principal in all circumstances, while IHL apply during times of war.[7] To alleviate suffering and achieve a better life with greater freedoms for people during war and peace times requires a common understanding and a universal respect for these laws. It is the duty of each country that has ratified the IHL and Human Rights Laws to communicate the information contained in these laws during times of peace.

DISPLACEMENT AND DISPLACED PERSONS

Many disasters occur every year. These disasters force large populations to leave their homes in order to:

- Escape the effects of conflict and violence resulting from weakened states or external aggression.

- Find food, water, shelter, which are lacking due to poverty and economic collapse.

- Seek protection from persecution because of race, religion, political opinion, nationality, or membership in a social group.

- Escape the devastation of an environmental disaster.

Impact of Displacement

Displacement causes a strain on both the populations that have been displaced and the host populations that have to share their scarce resources.

The risk of death is usually highest immediately after displaced people arrive at a place of safety. This may occur because of physical exhaustion and prolonged lack of food and medical care. Most deaths among displaced populations occur in children less than five years of age. Because people need water to survive, most displaced people settle themselves near rivers and streams. The risk of contaminating these water sources with human waste can give rise to serious outbreaks of communicable diseases such as cholera, typhoid, and dysentery.

> "Since 1990, death rates among the Sudanese refugees in Ethiopia (July 1990), the newly arrived Somalia refugees in Ethiopia (June 1991), the Somalia refugees in Kenya (January 1992), the Bhutanese refugees in Nepal (May 1992), and the newly arriving Mozambican refugees in Zimbabwe and Malawi (July 1992) have been elevated between five to twelve times the crude mortality rate in the country of origin." [8]

The impact of displacement is not only felt by the persons being displaced, but also by those living around their new residence, whether it is temporary or permanent. Host populations can be adversely affected when large numbers of people settle (even temporarily) in a region that is ill-prepared for supporting a large influx of displaced people. Many rural and urban societies in Africa are being sustained on the most basic of subsistence economies. Any change to the environment can interfere with the livelihoods of the residents hosting the displaced population. For example, when there is limited access to food in an area, even small increases in the demand for food can disrupt local market prices and food availability, resulting in increased malnutrition.

The following table summarises the consequences of displacement on *displaced persons* and *host populations*:

Table 1-7: A Summary of the Consequences of Displacement

Effects of Displacement on *Displaced Persons*	Effects of Displacement on the *Host Population*
- Loss of livelihood/increased poverty - Hunger, malnutrition, and starvation - Lack of shelter - Lack of heating and cooking fuels - Lack of potable water - Spread of communicable diseases - Overcrowding - Loss of land tenure - Long-term psychosocial trauma - Breakdown of traditions, common values and norms "Community" functioning is disrupted	**Initially** - Competition for essential resources and services - Food shortages and increases in food prices - Reduced wages - Impeded transportation and/or movement in the area - Civil unrest - Interruption of local commerce due to black market economies - Increased pollution due to overburdened water and sanitation systems - Spread of communicable diseases - Overcrowding - Long-term psychosocial trauma **Later** - Local commerce increases and booms

External support in response to refugee problems is often late, hampered by the unwillingness of local or host governments to appeal to the international community for assistance. Private or other political factions within the community may be the root cause this unwillingness. In other situations, the media and donors may not respond to an appeal until the situation becomes critical. By then, the lives of both the displaced and host populations may be at risk from disease outbreaks and inadequate health care. Permanent solutions for displaced persons should also address the adverse impact of displaced populations on the host population.

Refugees and Internally Displaced Persons

Africa continues to have a disproportionate number of refugees and internally displaced persons. From 1990 to 1993, the world population of internally displaced persons and refugees grew by 40 percent, from 30 million to 43 million people. Of these, approximately 16 million people were located in Africa as of 1993.[9] Globally, the bulk of displaced persons have been in Afghanistan, Bolivia, Sierra Leone, Liberia, the African Great Lakes Regions and the Balkans.

The following sections describe the major differences between refugees and internally displaced persons.

1. **Refugees**

    "Refugees" are people who, because of fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion, flee from their home country (and are unwilling to return) and seek protection across an international border.

    Note: *It is becoming increasingly difficult to obtain the required documentary evidence of genuine "fear of persecution."*

    How refugees should be treated is clearly defined in the Geneva Convention and Added Protocols. Almost all countries have signed the Geneva Conventions and are obliged to grant asylum to any refugee that flees into their territory.[10] While it would be illegal for these countries to return refugees to the country they are fleeing from, there is no legal way of forcing a country to offer them asylum. This is because the United Nations and

other humanitarian organisations that try to assist the increasing numbers of refugees must respect the sovereignty or freedom of the host country to rule itself.

The following table summarises who is not a refugee.

Table 1-8: Those Persons Not Qualifying as Refugees

Under the United Nations Refugee Mandate, the Following Persons are <u>Not</u> Refugees:
1. Someone who fled from his home areas due to fear of persecution but does not cross an international border (IDP).
2. Someone who is a victim of a natural disaster — famine, drought, etc.
3. Someone who is fleeing from economic hardship (economic migrant).
4. Someone who returns back to his country of nationality.
5. Someone who acquires a new nationality in another country, and enjoys protection by the country of his new nationality.
6. Someone who cannot invoke compelling reasons for refusing to return to the country of his nationality, because the circumstances that led to his refugee status have ceased to exist.
7. Someone who has committed a crime against peace, a war crime, or a crime against humanity.
8. Someone who has committed a serious non-political crime outside the country of refuge prior to his admission to that country as a refugee.
9. Someone who has been guilty of acts contrary to the aims and principles of the United Nations.

Because most developing countries are poor and overwhelmed by their own problems, they may request for aid once they detect a serious refugee problem. The United Nations High Commission for Refugees (UNHCR) and other humanitarian agencies may provide assistance to refugees. UNHCR is responsible for protecting the rights of refugees and ensuring that they are treated according to internationally recognised standards.

2. Internally Displaced Persons

The majority of displaced persons are referred to as "internally displaced persons" (IDPs). These people are forced to flee from their home suddenly or unexpectedly in large numbers as a result of armed conflict, internal strife, systematic violations of human rights or natural or man-made disasters but remain within the territory of their country. Although some IDPs are compelled by similar reasons to flee (and may face similar problems) as refugees, they do not enjoy the same legal status for protection and for assistance simply because they did not cross their country's borders. Prior to 1998, no international agency had been given the responsibility of ensuring adequate care and protection for IDPs. Since then, Guiding Principles have been developed by the United Nations to define standards for the treatment of internally displaced persons[11].

Note: *The biggest cause of internal displacement is urbanisation, which is a disaster in itself. For details, see the section on Prevention, Mitigation and Preparedness: the future of humanitarian assistance.*

Whether displaced persons cross a border or not, they should first be provided with basic necessities of life before sorting out their identities and other criteria. Permanent solutions for refugees and IDPs should be approached the same way, e.g., voluntary repatriation and return of IDPs to their place of origin should be carried out in a similar manner. Displacement for both groups should be addressed in the context of the root causes. If human rights abuses were the major factor, then human rights groups should join together with agencies and increase awareness of the problem while providing assistance and protection.

Special Concerns of Displaced Persons

Populations that have been displaced due to armed conflict, civil strife, increased human rights violations, natural

or man-made disasters may have unique concerns, including the following:

1. **Increased Vulnerability**

In many emergency situations, up to 80% of the affected population are women, children, and elderly persons. Displacement makes these groups more prone to violence, starvation, and even death. They are vulnerable because they lack the capacity to cope, for example:

- *Physiologically vulnerable* — those who lack access to basic needs, including health care, e.g., malnourished, sick, pregnant and lactating women, young children, and the elderly.

- *Socially vulnerable* — those who lack access to education and social support, e.g., female-headed households, unaccompanied minors, AIDS orphans and the disabled.

- *Economically vulnerable* — those who lack sufficient income, e.g., the poorest

- *Politically vulnerable* — those who lack autonomy and have no control over their situation, e.g., internally displaced persons, refugees, and ethnic minority groups (by language).

If the above vulnerabilities are not effectively reduced, the affected people may suffer more serious consequences, and their "return to normalcy" may be more difficult.

Note: *The above classification of vulnerable groups represents overlapping but separate problems. For example, there may be many female-headed households among the very poor, but targeting all women for seeds and tools distribution will not solve the problem of poverty, which has many other underlying causes.*

2. **Lack of Security and Protection**

All displaced persons are under constant threats of physical violence if normal defence and policing systems are disrupted, during their flight and in the relief camp, especially if it is a detention-like situation. Children and females of any age or marital status, who are on their own for whatever reason, will be more vulnerable, for example:

- People in power may demand sexual favours from women and adolescent girls in exchange for "protection" and basic subsistence goods, such as food and water.

- Unaccompanied children may be at higher risk for sexual violence, particularly when foster care placement occurs without adequate screening.

- When displaced persons cross international borders, they may be held in closed detention facilities. These facilities may house criminals with children and females with males.

- Breakdown of the community which usually enforces traditional norms, individual roles, and security results in disruption of social patterns and disappearance of the safety net.

- Not having proper personal identification may put a person at higher risk for sexual violence. The male head of the household may have been given all the relevant documents and may not be available to produce them when questioned by authorities.[12] In addition, politically active people among IDPs and refugees may interfere with the system of providing relief.

Relief workers need to be aware that the above incidents do occur and they can be reduced through basic preventive measures, such as better site planning, ensuring a balance of power between various groups of displaced people in camp settlements, and taking legal action against those who commit acts of violence.

3. **Psychological Trauma**

Considerable psychological trauma occurs when people are forced to flee from their homes. Displaced persons face stress during the flight, throughout their life in a settlement, and even after they return to their homes or settle in other countries. Common reactions to stress may include *anxiety, fear,* and *aggression* in the early phase of flight from their homes. As their displaced status becomes chronic, these reactions may progress to *psychosomatic illness, depression*, *substance abuse* and possibly *suicide*. Common causes of stress include lack of basic needs, concern for missing family members, and uncertainty about their future.

To date, effective mental health programs for displaced persons have not been established. Even though there is sympathy for displaced populations, few donors are keen on supporting mental health care and social services programs. Nonetheless, simple measures can reduce the continuous exposure to stress, for example:

- Helping displaced persons to reunite or find out about the fate of missing family members can significantly reduce their anxiety and enable them to resume normal function for their future life.
- Ensuring access to basic needs and services and giving them opportunities to live a meaningful life in the settlement can help restore dignity and hope among displaced persons.

    (Refer to the *Emergency Mental Health Care* and *Needs of Children and Adolescents* chapters for further information on mental health care and social services.)

4. Loss of Livelihood

Camps often put the lives of hundreds of thousands of displaced persons on hold. They are cut off from their normal means of survival, and may not be allowed to farm, trade, or receive wages or state benefits. For complex emergency situations, relief may be their only means of survival since traditional coping mechanisms do not work. As a result, they require prolonged external support, which can create dependency among the beneficiaries. This causes more hardship when programs are terminated abruptly (which is often the case). It is essential to find long-term solutions for displaced persons that reduce their vulnerabilities and prepare them for sustainable livelihood. See last section in this chapter on Humanitarian and Developmental Relief.

LONG-TERM SOLUTIONS FOR DISPLACED POPULATIONS

In many situations, refugees and internally displaced persons are not able to return immediately to their place of origin. Their lives are kept on hold for as long as they are "displaced persons." The fundamental humanitarian question is:

> *What should be done with people who fear persecution and even death if they return to their homes before conflict is resolved?*

UNHCR Responsibility to Refugees and IDPs

The United Nations High Commissioner for Refugees (UNHCR) is mandated to guarantee protection for refugees as well as to find a long-term solution for their displacement. The three main long-term solutions are listed below (but all are subject to approval by the governments concerned):

- Repatriation to the country of origin
- Integration into a neighbouring country of asylum
- Resettlement in a third country (usually in a developed country)

Refugee law is based on a need for *temporary* protection in the country of asylum. The UNHCR is not mandated to care for refugees after they have been repatriated, integrated, or resettled. Therefore, immigrants become subject to new laws without the United Nations or other relief organisations to ensure their basic rights are respected and that they live under acceptable conditions. Refugees being settled in a permanent location may find it more difficult to handle problems of rehabilitation, re-integration, or re-adaptation than to handle the previous problems in a refugee camp.

Assistance to IDPs is broadly similar to that for refugees. However, the protection and rights of IDPs are based on the national laws of their state as well as the universal human rights laws. The presence of UNHCR and other humanitarian NGOs has proven helpful in promoting respect of these laws by host authorities and parties to the conflict. Certain situations may demonstrate a need for increased UNHCR assistance toward internally displaced populations. For example, where IDPs are, or are likely to be mixed with returning populations, or where the same causes have produced both refugee flow and internal displacement. UNHCR may also decide to get involved in order to tone down the causes of internal displacement and contribute to conflict resolution through humanitarian action.

The main requirements for UNHCR to become involved with internally displaced persons (IDPs) are as follows:
1. A specific request from the United Nations General Assembly, Secretary General or other competent principle organ of the UN;
2. The consent of the concerned state or other relevant entity;
3. The relevance of UNHCR's expertise to assist, protect and seek solutions for internally displaced persons in the particular situation
4. The availability of resources for the activities in question.[13]

Note: *All refugees and internally displaced persons are expected to return willing to their place of origin once conditions are considered safe. Because some issues surrounding finding a long-term solution for IDPs are similar to those for refugees, this section will focus on solutions for refugees.*

Containment in a Camp

Countries in Africa have traditionally been very hospitable to refugees from neighbouring war-torn countries, expecting that their plight will be short-lived. Individual families, religious institutions, and local authorities and organisations readily assist the affected population, usually for humanitarian reasons. The quotes below illustrate the reasons Tanzanian families gave for hosting Rwandese refugees following the Rwanda and Burundi crisis:

> *"They are fellow human beings…we have to share with them the little we have."*

> *"They were relatives, and even those who were not kin were friends and neighbours to our kinsmen. How could we turn them away?"*

Unfortunately, more and more crises are becoming "chronic." Hospitality of any kind is sweet when it is for a short and limited time. More frequent and prolonged conflicts now make it difficult for poor developing countries to host and help refugees for indefinite periods. It also makes it more difficult for displaced people to help themselves. To reduce the adverse impact on the host population and the local infrastructure, host authorities frequently contain displaced populations in camps that are located in the least desirable areas. Locations near the country's border may expose the population to increased insecurity. Despite the negative experience of camps, the international community usually assumes responsibility for establishing these camps and providing assistance to the displaced people rather than offering to resettle them in developed countries.

The design and layout of the camp may compromise the security and protection of displaced persons, for example:

- The physical and geographic location of a camp may increase the likelihood of sexual violence. If the camp is isolated or located in a zone with high crime, persons in the camp may be at higher risk.

- Overcrowding and the breakdown of a social structure may contribute to problems of personal security. Unrelated families may need to share common living and sleeping accommodations. People may be forced to live with strangers or with those they may consider enemies.

- Poor access to services and facilities may also increase the vulnerability of certain groups. When children or women must travel distances to obtain food, water, fuel, latrines, washing facilities, and to distribution or collection areas, they may get exposed to unnecessary risk.

- Inadequate security measures may be another factor. When vulnerable persons are housed in centres or camps where sleeping and washing facilities cannot be locked or secured, they are exposed to unnecessary risk.

- Lack of police protection or general lawlessness may encourage incidents of sexual violence in some camps. Police or persons charged with security may accept bribes and stop investigating complaints or release perpetrators from custody.[14]

Repatriation

Repatriation is defined as returning back to the country of birth or citizenship. The trip is not always planned or expected. All refugees are expected to return to their country of origin willingly once there is evidence of change in the political climate (voluntary repatriation). Repatriation of refugees entails the same concerns as the return of internally displaced persons to their home areas. Most displaced persons return to their former homes on their own initiative. Sometimes, however, refugees are forced by host authorities to repatriate when the hospitality of the host population has been exhausted (forced repatriation). In these situations, the UNHCR with other agencies, may organise a large-scale repatriation program for the mass movement and provide the returnees with repatriation packages and transportation.

Note: *Forcing displaced people to return to their place of origin against their will (forced repatriation) is expressly forbidden in the Geneva Conventions and Additional Protocols. It often results in severe consequences (including death and being internally displaced) for people who return to areas with ongoing conflict or landmines. UNHCR should seek reliable information on areas reportedly affected by landmines and discourage returnees from travelling to there.*

Repatriation is a complex process, which involves more than simply helping displaced people to return to their former homes. Forced repatriation does not guarantee that the displaced population will remain and re-integrate with other people in their place of origin. It is important to understand which factors motivate displaced persons to repatriate, for example:

- *Factors that "push" displaced persons from a host country* — insecurity, phasing out of food distributions and other essential services, poor integration with local population.

- *Factors that "pull" displaced persons to their home country* — improved security conditions, improved access to land, political change, assistance for returnees (transport, basic supplies, protection), agricultural season, etc.

Rather than cutting back relief assistance in the camp it is more effective to improve the conditions in the place of origin and address any constraints preventing the displaced population's return. Ensuring security, access to basic needs, and opportunities for economic development and self-sufficiency at the final destination is essential for a successful return. (See last section on Developmental Relief.)

The following preparations may be necessary for repatriation (and resettlement) of displaced persons:
- Ensuring that repatriation is safe
- Ensuring family reunions or families can go together
- General health screening
- Immunisation campaigns
- Treatment of the very ill
- Controlling existing outbreaks of communicable diseases
- Ensuring completion of drug treatments for patients with tuberculosis or appropriate follow-up at their final destination
- Providing basic supplies for the trip

Integration

Integration is when the neighbouring country is willing to allow refugees to settle with the local population without any restrictions for as long as the security situation in their country of origin remains uncertain. Although integration is becoming less common than other long-term solutions, it may still occur if the following conditions are present:

- The number of refugees is small.
- The displaced persons share a similar cultural or ethnic background as the local population.
- The integration process does not provoke mass migration of people who are not entitled to protection (magnet effect).
- The host country economy is strong enough to welcome the additional labour and market expansion, and there is no threat of economic or environmental damage.

Some refugees may acquire adequate resources and social support to enable them to create a comfortable livelihood in the host country, without depending on relief aid. These refugees may never return to their country of origin even if there is peace. Competition for essential services and resources may give rise to domestic tensions between the local people and the migrants. Host countries may demand for additional development aid from the international community to continue to host the displaced persons.

When a stable long-term relationship can develop between different societies, a sense of helping and learning from one another develops. People are only now beginning to understand that building and preserving *social* capital is as necessary for a country's growth as human and physical capital. The ability of different people to come together and bond socially is very important in promoting economic growth and social stability.

Note: *Promoting integration as a long-term solution can pose serious political implications. It can imply that the United Nations and the host country support the ongoing efforts of ethnic cleansing in war-torn countries.*

Resettlement

Resettlement may be defined as giving protection to refugees in a third country. It may be the only option when repatriation and integration are not possible. In many situations, refugees are not able to return to their home country. For example, in Somalia, many villages were mined as hostile forces withdrew.

Resettlement in a developed country is considered the *least preferred* long-term solution for donors and governments, but the *most attractive* to many displaced persons. Many developed countries perceive no strategic value in admitting socially and culturally diverse displaced communities. The United States views resettlement more positively than Europe and some Asian countries. The conditions for a third country (usually one of the developed countries) to grant resettlement to displaced persons are similar to those described under integration. Because there is no external support after admitting displaced persons, most developed countries grant resettlement as a *temporary* solution. They may limit the level of social protection to displaced persons and prohibit them from working, as work is an important method of integration into host societies. They may also give them incentives to return to their country of origin once the situation is safe.

Future of Displaced Populations

Having the wisdom of knowing which option to select for displaced persons, and the power, resources, and commitment to see it through, is often difficult to achieve. Although it has been said that the international community should intervene earlier in complex disasters involving civil war, human rights abuses, food shortages, and mass displacement, doing this is extremely difficult.[15] When returning home is not an option for refugees or internally displaced persons due to ongoing civil unrest, heavy landmine presence, or other unnatural event, alternative strategies should be considered, such as:

- In armed conflict situations, the regional and international community may need to implement peacemaking and peacekeeping initiatives while seeking long-term solutions for the displaced.

- The international community should assume greater responsibility and consider compensation to the host populations when their social and economic infrastructure is strained by the displaced population.

- When necessary, trade and economic power should be used to improve access to, and the treatment of, displaced populations. Even though it is important to respect the sovereignty of a nation, it is also most important to intervene when human suffering is excessive.

- While carrying out a landmine survey is a national responsibility, UNHCR, through its presence in the country of origin and interviews with refugees, may contribute additional information.[16]

If the above steps are not taken, host authorities will force displaced persons to return to their former places where they will still depend on the humanitarian community for the same basic needs (food, water, etc.), but require far much greater protection.

The following table lists key advantages and disadvantages to long-term solutions for displaced persons:

Table 1-9: Advantages and Disadvantages of Various Solutions for Displaced Populations

SOLUTION	PERCEIVED ADVANTAGES	DISADVANTAGES
Camp Settlement	• Allows more efficient service delivery • Better accounting of relief distribution • Easier to identify beneficiaries • Greater control of population activities • Increases physical access to services • Enhanced security • Cost effectiveness of relief • Monitoring of program	• Puts displaced people's lives "on hold" • Overcrowding and increased ill-health* • Duplicates rather than strengthens local capacity and infrastructure • Least accessible and poor quality land • Environmental degradation • Breakdown of social structure/norms and development of new "less protective" roles • Idleness and restriction of activities can increase security threat • May create "dependency syndrome" which is very destructive and difficult to handle
Repatriation	• Restores country's economic stability • People regain control over their lives • Fewer social problems or conflicts • *Voluntary* repatriation is the best solution for refugees, host country and donors	• May lack access to original homes or land • Root causes of displacement may persist • Forceful adjustment from total dependency to relative self-sufficiency • Limited external aid for economic rehabilitation and reconstruction
Local Integration	• Integrates assistance to refugees and locals • Promotes self-sufficiency and minimises dependency on aid • Builds morale and self-pride	• Reduces control of population activities • Too complicated to support, leading to possible exclusion from aid • Conflicts over resources with locals • Encourages permanent settlement
Resettlement or Temporary Asylum	• Provides protection to selected people facing real threat to personal safety (protection is temporary until safe return to place of origin is possible). • May be only option when second country is un-welcoming • Puts strong emphasis on preparation for return	• Many asylum restrictions to reduce magnet effect • May detain asylum seekers for duration of application or as protection • Restricted access to work and other benefits until asylum is granted • "Voluntary repatriation" when safe return is possible may be difficult

* **Note**: Many refugees may have better access to health care and basic needs than local population

PART II

POLITICAL, SOCIAL, AND OTHER FACTORS SURROUNDING CHE

Characteristics of Complex Humanitarian Emergencies (CHE)

Complex humanitarian emergencies (CHE) are often the result of weakening political and governmental processes that foster peaceful coexistence between different communities. The cause of political instability is usually poor leadership combined with natural disasters such as famine and disease epidemics. This may lead to the following complex emergency situation:

- Politically driven resource wars
- Widespread human rights abuses and civil unrest
- Cultural and ethnic minority groups at risk of extinction
- Territorial buffer zones between different communities erased
- Disruption of essential services and supplies
- Poverty and economic collapse
- Forced migration of large populations from their homes
- Catastrophic environmental and public health events
- Acute human suffering with significant excess mortality

Once political instability sets in, underlying conflict may intensify as communities struggle to regain historical power and to control resources. Certain services, such as health care, education, or social welfare programs may be the first to stop functioning. Increasing insecurity and poor access to food may force large populations to migrate to places without adequate food, water, and other basic necessities. Ineffective political and humanitarian actions may lead to great human misery in the form of malnutrition, disease outbreaks, and violence. Social welfare, justice systems, and cultural norms collapse for as long as the affected populations are forced to spend most of their time and energy searching for their basic human needs.

Underlying Factors

Complex humanitarian emergencies are surrounded by many factors that evolve and affect the displaced population. These factors may be political, economic, social, or cultural. Figure 1-1 below summarises the key political, economic, social, and cultural factors that usually surround a CHE. Each factor is discussed in detail in the following sections.

Figure 1-1: Key Factors Surrounding a Complex Humanitarian Emergency
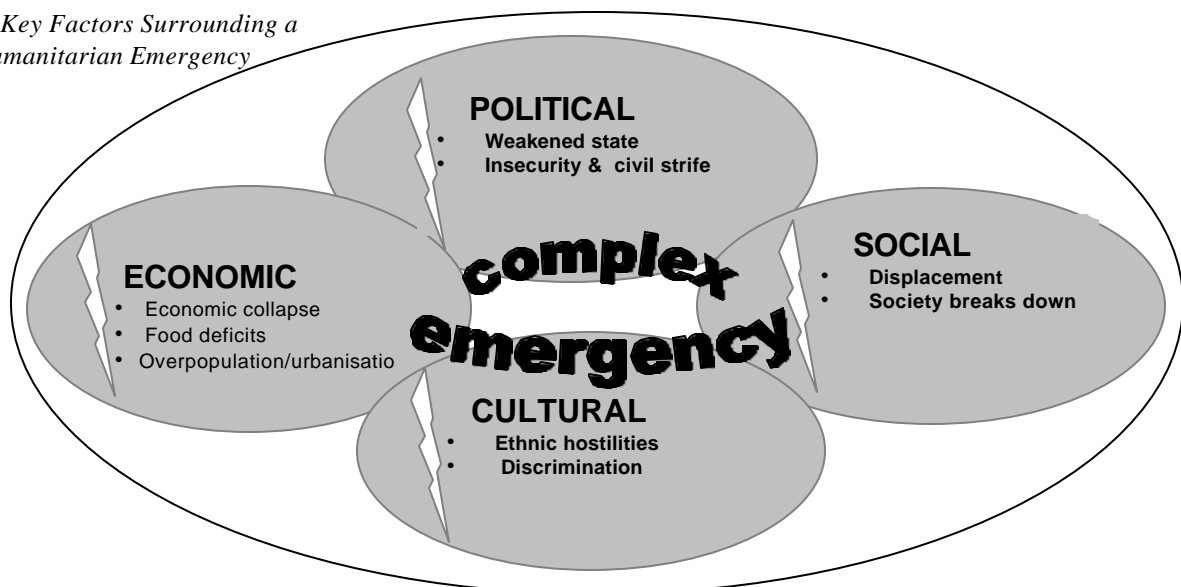
Political Factors

It is important to understand the past and current political and constitutional factors e.g., corruption, criminalisation, suspension of laws, etc. These factors can help predict the potential for an ongoing crisis as well as dictate what political solution is appropriate.

- As weakened states collapse, historical, religious, political, and ethnic forces that are deeply ingrained in populations resurface. This may drive civilian groups to fight for independence and nationhood. For example, even after many years of relative stability during the communist years of Yugoslavia, tensions that existed between ethnic groups during previous generations resurfaced and caused tremendous turmoil.

- Different groups (the military or paramilitary, rebels, warlords, organised gangs, etc.) may initiate conflict. External forces may increase instability by supporting the rebels.

- Once chaos appears, political groups that were previously unimportant may gain importance if they have control over some basic human needs.

- Who is persecuted or stigmatised depends on who controls the state. Human rights abuses against certain people may intensify if they belong to an ethnic minority group.

- The relief response to a crisis may create serious political consequences. Political factions may successfully exploit relief efforts for political gain. As a result, provision of water, food, shelter, and medical care may become instruments of political control.

- Fear of intimidation and violence is a concern of many displaced populations. An imbalance of power may have contributed to displacing these people in the first place. Providing aid to one group may shift the balance of power and create another emergency situation.

Economic Factors

- Overpopulation can increase pressure on land and environmental degradation. Competition for valuable resources (e.g., water, food, arable land, territory, fishing rights) is a major contributor to the global increase in conflicts and complex emergencies.

- Emergence of inter-dependent world economies has led to loss of national governmental influence. The value of many currencies depends upon the public level of confidence in the political regime. Thus, alternative means for exchanging goods and services such as bartering and more stable foreign currency become more important as governments falter.

- The increasing disparity between the rich and the poor has led to urbanisation, with the isolation of the poor, exposing them to more hazards. This can increase ethnic and communal tensions.

- Economic hardship and serious food deficits may result from adverse climatic events or disruption of farming, transport and marketing. Lack of transportation can reduce people's access to resources and prevent them from relocating or evacuating.

- Poverty may interact with other factors and bring about displacement.

- Extended food handouts may create dependency among beneficiaries. This may delay economic recovery and discourage local production.

- The result of a normal political process is a functioning government that not only provides security, but much of the infrastructure that sustains a society. Thus transportation, education, justice systems, public service utilities, sanitation, medical care, and other systems break down when a government falls; and they often cannot be restored without some external assistance.

Social Factors

- Children, adolescents, women, and elderly persons represent a significant portion of a displaced population. As the forces that hold a society fail, these subgroups invariably suffer. As crisis situations worsen, they suffer even more, due to increasing domestic violence.

- Displaced people spend more and more of their time looking for food, water, shelter, and security. As food shortage becomes severe, families break up and prolonged separations prevent them from forming long-term relationships that help to hold a group together. As a result, the social fabric of communities disintegrates.

- Most people respond to disasters as a community, in terms of helping others, abiding by rules, and maintaining respect for person or property. These social patterns of behaviour and conduct may become eroded as an "each for himself" mentality sets it.

- Long-term views and goals, which often guide how people act and interact, fade away as hope for the future diminishes and each person tries only to survive day-by-day.

Cultural Factors

- Some factions still cling to the idea of a homogeneous population (single race, ethnic group, language, religion, etc.).

- Even though a nation may have multiple ethnic groups, those not represented in the central government may be seen as obstacles to nation building.

- Displaced populations are often more concerned with securing their basic needs than spending time and energy restoring their cultural practices.

- Cultural and religious norms may become obstacles to the relief effort. For example, certain groups of the population may be denied access to essential services, or certain relief foods may be considered a cultural or religious taboo and therefore, will not be eaten.

- Cultural and ethnic differences are often a basis for warfare. Therefore, settling displaced people from different ethnic groups and cultures together in one camp may lead to unrest.

- As the emergency situation becomes severe or prolonged, cultural aspects such as language, art, and music may begin to be lost or changed forever.

Analysis of the Complex Emergency Situation

Since 1991, complex humanitarian emergencies have become more frequent and widespread. Complex emergencies are usually predictable, following a sequence of events that often begins with a weakening government, civil unrest and severe food deficits. This gradually leads to forced migration of civilian populations. Excessive mortality may result from war or civil strife, population displacement, starvation, or environmental factors.

Humanitarian assistance becomes necessary when large numbers of people are affected and the local capacity is unable to cope with the consequences of the disaster. Humanitarian interventions, however, should be based on a clear understanding of the political and economic processes that led to the emergency situation. For example, physiological vulnerability may be more effectively reversed through political advocacy or promoting social and cultural practices that can help rebuild societies within the displaced population, rather than by only addressing the immediate causes of physiologic vulnerability (lack of food, water, shelter, and medical care).

Complex emergencies usually last for years because they are influenced by a combination of political, economic, social, and cultural factors that are almost impossible to control. Simply carrying out food and nutrition measures in the absence of a social and economic solution will only increase dependency. Relief aid has to be provided for a longer period of time to enable the very poor or displaced populations to recover and resume normal function. Long-term assistance should create opportunities for people to become self-sufficient by supporting self-help projects, re-establishing schools, etc.

Humanitarian response to complex emergencies now demands that new partnerships be formed between people who traditionally have never worked together. The military and humanitarian relief workers may find themselves working together where humanitarian assistance is impossible due to ongoing conflicts, banditry, or diversion of supplies by warlords. The military usually exit when security is sustainable for others to create an adequate political, economic, social, and cultural structure for the future of displaced people. The United Nations has an important role during the entire response, including the entry and exit strategy.

Note*: See the* Incident Management System (IMS) *chapter for more details on civilian-military co-ordination.*

PART III

PREVENTION, MITIGATION, AND PREPAREDNESS: THE FUTURE OF HUMANITARIAN ASSISTANCE

Prevention, Mitigation, and Preparedness (PMP) measures aim to manage risks before an emergency happens. They include those measures that need to be carried out during the crisis. Because implementing these measures takes time, they should be initiated before the emergency occurs in order to be most effective.

Table 1-10: Terms and Definitions

Capacity	The resources people possess, mobilise, have access to that allow them to have more control over shaping their own futures. Resources may be physical assets (land, money, etc.), skills (literacy, technical), social (community organisation), personal (will to survive), or beliefs (religion).
Community	A group of people living in the same environment and sharing resources. They have common problems, concerns, hopes, and ways of behaviour that give them a sense of belonging to each other. The group also has leaders, ways of communicating ideas and activities, rules and ways of dividing work and participating in functions that are vital to its members.
Development	A dynamic process that enables communities and individuals to grow stronger, enjoy fuller and more productive lives, and become less vulnerable to disasters. The development process emphasises equitable sharing of resources, participation by all members of the community, improving the quality of life, and conserving the environment.
Development Relief	The process of reducing vulnerability and increasing self-reliance, based on the community's identification of needs and priorities. The goal is to strengthen the community's capabilities leading to self-reliance.
Disaster	An extreme, but not necessarily abnormal, state of everyday life in which the continuity of community structures and processes temporarily fails. It occurs where vulnerable people are overwhelmed by a hazard. Basically, it is a socio-economic event since the economic and social structures may be critically disrupted which undermines a community's ability to cope.
Mitigation	Recognising that disasters will occur, attempts are made to reduce the harmful effects of a disaster; and to limit their impact on human suffering and economic assets.
Participation	Involving the community in the decision-making process, aiming to empower them to take responsibility for their lives.
Preparedness	The readiness to predict, prevent, mitigate, respond to and cope with the effects of a disaster.
Prevention	Activities taken to prevent a natural phenomenon or potential hazard from having harmful effects on either people or economic assets.
Risk	The probability of being affected by the unwanted consequences of a hazard. It combines the level of a hazard and degree of vulnerability.
Risk Maps	Maps drawn showing the areas with risks that a community is most concerned about.
Vulnerability Maps	Locally drawn maps showing where vulnerable people who will need special attention during an emergency are located. These maps also show the community resources, e.g., shelters, local services, response groups, etc.

Time and time again, many governmental bodies and humanitarian organisations have committed more and more resources into emergency response operations (the immediate actions needed following a disaster), while ignoring prevention, mitigation and preparedness options. Resources have been invested into training rescuers (law enforcement, emergency medical service, and fire service members and organisations) to deal with the consequences of a disaster. This training usually covered emergency *response, re-building,* and *recovery*

activities. These activities are critical for quickly restoring essential services and a sense of normalcy within the community.

From a political and economic sense, the humanitarian system has led to an inefficient response where relief organisations strictly react to disasters. Focusing solely on the post-disaster response does not reduce the vulnerability of the majority of the population in the long term, nor control the increasing disaster losses[17]. Other measures need to be taken before a disaster strikes in order to reduce its consequences. These measures include disaster *prevention*, *mitigation*, and *preparedness*. Disaster preparedness and response planners should not neglect women and other minority groups which suffer most at every phase of the disaster.

Prevention

Prevention can be defined as those actions that are taken to prevent a natural phenomenon or potential hazard from having harmful effects either on people or on economic assets. Delayed action drains the economy and the resources for emergency response within a region. For developing nations, prevention is perhaps the most critical component in managing disasters. However, it is clearly one of the most difficult to promote. Prevention planning is based on two issues: **hazard identification** (identifying the actual threats facing a community) and **vulnerability assessment** (evaluating the risk and capacity of a community to handle the consequences of the disaster). Once these issues have been put in order of priority, emergency managers can determine the appropriate prevention strategies.

Hazard Identification

Significant efforts are needed to protect people and the environments from the risks posed by natural hazard events. Hazard identification is a critical first step in controlling hazards and improving health and safety of a community. It involves reviewing the frequency and type of past disasters and identifying the communities at greatest risk from the hazard. However, it must take place on a scale that is meaningful to those who must act. Building long-term partnerships between the local authorities, the community and other interested organisations is the most effective means of implementing measures to reduce the impacts of natural hazards. Concerned members from all parties can be trained to perform the following:
- Carry out inspections to identify all known hazards and risks associated with those hazards for hazard-prone communities.
- Make an inventory of existing structures in identified hazard areas to provide a basis for mitigation plans and priorities.
- Estimate the types and extent of economic losses and the loss of natural and cultural resources that may result from natural hazard events.
- Transform the natural hazards information into maps and share them with all concerned parties.

Hazard identification should be linked with preparedness and mitigation measures. Natural hazard public awareness campaigns can help the community recognise the natural hazards that may affect them. The emergency services organisations or local fire or emergency management departments can target these campaigns for specific groups (e.g. those most at risk of a particular hazard) or the general public. These campaigns will increase community's support for efforts that can effectively reduce the level of damage and injury from hazardous events and allow communities to recover from their impacts as quickly as possible. Individual families may also feel encouraged to take appropriate actions to protect their lives and property against the impacts of natural hazards.

Vulnerability Assessment

Disasters impact on communities differently, according to the location of the community and the level of socio-economic development. Communities living in disaster-prone areas in developing countries usually suffer the most. It is important to assess a community's vulnerabilities in order to prioritise the external resources needed to help them cope after a disaster strikes. However, assessing the vulnerability of a community is difficult for the following reasons:

1. Vulnerability is caused by *lack of something* (no security or protection, lack of basic needs or political power, no family, etc.). Even translating questions about vulnerability into a local language is difficult and subject to multiple interpretations.

2. Each type of vulnerability needs to be assessed in context in order to determine the long term solution. For example, after finding evidence of physiological vulnerability (such as a high level of malnutrition), one should analyse the political, social, and economic factors.

3. There are no standards for evaluating the level of vulnerability. Therefore, declaring particular sub-groups as mildly, moderately, or highly vulnerable can be subjective and may divert assistance to wrong groups.

4. Vulnerability is an evolving process, where the causes of vulnerability and how people cope with disasters change over time. For example, not all the poor people will remain vulnerable to future disasters. Some may learn to cope better after experiencing drought by becoming more mobile, finding other sources of income, etc.

Common Prevention Strategies

Various prevention methods and techniques can be used to protect a community from the effects of an identified threat or to reduce its impact, for example:

- Improving people's access to public health services (water, sanitation, etc.).

- It is important that all health facilities, schools, water supply systems, etc. are regularly assessed for weaknesses against climatic events such as floods, cyclones, or earthquakes. Strengthening them will help to ensure that all essential services can continue during and after the disaster. Schools are often turned into temporary shelters.

- Providing emergency medical and rescue training programs and essential equipment can greatly reduce the morbidity and mortality outcome of a population following a disaster. Emergency response teams should be encouraged to apply their new skills and equipment in their daily routines in order to become efficient, rather than only using them for emergency situations.

- To prevent hospitals from becoming overwhelmed with casualties during disasters, the emergency medical team and public safety sector should be trained in **Mass Casualty Incident Management**. (See the *Health Services* chapter for details.) In addition, adequate stocks of emergency supplies (food, medicines, etc.) should be maintained to ensure that local people can survive until outside help arrives.

- Identifying and strengthening appropriate and reliable local lines of communications will ensure good co-operation and co-ordination during a disaster response.

- Disease outbreaks do not occur in every disaster, but they may result when large populations are displaced and settle in camps that are overcrowded with poor hygienic conditions. Waiting for an outbreak to occur before taking measures to control the spread of a major viral or bacterial disease delays the recovery of a population. Promoting healthy behaviour and immunisations are affordable preventive health strategies that can effectively safeguard a vulnerable population against an outbreak of communicable diseases.

- Test the disaster preparedness systems.

- Establish reasonable back-up systems for telecommunication, tranportation and health care.

Other Strategies

With advancing knowledge and experience in emergency management, developed nations are able to share with developing nations their information, new skills, and technology in disaster prevention, for example:

- Allowing governments and NGOs access to weather or seismological data (see the *New Technologies in Emergencies* chapter for more details).

- Conducting educational seminars and training programs on various emergency management approaches such as the Incident Management System (see the *Incident Management System (IMS)* chapter for more details).

- Supporting the establishment of disaster early warning systems within the developing country's infrastructure. The USAID Famine Early Warning System (FEWS) is a good example of processes that can help developing nations in disaster prevention.

Mitigation

Mitigation recognises that disasters will occur, and attempts to limit the impact on human suffering and economic assets. Mitigation strategies that can decrease the harmful effects of a disaster include the following:

- Identifying potential threats of hazards and selecting the appropriate defensive action is critical for planning all other emergency management phases and may be done by governmental and non-governmental organisations (NGOs).

- Forming and deploying specialised disaster response teams such as Urban Search and Rescue (USAR),[18] Disaster Medical Assistance Teams (DMAT), United Nations Disaster Assessment and Coordination (UNDAC), Disaster Action and Response Teams (DARTS), etc.

Even though there are various forms of mitigation measures, each should aim to limit the amount of damage that a hazard will cause. Mitigation measures may include:
- strengthening building and construction codes
- land use restrictions
- legislative mandates
- relocation of vulnerable populations, e.g., urban migrants living in informal settlements
- reinforcing critical services to ensure continued function during and after an emergency

A recent rule by the Federal Emergency Management Agency (FEMA) in the U.S. is to help people affected by disasters once. If people decide to rebuild in a flood prone area and they face a similar disaster again, the government will not provide any further assistance. Enforcing rules, building codes, and land use restrictions for mitigation purposes can help to reduce further loss of life or property in the future.

Mitigation within a community involves knowing the hazards and risks surrounding a community, and identifying the opportunities for defensive measures. It is important not to plan individual mitigation activities in isolation. This will allow the emergency management team to develop an objective overall picture rather than one that focuses on individual hazards in a disaster area. This will build the community's capacity to do the following:

1. Identify the key hazards that require mitigation.

2. Focus on the community's priorities in mitigation, especially in those areas where limits in funding will dictate which is the most appropriate mitigation activity.

3. Define future activities and find ways of sustaining a functioning mitigation program.

Note: *A new approach for dealing with hazards is the* Multiple Hazard Management. *This is an integrated or co-ordinated approach that is useful for addressing the full range of hazards to which a community is prone.* Multiple hazard mitigation *is a component of multiple hazard management that is concerned with reducing the long-term adverse impacts of all the hazards within a district[19,20]. This approach allows the emergency manager to weigh the impact that multiple hazards may have on a community, especially if more than one emergency occurs at the same time.*

Preparedness

Disaster preparedness may be defined as a readiness to predict, prevent, mitigate, respond, and cope with the effects of a disaster. Disaster preparedness measures cover three main areas:

1. *Mitigation* — reducing the severe effects of a hazard as described above. In preparedness, it usually involves physical construction.

2. *Vulnerability Reduction* — increasing the **capacity** of potential victims to resist the stress caused by the hazard by warning them early about approaching hazards, while addressing the factors that make some people more vulnerable (e.g., socio-economic and political structures).

   Knowing where the vulnerable communities are located as well as their resources can help determine what strengths reside within a community and the level of external assistance required. Simple technology (or GIS systems where feasible) can transform this information into **vulnerability maps**, which can be used to design more effective disaster preparedness measures.

3. *Disaster Response* — the capacity of the community to deal with the effects of the disaster can be improved by training volunteers in first aid, transporting the injured, setting up temporary shelters, etc. (See the next section on Community Participation in Disaster Preparedness for details.)

   Integrating disaster preparedness within the public safety and emergency medical sector may not be difficult. The employees already understand the basics of emergency response and are usually eager to add disaster response to their skills. However, developing nations lack training programs that provide up-to-date information and skills for disaster response. In addition, trainees often lack the appropriate equipment or opportunities to practise any newly-acquired emergency response skills.

Future Trends in Prevention, Mitigation, and Preparedness

1. More Urban Disasters
   As more national economies become weaker, the number of homeless people can be expected to grow. The increasing rural-to-urban migration in Africa and other developing countries around the world will cause a substantial expansion of informal settlements or shantytowns on the margins of industrialised metropolitan areas. Communities in shanty towns usually receive little support from government or metropolitan authorities. They may lack access to education and live with no formal government. Because building codes and sanitation measures are not observed, the basic infrastructure of these shanty towns is very weak and the threat of epidemics is high. Shelters that are built of cardboard boxes are more likely to be destroyed by natural or man-made disasters.[21]

2. More Disasters Along Coastal or River Areas
   The number of settlements around flood plains is increasing since most cities are located along coastal and river areas. These areas attract people because of ease of cultivation, water supply and transport. However, they expose people to increased risks from flooding, landslides and tidal waves. In addition, more outbreaks of diseases will occur where overcrowding and poor sanitation encourage the proliferation of communicable disease pathogens. As safety standards are ignored, more technological and transport disasters will occur.[22]

3. Improving the Capacity of Vulnerable Communities
   Because the poor are likely to require extended public assistance, giving priority to them when planning Prevention, Mitigation, and Preparedness measures will be a more cost-effective way of addressing their needs. Just because they could not cope in the past does not mean that vulnerable communities are unwilling or unable to play an important part of the process of improving their safety and chances of survival. Since each community has unique vulnerabilities and capacities, national prevention, mitigation and preparedness strategies must be flexible. These strategies should be developed from the grassroots level and carried out using local resources. Otherwise, vulnerable communities may interpret a national strategy that seemed like a good idea as irrational, overbearing, and inappropriate.

4. Future of Humanitarian Aid

The burden of caring for the most vulnerable is increasingly being ignored by many developing nations. Governments expect this burden to be carried by various non-governmental organisations (NGOs) involved in humanitarian emergencies. Yet competition for donor funding sometimes drives humanitarian aid agencies away from their core values. In the future humanitarian assistance, may become private, not state-run, and states will be facilitators not power centres.[23] In addition, future emergencies may be so great that only military institutions may have the resources to manage them.

COMMUNITY PARTICIPATION IN DISASTER PREPAREDNESS AND RESPONSE

Disaster relief, prevention, mitigation, and preparedness to assist vulnerable communities have traditionally been carried out through national or regional authorities. Affected individuals and communities were often treated as dependent and passive recipients of externally imposed programs. Yet many problems of survival and health that result from a disaster may be handled more efficiently if a community is well organised.[24] Evidence shows that community participation *before*, *during,* and *after* a disaster can greatly reduce the overall mortality, as well as improve the use of resources in the following ways:

- If a community is in a state of preparedness before a disaster strikes, this may reduce the impact of the disaster with regard to the number of injuries and deaths, damage to infrastructure, loss of property or livelihood.

- Whatever the type of disaster, the greatest number of lives can be saved during the first few hours following a disaster. Before help from the outside arrives (which can take several hours or days). The local community must, therefore, be ready to assist since they may only have themselves to rely on.

- Most health and survival problems can be handled by the community. This is possible if the community is active and sufficiently organised to sustain itself until outside help arrives.

Strategies for Community Participation

Disaster preparedness programs that are planned with the community are more likely to secure their long-term support and resources. To ensure the disaster preparedness program addresses the concerns of the community rather than only those of donors, the following approaches may be used:

A. Community Motivation

There may be a general lack of interest in disaster preparedness among political leaders and communities. This lethargy will make it difficult for the emergency manager to engage the community in disaster preparedness activities. The following reaction may be observed in communities frequently faced with catastrophic events:

> People living in hazardous areas or who are frequently exposed to hazards are observed to have attitudes of marked indifference. They tend not to worry about the coming earthquake, flood, hurricane, or disease epidemic until it happens. Believing they have little control over such events, they tend to be fatalistic about the impact of any catastrophe.[25]

Depending on the resources available, at-risk communities may be motivated to participate in disaster preparedness through the following ways:

- Organise informal meetings and events to improve the relationship between citizens and their local, regional, and national public officials.
- Build the community's pride by broadcasting their achievements through the local media (newspapers, radio, and television reporters).
- Explore both traditional and modern techniques of reducing the risks posed by local hazards and how to cope with disasters.

- Involve vulnerable groups from disaster-prone areas (e.g., women and minority groups). They can help by monitoring changes in weather, water levels, food prices and availability, etc.
- Respond appropriately to disaster warnings from the community (e.g., investigate, take preventive measures, etc.)
- Offer to train volunteers and other members involved in rescue work, communications, transportation, construction of shelters and food supply.

Several members of the community may be interested in supporting disaster preparedness activities, including people from:
- emergency services and law enforcement
- public and private health services
- first-aid and volunteer groups, such as the Red Cross or from churches, mosques, etc.
- community and professional associations
- the business sector: trade, construction, etc.
- school teachers and school children
- women and youth groups

B. Analysis of Past Experiences

The emergency services staff, local health personnel, and concerned members of the community should form a disaster committee and analyse the key problems that arose during past disasters. This will help determine the priorities for future disaster response. Thereafter, action plans can be drawn based on available resources and combining both modern and traditional methods. The following questions can be used to analyse a community's disaster experiences:

Table 1-11: Analysing the Disaster Experience

Questions to Help Analyse a Community's Disaster Experiences

1. What were the principal causes of damage to infrastructures, such as roads electricity, and water, as well as buildings and houses?
2. What were the main causes of illness and death in disaster victims?
3. What were the main difficulties in providing relief?
4. What problems arose soon after the disaster (by hours and days)?
5. Would it have been possible to predict the disaster before it occurred?
6. What preparedness measures could have limited the numbers of victims and the damage?
7. What errors were made that must never be repeated?
8. What actions did the most good?
9. What equipment and supplies were lacking?
10. What problems were encountered when transferring the injured to hospitals or clinics?
11. What were the difficulties of co-ordinating with the authorities and other community groups?
12. Would it have been possible to get better co-operation from volunteers?
13. How would it have been possible to obtain more effective outside assistance?
14. What health problems arose after the disaster and what were the difficulties of coping with them?

Adapted from WHO: Coping with Natural Disasters, 1989

B. Risk Assessment

A detailed risk assessment should be carried out by the disaster committee led by a local official. This involves gathering information about the risks that a community is most concerned about (e.g., fires, collapse of buildings, floods, contamination of water sources, etc.) The committee should physically walk through the entire disaster location and help community groups, local organisations, industry workers, merchants,

teachers, and other knowledgeable individuals to identify potential risks. The emergency response services and public health workers can help concerned people recognise factors that make the risk more acute during a disaster (e.g., neglect of building codes, inadequate protection of water sources, etc.). The following questions should be answered during the risk assessment.

Table 1-12: Questions to Help Assess Risk

Questions to Help in Risk Assessment

1. What common hazards are likely to affect the area?
2. What and who will be at the highest risk from these events?
3. What are the key factors that make them more vulnerable to these hazards?
4. Which subgroups of the local population are likely to suffer more from their vulnerabilities?
5. What resources and capacities are available locally that can enable the community to respond effectively in times of disaster?

The following steps may be carried out to assess the risks and the resources needed to address them:

1. The committee meets and discusses the risks it wishes to concern itself with.
2. Conduct visits to those sites exposed to risk and carry out informational meetings.
3. Clearly identify risks in writing and locate them on a risk map, as shown in Figure 1-2 below.
4. Have risk maps reviewed by experts and committees made up of emergency service workers and the community.
5. List those resources available to the community in case of disaster.
6. Propose actions to reduce the risks.
7. Carry out efforts with the co-operation of the community to reduce the risks.

Figure 1-2: Example of a Risk Map

School
Landslide danger
Town hall
Fire hazard
Poorly built shelters
Explosion hazard
Flood-prone zone
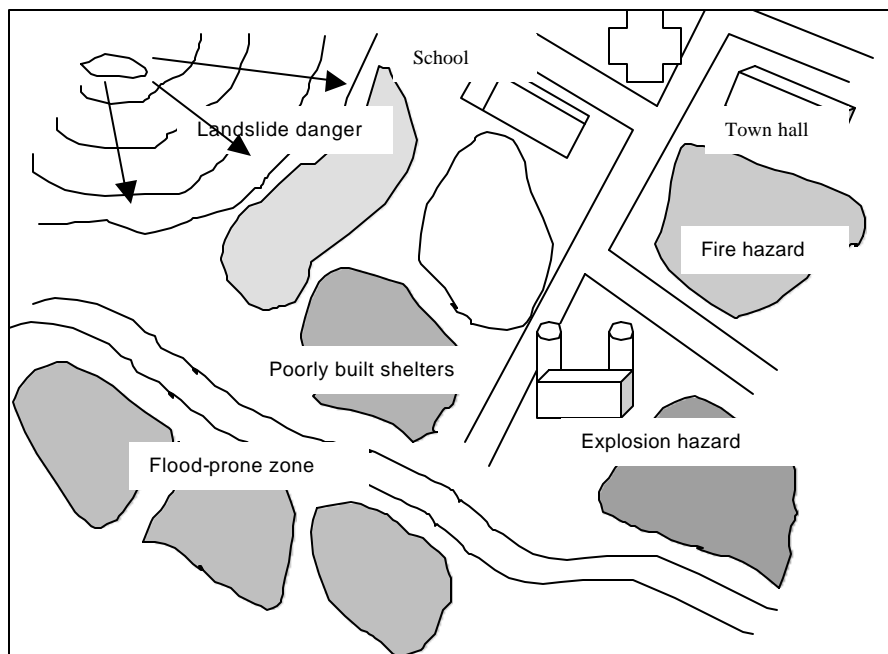
The assessment team can then draw risk maps to summarise their findings and conclusions. Risk maps can serve as useful tools for educating the community on the risks of hazards and for identifying the appropriate preventive actions that can reduce the impact of particular disasters. Risk maps can also be used for monitoring the high-risk sites during a disaster, and for organising relief priorities more effectively. Possible results from risk maps include the following:

- strengthening scanty shelters
- identifying places that can provide temporary refuge against floods
- planning evacuation routes in the event of a fire

C. Community Action

Past experiences with disasters show that most people who are struck by disasters react in a positive way. Most members of the community may volunteer in the following activities:

- warning people of danger
- searching and rescuing victims
- giving food and shelter to the homeless
- constructing dams or dikes to eliminate flooding
- safely disposing of hazardous materials[26]

Even in the absence of specific disaster preparedness activities, communities and emergency response services operate better if they have some basic knowledge and skills in certain areas. It is important to carry out drills and practice other basic disaster preparedness exercises in areas that can improve the victims' survival and health, such as:

- chlorinating water and distributing food
- setting up temporary shelter and sanitation
- performing first aid
- transporting the sick and injured to hospitals
- reporting critical information by telephone, radio, etc.
- dealing with stray or dead animals

When a population is threatened by a disaster such as flooding, cyclones, tidal waves, volcanic eruptions or open conflict, evacuation may be necessary. It is important that the community takes part in determining the evacuation routes and plans, the means of transportation, their next destination and how to access basic supplies. Every member of the community should be made familiar with these plans so that evacuating people can go as smoothly as possible.

Conclusions on Community Participation

Communities that have been overpowered by a major disaster (earthquake, flood, wild fire, etc.) usually require long-term assistance from the national or international level in order to recover and resume their normal lives. Introducing the disaster-prone community to practical disaster preparedness activities (analysis of past experiences, risk assessment, and disaster preparedness) can build their capacity to cope with future disasters. In addition, a well-organised community can help to improve the quality of outside assistance and avoid common mistakes (such as inappropriate aid due to lack of information about the external resources needed).

FROM HUMANITARIAN RELIEF TO DEVELOPMENTAL RELIEF

> *"Disasters hinder development by destroying the infrastructure and by using up the health services' scanty resources for emergencies or rehabilitation. However, they also provide an opportunity to genuinely reform and improve the health system because they encourage such changes as better distribution of services or a shift from large hospitals to comprehensive and decentralised health services. Such measures were adopted in Mexico City during the reconstruction of the hospitals destroyed by the earthquake."[27]*

The quote above shows that there is an important association between development and disasters:
- development can increase or decrease vulnerability to disasters
- disasters can set back or provide opportunities for development

Humanitarian Relief

Humanitarian relief is about securing the survival of disaster victims by ensuring access to six essential things:

- sufficient drinking water
- sanitation
- sufficient food
- basic medical care
- protection from the elements (by providing shelter material, blankets, clothes, shoes)
- protection from violence and harassment

For humanitarian reasons, many basic relief operations are set up very fast, often based on little information. They were traditionally planned as short-term operations because most disasters were assumed to be a temporary but tragic phenomenon that did not really interfere with the long-term development of the survivors. It was assumed that once people survive the disaster, they would be able to return to normal development activities without much need for external assistance.

This approach to humanitarian relief is based on a linear model of natural disasters in which relief gives way to rehabilitation, which leads to development. The model assumes a typical response cycle of disaster preparedness, then a disaster event followed by relief, which gives way to rehabilitation. Once the crisis ends, rehabilitation activities are expected to gradually merge into normal development activities and life goes on. For example, after a flood, a relief agency may distribute free food for a short time, then provide food-for-work in order to reduce dependency and support the development process.

Figure 1-3: Relief-Rehabilitation-Development Model
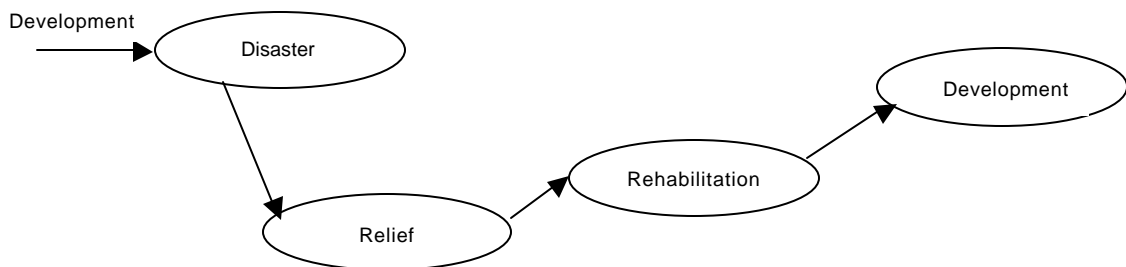
The relief-rehabilitation-development model shown above divided the aid community into two camps: those traditionally concerned with development and those concerned with relief. Each camp may belong to different agencies, or operate under different management within the same aid agency. As a result, there are major

differences between humanitarian and development agencies, in terms of the organisational structure, system of working, access to resources (staff, skills, funding), etc. Donors may be partly blamed for this division. As a result, the development camp works outside disasters, and the relief camp simply patches things up for the disaster victims to get back on the road to development on their own. However, recovery is not a smooth line, and disasters may become chronic.

Key Facts

- In Malawi, Mozambican refugees spent many years, some up to a decade, in relief camps before they were able to return to their native country in the early 1990s.

- By 1996, almost 750,000 people were still surviving in refugee camps outside Rwanda 2 years after they fled the country, while in Rwanda tens of thousands of people remained dependent upon humanitarian aid for survival.

- Large population displacements resulting from disasters may interfere with economic development programs and priorities of governments.[28] Over time, the effects of disasters can seriously impair a country's potential for sustained growth and rehabilitation.

Developmental Relief

It is necessary to find new ways of delivering relief since the relief-rehabilitation-development model rarely works in complex humanitarian emergencies (CHE). There are many reasons for this, for example:

- People's livelihoods do not recover because the development framework has been destroyed — there is no economic system, no social structure or services, and no political system.

- New crises keep emerging and pushing recovery back from rehabilitation to the relief phase.

- The traditional coping mechanisms that help people survive natural disasters do not exist.

- There is often no fast return to the normal way of life, making relief the only means of survival.

- It is difficult to recognise when a particular phase ends.

Putting large displaced populations in camps should mean more than a convenient way of providing drinking water, food, sanitation, basic medical care, and shelter. Victims of complex emergencies cannot wait indefinitely for the relief phase to give way to rehabilitation and finally development. Rehabilitation and development activities need to be introduced as soon as possible. Figure 1-3 shows how relief, rehabilitation, and development activities may be better timed in complex humanitarian emergencies.

Figure 1-4: Complex Humanitarian Emergency (CHE) Interventions
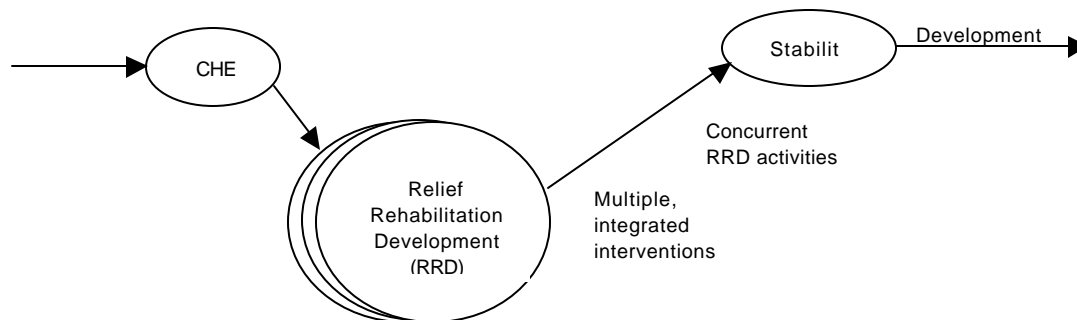
Relief agencies are now realising that relief and development can no longer be carried out as separate programs. When development activities are carried out by relief agencies, the interventions are referred to as "*developmental relief*." The aim of developmental relief is to reduce dependency, lessen vulnerability, and provide hope to populations whose lives have been shattered by conflict. Three key areas differentiate developmental relief strategies from those of basic relief, namely:

1. Communicating with beneficiaries.
2. Looking to sustain livelihoods, not just lives.
3. Building on local realities.

Principles of Development

In order to ensure a smooth transition from relief to rehabilitation to development, humanitarian assistance should be coordinated and delivered in ways that support the recovery and long-term development of the displaced population. The following development principles were put together to ensure that relief is carried out in a more "developmental way:"[29]

1. **Promote community participation** — involve the survivors in decision-making, including assessment, identifying resources, etc.

2. **Accountability and transparency** — openly share information about planning, execution, and expected duration of the program with the program beneficiaries.

3. **Decentralised control** — move management decisions closer to the community.

4. **Demonstrate a concern for livelihoods** — establish what will follow the relief operation and how it will be carried out. Then ensure relief complements the normal means of livelihoods, rather than competing with it.

5. **Strategies based on the reality of disasters** — adapt the relief strategies to suit the local disaster situation rather than relying on standard ways of delivering relief based on one type of disaster.

6. **Identify the needs and capacities of diverse disaster survivors** — recognise different survivor populations and seek to address their needs and capacities.

7. **Build on local capacities** — seek and work with capacities, skills, resources and organisational structures of disaster survivors.

8. **Build on local institutions** — aim to work with local institutions and build their capacities to carry on humanitarian work after the need for relief has passed.

9. **Set sustainable standards for services** — provide health, education, water supply, etc. in a way that can be sustained after the relief program ends.

Strategies for Developmental Relief

Emergency measures should be seen as a step toward long-term development.[30]

Relief programs can be organised to deal with the immediate impact of the disaster in a way that strives for long-term development. The following approaches may help extend relief toward rehabilitation and long-term development:

- Train relief workers in development principles and development workers in relief principles to enable them to respond to any phase or type of program.

- Ensure planning of developmental relief operations is flexible, since situations can change very rapidly.

- It is essential to set the criteria for shifting from the short-term emergency response to rehabilitation and sustainable development, based on the local disaster situation.

- A relief agency should not provide direct services indefinitely. After the acute emergency phase, it should strategically pull back and give way to the community, local authorities, indigenous non-governmental organisations (NGOs) and National Red Cross and Red Crescent Societies.

- Some host governments can help create sustainable means for survival for the displaced victims, such as providing access to markets, starting road construction, etc.

- Developmental relief requires collaboration with other local organisations and the private sector to ensure adequate local support after the relief agency exists from the program.

- Resources should be found to monitor and evaluate developmental relief activities. (This is very critical for future programming.)

- It is important to plan an exit strategy, which may be carried out once the affected community is capable of running the program or when the political and security situations do not allow further external support.

- Educate donors about the value of developmental relief activities, e.g., reducing the need for long-term relief, which is more costly. They should be willing to support relief activities that can achieve long-term development (e.g., education, vocational training, seeds and tools distribution) where the disaster environment seems right.

- Appeal to donors to continue supporting programs that relief agencies have handed over to the local community.

After repatriating displaced populations, various measures can be used to restore long-term stability and help them settle at their permanent residence, for example:

- Promoting political actions that address the root causes of displacement.

- Rehabilitating and restoring public health facilities to their former state.

- Technical and financial investment in the economic infrastructure that include developing markets, vocational training and expansion of industry, roads, and airports.

- Helping returnees to reclaim their property and distributing improved seeds and tools may help to speed up their recovery.

- Restoring social structures and services (particularly health care and education).

- Reviving local values and supporting traditional coping mechanisms.

Once the above measures have been initiated, disaster preparedness skills and technological assistance can be introduced to identify vulnerabilities such as flood plains, dangerous earthquake locations, and proper construction materials for a given environment, etc. (See previous section on Prevention, Mitigation, and Preparedness for more details.)

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MANAGEMENT

Description

This chapter provides the skills needed to design, implement, and evaluate Primary Health Care services for emergencies, based on the identified needs and the resources available. It emphasises the community-based approach in delivering services, which requires involvement of the affected population in decision-making.

Learning Objectives

- To characterise management issues in emergencies
- To describe basic management tools and their application in relief program planning.
- To discuss how to carry out a rapid assessment, and set goals and objectives based on the most important problems.
- To define an action plan and the resources needed, while considering those available locally.
- To describe the implementation process in terms of coordination, leadership, and management of resources and constraints.
- To define the steps for monitoring and evaluating relief projects.

Key Competencies

- To understand the main management issues that can interfere with the success of a relief operation
- To apply the planning cycle and the systems model when planning a relief operation.
- To organise a rapid assessment and write "SMART" objectives based on assessment findings.
- To design a simple relief program, with consideration of existing resources.
- To recognise the importance of coordination and good leadership in management of resources and constraints
- To set up an information system and organise a final evaluation.

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OVERVIEW OF MANAGEMENT IN EMERGENCIES

"If you don't know where you're going, any road will get you there."
"If you don't know where you are, you may already be there. Or you may not be."

Management is sometimes presented as a complicated process, but it simply means searching for the best way to use resources, with a view of achieving objectives. Management of a project involves the following:

- **Planning** — analysing different ways of moving toward identified goals in the order of priorities.

- **Implementation** — transforming inputs through a set of systems and procedures to produce outputs.

- **Monitoring and Evaluation** — continuously and periodically assessing work against the targets.

- **Leadership** — people who are responsible for accomplishing the organisation's goal by making the best use of available resources (staff, money, material, etc.), within given constraints.

- **Coordination** – a harmonious and effective working together of people and organisations toward a common goal.

Good management should begin with a clear understanding of management terms. The table below lists common management terms and their definitions.

Table 2-1: Terms and Definitions

Accountability	The responsibility of demonstrating to stakeholders, including the beneficiaries, that humanitarian assistance meets with agreed standards.
Activity	An action within a project that is done to achieve an objective; activities transform inputs to outputs.
Coordination	Harmonious and effective working together of people and organisations toward a common goal
Coverage	The proportion of the target group that has received a service or is protected from a disease or health problem.
Effectiveness	The extent to which an organisation is doing the right thing to reach its objectives.
Efficiency	The degree to which results (desired outcomes) are achieved without wasting resources. How economically inputs are converted into outputs.
Evaluation	A periodic assessment of the relevance, effectiveness and impact of health interventions against the set objectives. Evaluation is a learning and action-oriented tool that requires the establishment of specific objectives, progress indicators and criteria.
Goal	General statement about what is to be eventually achieved (i.e. impact) through a program.
Implementation	Transforming inputs through a set of systems and procedures to produce specified program outputs.
Indicator	A "signal" that shows whether a standard has been reached. It is used to measure and communicate the result of programs as well as the process or methods used. Indicators can be quantitative or qualitative.
Inputs	Resources (staff, supplies, money, information) available for carrying out a project in a given time.
Leader	Someone who makes people work together, by motivating and inspiring them, to achieve a common goal.
Management	Searching for the best use of resources in pursuit of objectives subject to change (Keeling)[i]
Methods	Sequence of tasks or activities for achieving objectives.
Minimum Standard	The minimum acceptable level (of service) to be attained in humanitarian assistance.
Monitoring	An ongoing process of checking the progress of activities against the plan to ensure that all processes are going on as intended.

Objective	The intended, measurable targets (outcomes) of a program; the specific targets or positions that are to be reached in order to achieve the overall goal.
Planning	A continued process of anticipating the resources and services required to achieve objectives determined according to an order of priorities that permits the selection of the optimal solution or solutions from among several alternatives; these choices take account of the context of internal and external constraints, whether already known or foreseeable in the future. (Pineault)

The core of planning consists of analysing alternative means of moving toward identified goals in the light of priorities and existing constraints. (Reinke) |
Process	The steps or tasks for carrying out activities (diagnosing, counselling, referral, etc.).
Program	An organised set of projects or services seeking to attain specific (usually similar or related) objectives.
Project	A planned scheme aimed at achieving specific objectives within a given time/budget.
Results	Outcomes of processes and necessary inputs for the target population as:

- Outputs — Direct results (products or services) a program delivers to a target population to produce the expected impacts.
- Effects — Changes in knowledge, attitudes, behaviour/practice, coverage resulting from the output.
- Impacts – Changes in health status (morbidity, mortality, disability, fertility) resulting from the output. |
Staffing	Planning for the types and number of personnel that will be required.
Strategy	The order of pursuing priorities and objectives based on relative effectiveness and consideration of constraints.
Target Group	A family, specific population group, or a community in a defined area of a country.
Training	Transferring specific skills and competencies to individuals about to do a particular job.

Management Issues in Emergencies

The success of relief operations may be affected by several management issues, including:

1. **Poor Management of Relief Operations**
   During the last thirty years, hundreds of humanitarian relief and development programs have been started in developing countries in response to natural or man-made disasters. Although the quality of the international aid is improving, poor planning has resulted in poorly organised, inappropriate, delayed, and ineffective relief. Constraints do exist in planning relief operations. These include lack of reliable information, the urgent and rapidly evolving emergency situation that is beyond managerial control and lack of relief managers with planning and management skills. Because many relief operations extend into long-term rehabilitation programs, it is important that none of the planning steps are missed out. For example, if the objectives were not established at the beginning of the operation, programs cannot be evaluated. As a result, organisations would not be able to take advantage of lessons learned from previous relief operations.

2. **Relief Planning Not Based on Sound Information**
   Planning a relief program is hard work because it should be based on the best available information. Emergency situations change quickly, demanding timely assessment and reporting to obtain funds. Yet there is often not enough time to assess the situation and get all the facts. Many relief organisations conduct rapid assessments to gather critical information for planning their interventions. However, data on current status may not be measurable, or the information that is collected may be unreliable. This may lead to inappropriate responses. Lack of time should not be an excuse for not analysing or reporting the information carefully. (See the *Disaster Epidemiology* chapter for further details on collecting and analysing information.)

3. **Relief Aid Not Promoting Recovery and Self-Reliance**
When planning any emergency operation, it is important to consider the local ways of coping with the situation. Some disasters are seasonal (e.g., floods) and the affected communities may have fairly adequate response mechanisms, which are not always obvious to the outsider. Each community has the primary responsibility for caring for its own well-being. Yet time and again, emergency managers around the world have designed and directed relief operations without fully appreciating the capacities of local communities and their central role in determining their own needs. The tragic result is often the erosion of local coping mechanisms, the development of a dependency cycle, and the creation of incentives for populations to remain displaced. (For further detail on these issues, refer to the *Disaster Dimension* chapter.)

4. **Failure to Recognise the Impact of Emergencies on Host Communities**
Many emergencies occur in developing countries that still depend heavily on international aid to care for its own people. An influx of a large population can put a heavy strain on existing resources. It is crucial that the plight and needs of host communities are also addressed during the relief response to displaced communities.

5. **Poor Coordination and Cooperation**
Poor coordination and collaboration with governments, other agencies and community leaders is unfortunately a common problem, particularly in large-scale disasters. This often occurs because of failure of host authorities or lead agency to establish appropriate structures and mechanisms for coordination. As a result, other humanitarian agencies may set up operations without consulting with or providing regular feedback about the relief operation to the host authorities (for health and other sectors), the leaders of the affected population and other locally based agencies. This can make the relief operation ineffective. Coordination must be based on good information sharing and sound management. Working with local authorities can help in addressing the political issues concerning the relief response. Regular meetings will reveal a variety of perspectives from other agencies and a common goal of meeting priority needs of displaced populations.

6. **High Turnover of Relief Workers**
Working in a relief operations places unique demands on relief workers. They work under high stress conditions, with little support from headquarters and no career development or future prospects. It is not uncommon for them to leave the agency in search of better opportunities. Better leadership and team building can help foster team spirit and increase commitment in assisting the most vulnerable. In addition, more attention should be given to staff training and motivation, conflict resolution, and staff health and welfare. (See the *Human Resource Management* chapter for further details.)

7. **Trained/Skilled Volunteers Not Available from the Affected Population**
When responding to acute emergencies, relief agencies recruit skilled workers or volunteers that are not from of the affected population. Skilled workers from among the beneficiaries may not be available since they may also have been affected by the disaster. As a result, they may be "lost" for a couple of weeks.

8. **Relief Programs Not Based on Primary Health Care (PHC) Framework**
Many relief programs ignore the principles and concepts of PHC. Relief planners do not always collaborate with other sectors, nor encourage victims to come up with the solutions and ideas to help their recovery. In addition, they introduce inappropriate procedures and technologies that cannot be sustained without long-term outside support. (See the *Primary Health Care (PHC)* chapter for further details.)

9. **No Codes or Yard Stick for Measuring Performance**
Lack of standards and quality levels for monitoring and evaluating the performance of humanitarian agencies has led to unprofessional and wasteful relief operations, and sometimes, unnecessary loss of life. Common standards (such as Sphere) and health information systems are needed to help humanitarian actors to work more effectively, and become accountable to donors, as well as the beneficiaries.

10. **Failure to Link Relief and Development**

   There are distinct phases of any emergency (i.e. pre-emergency, impact and flight, acute emergency, post-emergency, repatriation, and rehabilitation/reconstruction), each of which requires different interventions and approaches to management. It is not enough to simply keep people alive. The emergency manager must focus on the long-term solution for the displaced population (whether it is repatriation, integration, and resettlement). Many disaster-affected populations are displaced for long periods of time, usually as the result of internal conflict. Relief projects should serve both their immediate and long-term needs by building upon local capacities to respond to disasters. (Refer to the *Disaster Dimension* chapter for further details.)

11. **No Exit Strategy**

   Many relief programs close down when there is no more funding to support the relief interventions. The closure is usually very abrupt, with no proper handing over of the relief operation and resources to the local authorities or transfer of skills to the affected community. The consequences may be severe if the affected community is not yet self-reliant and has no other means of support.

Management Objectives

Humanitarian agencies need to improve their skills in management of relief projects. Good management is measured by two criteria, namely:

- **Effectiveness —** achieved by setting the right goals, developing an appropriate strategy for activities, and coordinating and monitoring the overall performance to the satisfaction of the stakeholders (beneficiaries, host country authorities, etc.)

- **Efficiency —** achieved through assessment, planning, carrying out and monitoring the operation in the most economical (cost-efficient) manner

Objectives of management of relief projects include the following:

- To define the existing problems and the priority needs.
- To integrate the perspectives and priorities of the beneficiaries with those of the organisation.
- To give a sense of direction and purpose to an organisation.
- To monitor quality and performance and motivate personnel.
- To make optimum use of resources (local and external).
- To coordinate activities and cooperate with other agencies

Management Tools

The following **planning cycle** and **systems model** can be used as management tools where no standard guidelines exist within an organisation.

The Planning Cycle

Planning is basic to any human activity and it is a continuous process. Providing proper answers to a series of common sense questions in the planning cycle can establish a solid base for project planning, as follows:

1. **Assess the Situation** — What is the nature of the crisis? How urgent is it? What are the needs of the displaced population?

2. **Prioritise the Needs** — What needs are most important to the survival of the displaced population? What can actually be accomplished?

3. **Set Goals and Objectives** — What should be done and what are the limits of these actions?

4. **Plan the Activities** — How will the goals and objectives be met? What resources will be required? Create a schedule.

5. **Implement the Plan** — Carry out the planned activities.

6. **Monitor the Implementation** — Are the activities being carried out as planned: were the inputs delivered, were the processes conducted, and were the outputs produced as planned?

7. **Evaluate the Program** — Did we achieve what was planned? Were the objectives relevant? What was the impact?

The following shows how the series of questions forms a planning cycle:

Figure 2-1: The Planning Cycle
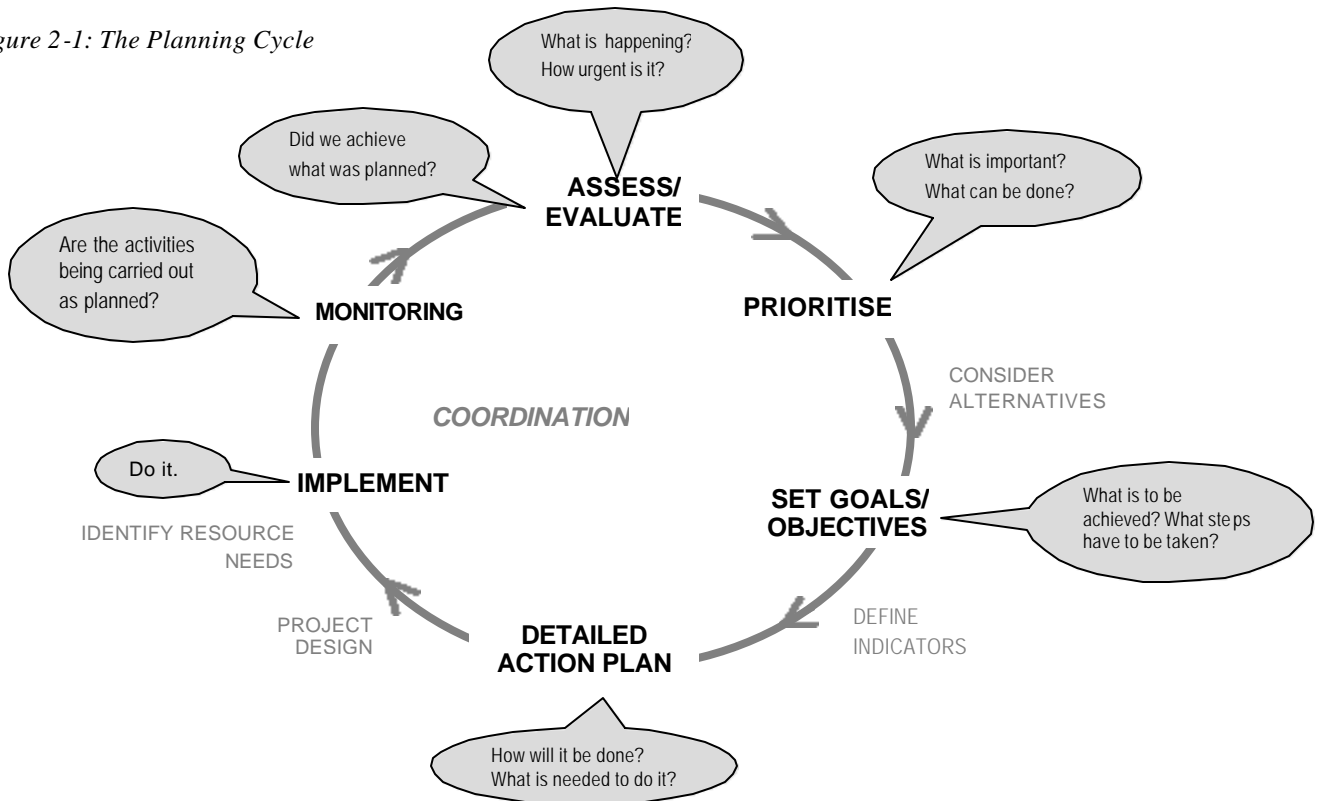
The first step when responding to a crisis is to rapidly assess the situation in order to understand the overall picture, e.g., lack of food, contaminated water, and poor sanitation. Then carry out a detailed assessment of individual problems or issues to identify root causes as the real problems are often not what may appear on the surface, and wrong assumptions may result in a project that is inappropriate. The basic health needs arising from the identified problems should then be ranked by priority. However, other less urgent needs should not be forgotten since they are no less important. They should be considered once the situation becomes stable. Thereafter, the overall goal and specific objectives through which the goal will be reached should be defined. Actions that are necessary to achieve the objectives should then be determined, as well as the required inputs and the expected outputs. During the planning phase, measurable indicators of progress towards objectives need to be identified. Indicators of quality, though more difficult to define, are also important for tracking progress. Potential constraints that may arise should be anticipated, and appropriate actions for eliminating them planned in advance. Monitor services to determine whether they are being delivered as planned. Periodic evaluations should also be carried out to establish if the program objectives were achieved and any important lessons for the future. It is important to ensure good coordination when planning and implementing a relief operation. This requires a clear definition of objectives, responsibilities and authority.

The Systems Model

PHC services and management services are two sub-systems that are linked to the health needs and outcomes of a population. PHC services have a direct effect on the health needs and outcomes. Management services do not impact directly on the health of the affected population, but provide support that is critical for delivering PHC services. This link between PHC and management subsystems through the health needs and outcomes is shown in the Figure below.

Figure 2-2: Linking PHC and Management Services
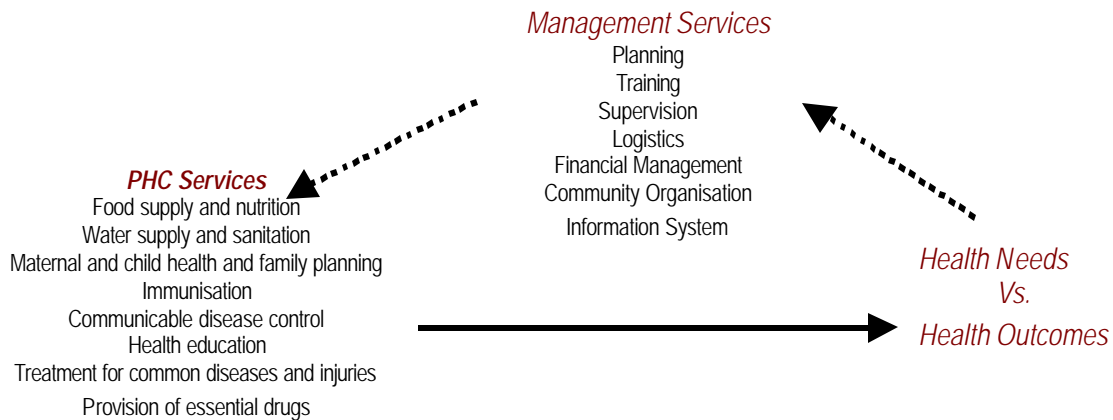
The **systems model** is a management framework that allows managers to focus on the *process* of providing PHC services in order to produce better results. It helps them to identify the key elements of a program, which include resources (*the inputs*) for carrying out a set of activities (*the process*) in order to achieve the expected results (*the outcomes*), as shown in the Figure below. The model thus defines the relationship between what is needed and what should be invested, and between what is invested and what is actually achieved.

Figure 2-3: The Systems Model

This link between what goes into PHC services and what comes out at the end is an important management concept. The *process* is the focal point of both planning and evaluation. Some managers look only at what goes into a project. Others look at what comes out. Most cannot explain why things go wrong. The systems model helps managers to gather and analyse information on the key processes of health care delivery so that they can identify weak links and take appropriate action when things go wrong, for example:

- Poor outcomes of a program (e.g., a rising incidence of common diseases and high death rates) may be due to insufficient inputs (e.g., lack of vaccines) and/or incorrect processes (e.g., poor storage of vaccines).

- Defective inputs (e.g., frequent stock-out of essential supplies, poorly performing staff) require better quality of inputs (e.g., regular drug supply, trained staff) in order to improve the quality of outcomes,

- Deficient processes (e.g., wrong diagnosis, delayed referral) require corrective action (e.g., job aids, supervision) rather than simply improving the quality of inputs.

Figure 2-4: A System Diagram for Diarrhoea Control

INPUTS →	PROCESS →	OUTPUTS →	EFFECTS →	IMPACTS
Resources	Activities	Products/services	K A P	Morbidity/Mortality
Management Services				
Trainers ORS packets Guidelines	**Train & evaluate** (lecture/ practicals)	Community health workers trained in ORT	Community health workers skilled in ORT	HIS (incidence of diarrhoea and death rates for < 5 children)
Trained community health workers ORS packets	**Diagnose & prescribe** ORT, (supervised)	Mother counselled ORS issued	Mother uses ORT	Avoid dehydration & death of child
PHC Services				

The above systems diagram for diarrhoea control shows the link between the management services and PHC sub-systems and also defines different outcomes (outputs, effects, impacts). The outcome of management services (e.g., improved staff skills, and motivation) leads to improvements in PHC service inputs and processes. The result of training a community health worker (CHW) in oral rehydration therapy (ORT) and providing an adequate stock of oral rehydration solution (ORS) should be a more capable CHW who provides better service to the target population.

By linking all the components in a systems diagram (inputs-process-outputs-effects-impacts), the systems model can be used for planning as well as monitoring, and evaluating programs. A logical **IF-THEN** relationship is observed within the linked processes of systems diagram for diarrhoea control. This relationship can help in program planning, monitoring, and evaluating as follows:

Planning — Work backward from the known health needs of the affected population. The overall picture may be obtained from the community through Health Information Teams (HITs), and ongoing data collection in health facilities. Analyse the data in the health information system (HIS) to identify the impacts, effects, and outputs; then the processes and finally, the inputs.

- **IF** diarrhoea is a major cause of deaths among children under five years, **THEN** the desired impact is avoiding deaths from dehydration.

- **IF** deaths from dehydration are to be avoided, **THEN** the mothers have to administer oral rehydration therapy (ORT) correctly.

- **IF** mothers are to correctly administer ORT to children with diarrhoea, **THEN** ORS should be issued with proper counselling on ORT given by the CHW.

- **IF** ORS is to be issued and proper counselling given to the mothers, **THEN** diarrhoea should be correctly diagnosed and ORT prescribed.

- **IF** diarrhoea is to be correctly diagnosed and ORS prescribed, **THEN** the CHW should be trained and ORS supplied regularly.

Figure 2-5: The Systems Framework and the Planning and Evaluation Cycle
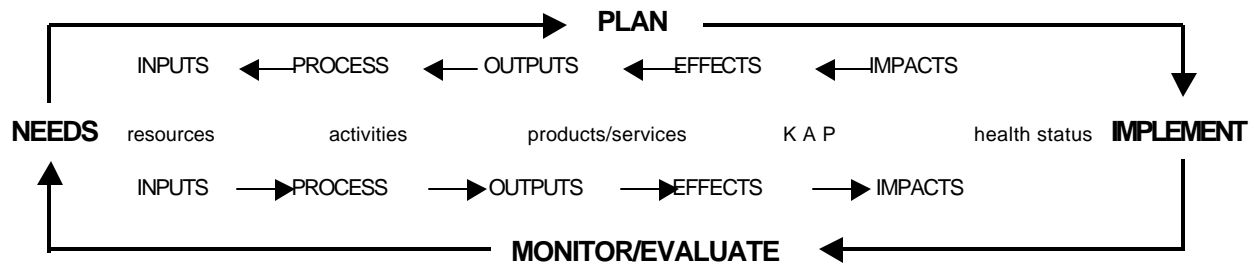
Monitoring/Evaluating — Work forward to ensure that what was planned is actually carried out. Ensure that inputs are processed as planned, in order to bring about the planned effects, and then monitor the impacts. This will ensure that the priority health needs are met, as described below:

- **IF** the CHW is trained and the ORS regularly supplied as planned, **THEN** a child with diarrhoea will be correctly diagnosed and ORT will be prescribed

- **IF** diarrhoea is correctly diagnosed and ORT is prescribed as planned, **THEN** the ORS will be issued and mothers will be properly counselled on ORT and encouraged to breastfeed

- **IF** the mothers are properly counselled and ORS issued as planned, **THEN** the mothers will administer the ORT correctly

- **IF** the mothers administer the ORT as planned, **THEN** deaths from dehydration will be avoided among children

- **IF** deaths from dehydration are avoided as planned, **THEN** the problem of diarrhoea causing many deaths among children less than five years will have been addressed.

Using Management Tools

In acute emergencies, reaching out to the community effectively is more important than efficiency. It is better to get the right things done than to do the wrong—or irrelevant—thing most efficiently. However, prolonged use of products, procedures and services that are too expensive will eventually interfere with effectiveness. This should always be remembered but should not serve as an excuse for poor planning and implementation of a relief program. Both the planning cycle and the systems model can be used to improve the efficiency and effectiveness of a relief project.

A step-by-step approach to management of a relief project is described the next sections.

PROJECT PLANNING IN EMERGENCIES

ASSESSMENT
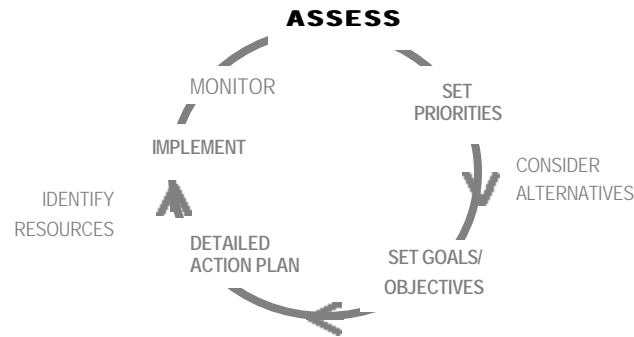
Carrying Out an Assessment

Assessing the emergency situation should be the first step toward setting up or taking over a relief project. The objectives of carrying out an assessment may include the following:

- To determine the magnitude of the emergency and the affected population.

- To appraise the present and potential public health impact of the emergency.

- To evaluate the local response capacity and immediate needs.

- To determine if external assistance is needed and plan an appropriate response.

- To establish the basis for a health and management information system.

When assessing emergency situations, there is a trade-off between accuracy and timeliness. The amount of time available for conducting a rapid assessment may depend on the nature of the disaster, the skills of the assessment team and the existing constraints (e.g., poor access). A preliminary assessment may be completed in 2-5 days, after which priority actions and estimates of resources can be determined. Data may be gathered through quantitative and qualitative methods e.g., direct observations, reviewing existing records, interviewing key people and rapid surveys. Focused assessments (e.g., nutritional surveys) and focus group discussions can be organised immediately after deciding to intervene. These may require 2-4 weeks to determine the appropriate PHC interventions to address potential public health problems. Regardless of the total amount of time spent on the assessment exercise, it is important to plan and prepare for the event adequately. An epidemiological approach to data collection, analysis and interpretation is essential for gathering reliable information and drawing the right conclusions about the health needs of the affected population. Rapid assessments, however crude, can help to initiate community participation and break down fear and mistrust so their recovery can begin. (Refer to the *Disaster Epidemiology* chapter for details on Rapid Assessments.)

Be aware of the potential mistakes that can occur during an assessment and try to prevent them. The assessment team should plan and co-ordinate the assessment with the local authorities and other agencies. An epidemiological approach to data collection and analyses will produce reliable information and ensure the right response is carried out. Many assessment checklists have been developed to help teams identify the information they need to collect from the assessment. However, these checklists should be used with caution, since they should first be translated and adapted to the disaster context and local culture. They may be considered as guides for thinking out the information needed, to ensure that the key issues have been covered. Involving the affected population in this process can produce much insight to what is or is not applicable.

After the assessment, the team should prepare a report describing the impact of the disaster on the target population (e.g., poor health status of children under 5 years) and services, the existing resources and capacity of the local response. The perceptions of the affected population should be included. The report should be sent to the host country Ministry of Health and Ministry of Internal Affairs, the headquarters of the agency conducting the assessment, other local and international agencies and donors. The conclusions should enable decision-makers to determine whether or not external assistance is required, otherwise any data collection that is not linked with decision-making and feedback is a waste of resources. Any external assistance should follow a hierarchy of needs:

1. *Basic life support needs* – food, water, shelter, and clothing.

2. *Security and Protection* from physical violence and aggression (especially in conflict situations).

3. *Psychological and social needs* due to the stressful effects of the disaster.

Table 2-2: Outline for a Rapid Assessment Report

Executive Summary – disaster being addressed, program planned and resources needed

Survey – by whom, when it was carried out, objectives and methods used

Background of Disaster – origin, impact and forecast of evolution of disaster

Affected Population – size, age/sex composition, general condition, casualties/ death rates, disease pattern, condition of host population

Current Response – relief measures so far

Needs and Resources – existing services and facilities and unmet health needs (security, access, etc.)

Capacities – of disaster victims, host country, local NGOs, other organisations

Recommendation – aim/strategy for action, target beneficiaries, program implementation

International Aid Needed – equipment, supplies, technical, etc**.**

Forthcoming Reports – advise on pending surveys, etc**.**

Appendices – maps/country profiles of affected areas, data analysis of assessment, program design, description of other relief actions, contact names/addresses

Writing a Project Proposal

The first response following an assessment report's recommendation of assisting a large displaced population is to write a project proposal. This will be presented to potential donors and the host government, in order to convince them of the need to respond to the disaster situation and how the proposed project can address the identified problems. These proposals can later provide a basis for detailed project planning and for evaluation of the project.

The proposal should do all of the following:

- Be brief but include all the important details about the project (project justification, goals and objectives, general outline of strategy, activities, and time-frame, indicators for monitoring and evaluation, budget).

- Be supported by facts and estimates from the assessment report and other reliable sources.

- Name all sources of funding and other contributions. Where necessary, it should advise on the future sustainability of the project.

Use pre-designed formats for project proposals with care. They can serve as useful checklists of all the issues that should be considered, but they should not be taken as a "form-filling exercise." The forms should be adjusted to the particular situation or culture of the project.

Establishing a Health Information System

As soon as the decision to establish a relief program is made, a *health information system* (HIS) should be established, ideally based on findings from the initial assessment. (An information system consists of people, equipment and procedures that are organised to provide information to health workers in a way that enables them to make informed decisions.) The baseline data from an initial assessment can be compared with other data collected over time. This will allow relief workers to review the overall progress of the operation in terms of the the health status of the affected population. Later, the information may assist in evaluating the achievements of the project. The HIS uses a group of quantitative and qualitative indicators to store information from routine surveillance and periodic, population-based surveys. (For details about quantitative and qualitative indicators, surveillance and surveys, refer to the chapter on *Disaster Epidemiology*. For more details about setting up an information system, refer to the last section of this chapter under Monitoring and Evaluating Relief Projects.)

Table 2-3: Example of How to Collect Data for a Health Information System

> The Federation (IFRC) recruits **Health Information Teams** (**HIT**) to quickly make contact with the community and establish information flow. They monitor health posts, food availability, water, sanitation, disease control measures, health education, etc. TBAs, CHWs and teachers are favoured for recruitment. Members of vulnerable/victimised groups are recruited for maintaining communication between the targeted community and peripheral clinics.
>
> HIT form a vital link between the community and the peripheral clinics, where the really sick are referred to. They receive training each week, e.g. on use of ORS, how to dig latrines, promote breast feeding, etc. Later, they will become CHWs.

SETTING PRIORITIES
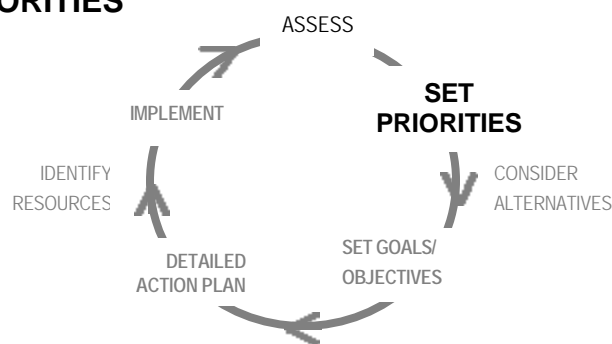
Once the proposal for a relief program has been accepted (by donors, the host government and the concerned UN agency), the implementing agency should proceed with the next planning step. Since not all problems can be addressed at once, planners should determine which of the problems identified in the assessment should be given highest priority. Representatives from the affected population should also be involved in this process. Determination of priorities is best done with a **priority chart**, which is used to rank identified health problems according to specific criteria. The following criteria may be used:

- **Seriousness of the Disease** — What will happen if the problem is not addressed in terms of mortality, disability?

- **Prevalence of the Disease** — What is the total number of cases with the disease among the target population at a given period of time?

- **Feasibility of Control** — Can the health problem be adequately controlled by the available resources (technology, staffing, funding, supplies) and despite existing constraints (such as lack of security, transport delays, inadequate staff skills, budget restrictions, etc.)?

- **Community Acceptance** — What is the likelihood of gaining the community's support for the disease intervention with respect to perceptions and demands?

Each health problem gets scored against a set of criteria. In the table below, problems are given scores from 1-4, where 1 is considered the lowest priority and 4 as the highest.

Table 2-4: Priority Chart for Ranking Health Problems

Health Problems	Prevalence	Seriousness	Feasibility of Control	Community Acceptance	Additive Scores	Multiplicative Scores
Malnutrition	3	3	3	2	**11**	**54**
Diarrhoea/ Dehydration	3	4	2	4	**13**	**96**
Cancer	1	4	1	4	**10**	**16**
AIDS	2	4	1	3	**10**	**24**

Note: *Multiplication may produce a more sensitive score for comparison of health problems that have equal scores after addition. In the above exhibit diarrhoea is ranked as being of the highest priority followed by malnutrition, with cancer being ranked as the lowest priority.*

The consequence of ignoring some of the identified health problems should be considered, such as:

- A high prevalence of tuberculosis among a displaced population may increase the incidence of the disease in the host population.

- Neglecting the local population in the control of diarrhoeal disease outbreak when local disease control measures are lacking may render any control measures among the displaced population ineffective.

SETTING GOALS AND OBJECTIVES

Goals are general statements about what one wants to eventually achieve through the program. They are derived directly from the health needs identified in the assessment, and are used to define the limits of what can be achieved through specific objectives. Not more than one or two goals should be set for the overall program. A logical goal to address the problem of high mortality among a displaced population could be: to improve the survival of children less than five years.

Objectives are the specific targets or positions that are to be reached in order to achieve the overall goal. They are the intended results for problems identified in the initial assessment. Table 2-4 shows examples of PHC project goals and objectives and their indicators. Objectives should be SMART (**S**pecific, **M**easurable, **A**ppropriate, **R**ealistic, and **T**ime-bound) and ideally, should specify the following:

1. the intended type of improvement

2. the target group (e.g., children 12-23 months, women 15-45 years)

3. the amount of change that should occur from the baseline (absolute number or proportion, or reference to standard)

4. the time frame for achieving the objective

Following are examples of objectives that are not SMART:

- to increase the immunisation coverage – neither specific nor time-bound

- to increase the mothers' use of oral rehydration therapy for all children with diarrhoea to 100% within one year – may not be appropriate and gives no idea of baseline

- to ensure access to basic health care for the affected population – not measurable

Most PHC projects have only two or three goals. However, each goal may only be achieved through several objectives. Each objective may be measured by at least one indicator. Examples of goals, objectives, and indicators are shown in Table 2-4 below.

Table 2-5: Worksheet for Identifying Goals, Objectives, and Indicators

TARGET GROUP	GOAL	OBJECTIVE	OBJECTIVE INDICATORS
Total population	To improve the overall well-being of the disaster affected population	Reduce the incidence of the 3 most common diseases to host population levels within 6 months	No. of cases diagnosed with the 3 most common diseases within 6 month period /Total population
		Provide the basic needs to all affected persons, including 15 litres/p/day of potable water within the first 3 months	% population who received at least the recommended minimum of basic needs
Children under 2 years	To improve the survival of children under 2 years	Reduce mortality among children under 2 years to a rate of 90 per 1,000 live births within 1 year	No. of deaths of children < 2 years per total no. < 2 years
		Decrease the prevalence of third degree malnutrition among children < 2 years by 30% within 6 months	No. of cases of third degree malnutrition among children age < 2 years/total no. age < 2 years
Women 15-49 years	To improve the reproductive health status of women of child-bearing age	Increase the prevalence of modern contraceptive use among women aged 15-49 years from 10% to15% within 1 year	% women aged 15-49 years who are using a modern contraceptive method
		To increase the coverage of ANC by 50% within 3 months	No. of pregnant women attended by a health worker at least once for pregnancy-related reasons

Sometimes people define *process* objectives (which are truly methods) rather than outcome objectives. Unfortunately, process objectives only indicate what the program is going to do, not what it is going to achieve. The table below distinguishes between *process objectives* (which are truly methods) and true *outcome objectives*.

Table 2-6: Differentiating between Outcome Objectives and Process Objectives

OUTCOME OBJECTIVES	PROCESS OBJECTIVES (METHODS)
To reduce the incidence of measles among children < 2 years to host country levels within 1 year	To provide measles immunisation services weekly at all health centre and do monthly outreach for all children < 2yrs within 1 year
To increase the average breast feeding period to at least 18 months among children < 2 years within 1 year	To provide for 1 year, bi-weekly individual and group counselling to motivate mothers to breast-feed children till the age of 2 years.
To reduce the prevalence of malnutrition among children under 5 years from 15-10% over the next 3 months	To improve the food supply from an average 1900-2,200 Kcal food/p/day to all displaced persons over the next 3 months
To raise the prevalence of modern contraception to 25% among women of child bearing age within 1 year	To extend the availability of information and services for modern contraception to all women of child bearing age within 1 year
To reduce the incidence of diarrhoea among the children < 5 years by 75% within 6 months	To increase the potable water supply in the district by 25% within 6 months

DETAILED PLAN OF ACTION
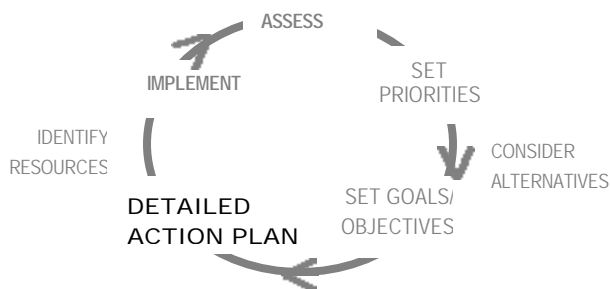
The next step is to define the **detailed action plan.** This plan of action defines how a project will be carried out in terms of strategies, activities and work schedule. Planners should draw a detailed action plan mainly for the initial phase of the project, as the situation may change thereafter. Where possible, preliminary action plans for activities that will be introduced after the initial phase of the project could also be drawn. To ensure the timetable or schedule for the planned actions is realistic, involve local workers with past experience in this field. Activities that could cause a delay should be anticipated and alternative timetables prepared. The plan of action should include suitable indicators and targets for monitoring the progress of implementation.

Identifying Strategies, Activities, and Work Schedules

1. Define What, How, By Whom, and Where

    a. From the eight components of PHC, consider all the services that should be carried out to achieve the project objectives. Then select those services that address the most urgent needs and consider the management services that are necessary for supporting the selected PHC services.

    b. The next step is to define the how the services will be delivered (strategies), e.g., whether the initial response will focus on preventive or curative measures, whether services will be integrated or function independently, community-based or facility-based. In acute emergencies, the priority is to control the situation quickly regardless of efficiency. Therefore determine the logical sequence of activities (methods) for each PHC and management service, e.g., vaccinate, manage cases, and maintain records. Supportive management services (e.g., training, supervision) should also be broken down into strategies and activities. (Refer to Table 2-6 below.)

Table 2-7: Work sheet for Identifying Services, Strategies, and Activities

Objective	Services	Strategy	Activities	Who Will Deliver	How and Where
Reduce incidence of measles	**Immunisation** Nutrition Health education Basic curative care	**Emphasise prevention**: Provided with basic supplies to new arrivals after screening at settlement entry point	Establish cold chain Vaccinate all < 12 years Active case-finding Manage cases	PHN at clinic Vaccinator at entry, clinics Vaccinator & CHW Community Health Doctor	At h/centre, camps, OPD consultation, home-visits, screening
Reduce incidence of diarrhoea	**Community organisation** Water/Sanitation Child health care Nutrition	**Emphasise promotion:** Mobilise community to participate in improving the sanitary conditions	Meet community leaders Form health committees Recruit volunteers Train on diarrhoea control Mobilise supplies	Community Organiser, PHN COs, PHN Health committee PHN, volunteers COs, PHN	Visit camp COs Assemble at camp offices Camps, health centres
Reduce incidence of malaria	**Basic Curative Care** Disease control Health education Nutrition	**Emphasise curative:** Provided regularly at health facility and periodically in community	Standardise case definition & treatment protocols Identify/refer cases from field Manage cases Maintain drug supply Maintain records	CHD, Pharmacy technician CHWs & supervisors CHD, CHN Pharmacy technician CHD, Clerks	Health centre Camps At h/centre At health centre

    Note: *It is only when a relief program is being implemented that each activity is broken into a series of tasks. For example, to manage cases under basic curative care involves taking history, doing a physical examination then making a diagnosis which will determine whether to admit or refer the patient, prescribe treatment and book a follow-up, or simply give the patient some health care advice. Even then, only key tasks should be specified, since in emergencies it may not be practical to standardise every specific task in the face of changing emergency situations and resources.*

    c. People who will be responsible for carrying out key activities and tasks should be specified. Recognising that tasks should be assigned to the lowest skilled worker capable of doing the task, let the family and community do whatever promotive and preventive health care they can for themselves. It is also necessary to specify where each activity will be conducted.

2. Define the Timetable for Each Project

Estimate the duration of each activity. Then define the order in which related activities need to be performed (while considering obstacles) and the expected time frame. Thereafter, draw a monthly schedule for each service and an annual one for the entire program (project time-frame). A Gantt chart can be used to map the time-line of activities as shown in the table below. A Gantt chart can later assist in evaluating the process.

Table 2-8: Gantt Chart Showing Timeline for Oral Rehydration Therapy (ORT) Project

ORT ACTIVITIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
Recruit volunteers										
CHW training on ORT										
CHW diagnose & prescribe ORT										
CHW motivate 20% mothers to use ORT										
CHW motivate 30% more										
Motivate remaining 40%										

Selecting Indicators and Targets

1. Select Indicators for Monitoring the Progress of Activities

a. For each PHC service to be delivered, define the principal *inputs*, *processes*, and *outcomes,* making sure that they are all logically linked. The systems approach (shown in Table 2-8 below) helps managers to remember all the essential information for each proposed service. One can start with the inputs and work forward, or from the desired impacts and work backward.

Table 2-9: Defining Indicators for PHC and Management Services

INPUT	PROCESS	OUTPUT	EFFECT	IMPACT
CHILD NUTRITION				
GM cards, scales, Nutrition monitors, Functioning TFC	weighing, diagnosing PEM, counselling	weight recorded, child referred to TFC, mother counselled on breast feed & nutrition	Mother understands child nutrition, Mother feeds better	weight gain, malnutrition drops
WATER SUPPLY				
Water monitors, chlorine, pipeline	Transport to taps, disinfect	Quantity & quality of water at household	Water consumed: drinking, hygiene	Decreased illness from diarrhoea and skin diseases
BASIC CURATIVE CARE				
CHD, CHN, drugs	patient consulting, diagnosing, counselling	patient diagnosed, counselled on therapy, drugs prescribed & issued as per protocols	patient understands therapy, complies to treatment	patient recovers, decreased death rates
SUPERVISION				
Supervisors, checklists	visiting, evaluating	performance evaluated and worker counselled	Improved skills, increased motivation	not applicable
COMMUNITY ORGANISATION				
Community Leaders	visiting	communities visited	active volunteers	not applicable

b. Since it is not feasible to monitor very many indicators, particularly in the acute phase, select two to three indicators to monitor the progress of each service. Experience has shown that the most crucial indicators for monitoring program implementation are the *inputs*, *outputs,* and *outcome* indicators as illustrated below:

- *Input Indicators* — Are the critical resources adequate to produce services/products? Cost of services?

- *Output Indicators* — Are the target groups being provided with the expected services and products?

- *Outcome Indicators* — Are the PHC services having the desired effect on the target group? Is there an increase in immunisation coverage? Has there been any health improvement?

Table 2-10: Examples of Indicators for Monitoring Program Implementation

Service	Input Indicator	Output Indicator	Outcome Indicator
Child Nutrition	% child care units which lacked nutrition monitors	% mothers counselled on proper child nutrition	% under-fives who are malnourished
Basic Health Care	% health units which experienced shortage of essential drugs and supplies	% malaria cases treated (as per protocols)	% deaths due to malaria

2. Set Targets

a. Performance may be measured in terms of quantity as well as quality. **Quality** may be assessed in terms of the service delivery *process* and *availability* of resources (e.g., drugs, staff). Checklists can be designed for both quality indicators and quantity indicators to measure the progress against the objectives, as shown in Table 2-10:

Table 2-11: Indicators for Monitoring and Evaluating Oral Re-Hydration Therapy

Input Indicators	Output Indicators	Effect Indicators
*% health units which experienced stock shortage of ORS packets**	% health workers who counsel mothers on preparation and administer ORS *% health workers who correctly showed mothers how to prepare and administer ORS**	% mothers who know how to prepare and administer ORS % mothers who used ORS and continued feeding during their child's last diarrhoea episode
% health units using program guidelines about service quality to plan or focus training sessions in the last period	% health workers who received refresher training on specific PHC interventions within the last period *% training sessions given that completed the technical content**	*% health workers who showed improvement between the pre- and post-tests during training**

*Quantity indicators are shown in italics

b. Setting targets or standards helps to gauge the performance and detect any deficiencies in PHC or management services. Whether the targets or standards are based on base-line data or international standards (e.g., minimum standards), they should be realistic. In addition, they should be reviewed and updated periodically by the concerned staff. Targets may be set for the following criteria:

- **Access** – e.g., access to safe water resources within a walking distance of 15 minutes

- **Utilisation** – e.g., prenatal care attendance to be above 60% of pregnant women

- **Quality** – e.g., cold chain to be maintained 100% of the time

- **Resource availability** – e.g., 15 most essential drugs must always be available
- **Cost** – e.g., cost of drugs consumed to be within fixed budget
- **Coverage** – e.g., a minimum of 80% of children aged 12-23 months to be fully immunised

The Minimum Standards of the Sphere Project[ii]

The international humanitarian community, through the Sphere Project, have produced a set of **minimum standards** for humanitarian response. The aim of the minimum standards is to improve the effectiveness of humanitarian efforts in five sectors: water supply and sanitation, nutrition, food aid, shelter and site planning, and health services. Minimum standards can make relief agencies more accountable for what they are doing by providing a yardstick for measuring what an agency should try to achieve. These standards can also be used to monitor and evaluate the service delivery and outcome of projects. The following table summarises the areas covered by minimum standards for different sectors.

Note: *Using the minimum standards will depend upon the context of each emergency situation. Not every standard will be relevant in every situation.*

Table 2-12: Summary of the Minimum Standards of the Sphere Project

SECTOR	MINIMUM STANDARDS
WATER SUPPLY AND SANITATION	1. **Analysis**: initial assessment, monitoring and evaluation, participation 2. **Water Supply**: access and water quantity, water quality, water use facilities and goods 3. **Excreta Disposal**: access to and number of toilets, design and construction 4. **Vector Control**: individual and family protection, physical, environmental and chemical protection measures, good practice in the use of chemical vector control methods 5. **Solid Waste Management**: solid waste collection and disposal, solid waste containers/pits 6. **Drainage**: drainage works, installations and tools 7. **Hygiene Promotion**: hygiene behaviour and use of facilities, program implementation 8. **Human Resource Capacity and Training**: competence
NUTRITION	1. **Analysis**: initial assessment, response, monitoring and evaluation, participation 2. **General Nutritional Support to the Population**: nutrient supply, food quality and safety, food acceptability, food handling and safety 3. **Nutritional Support to Those Suffering From Malnutrition**: targeted nutritional support for moderate malnutrition, for severe malnutrition, and for micronutrient deficiencies 4. **Human Resource Capacity and Training**: competence, support, local capacity
FOOD AID	1. **Analysis**: initial assessment, monitoring and evaluation, participation 2. **Requirements**: requirements 3. **Targeting**: targeting 4. **Resource Management**: resource management 5. **Logistics**: logistics 6. **Distribution**: distribution 7. **Human Resource Capacity and Training**: competence, local capacity
SHELTER AND SITE PLANNING	1. **Analysis**: initial assessment, monitoring and evaluation, participation 2. **Housing (Shelter)**: living quarters 3. **Clothing**: clothing 4. **Household Items**: items for household and livelihood support, environmental concerns 5. **Site Selection and Planning**: site selection, site planning, security, environmental concerns 6. **Human Resource Capacity and Training**: competence, local capacity
HEALTH SERVICES	1. **Analysis**: initial assessment, health information system – data collection, data review, monitoring and evaluation, participation 2. **Measles Control**: vaccination, vaccination of new comers, outbreak control, case management 3. **Control of Communicable Diseases**: monitoring, investigation and control 4. **Health Care Services**: appropriate medical care, reduction of morbidity and mortality 5. **Human Resource Capacity and Training**: competence, support, local capacity

Source: "Humanitarian Charter and Minimum Standards in Response," The Sphere Project, Geneva, 2000

Identifying Resources Needed

Humanitarian ethics dictate that during acute emergencies immediate assistance should be given at any cost to alleviate suffering of the victims. Even if it involves providing large consignments of food, standard health kits, water trucking, or shelter material. Appeals for humanitarian assistance typically result in tons of unnecessary donations, which consume valuable storage space, manpower and time to sort. To ensure assistance is more efficient, the implementing agencies should specify what external resources are needed (e.g., personnel, commodities, equipment, drugs and transport). Estimates should be based on the assessment findings and proposed action plan. Otherwise major shortages could greatly interfere with the relief operation. After identifying the resources, a reasonable budget needs to be drawn for each project and for a specified time period. The budget should be based on information on the local availability of the required resources (in terms of their cost, quantity, quality, etc.). More resources should be focused on the community level and health centre level care (refer to the *Primary Health Care* chapter for details).

Standard rules for identifying and procuring resources must be respected. Donors should enquire from the relief agencies about the external needs before sending any donations. Other basic rules for selecting resources include:

- Must involve the affected population in order to build capacity.
- Should strengthen rather than cripple the existing services.
- Prolonged external support can lead to dependence that cannot be sustained.
- Must be compatible with local customs.
- Must conform to local protocols and methods.
- Select materials which can be rapidly mobilised and easily stored or distributed.

Resources for the program may be classified as follows:

- *Basic supplies* — what is consumed, how much, buffer stock for losses or sudden population influxes
- *Equipment* — what type, how to mobilise and maintain, clearance costs and possible duty charges
- *Staffing* costs — specify who, how many, for how long, training needs, staff health care, and end-of-contract bonus

Below is a summary of essential resources that relief programs may require:

Table 2-13: Essential Resources for an Emergency Health Care Program

Staffing		Basic Supplies	
PHC co-ordinator	Health co-ordinator	Food	Shelter/Service structures
Administrator	Medical assistants	Water supply	Shelter material
Field managers	Public health nurse	Sanitation	Household items
Finance staff	MCH staff	Drugs/medical supplies	Clothing
Logistics staff	Nutrition staff		
Guards/messengers	Health educators		
Cleaners	Water/Sanitation staff		
Drivers, mechanics	Health assistants		
Construction workers	Cleaners		

The following steps may be used to estimate the resources for the proposed actions:

1. Determine Basic Supplies
Estimating basic needs for the displaced persons according to internationally approved standards. The Minimum Standards of the Sphere Project identifies the following requirements:

- There should be access to sufficient amount of water for drinking, cooking and bathing (at least 15 L/person/day); additional supplies may be necessary if there are large numbers of domestic animals.

- A steady and adequate supply of sufficient quality food to sustain life (an average 2100 kcal/person/day).

- Safe access to sufficient number of clean functioning latrines (1 latrine per 20 persons or family).

- Each person has access to 250 g of soap per month.

- New Emergency Health Kits (1/10,000 population) are used initially, but later drug needs are ordered.

- The Minimum Initial Service Package (MISP) is used initially for people's reproductive health needs.

- Sufficient protection from the climate (appropriate shelter material and sufficient blankets per family)

- At least one full set of clothing per person (which is appropriate to the culture and climate) and a regular supply of sanitary protection for women and girls.

- People have appropriate household items (1 cooking pot with lid, 1 basin, 1 kitchen knife, 2 wooden spoons, 2 water collection and water storage vessels per family; 1 plate, 1 metal spoon, 1 mug per person)

- Particular attention is paid to the provision of cooking fuel, and the control and management of natural resources in the area around the camp.

- As soon as possible, people to have appropriate tools and materials to support livelihood activity.

Note: *Considerable losses occur, particularly food and drug,s during transport, distribution and at the household.*

2. Determine the Equipment Required
Determine the equipment required for key activities, such as cold chain maintenance, pumping water, and well drilling, laboratory, transportation, telecommunication, etc.

3. Determine Staffing Requirements
The affected population should pla y a central rol in delivering services. Outsiders may be limited by language barriers and unfamiliarity with the local culture. The following steps may used to estimate staffing requirements:

a. After specifying *who* will deliver services, determine *how many* workers are needed for each service. The number will vary according to the level of the PHC system. The minimum staff that can deliver the services should be recruited for the project. It is important to plan for supervision right from the beginning. The table below defines the minimum standards for staffing in health services:

Table 2-14: Health Services Staffing Based on the Minimum Standards

• Home Visitor:	1 per 500-1000 people (at least 50% should be female)
• Traditional Birth Attendant:	1 per 2,000 population
• Supervisor:	1 per 10 home visitors, 1 senior supervisor
• Qualified health worker:	1 per 10,000 population (based on 1 person per 50 consultations/day)
• Health worker:	1 per 20-30 beds (8 hour shifts)
• Doctor:	1 per 50,000 population
• Locally-trained health worker:	1-2 for pharmacy, 1 for ORT, 1-2 for dressing/injection/sterilisation
• Non-medical staff:	1-2 clerks, 1-3 guards (8 hour shifts), cleaners

b. It is not enough to base the number of personnel required only on the recommended health worker norms, but also according to the level of competence of the work force. To ensure the most productive use of people, the following should be specified when new staff are recruited:

- Who will do what?
- Who will be responsible?
- Who will report to whom?

Drawing an **organisational chart** and individual **job descriptions** may help answer the above questions. Organisational charts help define reporting lines while job descriptions are useful for selecting the right staff and preventing future problems of excess staffing or poor performance. For each staff position, very short job descriptions can be drawn (one to two sentences that summarise the main responsibilities will do). The organisational chart and job descriptions may need revision during the course of the relief project because of changes in the emergency situation, in staffing or program funding.

c. In order to determine *how much work time* will be required for specific activities, basic **work plans** (or timetables) may be developed as shown below. They are useful for guiding how the work will be carried out. Supervision should be included in the work plans to ensure that workers can get help when they need it and to maintain a high standard of service delivery.

Table 2-15: Example of a Community Health Nurse Weekly Work Plan

TASK	CHN WEEKLY WORK PLAN					
	Mon	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
Child care clinic			8-12		8-12	
Health education	8-9			8-9		
ANC	9-12				2-5	
Immunisation				9-12		
High-risk visits		8-12		2-4		
Supervision		2-5				
Community meetings	3-5					
PHC meeting			1-2			
Continuing education			3-5			9-12
Reports	ANC	MCH	EPI	CHW		

d. Because of the wide range of backgrounds and skills among the staff and to prevent waste of resources, task descriptions or **job aids** can be provided to instruct workers on how to perform a task in a standard (and efficient) way. Different job aids can be developed for various categories of health workers. They may range from simple pictures and instructions for community outreach workers to decision-making flow charts and checklists for qualified health workers. Many job aids have been developed and are readily available from the local Ministry of Health, WHO, and other organisations. For example, the WHO-UNICEF IMCI guidelines can be used to standardise the clinical management of common childhood illnesses. In addition to improving the quality of care, job aids can be used for supervising staff and helping them to achieve the desired outcomes from program interventions.

e. Determine the training gaps of the available work force by comparing their current skills to the desired level of skills, i.e., those skills that would enable them to carry out their assigned tasks according to set standards. Plan for training according to the identified training gaps, and arrange for in-service and on-the-job training to be provided by the more experienced staff. Up to 50% of the experienced staff's time should be spent on staff training and supervision. For more details on management of staff, refer to the *Human Resource Management* chapter.

4. Putting the Budget Together

A budget is a financial management tool that shows how much money is needed to carry out a relief project, as well as how the resources are distributed and used. It can later be used to evaluate how well the resources were distributed and used to achieve the project objectives. The following steps can be used to draw the budget:

a. Budgeting for the relief program should be based on the best available population estimates. The following table shows a hypothetical population profile that may be used to estimate the resources for a relief program for 20,000 internally displaced persons (IDPs).

Table 2-16: Hypothetical Population for Estimating Resources

Target Group	% Total Population	Estimated Size
Total population	100	20,000
Infants	4	800
Children 0-4 years	20	4,000
Children 0-14 years	40	8,000
Women 15-44 years	30	4,000
Elderly	10	2,000

b. First specify the minimum resources required for individual projects and then look at all the resources needed for the entire program. Since many projects involve similar inputs (personnel or supplies), resources should be distributed efficiently, in a way that will ensure optimal level of care for vulnerable groups. Requests should be sent to donors for essential staff, supplies, equipment that cannot be obtained locally.

c. Planners should budget for resources according to the health needs and available funding. They should to keep track of the cash limits for each project or items, e.g., vaccination or salaries or "in-kind" contributions (drugs, food, personnel, equipment, etc.).

d. The final budget may be prepared as a line budget or program budget (allowing for inflation, contingency plans and costs of running and evaluating the project). Agency and donor preferences and local practices should be respected when drawing the final budget. An outline and the advantages of each type of budget are shown in Table 2-16.

Table 2-17: Outline and Advantages of a Line Budget and a Program Budget

Outline of Line Item Budget	Advantages

Cost (local currency)   Donor
 	
Personnel
  Qualified
  Non-qualified
Capital Expenses
  Office
  Vehicles
  Laboratory
Recurrent costs
  Drugs
  Vaccines
  Stationery
  Travel
	• Easy to visualise costs.
	
	• Simpler to work out.
	
	• Good for small projects with few activities.

Outline of Program Budget	Advantages

Water/San   Food   Health Centre
Personnel
  Qualified
  Non-qualified
Capital Expenses
  Office
  Vehicles
  Laboratory
Recurrent costs
  Drugs
  Vaccines
  Stationery
  Travel
 	
  TOTAL COST
	• Breaks down cost per activity.
	
	• Good for multiple interventions.
	
	• Essential if funding may change during project.
	
	• Allows cost-analysis of multiple interventions.

Table 2-18: Example of Worksheet for Estimating Resources for a Relief Program (for 20,000 IDPs for One Year)

INTERVENTION			PERSONNEL			LOGISTICS			FINANCES	
			Required		Avail	Required		Avail.		
Service or Activity	Target Group	Frequency	Type	No.	No.	Type	Amount.	No.	Cost	Source
Community-based Health Care										
Reproductive Health: **Safe motherhood**	600 pregnant women (CBR~30/1000/yr)	50 ANC visits/month	TBA @ 30 deliveries/mo	2		TBA kits	30	10		UNICEF
CHW Home Visits: IEC (GM/ORS/EPI/ANC/FP), follow-up high-risk. referral, collect data, etc.)	3,500 households (@ 6 persons/house-hold)	1visit/house-hold/month High-risk 1/week or more PRN	CHW @ 30 persons per day	20	4	Weighing scale, ORS packs, registers, stationery	10 20,000 5	5 5,000 10		IFRC
Community organisation: H/Ed, dialogue, feedback	All mothers in 5 camps	1 camp meeting /mo	CHW CHN CHD	2.5 1 0.4		Flip charts	5			ONS
Outreach										
Vaccination	All children < 5 & pregnant women in 5 camps	1 visit / camp/week	Vaccinator	1		Vaccines, carrier, syringes, van	10 days/ month			UNICEF
Supervision	All CHWs, TBAs, Vaccinators	3 visits/ camp/month	CHN @ 1 per 10 workers	3		Van	15 days/ month			MOH
Centre-based										
Curative care (includes vaccination)	All 20,000 IDPs @ 4 consult /person/yr	200 patients/day (20% refer. to CHD)	CHN, CHD CHW Vaccinator	3 1 5 0.8		Drugs, equipment, van	2 days/ month			MOH MOH IFRC UNICEF
Management activities (meetings, reports, training)	Health care team, CHN, CHD	1/mo 1/mo	CHD CHN CHW Vaccinator	0.6 1 2.5 0.2		Stationery (registers, forms)				IFRC
Administration			Admin. clerk Junior staff Security	2 3 2		Van, stationery, cleaning supplies, etc.	2 days/ month			ONS
TOTAL			Vaccinator CHN CHW CHD TBA Admin. clerk Junior staff Security	2 8 30 2 2 2 3 2	1 1 8 1 10 @ 20% 1 1 1	Van, cost of other equipment	1			

ANC – antenatal care
GM – growth monitoring
EPI – expanded program on immunisation
FP – family planning
IEC – information, education, communication
H/ED – health education

CHN – community health nurse
CHD – community health doctor
TBA – traditional birth attendant

ONS – Operating National Society
MOH – Ministry of Health

IMPLEMENTING RELIEF PROJECTS

Project implementation is defined as transforming inputs through a set of systems and procedures to produce planned outputs. The implementation process is described in the Figure below.

Figure 2-6: The Process of Implementing a Relief Project

INPUTS

Supply:
staff, equipment, food, drugs, funds, information, training, etc.

Organisation of Work
(design working methods, recruit and train staff)

Co-ordinating Activities
(define lead agency and implementing partners)

Mobilising Resources
(includes arranging contracts, transport, storage)

Setting Up Facilities and Equipment
(involves construction, installation)

Delivering Services
(using the most effective methods and resources)

Supervision
(of physical implementation and service delivery)

Financial Control
(use of resources for overall implementation)

Monitoring and Improving Strategies
(performance of staff, addressing constraints)

Provide:
food rations, water, sanitation, health care, education, etc.

OUTPUTS

Implementation begins with organisation of work and continues until a project is fully operational. Implementation takes time. To be successful, it requires coordination, good leadership and management of staff, regular reporting of the progress of the project, and timely management of constraints and changes.

Coordination[iii]

The implementation of a relief operation needs to be coordinated with the activities of other partners (government ministries, UN and other concerned agencies). Good coordination will result in the following:
- appropriate division of responsibilities,
- elimination of gaps and overlap in services,
- uniform treatment and standards of protection and services for all the beneficiaries,
- maximum impact for a given level of resources.

It is important to establish a single coordinating body to provide a framework within which the overall relief response can be coordinated. Where a coordinating structure does not exist, the concerned United Nations agency (e.g. UNHCR for refugee situations, the WHO for natural disasters) should take the lead in cooperation with the host country in setting up a coordinating body and mechanism. The coordinating body should have clearly defined responsibility and authority.

Coordination is not free. It has costs in terms of time and other resources that are needed to make it work. The coordinating body should hold regular meetings where the overall progress is reviewed and plans adjusted. Government ministries and departments, UN agencies and all concerned NGOs should be represented in the coordinating body. For large scale emergencies with many actors, sectoral committees, for example for health and nutrition, may be set up to coordinate implementation in that sector. These committees could be made responsible for developing common standards for the delivery of assistance This is particularly important where a number of agencies are providing similar assistance.

Leadership

Translating project plans into action requires good relief managers who can ensure that activities are carried out as planned so that the intended objectives can be achieved. In other words, managers should be good leaders who can provide a sense of to direction to team members and motivate them to be committed to the mission's overall goals.

In emergencies, there is no correct management style as everything depends on the situation and the ability and confidence of a relief manager in leading a team. Managers are accountable for their staff, time, material resources, for making timely reports of what is being done, and even for their health and welfare. The following table summarises the role of a manager during the course of a relief project:

Table 2-19: The Role of a Manager

ROLE	DESCRIPTION
Leading the team	Motivating and inspiring team members to exceed their personal expectations, in line with the mission's objectives and providing an "enabling" environment for team members to work effectively.
Managing people	Adopting a flexible management style according to the abilities of each team member. Provide direction when needed but look for opportunities to give responsibility.
Team building	Holding regular meetings is both a clear indicator of the team's working methods and an excellent opportunity for team building.
Communicating the project purpose and strategy	Taking the time to review the purpose and strategy of the project with the team, build their commitment and keep emphasising the need to be flexible in order to adapt to new challenges. Also communicating the potential security risks and evacuation plans.
Managing the performance of team members	Taking the time to sit down with each team member and discuss how their work is going and how performance can be improved.
Managing for results and building capacity	Making the job more interesting by giving responsibility, recognising work that is done well and involving team members in program monitoring, analysis of trends and decision-making.
Delegating responsibilities	Delegating tasks is essential and should be done gradually, with on-the-job coaching. Be sure to give the necessary authority and resources.
Managing conflicts	Conflicts cannot be completely avoided, but they should always be prevented from growing into major problems.
Coordinating with the team and others	Reporting and sharing information from the central level with the field staff, and ensuring important information is passed to the coordination body.

Managing Staff

All project managers need to recognise and understand the importance of good management of staff. Certain aspects of disaster relief operations make human resource management particularly important, for example:

- Humanitarian assistance consists of services provided to people by other people. As a service industry, which depends on good relationships with all stakeholders, human resources are the most valuable asset of relief operations.

- Because of the urgency of responding to disasters, humanitarian organisations are often forced to hire inexperienced or unsuitable staff. To ensure that the quality of relief services does not suffer, it is necessary to set up the management systems in a way that addresses this reality.

- Humanitarian organisations usually hire both local and expatriate staff. Human resource policy can prove to be either an obstacle or an aid to building co-operation and team spirit between all staff, regardless of their culture, position, or gender. Addressing the professional and personal needs of both staff pools can greatly reduce the high staff turnover typically experienced by humanitarian agencies.

- Working in disaster situations often exposes workers to security incidents, a high level of stress and health risks, and insufficient support from headquarters. Human resource policies must be designed with these special challenges in mind.

On recruitment, each worker should be welcomed and given a good orientation of the relief operation and working environment. A detailed job description should be provided, which informs of his or her main responsibilities, relationship to other workers and the expected *achievements* from doing a job. (An example of a job description is shown in Table 2-19.) Thereafter, all workers should receive adequate support from both the project and headquarter level. Supervision and periodic evaluation of performance should be carried out to identify further training needs as well as to consider promotion or other incentive.

Table 2-20: Responsibilities of a Medical Assistant

Administrative Duties	Patient Care
- Maintain smooth-running of health centre - Co-ordinate health centre with community activities - Supervise team of health workers - Facilitate collaboration with other sectors - Convene health committee meetings - Manage basic health information system - Monthly reports (for MOH, UNHCR)	- Preventive care: screening for TB - Promotive: counsel on child care, nutrition, hygiene - Curative: diagnosis, treatment, referral and follow-up of ill patients

Managing Constraints and Changes

During the course of the relief operation, managers are constantly faced with an evolving situation and unexpected complications. They should think of all possible ways in which plans may go wrong and plan how to prevent such complications before they happen. The following table describes common constraints and possible actions.

Table 2-21: Examples of Constraints and Possible Actions

CONSTRAINT	SUGGESTED ACTION
Inadequate or incorrect baseline data resulting in inappropriate project objectives, e.g., only long term objectives defined for a rapidly changing situation.	Improve information system and monitor trends and always set both short and long-term objectives for unstable situations.
Lack of basic skills among staff.	Not solved by increasing the number of workers but by recruiting the right staff and providing on-the-job training.
Procedures for procuring material resources too complicated, causing delays in setting up the relief project and poor quality of outputs.	Train logistics staff on basic procurement procedures while initially ordering for standard emergency kits.
PHC approach not supported by professional health workers.	Facilitate dialogue on PHC concept and successful programs.
Community participation may not occur in practice.	Discourage top-down decision-making.
Poor integration of community-based health interventions into the existing health care system, e.g. community health workers not supported by community and professional health team.	Involve all concerned in planning, implementation and evaluation of the project.
Environmental changes beyond managerial control causing an increased incidence of communicable diseases.	Improve surveillance for early warning signs.
Unexpected population influxes due to worsening political situation in neighbouring regions.	Plans for relief response to unstable emergencies should be flexible.
Developing constraints not picked up by the monitoring system.	Periodically evaluate the information system.
Chronic delays by central authorities (agency, host country, donors) in responding to emergency requests.	Improve data collection and reporting.

Sometimes the problems or needs identified during the assessment may evolve, calling for changes to be introduced. A plan that no longer addresses the needs of beneficiaries, overlooks vulnerable groups or causes serious negative effects should be changed or abandoned. Since not all changes are easy to implement, it is important to review the plan and determine if it should be adjusted to the reality, rather than the partners. Any changes of plan should be discussed with all who may be affected. It is easier to implement changes when all partners approve changes to the original plan.

For more details about Leadership, Managing Staff, and Managing Changes, see the *Human Resource Management* chapter. Many of the principles covered in that chapter apply across all organisations, be they for-profit businesses, government offices, schools and hospitals, or humanitarian assistance organisations.

Reporting

Reports are management tools that summarise the results of monitoring the progress of a project toward achieving the objectives. They are good for analysing the progress of activities as well as for sharing information with other concerned parties. Reporting for the project should be outlined in advance in terms of:

- What is to be reported?
- Who will prepare the reports?
- How often will the reporting be done?
- To whom are the reports to be submitted?

Reporting must be timely, regular and accurate, to ensure good management support and sufficient funding for a relief operation. In order to meet reporting deadlines, managers have to take time off from other demands to write reports. Even if no progress has been made or the data is incomplete, they should follow the principle "go with what you have" and compile the required report. In emergencies, no news is *not* good news. The frequency of reporting will depend on the nature of the emergency and the type of report. A manager may have to submit different types of reports including *situation reports, monthly reports, quarterly reports, final reports* or *special donor reports*.

Some reports have to follow a particular format. Where no special format is requested, the standard reporting requirements and procedures of the implementing agency should be used. Even though various funding partners may require their reports in special formats, all reports actually provide differently worded answers to the same basic questions, namely:

- What was intended?

- Has it been done?

- If not, why not?

- What is to be done next?

Reports should be objective, factual and brief, yet provide enough details for a reader to understand the context of the project. Including the priorities and plans for the next reporting period may be helpful. All information should be checked and verified, and its sources quoted in order to establish reliability.

MONITORING AND EVALUATING RELIEF PROJECTS
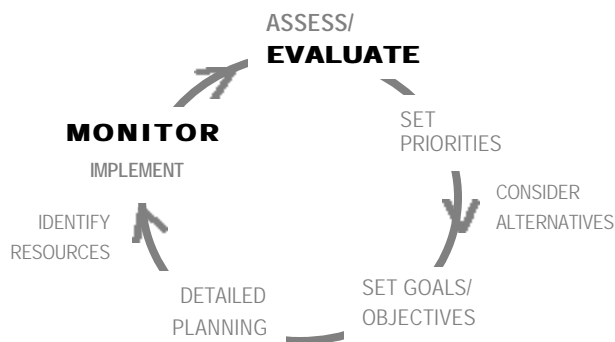
Program monitoring and evaluation can provide a powerful means for building support for assistance to displaced populations. It is important that relief programs are evaluated as follows:

1. **Initial Evaluation —** usually known as **needs assessment**, carried out before starting a program asks, "What is happening?

2. **On-going Evaluation —** usually known as **monitoring**, carried out during implementation by those managing it, asks, "How is the program progressing?"

3. **Interim and Final Evaluation** — An interim evaluation, usually known as **process evaluation**, is carried out between program phases, may ask, "What has been achieved from the resources allocated? What are the other needs?" The final (end-of-project) evaluation, usually known as **outcome evaluation**, asks, "Have the objectives been achieved?"

The above three evaluations are essential for good program management. When combined, they provide information on the full range of an emergency situation and the relief response. The information gained can be used for establishing or confirming relief program priorities, for linking resources to needs and for measuring program results against intentions. Most relief programs carry out the needs assessment and on-going monitoring. However, due to limited resources, process and outcome evaluations are less likely to be carried out.

While a needs assessment is useful for determining the initial response, and monitoring for checking that the objectives are still valid for achieving the overall goal, relief agencies should recognise that an interim or end-of-project evaluation can greatly influence how future projects are planned and managed. The time and resources for carrying out *all* evaluations should be budgeted for from the beginning of a relief program. How the results of each evaluation will be used should also be decided in advance so that results can be presented in the most practical way. Representatives of the affected community should be involved in organising and carrying out all evaluations as relief organisation must be accountable, not just to donors, but also to the beneficiaries.

Monitoring
Monitoring primarily means watching the efficiency of project implementation. It concentrates on project inputs, outputs and processes, while checking the progress of work against earlier identified indicators. It also attempts to identify reasons for any differences between actual and planned results.

Purpose of Monitoring
- To make sure the program is implemented as planned:
    - resources are mobilised as scheduled.
    - services and products are delivered as planned.
    - beneficiaries are receiving quality services as intended.
- To detect when something goes wrong so that it can be fixed (a supportive role).
- To revise objectives (if inappropriate in addressing the original problem, or if the situation has changed).
- To make sure that any program changes are carried out as planned and that they work.

A good monitoring system can show whether or not actions are in line with the project goals and objectives, and where the plan needs to be adjusted. In addition, monitoring program **outcomes** and impacts can reduce the amount of work involved in an interim or final evaluation. Monitoring is usually done through an **information system**. An information system consists of people, equipment and procedures that are organised to provide information (e.g. use of health services, disease surveillance, health status of affected population and program management) to health workers in a way that enables them to make informed decisions.

Objectives of an information system include the following:
- To follow trends in the health status of the affected population and establish health care priorities.
- To detect and respond to epidemics.
- To evaluate program effectiveness, coverage and quality of services delivered.
- To ensure that resources are targeted to the areas of greatest need.

To be effective, the information system should:
- *Collect only the most relevant data* — focuses on data which is of direct relevance to work and conforms with the data processing capabilities.
- *Be simple, up-to-date and cost-effective* — consumes the minimum amount of time and resources to collect and analyse.
- *Be action-led* — linked with decision-making and feedback. Data collectors should also be able to use the data they collect for their decision-making.

Setting Up an Information System (IS)
A very systematic approach is necessary when establishing an IS. The following steps can guide people setting up an information system where none exists or where the local IS cannot be strengthened:

1. **Define the People Concerned with the IS**
   One person or agency at the highest PHC level must be put in charge of co-ordinating the information system and regularly supervising data collectors based in facilities and within the community. The reporting lines should be defined and key people made responsible for monitoring and reporting data for different levels/facilities. All data collectors should understand the purpose of gathering data and should be trained to follow standard data collection procedures.

2. **Define What Is to Be Monitored**
   Indicators to be monitored should meet the objectives of the information system, i.e., they should be related to decisions that need to be made. The volume of data to be collected should be manageable. Because it will not be feasible to monitor all the activities simultaneously, organise the management information system as follows:
   a. Summarise the baseline survey findings
   b. List the program objectives, for example:
      - Improve child survival rates to pre-emergency levels within 3 months.
      - Increase measles immunisation coverage to 95% of children less than 5 years within 3 months.

- Improve food availability to 2,100 kcal/person/day for all displaced people within one month.
- Increase potable water supply to 10 litres/person/day within one month.
- Reduce the malnutrition rate from 15% to below 10% for children under 5 years within three months.

c. Summarise each PHC and management activities that is carried out in order to achieve the objectives, in terms of *what, how, when* and *who* (may be extracted from the detailed plan of action).

d. Define the indicators to be monitored and set targets for all PHC and management services: Select 2-3 indicators that will show the progress of each service and the achievement of targets. Targets that were defined in the action plan may be adjusted during the course of implementation, as more reliable data is gathered. Indicators may be categorised as follows:

i. *Demography* (quantify target population: total, age/sex breakdown, new arrivals, ratio to host population)

ii. *Health Status* (birth rate, death rate, morbidity incidence and prevalence, nutritional status)

Note: *- determine cause-specific morbidity/mortality to identify the priority interventions.*

- determine age/sex-specific morbidity/mortality to assess equity to resources and services and to target interventions.

- after the acute emergency phase, health status does not usually change rapidly, and may be monitored annually to detect changes resulting from project interventions.

iii. *Program Process* – assess the output, coverage and quality of services. Table 2-22 on the next page shows specific examples of program process indicators for various PHC services.

iv. *Resources* – assess the quantity and quality of supplies, equipment, staffing, finances, etc. The following table shows specific examples:

Table 2-22: Examples of Resource (Input) Indicators

Resource	Quantity Indicator	Quality Indicator	Expected Number /Ratio to Total Population
Facilities			
Hospital	# per total population	Access, utilisation, morbidity/mortality	1 per 30,000
Health centre	"	"	1 per 10,000
Health post	"	"	1 per 5,000
Cholera centre	"	"	1 per camp
Therapeutic feeding centre	"	"	1 per camp
Staffing			
Camp administrator	# per camp	Level of training	1 per camp
Storekeeper	"	"	"
Registration officer	"	"	1 per camp
Registration team	# per daily arrivals	"	10 per 1,000 daily arrivals
Supplies			
New Emergency Health Kit	# per total population	% drugs expired	1 per 10,000 for 3 months
Beds	"	Bed occupancy rate	1 per 1,000
Domestic kits	"	Use by beneficiaries	1 per household

The Johns Hopkins and IFRC Public Health Guide for Emergencies

Table 2-23: Examples of Program Process Indicators

Emergency Health Service	Output	Coverage	Quality of Services	Target
Nutrition	# beneficiaries/month	% population getting an average 2100 kcal/p/day	Global malnutrition rate for children < 5 years	Malnutrition rate < 10%
Water	# Litres/person/day	% population within 15 mins walk to safe water sources from shelters	Water quality Frequency of water shortage	Average water supply: 20 L/person/day
Sanitation	Persons/ functioning latrine	% population with latrines close enough to dwellings for safe access, day or night.	Cleanliness of latrines	Latrine coverage: 1 per 20 people or 1 per family
Maternal health care	# ANC visits/month	% mothers with child < 24 mos. who received ANC at least once before delivery	% of high risk pregnancies detected	All pregnant women: (estimated at 25% of women)
Child care	% mothers counselled on breast-feeding	% children 18-23 months breast-fed until aged 18 months	Infant mortality rate (IMR)	IMR < 2.0/ 1,000/ day
Immunisation	% children vaccinated/month	% children 12-23 months fully immunised	Measles incidence & mortality rates	>= 95% measles coverage 40% vaccine loss
Disease control	# diarrhoea cases given ORT/month	% diarrhoea cases given ORT	Frequency of ORS shortage	100% ORS availability
Health education	# home visits/month	% homes visited by CHW	Level of awareness	100% coverage
Treatment of common diseases and injuries	# patients treated/month # admissions/month	% malaria cases treated	% emergency cases detected early Case Fatality Rate (CFR)	Acute phase: Total visits = total population Post-emergency phase: 4 visits/person/year
Essential drugs	# prescriptions /month	% population with access to essential drugs	Frequency of drug shortage Cost per prescription	Acute phase: NEHK Post-emergency: essential drug orders

3. **Define the Equipment /Tools for Data Collection**

The IS co-ordinator should ensure a constant supply of the following tools/equipment to facilitate smooth function:

- *Simple tools* for collecting and recording the information on indicators for each PHC service include pencils, maps, graphs, health cards, diaries, checklists, tally sheets, registers and pictorial charts (for workers with low education levels).

- *Communication channel* for transmitting information from the data collectors up to the level of the MIS Co-ordinator who needs to transmit the analysis results to decision-makers. This may involve vehicles, radios, telephones, faxes, etc. Other means of communication may be considered for giving feedback to the beneficiaries and data collectors, e.g. progress reports, quarterly newsletters.

- *Analysis tools*: should always be done manually with a pocket calculator and verified, where possible, by computer. EPI-INFO, a public domain software from CDC may be downloaded free through the internet. A CD-ROM version is also available.

4. Define the Procedures

To regulate monitoring, the following should be decided in advance:

a. *Information sources and methods for collecting data* for each indicator (observation, interviews, surveys, census).

b. *Frequency* of data collection and compilation (depends on the event being studied and available resources), e.g., in the acute emergency phase, death rates may have to be monitored daily, and later weekly then monthly.

c. *Standard data handling procedures* – to improve data quality, train staff to use:

- standard recording procedures (e.g., event to be tallied just *before* giving service)

- standard case definitions (e.g., malaria = fever > 38.5 C and absence of other infection)

- standard compiling procedures (total events summed up by the end of the day; daily summaries summed up weekly, and then monthly). Note the time, place and person for all data collected.

d. *Standard analysis procedures* – how the data will be analysed will determine how it should be collected, e.g. if use of services will be analysed by gender, then information on gender must be included in data collection. Adequate time and resources should be allocated for data analysis which should begin at the field level where the results can be used.

e. *Standard reporting procedures*: The results of the analysis should be displayed in an easily understood format for decision-making, e.g., using percentages, rates, tables and graphs, etc.

Note: *To ensure use of standard case definitions and indicators by all implementing agencies, the coordinating body for the overall relief response should develop and promote standard data collection and reporting protocols.*

5. Take Appropriate Action

After receiving the analysis results, share the information during management meetings and determine how to solve reported problems. This will help the project adapt to the evolving phases of the emergency. Data collectors should be informed about these decisions to keep them motivated.

6. Adapt the IS to Changing Information Needs

- Periodic examination and revision of the information system should be planned, particularly following any major changes in action plans. The information system should evolve as the needs for information changes.

- Any additional resource-needs to maintain the function of the IS should be addressed.

- This information should also be stored in a database as future reference for similar emergency situations.

Evaluating

Evaluation means to systematically establish the relevance, efficiency, effectiveness, and impact of the project in relation to its goals and objectives. This involves:

- Looking at whether the original problems to be tackled have changed since a project began, and whether the objectives have been achieved or not, in order to improve on-going operations (INTERIM or PROCESS evaluation).

- Measuring the actual results against the set goals and analysing reasons for success or failure in order to draw lessons for future planning, programming and decision-making (FINAL or OUTCOME evaluation).

In other words, evaluation is "the periodic measurement of performance against intentions." Evaluations are only possible if objectives and quantifiable indicators of success were defined at the beginning of a relief project. It is not enough to carry out regular monitoring of the project. **Interim evaluations** of the Gantt chart, job descriptions, job aids, staff work plans can help identify solutions to problems detected by routine monitoring and to adjust the action plan for the next phase. Few organisations conduct a **final evaluation** to assess the benefits, the effectiveness and the *impact* of a completed project. Final evaluations are essential for large, complex projects and particularly for long-term development projects where the final benefits may not be known for many years after completing the project.

Note: *Evaluation is a management and learning tool. It does not "put the project on trial," like an inspection (on-the-spot checks to investigate a particular problem and determine appropriate solutions) or audit (which is a review of whether activities measure up to set financial or management standards).*

Types of Evaluations

The type of evaluation that is carried out will be determined by who is included in the evaluation team. It may be carried out by the project staff, beneficiaries and/or external supporters as follows:

3. **Internal Evaluation** — This happens when members of the implementing organisation evaluate their own relief projects. Results from this type of evaluation are subjective, particularly when future funding depends on good performance, since they deal with how people feel about a project, rather than concrete results of the project. While an internal evaluator is immediately familiar with all aspects of the program and often poses less threat to others involved in the activities, s/he may lack objectivity and/or special evaluation experience.

3. **External Evaluation** — A more objective evaluation may be designed and conducted by bodies outside the implementing organisation. These evaluations greatly add to the credibility of the organisation but are more costly and time-consuming. More money should be invested in outside expertise for larger projects and for end-of-program evaluations. Program managers should ensure that external evaluators fully understand the goals and objectives, which is critical to a relevant evaluation.

3. **Self-Evaluation (Participatory)** — Beneficiaries of the project can be invited to participate in the evaluation as full partners with the organisation staff. They are the ones who can truly explain how an intervention has affected the target population: whether it was for better or for worse. They can provide insight and information on areas that may have been overlooked while planning the project and the evaluation. In addition, trusted and respected members of the community may be able to get more detailed and/or accurate information from the affected population. Finally, involving them enables the transfer of vital skills (i.e., evaluation skills) to the community. However, beneficiaries participating in such exercises may feel pressured by their community to view the project in a less objective way and use the opportunity to make additional demands.

The following table summarises the advantages and disadvantages of including different members of the evaluation team:

Table 2-24: Advantages and Disadvantages of Having Various Members on Evaluation Team

Evaluation Team Members	Advantages	Disadvantages
Beneficiaries	• Provide a unique "user" perspective. • May learn new skills. • Fosters co-operation and understanding between project staff and beneficiaries.	• May be influenced by other beneficiaries. • May have vested interests.
External consultants	• No vested interest. • Can apply "lessons learned" to and from other projects.	• May not understand the local situation well enough. • May lack support of project staff. • Can be expensive.
Donors	• Have a good overview of program goals and objectives. • May better understand the progress and the operating environment of the project as a result of their participation.	• May raise too many questions. • Can make program staff and beneficiaries uncomfortable and possibly pressured to report progress inaccurately (i.e. tell evaluation team what they want to be told rather than reality). • May have expectations and goals that are unrealistic or not the same as the agency's
Local authorities	• Provide a unique perspective of community-wide issues relevant to project progress.	• May be skilled in doing evaluations. • May take too long to report findings. • May be influenced by political interests (either their own, or from elsewhere within the community).
Program staff	• Good resource persons for immediate feedback.	• May find it difficult to criticise own program. • Often perceived as less credible by donors and other outside parties due to natural tendency to be subject.

Planning an Evaluation

Evaluations need to be planned when a project is being designed. The terms of reference should be written and agreed upon in advance, including the criteria for measuring the project's progress towards success (i.e., comparing achievements to baseline or target indicators), the types of evaluations that will be carried out, the dates and the cost. This will help determine what information needs to be collected during the course of the project. When planning an evaluation, determine *who, what*, *where, when* and *how* to carry the evaluation, as follows.

1. Who

    Who should be on the evaluation team (the beneficiaries, external consultants, donors, local authorities, and/or program staff) and who needs the report will depend on the answers the following:

    • **Who will participate in the evaluation?** – This will depend on the timing and depth of the evaluation, the availability of different parties, and the available funding. The team should not be too large and women should be included in order to assess the impact of the project on women's needs and status.

    • **Who are to be the users and why is the information needed?** – an outside consulting team may be most appropriate if the evaluation is for donors who want to measure impact of the intervention. Project staff and beneficiaries can evaluate the project on a smaller scale to help the organisation plan the next phase of activities or write a proposal to extend the project.

2. What

What is to be evaluated will depend on the purpose of carrying out an evaluation. The aim of evaluation is it to research, understand, and document changes that have occurred as a result of the project. These changes may be measured according to answers to the following:

- **What are the project's goals and objectives?** – In many cases, project planners do not fully understand the difficulty of evaluating objectives that are unclear or not measurable until the time comes to evaluate activities. Involving them may help them to better define goals and objectives for future projects

- **What are the assumptions upon which the project was designed?** – this will help to identify links between the inputs, outputs and impacts. This model can then be compared with the actual implementation.

- **What are the policies for operating the project?** – evaluating information about health indicators, without considering an agency's policies for the operation may not provide a complete picture.

3. Where

Where the evaluation will be carried out will depend on the project and the evaluation team's capacity to gather information. This may mean travelling to a number of different locations. For example, in evaluating an immunisation project, the evaluation team may review the supply and storage of vaccines at the central and district level of health care, thereafter evaluate specific immunisation activities in the field. They may review records at health clinics, and visit the target population immunised in their households. All the information should be gathered from representative sources of information.

4. When

When to carry out an evaluation will depend on the length of the project cycle and the purpose of the evaluation – i.e., why the information is needed. Short-term projects that begin and end within a six-month time frame, will most carry out on-going data collection for monitoring purposes, and then only a final evaluation, if any, at the end. Projects that address the more long-term needs of displaced populations may include both interim and final evaluations.

5. How

How an evaluation is conducted will depend on the purpose for the evaluation, and time and cost constraints. In addition, certain donors may request for a particular evaluation method, e.g., **qualitative** rather than **quantitative**. Quantitative evaluations can be carried out alone, but combining them with qualitative evaluations can help to explain deviations in quantitative data. (For more details about qualitative and quantitative methods of data collection, please refer to readings suggested at the end of the *Disaster Epidemiology* chapter.)

Carrying Out an Evaluation

Carrying out the evaluation involves the following:

1. Data Collection

Once the team has defined the information to be collected and the most appropriate methods and sources of information, the evaluation should proceed smoothly. Many areas can be explored during evaluations, and their importance will vary from project to project. The following table gives examples of key information that can be obtained from evaluations.

Table 2-25: Information from Evaluations

1. What were the project's objectives? To what extent have these objectives been achieved?	11. What is the relationship between the project objectives and the problems addressed?
2. In retrospect, how realistic were the objectives when they were set against existing limitations? What alternative objectives were considered and why were they rejected?	12. What factors account for the variations in the level and the distribution of benefits produced?
3. When were the benefits of the project expected to materialise, and when were they actually realised? How did this timing correspond with the timing of the needs which were addressed?	13. What were the intended benefits from the project? Who was expected to benefit from the project; who actually did and who did not benefit?
4. How was the program organised, set up and financed?	14. How were the various levels within the aid system linked?
5. Is the organisation's communication and co-ordination efficient? Is its structure flexible enough to adapt to changing conditions? Are decision-making and authority lines clear?	15. What pressures were exerted on the project and personnel? Where were these pressures generated?
6. What opportunities existed for the beneficiaries to influence the project set up?	16. Which way did information flow? To whom is the organisation accountable?
7. Has the project encouraged the growth of networks to facilitate problem-solving and learning between the communities and organisations?	17. What effect did the project have on local and social processes, on the way different communities and individuals interact and participate in public life?
8. What effect did the project have on the coping mechanisms within the community? Did the project improve or damage this internal system? Was any dependency created?	18. What effect did the project have on the physical environment?
9. Was there an effective control system for tracking the disbursement of financial and capital items and service provision?	19. Is the system geared to avoid and solve conflict – either internal or with other organisations?
10. What policy lessons have been learned from the project?	20. What issues emerged during the setting up and management of the project that might be generalised to other situations?

2. Dealing with Constraints

While an evaluation can be a powerful management tool for identifying project strengths and weaknesses, it is important to recognise that there are many constraints to project evaluation. Evaluators and program managers should address the following constraints when planning or preparing for an evaluation:

- Goals and/or objectives are frequently unclear or unrealistic.
- Projects often accomplish positive effects besides "documented" objectives.
- Health service programs are usually complex and individual components are difficult to separate.
- Health outcomes are difficult to link to cause and effect.
- The question why goals have or have not been reached is a key issue.

3. Reporting the Evaluation

It is important to specify to whom, when and how to report an evaluation in advance. The evaluation report should describe what the project has achieved or failed to achieve, and explain the reasons for its success or failures. In addition, it should include recommendations on how to improve the project in the future. Any recommendations that are accepted should be acted upon. Interim evaluations may require immediate action while end-of-program evaluation recommendations may be built into the planning and implementation of the next project. Major evaluations should include a review of whether recommendations from previous evaluations were taken up and acted on. The evaluation report should be shared with all parties concerned, including beneficiaries where applicable.

SUMMARY OF MANAGEMENT

Poor management of relief programs has resulted in poorly organised, inappropriate, delayed, and ineffective relief. Managers of relief programs should be skilled but flexible if they are to accomplish the organisation's goal. Otherwise, the plans may remain on paper. Planning a relief operation is hard work because it needs to be based on the best available information, which may be difficult to collect. For every emergency, the health needs of the affected population must first be identified and prioritised (since not all problems can be addressed at once). The detailed action plan should address both short-term objectives (for immediate survival needs), followed by long-term objectives (to foster recovery and build capacity of the affected population). Continuous monitoring of the program implementation is essential to measure the achievements of the program against pre-set objectives and to determine whether the priorities and objectives need to be adjusted. Once the humanitarian response has been implemented, the relief program can be evaluated to determine the effectiveness of the primary health care services, i.e., whether or not the objectives have been met and identify important lessons for future programs.

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[i] Collins, Charles. 1994. Management and Organization of Developing Health Systems, pp 2:
Keeling pointed out that "the most we can hope to achieve in management is to move frequently and quickly as possible to better positions from worse. Management in the public service is for those who can travel hopefully, not for those who expect to arrive."

[ii] A project of SCHR and Interaction, with VOICE, ICRC and ICVA as observer members. SCHR is an alliance for voluntary action of: CARE International, Caritas Internationalis, International Federation of Red Cross and Red Crescent Societies, International Save the Children Alliance, Lutheran World Federation, MSF International, Oxfam International and World Council of Churches. InterAction is a coalition of over 150 US-based non-profit organisations. VOICE is a European consortium of agencies working in emergencies while ICVA is a consortium of NGOs from the North and South.

[iii] UNHCR Handbook for Emergencies, second edition 2000.

HUMAN RESOURCE MANAGEMENT

Description
This chapter reviews the principles of managing human resources in humanitarian emergencies. The aim is to help field managers and supervisors increase their- understanding about the major concerns of their subordinates. It also outlines problem-solving techniques that can be used to improve the standard of human resource management (HRM) in relief operations.

Learning Objectives
- To characterise the scope of human resources problems in relief operations.
- To describe the needs of employees and reasons for employees leaving their jobs.
- To discuss leadership, team-building, and motivation of staff in relief operations.
- To define methods of supervision, performance evaluation, and disciplinary actions.
- To discuss how to implement change and prevent and resolve conflicts.
- To define basic security measures to be observed by relief workers in the field.
- To recognise the responsibility of managers and agencies towards staff health and welfare in the field.
- To describe the cultural priorities in human resource management.

Key Competencies
- To understand the main problems of human resources in relief operations.
- To address the needs of employees in order to prevent them from leaving their jobs.
- To recognise the value of good leadership, team building, and motivation in relief operations.
- To analyse health worker tasks for supervision, evaluation, and disciplinary action.
- To introduce change and prevent and deal with change and conflicts.
- To increase security awareness among field staff.
- To increase the manager's and agency's responsibility towards staff health and welfare.
- To recognise problems of working in a cross-cultural environment.

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Overview

Because humanitarian assistance is a **service given to people by people**, human resources are the most valuable asset of relief operations. Expatriates and local staff from the host and the beneficiary population consume a significant amount of the relief program budget. In addition to bringing skills, energy and creativity, these staff can initiate problems that are unique only to human resources.

The performance of a relief organisation may be influenced by the quality of staff recruited to assist the beneficiaries as well as how they are managed. Due to the urgency to respond, HRM problems usually begin with the recruitment of unskilled or unqualified staff. Thereafter, problems may increase over time if there is no staff orientation, inadequate training and supervision, and poor management of stress and conflict. Organisations that focus on achieving the mission's objectives without considering human resource needs such as staff development, health and welfare may experience a higher turnover of staff.

Relief organisations must learn to match their organisational needs with the needs of their human resources to improve operational performance. Because "**effectiveness**" (doing the right thing) of relief operations is often more highly valued than "**efficiency**" (doing things right), many relief organisations typically begin with a large workforce to quickly bring emergency situations under control. However, as the donor funding declines, there is increasing need to train, develop, and retain local staff who can run the operation in a more economic and efficient way.

Relief organisations should assist the host authorities and displaced community leaders in building their capacity to manage humanitarian emergencies, by providing opportunities for training and development. This will reduce long term dependence on expatriate staff whose primary role should be transferring essential skills for setting up and running relief projects (water and sanitation, trauma surgery, mental health, etc.). Having enough skilled staff locally will enable both the host and the displaced populations to cope better with future disasters.

HUMAN RESOURCE MANAGEMENT IN EMERGENCIES

Introduction

Human resources in relief operations usually comprise of **local staff** (all members recruited from within the host country) and **expatriate staff** (recruited from outside the country) who may work on contract or as **volunteers**.

1. **Local Staff**: Most relief workers are recruited from the beneficiary or host population. Even though local professional and para-professional staff may be available, they may not have enough experience or skills to run a relief operation with special emergency projects for displaced populations, e.g., search and rescue activities, selective feeding programs, prevention of sexual and gender violence, etc. Some professionals from the displaced population may have been considered "enemies" during the conflict and were killed. The professionals and para-professionals that survive the conflict (doctor, nurse, social worker, psychiatrist, etc.) and are available for recruitment may lack recognition or certification as a professional by the host country.

2. **Expatriate Staff**: Relief organisations have to recruit international professionals where the displaced or host population lacks professionals to set up or deliver essential services (medical, mental health, social services, etc.). However, expatriate staff may be unfamiliar with the culture of the host country and displaced population and keeping them over the long-term may not be cost-effective. Many expatriates have extensive experience and bring new skills from other emergency situations. In reality, they serve as program monitors or neutral parties during relief distribution to displaced people, particularly where there is conflict. The presence of expatriate staff may sometimes be the only guarantee that supplies (food,

medical) will actually be provided. Or sometimes, their presence makes high-ranking government officials more co-operative in giving support to the local staff. Thus, when the expatriate staff leave, critical supplies may cease to arrive or it may be more difficult to get any assistance from the authorities.

3. **Volunteers**: Voluntary service is a natural part of life in developing countries. Helping others in situations of distress or emergencies requires no particular motivation because it is a behaviour that comes with belonging to a family or community. Even though an organisation may recruit and pay many staff members, volunteers are the backbone of a relief operation. Volunteers may include community health workers (CHWs), representatives of the beneficiary population, Red Cross/Red Crescent volunteers from the host or displaced populations, or from local groups or NGOs. These volunteers offer voluntary service for various reasons, for example:

- to serve others and do useful work in the community
- to receive training
- to do challenging work
- to become involved in Red Cross/Red Crescent activities

The following table defines the key terms in human resource management.

Table 3-1: Terms and Definitions

Accountability	Being answerable to others for the results or performance of one's unit and the effectiveness of subordinates.
Authority	The right to make decisions and enforce them when necessary; limits of authority may be defined according to one's position.
Benefits	Non-pay rewards, e.g. vacations, sick leave, medical insurance, use of vehicles, pension, etc.
Conflict Resolution	Settling any disagreement or dispute that individuals or groups of people may have.
Counselling	Supporting a team member who is experiencing personal problems by providing a sympathetic ear and, where appropriate and possible, some advice.
Debriefing	A process by which information is obtained by management from those in the field. Field personnel contribute first-hand knowledge and provide management with important feedback.
Delegate	(verb): Transferring authority to a subordinate for a specific purpose.
	(noun): Expatriate staff recruited from outside the country by a Red Cross or Red Crescent Society. May be from neighbouring or distant locations.
Delegation	Transferring tasks and authority to a subordinate in order for the person who delegates to have more time for tasks only he/she can do and to build the capacity of the subordinate.
Disciplinary Action	Dealing effectively but fairly with workers who break rules or whose work is not up to standard.
Expatriate Staff	A person who has been recruited from outside his or her own country. May come from a neighbouring country or distant land.
Performance Evaluation	The process of assessing a staff member's conduct and performance, and by which his job description is regularly reviewed and if necessary updated. It includes giving feedback on the staff member's achievements, perceived strengths and weaknesses.
Human Resource Management	The mobilisation, motivation, development and deployment of human beings in and through work to achieve organisational goals. Defining the rules for optimal use of human resources to achieve organisational goals.
Incentive	Non-financial reward that a volunteer receives for performing a job. This includes getting recognition, training, promotion, etc.
Induction (Orientation)	The process of integrating new staff into an organisation. It includes welcome, introduction and briefing on the job description and expected benefits.
Job	A collection of tasks, with the role and responsibilities linked to a position in the organisation structure.

Job Analysis	Examining jobs in terms of the duties they fulfil, the results they are expected to achieve, the major tasks involved, and relationship to other jobs in the organisation structure.
Job Description	Simple statement showing the job title, terms of services, relation to other workers and the key responsibilities and duties to be carried out. Job descriptions are products of job analysis.
Leader	The readily identifiable person in charge of a working team.
Local Staff	• All personnel recruited and hired "in-country", nationals or otherwise, and issued with a fixed-term contract. • Occasional or "casual" labour – hired temporarily for short-term jobs (e.g., to unload trucks). Should respect local laws and customs and include accident insurance. • Volunteers (see below)
Misconduct	Breaking any formally prescribed rules and regulations.
Motivation	The feelings inside a person based on their wants or needs that makes them want to do something.
Organisational Chart	A chart showing functions of individuals and lines of authority and communication within an organisation or office.
Organisational Structure	Formal defined relations between people who work together.
Recruitment	Searching for and choosing the best-qualified workers for particular posts.
Responsibility	A task or duty for which one is answerable.
Salary	Regular payment for job grades within a hierarchy of jobs; includes associated benefits.
Staff Development	Helping staff to improve their skills and qualifications in order to improve the quality of services and to prepare staff to move on to posts of greater responsibility, should opportunities arise.
Supervision	Ensuring that task are carried out, that workers can always get help when they need it and that high standards of work are maintained.
Team	A group of people who communicate and work together to achieve a common goal.
Volunteers	People who offer services without any material or financial compensation, but may sometimes receive an allowance or have their expenses paid.
Wage	Weekly or hourly payment for performing a job in terms of time worked or by resulting output.
Welfare	Taking care of all other needs of employees, either as individuals (sickness, bereavement, domestic or employment problem) or a group (staff transport, canteen services, recreation, etc.)

HRM Problems in Emergencies

Relief work can be very trying, often resulting in a high turnover of staff. The following HRM problems are commonly observed in relief operations:

a. **Difficulty in Planning**: In many disasters, it is difficult to predict the long term health care and human resource needs due to lack of reliable information about the size of the affected population, the future of the operation, and the availability of funding. WHO currently suggests the following general guidelines for emergency requirements for a refugee camp: 60 staff per 10,000 population to cover vaccinations, growth monitoring, ante-natal clinics, assisted delivery, OPD consultation and treatments, registry and clerical duties.

b. **Inadequate Local Capacity**: Professionals from among the beneficiary population may have fled to developed countries or they may have been victimised and killed during the conflict. Professionals among the host population may be too few or they may lack support from the national HQ. Local staff in the latter situation may deliver poor quality services due to low motivation from unpaid wages, lack of tools, lack of supervision, no training opportunities, no recognition for achievements, insecurity, etc.

c. **Unprofessional Recruitment Procedures:** Lack of employment policies can make it difficult to regulate the recruitment of relief workers. Qualified local staff are usually secure at their jobs and few may be available for immediate employment. Due to the urgency of the relief response, local (and refugee) staff are recruited based on their availability, rather than qualifications, skills, and experience. In addition, relief agencies may be under political pressure to recruit poorly performing or unqualified local staff. Thus, relief managers in the first two weeks may find it necessary to recruit staff from other countries or offer very high salaries to attract the qualified local staff, which often cripple local services.

d. **Unsuitable Expatriate Staff**: International staff recruitment may be strongly influenced by donor funding conditions. Some expatriate staff do not understand the importance of following the national protocols. They may refuse to have their medical qualifications checked and registered by the host country. Some may consider relief work as a sightseeing trip, an escape from home, an adventure or evangelical opportunity, with little concern for cultural sensitivity for the population or organisation that they are serving. Expatriate staff with such misplaced motivations are immediately recognised by the affected community and local staff.

e. **Different Terms for International and Local Staff**: Expatriate staff are usually better paid than local staff, with benefits of accident and medical insurance, and enjoy greater HQ support. Local staff may be hired on lower terms (even for counterpart positions), may lack insurance, and face greater job uncertainty at the end of the mission. Due to these realities, the motivation of the international staff may be rather different from that of the local and refugee staff; yet they must all work together as a team. Relief agencies have come to accept high local staff turnover as inevitable, despite the obvious management problems.

f. **Poor Work Assignment and Motivation**: Due to poor HRM policies, political interference, poor program design (e.g., no primary health care approach), highly skilled staff may be wasted doing tasks that can be done by people with less skills or training. On the other hand, unqualified staff may be expected to perform tasks they have not been trained to do. Being under-qualified for the job can make staff feel overwhelmed. In other situations, workers may get bored doing tasks they have mastered, yet they are not given recognition or additional responsibilities to challenge them.

g. **Lack of Supervision**: Supervisors may be unskilled, overburdened with administrative duties (reports, meetings, etc.) or fail to delegate responsibilities. As a result, they cannot support their staff in terms of job orientation, training, evaluating performance, etc.

h. **Lack of Career Development or Professional Growth**: Humanitarian organisations may close down a relief operation after a short time or hand it over to local organisations. They offer very few senior positions that are filled as and when they arise rather than to support any individual's career development. In addition, disaster relief certificates given by some agencies for good service, or for training may not be recognised by their national government or other institutions.

i. **Unwelcome Program Changes**: Excessive recruitment of aid workers to run a relief operations at the beginning can later prove costly and unsustainable when the donor funding declines. Implementing inevitable operational changes (e.g., premature down-sizing) can prove very traumatic for relief workers as well as the beneficiary population if they are not prepared to lose services or assume new responsibilities.

j. **Increased Security Risks**: Many relief workers operate in high risk situations and are exposed to high levels of violence and criminality. Some workers may create security risks for themselves and their colleagues by not respecting prescribed security rules and regulations, for example, by violating cultural norms or travelling without authorisation.

k. **Increased Stress**: Relief workers have to deal with the suffering of displaced people, overwork, poor health care and living conditions, exposure to unfamiliar disease threats (e.g. malaria, typhoid), and extended absence from their families. In addition, interpersonal conflicts may arise for various reasons, including cultural differences. Many organisations do not provide a way for staff to release stress or tension. As a result, they may be at increased risk of alcoholism, violence and HIV/AIDS. Staff that suffer burnout from chronic stress may simply be discharged from the operation.

l. **Inadequate Support from Headquarters**: Lack of support from agency headquarters can be expressed in various ways, e.g. poor orientation, no job descriptions, delayed contracts and salaries (mainly for new staff whose names may take a while to appear on the payroll), lack of essential supplies. In addition, due to lack of concern about the stressful working conditions, the headquarters may conduct inadequate debriefing for field staff completing their assignment.

To reduce the high staff turnover due to HRM problems, relief organisations need to improve how they manage their staff. The rest of this chapter discusses how the above HRM problems can be addressed.

HUMAN RESOURCE MANAGEMENT CONCEPTS

Human Resource Management (formerly called Personnel Management) may be defined as:

> *The mobilisation, motivation, development and deployment of human beings in and through work to achieve organisational goals; where humans are not mere inputs of production but living, feeling, thinking beings who seek satisfaction from their work.*

Human and Professional Needs of Employees

In relief operations, "**effectiveness**" (doing the right thing) of relief operations is often more highly valued than "**efficiency**" (doing things right). As a result, many relief organisations typically recruit a large workforce in order to quickly bring emergency situations under control. However, as the donor funding declines, there is increasing need to meet the priority needs of the beneficiaries in a more efficient way.

To improve operational performance, relief organisations have to recruit and develop the right number of staff with the right skills from the beginning. More importantly, organisations need to improve how they manage their human resources. They need to understand their employees' human and professional needs as well as ensure that the priorities of relief workers do not differ from the organisational needs. Human and professional needs of human resources are described below:

Human Needs

All employees have human needs that exist at different levels, as follows :
*   *Physiologic needs* that sustain life: food, shelter, water
*   *Safety and security needs*: the job should be free from harm and provide a sense of security
*   *Belonging needs*: employees need to belong to a group or team
*   *Esteem needs*: employees need to be appreciated, recognised, valued
*   *Self-actualisation needs* for setting and achieving personal goals and being creative

The above-listed human needs are drawn from Maslow's hierarchy of needs. For more details on Maslow's hierarchy of needs, please see the *Mental Health* chapter.)

Professional Needs

- Clear work objectives and responsibilities
- Capable leadership that can be respected and admired
- Work incentives (not necessarily monetary)
- Opportunity for self-improvement
- Opportunity for promotion and increased responsibility
- Support and interest from superiors
- Degree of independence to set goals and determine direction
- Good work environment
- Assurance that others are doing their fair share of the work
- Fair treatment relative to others
- Respect for individual religious, moral, and political beliefs

Human Resources Management Functions

Human resource management is not only concerned with recruitment of qualified relief workers. How they are supported by the organisation's headquarters and managed by relief managers at the relief operations level can greatly influence the overall performance of a relief program. HRM functions may be defined at two levels:

1. **Headquarters Function**: In relief organisations, management of human resource usually begins at a manpower office based at the *headquarters level.* The role of the manpower office is to develop HRM policies for the mission that are credible, honest, and fair. In this way, it helps relief workers meet expected standards of performance. The following table defines the key HRM functions at the headquarters level:

   Table 3-2: The Key Human Resource Management Functions at Headquarters Level

   **Key HRM Functions
   (at the Headquarters Level)**

   - Defining employment policy: job descriptions, recruitment qualifications & contract conditions based on the HRM needs, the mission and other stakeholders (e.g. host govt.)
   - Recruiting and selecting staff (local and international) through the following means:
     - local contacts, advertisements, national databases etc.
     - screening applicants, selection,
     - standardising contract conditions, grading, salaries and benefits, etc.
   - Orienting new staff to the organisational structure, job description, relief operation, terms of contract, local culture, etc.
   - Ensuring best possible preparation of staff for working in an unfamiliar environment
   - Training operations managers on supervision, counselling, performance evaluation, etc.
   - Making staff assignments, encouraging team building, motivation (reward, punishment)
   - Defining guidelines for good HRM practices (supervision, performance evaluation, etc.)
   - Defining opportunities for promotion and staff development
   - Establishing disciplinary procedures for poor performance and misconduct
   - Defining procedures for managing change and conflict
   - Defining rules and regulations for staff security, health and welfare, etc.
   - Defining procedures for termination of contract, retirement, death, etc.
   - Maintain a human resources information system on staff recruitment and development

2. **Relief Operations Function**: Managing human resources is more critical at the *operations level* since poor management of human resources can be the single biggest source of problems. The proper management of human resources is the key to managing relief activities. It may demand as much as 90% of the supervisors' time. The table below describes the HRM functions at the relief operations level:

Table 3-3: Key Human Resource Management Functions at the Operations Level

Key HRM Functions **(at the Relief Operations Level)**
• Assessing human resource needs and reporting to headquarters • Revising job descriptions and organisational structure at the project level as situations change • Providing good leadership and building effective teams • Providing basic skills training and promoting cross-cultural sensitivity • Carrying out supervision and performance evaluation • Increasing staff motivation and staff development • Preventing and resolving conflict and managing change • Implementing disciplinary actions, when necessary • Updating staff about security evacuation measures and enforcing security measures • Addressing staff welfare, counselling, etc.

Note: *This chapter will focus largely on human resource management at the relief operations level.*

LEADERSHIP, TEAM BUILDING, AND MOTIVATION

To improve HRM in relief operations all managers and supervisors should be trained in **leadership**, **team building** and **motivation**.

Leadership

> *"Leadership is the art of getting someone else to do something **you** want done because **he** wants to do it."*
> — *Dwight D Eisenhower*

Some people seem to be born leaders. Others apply for senior positions in order to become leaders. However, true leadership is not always the same as having a title. Any manager or supervisor who is directly responsible for the performance of other members of staff needs to understand the art of leadership. Leadership is about teamwork and building teams. Teams need leaders and leaders tend to have teams.

Leaders should understand that they are not expected to know all the answers or do all the work. They often serve as role models through their commitment, discipline, and personal conduct. Even though team members may have different personalities and culture, they all expect the following qualities in a team leader:

- a sense of vision and purpose
- integrity and honesty
- enthusiasm and commitment
- trust, encouragement, and support for team members
- management competence
- decisiveness where necessary

Note: *In some cultures, the ability of the leader to influence higher authority and thus protect group members may be an essential quality.*

Leaders may use different leadership styles, according to the situation and ability of their team members. A leader could be:

- *Authoritarian* — during times of danger (war, fire, accidents), when saving lives comes first

- *Consultative* — a new team needs an experienced leader

- *Supportive* — in order to build an "enabling" work environment for team members to work effectively

Good leaders value their subordinates and avoid showing favouritism. They provide direction when needed but look for opportunities to transfer responsibility to others. They actively seek out team members to participate in decision-making and encourage them to express their opinions. In addition to being accountable for their staff's use of resources and reporting, good leaders maintain their staff's health and welfare by recognising when people are overburdened and acting to reduce over-commitment.

In summary, good leaders must be able to do the following:
- Function effectively within the limits of their responsibility and control
- Understand the scope of their work
- Understand their staff members and provide adequate support to them
- Allocate and delegate work fairly, according to individual skills and work preferences
- Carry out performance evaluations
- Be accessible for communication and consultation
- Develop effective conflict resolution skills

Team Building

> *A team is a group of people who share the same vision or purpose and are committed to achieving a common goal.*

Every relief worker (local and expatriate staff and volunteers) may receive individual mission instructions before joining other group members. However, the overall purpose of the team may be unclear. To transform individual staff members with varying perceptions and needs (including their welfare, security, and personal development needs) into a motivated team is one of the key challenges facing relief managers.

Team building demands special qualities in team leaders. Much more is expected from team leaders than from technical supervisors overseeing specific tasks of a job. In addition to having enough drive to get the job done, the team leader needs to be able to look at people with a "co-ordinator/shaper" view and also be attuned to listening to his or her staff. The ultimate goal of a team (i.e., providing services to the beneficiaries) may be achieved through the following approach:

1. **Set Up a Work Structure:** Involve team members to establish a common purpose and broad strategy for the coming months. Make sure every member understands and is committed to the purpose and strategy. As a team, define the functions the team needs to carry out, and then the role and responsibilities of each team member, distributing the work load fairly. This will build team commitment and reduce future misunderstandings and feelings of professional insecurity.

2. **Develop Appropriate Working Methods:** Even though working methods will depend on the leadership style, they should be acceptable to all team members. Leaders should organise various meetings and ensure everyone participates and is integrated into the team. For example, regular information-sharing and co-ordination meetings may be held for the whole team and more frequent problem-solving meetings for those who are directly involved. By bringing team members together to address pending problems and new challenges, meetings serve as an excellent method for team building and should be considered a good indicator of a team's working methods.

3. **Build a Good Working Climate and Relationships:** Even though the working climate depends on the individuals, the leader can set the tone of the team by listening carefully to team members' opinions, showing trust, encouraging, coaching, and delegating. Social activities during and after working hours are essential for establishing a relaxed, friendly, and co-operative atmosphere in which team members are able to speak openly and honestly about their ideas and feelings.

In conclusion, to achieve joint goals, teams require good leadership and good teamwork. It is important for the team members to feel that their leader is accessible, listens to their concerns, and shows respect for their contributions and ideas. Provided the whole team is taken through a goal-objective-action planning experience of creating mutually understood and agreed "milestones," great improvement in team performance can be expected with high levels of motivation. However, major problems can arise if an individual team member or the team leader is not fulfilling his or her responsibilities. There are many tips on how team leaders and members can build good working relationships, as shown in the table below:

Table 3-4: Tips for Team Leaders and Members

Tips for a Leader	Tips for a Team Member
- Be transparent - Be a good listener - Respect everyone's contribution - Delegate responsibilities - Recognise work done by others - Be decisive when necessary: - Lead by example (what you do rather than what you say) - Be proactive in dealing with conflicts - Look after the team at work and outside - Do not overwork yourself - Do not spend all the time in the office	- Be transparent - Be flexible and prepared to learn from others - Do not blame or criticise others - Understand your individual responsibilities, and ask the team leader for more when ready - Help integrate newcomers to the team - Respect differences among individuals (unless it interferes with your work) - Do not make quick judgements - Share information, ideas and experience with others - Support colleagues, especially the team leader - Discuss problems with other members or the team leader early and directly

Motivation and Staff Development

> *The best way to motivate an employee is to give him or her challenging work in which he or she can assume responsibility.*

As team members become more efficient in the tasks they were employed to do, they will need less support. Their team leader will simply need to periodically monitor how work is progressing, introduce the required changes and evaluate staff performance when necessary. However, these team members may gradually become dissatisfied with the monotony of their job.

The challenge for relief organisations is to motivate these skilled workers to remain with the operation rather than leave in pursuit of their personal goals. It is possible to increase motivation of over-qualified or over-capable team members even if the organisation does not have the capacity to increase salaries and benefits, or give promotions. For example, encouraging the practice of recognising work that has been done well and involving team members in decision-making on future activities of the team can greatly increase job satisfaction.

Jobs can be made more interesting by building the skills and experience of the team members in the following ways:

- Giving team members opportunities to act as chairperson during the regular team meetings.

- Improving communication and information sharing between teams from different sectors.

- Systematically transferring or rotating staff to different positions so that each one understands the overall work and demands on others.

- Giving team members special short-term assignments, with or without their routine work.

- Transferring additional tasks and responsibilities to subordinates according to their experience, ability, and preferences (**delegating**).

- Developing a team member with exceptional potential as an "*acting*" stand-in for future supervisory positions or as a "*counterpart*" to an international staff.

- Arranging for team members to attend training courses (within the organisation or external).
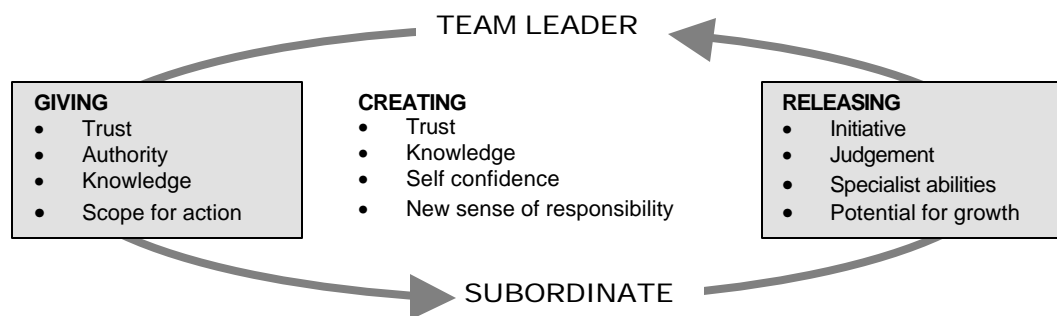

Two effective ways of motivating and retaining staff in relief operations are discussed in detail below:

1. Delegating

> *A team leader is under constant pressure and cannot do everything. The more one transfers, the more time one has for more important tasks.*

Delegation may be defined as transferring tasks to a subordinate and giving him or her the authority and resources to get the job done. Although it is essential for building the capacity of the subordinate, delegation should be done gradually and must be supported with on-the job coaching. This will motivate team members to perceive their personal expectations to be in line with the mission objectives. The Figure below illustrates the process and outcome of delegating.

Figure 3-1: The Process of Delegating

GIVING
- Trust
- Authority
- Knowledge
- Scope for action

CREATING
- Trust
- Knowledge
- Self confidence
- New sense of responsibility

RELEASING
- Initiative
- Judgement
- Specialist abilities
- Potential for growth

TEAM LEADER

SUBORDINATE

Note: *Even after delegating and giving the subordinate enough authority and resources for action, the ultimate responsibility for completing the tasks still remains with the team leader.*

2. Training

Relief organisations should build good relations with local educational and training institutions, community leaders and donors that can support the training and development of non-professional relief workers. Team leaders are responsible for identifying the additional skills that team members need to enable them to perform a job to required standards. A simple model can be used to identify gaps in team member's skills, knowledge, and information that can be filled through training.

Figure 3-2: Possible Skills Gap for Jobs that May Require Training
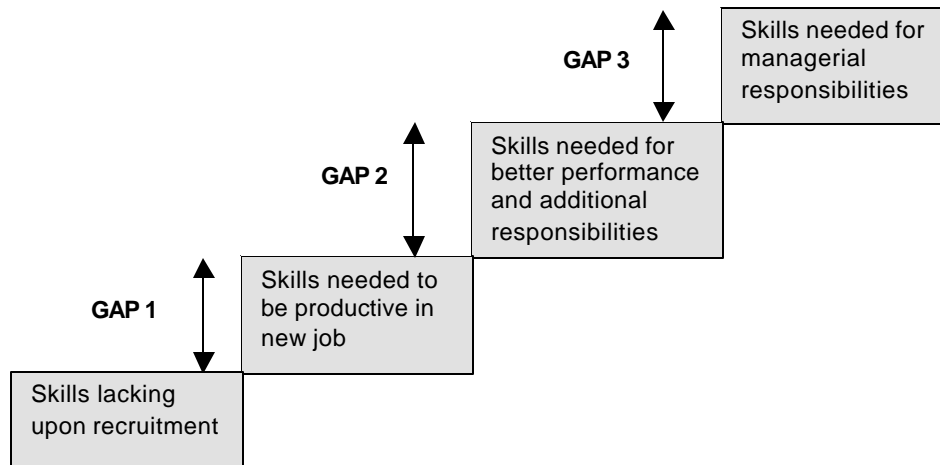
In the above exhibit the existing skills of a team member are regularly compared with those needed for a new job or for additional responsibilities. The first training gap (*Gap 1*) should be addressed immediately after recruiting new staff and may involve training in radio communication, report writing, team building, etc. Thereafter, informal and formal performance evaluations can help in identifying training and development needs of each team member as well as identify individuals with capacity for handling additional responsibilities (*Gap 2*). Through ongoing performance review and feedback, the manager can determine from among the most experienced, the skills that staff members with exceptional abilities require for big promotions or job changes (*Gap 3*).

Note: *It is not enough to provide training just for the sake of doing it. To ensure the training is effective, it should be matched to organisation's and employees' needs. In addition, opportunities should be provided for newly-trained staff to practice the skills and knowledge they have learned. Informal review sessions with the staff can help a manager to determine the long-term impact of training on staff performance.*

SUPERVISION AND PERFORMANCE EVALUATION

Supervision

> *Supervision is a management function that may be defined as ensuring that tasks are carried out, and providing workers with enough support to achieve prescribed standards.*

The goal of supervision is to create a work environment in which all team members (international and local) are motivated to improve their skills and performance. Supervision includes the initial staff briefing, assignment of work and evaluation to maintain agreed performance standards. It is also a helping function, which includes ensuring all the necessary resources are available, identifying problem areas and training gaps, and taking appropriate action. Supervision may sometimes demand some form of disciplinary action, such as a warning or punishment to handle poor performance of misconduct.

The following table summarises the various functions of supervision:

Table 3-5: Functions of a Supervisor

Function	Description
Induction	• To orient new staff to the organisational structure and other workers • To advise workers about the objectives of work to be done, their role, etc.
Assignment and Work Planning	• To plan the work of the unit • To allocate work to individuals
Ongoing Support	• To provide leadership • To coach, help and encourage workers to do their work properly • To facilitate problem-solving among teams • To teach and build skills in order to improve working methods • To supply resources and information as needed to help workers to achieve set targets
Evaluation	• To check that the work is done according to set standards • To assess the need for further training the workers • To give timely feedback (positive and negative) on performance to each worker • To report regularly to the manager about needs and difficulties
Discipline and Grievance	• To ensure a good working climate • To settle disputes and grievances among workers quickly • To deal effectively with workers who break rules or whose work is not up to standard

Supervision requires giving someone the authority to ensure that work is carried out and that workers get the support they need to maintain high standards of performance. In relief operations, most supervisors are generally workers who were promoted because of continuous satisfactory technical performance. However, new supervisors may face many problems as they attempt to supervise their teams, such as:

- **Inadequate preparation for supervisory role:** poor supervisory skills, no recognition from workers, not relieved of other time-consuming duties.

- **Inadequate support for role:** managers not available for advice, no access to resources (e.g. transport).

- **Lack of supervisory tools:** no instructions, protocols or standards, no rules and regulations.

- **Poor selection of supervisor:** even though the worker was technically competent in the former position, he/she may lack interpersonal skills or problem-solving capacity to be a good supervisor.

Field supervisors need adequate support from their own "supervisors" (relief managers) in terms of coaching, recognition for satisfactory performance, authority to mobilise resources and involvement in decision-making. Managers should regularly visit their field supervisors and be ready to assist when necessary. Field supervisors will become confident in making decisions if they know they have their manager's trust and backing.

Induction

Induction is defined as the process of orientating and integrating newcomers into a relief operation. It includes a welcome, an introduction, and a briefing.

The goal of induction is to ensure that new staff settle into their job and become productive as soon as possible. Every new staff member should be briefed on what he or she is hired to do in terms of the area of responsibility, the people he or she is accountable to, etc. They must be well advised about how the emergency situation came about, the expected future evolution, as well as the security conditions, and the cross-cultural issues surrounding the emergency setting. The terms of service should be clarified (whether they will be paid wages, salary or other incentives, depending on one's position), including benefits at termination of employment.

The following table gives an outline of the discussion during the induction:

Table 3-6: Outline for Induction Discussion

- Organisation/unit/section
- Job title & purpose
- Qualifications & experience
- Reporting to … and responsible for …
- Main tasks of the job
- Other relationships
- Methods of evaluation
- Terms of service & working conditions
- Termination of employment
- Date for revision of job description

The new member should be encouraged to discuss his or her expectations with the supervisor, e.g., status of the job, opportunities for promotion, training or transfers, etc. Sometimes the nature of the job may change, or the staff member's skill and experience may not exactly fit with the job they are hired for. In such situations, the job description may require "fine tuning," which can begin during the induction. Revisions in the job description should be discussed with every person who may be directly affected. The job description should also be reviewed during performance evaluations *(see Performance Evaluation)*.

How well the new member is orientated and integrated into the relief operation will leave lasting impressions in terms of how he or she is valued. Poor induction of newcomers can leave them unable to relate to the culture of the organisation or beneficiaries. This may later lead to job dissatisfaction, which can affect the overall team performance.

Note: *The induction of staff transferred to other units within the relief organisations, though much simpler, is essential for quick understanding of the objectives and working methods of the new unit and their new roles and responsibilities.*

Assignment and Work Planning

> *Many tensions and misunderstandings occur between staff because of one simple reason: being unclear about **who** is doing **what**, i.e., poor organisation.*

Even though formal orientation and work planning is essential, the INFORMAL organisation of the team is more important and often conflicts significantly with what is formally expected. This is the real challenge for relief managers. When one begins working with a team, it is useful to first review how it is organised to ensure that it serves the team's ultimate purpose — providing services to beneficiaries. The basic steps to follow are listed below:

1. Identify (and re-identify) the activities to be carried out by the team in order to deliver services effectively.

2. Assign (or re-assign) responsibilities and workload fairly between team members.

3. Prepare an organisational chart based on the team functions.

4. Ask each individual to prepare an individual work plan, which identifies specific tasks and time frames, based on the job description.

5. Give support to each team member.

Planning an overall work strategy for the team can help every team member to understand his or her individual role and relation to other team members. The team leader must be aware of the different roles that members may assume in the team (e.g., organisers, explorers, advisers, controllers, etc.) in order to assign workload and responsibilities according to individual preferences. It is important to discuss with each staff

member their work plan and the criteria for measuring performance. Work plans should be shared with other members of the team in order to integrate individual members (expatriate, refugees, and local) into the team.

Throughout the mission, the team leader needs to informally question each staff member about how work is progressing, what help is needed to build one's personal capacity, and how results can be achieved or even improved with better support. Thus the team leader adopts, from the initial briefing, a "helping/supporting" role which includes on-the-job coaching, providing technical guidelines, information and advice.

Performance Evaluation

> *The most important role of supervisors is to help team members by monitoring their work and giving them feedback in order to improve the performance of individual members and the team.*

The goal of evaluation is to review and give feedback to staff on their conduct and performance in order to encourage improvement in performance and personal development. Evaluation is a process that begins from the first day of joining the relief operation and continues beyond the probationary period. It may facilitate promotion, job re-assignment or secure a future job in the organisation. The extent to which evaluation is carried out is a key indicator of a manager's HRM skills.

Performance evaluation in relief operations may be carried out formally or informally, as follows:

- **Ongoing evaluation** is a continuing process of the manager giving regular and constructive feedback to staff, to help them achieve higher performance and reward.

- **Periodic evaluations** are informal but highly recommended. They may first be carried out after the *probation period* and then every 3-6 months, depending on a staff member's position and length of contract.

- **Interim evaluations** are formal and may be scheduled, e.g., carried out either annually or whenever an extension of a contract is being considered, when a long-term supervisor is leaving, or following *extraordinary circumstances* (e.g., disciplinary action).

- **Final evaluations** represent judgements on a staff member's performance and capacity. They can be used to decide on recruitment for future assignments.

Two evaluators are ideal for evaluating a staff member's conduct and performance. They must discuss the outcome of their evaluation with the concerned member. The opinion of the concerned member must be incorporated into the performance evaluation report before sending it to HQ. The evaluation must not focus merely on technical competence, but more importantly on qualities that are essential for the overall operational performance, such as the following:

- Interpersonal skills in a cross-cultural environment
- Support in transferring skills
- Contribution to the working climate and team capacity

Although formal evaluation policies may exist in each organisation, they may differ from the informal realities. Evaluations may follow guidelines, which may be in the form of a checklist of required skills and the potential for training. Each staff member needs to be evaluated according to his or her job description and/or tasks given.

The table below describes the "Seven Golden Rules" to be observed in any type of evaluation.

Table 3-7: Golden Rules of Evaluation

7 Golden Rules of Evaluation
1. Listen: perceptions may not match reality
2. Be fair: apply correct emphasis
3. Be objective: put aside any prejudices
4. Be balanced: highlight strengths *and* weakness
5. Focus on specifics, not personality
6. Be constructive: offer alternatives, advice, etc.
7. Allow time for a fair hearing

Disciplinary Action

Disciplinary action is an established set of procedures for dealing effectively but fairly with workers whose work is not up to standard (*unsatisfactory performance*) or who break rules (*misconduct* or *gross misconduct*). The goal of taking disciplinary action against a staff member is to seek improvement in performance or conduct when it cannot be achieved through informal discussions and mutual understanding. Disciplinary action should not be used in cases where the team member has been given a job for which he or she does not have the required skills. On recruitment, every staff member should be given a written code of conduct, an explanation of the organisation's expectations, and consequences for not following the written code. Only then can disciplinary action be taken against a staff member as a result of unsatisfactory performance, misconduct or gross misconduct. See the appendix for details on taking disciplinary action.

Note: *Effecting disciplinary action may be difficult where team members are selected for their high personal competence, independence and initiative for handling crisis.*

Unsatisfactory Performance

Unsatisfactory performance can best be characterised by the following:

- Objectives not achieved.

- Tasks not completed.

- Poor quality results.

It is rare for staff member's performance to become unsatisfactory overnight. Poor performance more often results from *organisational* causes (e.g., poor job assignment, inadequate training and support, unrealistic expectations) than *personal* ones (e.g., unsuitable for the job, laziness, family problems). Managers should always strive to address performance problems early. Friendly, non-threatening communication about the recent change in performance is often enough to right the situation. It is more economical to retain the employee than dismiss him or her and then try to find a replacement. If unsatisfactory performance results from organisational causes, these causes should be tackled promptly. Options include redefining the job or performance criteria, transferring tasks or responsibility to other members, or providing training and more support. Thereafter, the staff member's performance should be monitored to ensure that no further disciplinary action is necessary.

Continuing unsatisfactory performance despite adequate managerial support can be annoying to other workers and costly to the mission. Costs of unsatisfactory performance include decreased productivity and effectiveness of the team, monopoly of the manager's time and more work for other members of the team to produce the expected amount of work. Where the team member has the ability to bring about positive change, and the problem persists, formal disciplinary procedures may be necessary (documentation, warnings, suspension, and final dismissal). It is particularly important to document every disciplinary action that is taken when dealing with potentially difficult employees.

Misconduct

Sometimes, a relief worker may act or behave badly, in terms of set standards or the law. Certain actions may produce serious consequences, and therefore be declared as **misconduct** or **gross misconduct**. Consequences of misconduct (or gross misconduct) may include damage to the reputation of the organisation and political or security problems. A team leader must initiate disciplinary action against any team member who commits an action that qualifies as misconduct or gross misconduct.

The following table shows examples of acts that commonly qualify as misconduct or gross misconduct:

Table 3-8: Defining Misconduct and Gross Misconduct

Wrong acts that qualify as MISCONDUCT	Wrong acts that qualify as GROSS MISCONDUCT
• Failure to follow locally set procedures/policies • Unauthorised absence from work* • Disobeying instructions of the team leader • Improper behaviour while off duty • Sexual, moral, and racial harassment* • Disrespect toward local staff or local customs	• Disobeying security regulations • Working while under the influence of alcohol/drugs • Theft of the organisation's property • Violence against colleagues or the local population • Involvement in criminal and illegal activities • Carrying and storing weapons or other items of war • Blatant violations of organisation's principles/rules of conduct/formal agreement with host government

* If very serious, this act may be considered as gross misconduct.

Note: *Staff members may commit other wrong acts that are not included in the above table which have or might produce serious consequences. The seriousness of the consequences will determine whether these acts qualify as misconduct or gross misconduct, and disciplinary action should be taken accordingly.*

Reducing the Need for Disciplinary Action

The need for taking disciplinary action can be minimised by the following measures:

- Carefully recruiting and selecting relief workers.

- Identifying problems of performance or conduct early.

- Establishing procedures for expressing and addressing grievances.

- Maintaining regular and open communications with all staff and stakeholders.

- Making team members aware of their rights and obligations.

Responsibility Toward Supervision and Evaluation

HRM functions for improving supervision, evaluation, and disciplinary action can be divided in two levels:

Responsibility of Headquarters

Headquarters can build the capacity of field managers by:

- Setting up a functional organisational chart, defining job descriptions and supervision methods.

- Standardising procedures for staff recruitment, deployment, briefing, introduction and initial motivation for new team members.

- Regulating how each team should be evaluated both during and at the end of the mission, and debriefing individual staff at the end of the mission.

- Establishing formal procedures for disciplinary action and for ending a contract, which are consistent with organisational policies.

Responsibility of Relief Managers

Relief managers can effectively help all relief workers meet the desired standards of performance. They should clarify important HRM policies and procedures to minimise differences between the formal rules and the informal realities as follows:

a. Defining the formal organisational chart and regularly revising job descriptions to fit the changing HRM needs to achieve mission objectives.

b. Carrying out induction (orientation of work and operation) for new staff members.

c. Supervising staff, which includes introducing new staff, planning the work, assigning tasks, supporting the team, measuring performance, and controlling discipline and grievances.

d. Training and developing staff for additional job demands and creating opportunities for staff to exploit new skills.

e. Managing the performance and capacity of the team through coaching, giving advice, etc.

f. Carrying out performance evaluations, which include giving feedback and reviewing job descriptions.

g. Reducing the need for disciplinary action when necessary, effecting disciplinary action against staff reported with unsatisfactory performance or misconduct, in accordance with the national labour practices.

MANAGING CHANGE AND CONFLICT RESOLUTION

Change in Relief Operations

Relief operations are subjected to many forces, both from within and outside the organisation. Therefore, change is inevitable. Internal forces include new programs, budget cuts, and staff turnover. An example of an external force is the increased demands from beneficiaries and donors. Because relief operations involve interaction between different units, change in one unit is likely to have an effect on other units within an organisation. Therefore, relief managers need to adopt a proactive and systematic approach when implementing change. This approach will address the potential needs and impact of the change on all units that are affected.

Defining Change

To define change the following questions should be answered:

*   Is this change necessary?
*   What benefits can be expected?
*   Are the expected benefits worth the effort?
*   Can others be convinced of the need for change?
*   Can the enthusiasm of others be sustained?
*   What's in it for others if they accept change?

Major problems within an operation should first be analysed to determine the key issues, i.e. whether it is structure, management style, staff or the system of working. This will help determine all the changes needed. A problem in one area can touch on the other areas. For example, lack of supervisory skills may affect the style of supervision and the system of working. This implies that more than one area may have to be changed to improve the overall performance of the organisation. Training of supervisors may be enhanced by providing opportunities to practice new skills and changing the organisational structure and system of working.

Thereafter a logical plan can be drawn for implementing the desired change. It may simply be a timetable of the necessary steps, which can be used to monitor the implementation of change. Resources for implementing change should also be identified where necessary, e.g., new equipment, training materials and instructors, termination benefits, etc.

Implementing Change and Managing Resistance

Organisational change does not only concern the managers. The needs and the potential impact of the change on all who may be affected should be considered. A leader must recognise that "personal needs and security" are everybody's first priority, regardless of what they say. People resist change mainly because they perceive their position, status, security, etc. to be threatened by change. Usually, most of them cannot express this feeling of insecurity clearly. As individuals and groups get older, they become inflexible and resist change particularly when change affects long-standing practices or introduces procedures that take longer to learn or carry out. As a result, the resistance to change becomes even stronger.

Implementing organisational change is complex, since attitudes of a "critical mass" of people first need to be changed. Everyone who will be significantly affected must be prepared for the change. Key representatives should be invited to participate from the beginning, in discussing the value or impact of change, as well as planning how to implement it. Thereafter, flexibility and empathy for the stakeholders must be exercised throughout the process of change.

Introduce change in small steps, beginning with those who usually do not resist change. Wait for these initial changes to be accepted before bringing more. Monitor how the change is resisted or accepted, and give the affected teams time to adapt. If after a reasonable period of time a few team members continue to reject change, change their physical location of work. Changing people's place of work so often helps them to modify their attitudes and allows them to adapt to and accept change more readily.

In summary, the following measures should be taken when implementing change to prevent or overcome resistance:

- Involve people in planning the changes that will affect them.
- Consider the feelings of people and the groups and cultures they belong to.
- Develop flexible attitudes.
- Attend to people's needs (human and professional).
- Use time and formality effectively.
- Continually test and evaluate feedback … and consider changing the locations of resistant staff .

Interpersonal Conflicts in Relief Operations

Conflict between individuals in a team is natural and healthy. In most cases, conflicts can provide an opportunity to bring issues into the open and lead to creative solutions. However, conflict escalates if it is ignored, or managed inappropriately, e.g. by suppression. This may result from weaknesses within an organisation or relief operation. Unless the team leader resolves it quickly by functioning as an informed mediator, team relationships can become strained and eventually interfere with their productivity.

Each individual and group knows that to survive and be effective, it must work through and with other groups. Inter-personal relationships are fostered by the norm of give and take — like a human resource bank account. Communication can fail when an individual or group refuses to provide favours for another. Interpersonal conflict can present itself as follows:

- *Between individuals* — two employees, or between a supervisor and an employee
- *Between groups* —— the management and the employees, or between different units
- *Between organisations* — between the organisation and the host authorities or the local leaders, or between two different relief organisations

Immediate Causes of Conflict

Conflicts are inevitable among people working in a complex environment. The combination of multicultural teams, stressful working and living conditions, and the uncertain future of relief work provide fertile ground for interpersonal conflict. Differences between individuals or groups that may trigger conflicts include:

- Competition for limited resources
- Contradicting priorities
- Favouritism in working conditions and schedules
- Overlapping areas of responsibility
- Friction over power, control or individual status
- Differences in personalities or salaries and benefits

Root Causes of Conflict

Conflicts that arise over outwardly minor issues may be symptoms of deeper problems, such as:

- Personal or family problems
- Ethnic or national tensions
- Jealousy (position or education)
- Interpersonal tensions
- Political or religious tensions

Conflict Resolution

When a disagreement or conflict gets to a stage where the team leader has to intervene, he or she should take time to prepare for the discussion. During the discussion team leaders should treat everyone with respect (even when they do not agree with them) and try to establish a relaxed non-confrontational atmosphere for problem-solving purposes. The following approach may be considered for resolving any disagreement or conflict:[i]

1. **Separate the people from the problem**.
   Before discussing the issues with the "warring parties," gather all available information in order to understand the causes of conflict and each side's perception and emotions. During the discussion, focus on the issues, not personality differences.

2. **Focus on interests not problems.**
   Before the discussion, try to identify any unspoken interests and needs that led to the conflict. These interests may be multiple and will usually include basic human needs, e.g., economic well-being, recognition, control over one's life, a sense of belonging or security. During the discussion, try to get each side to talk openly about his or her needs and interests. It is important to acknowledge and discuss the interests of both sides.

3. **Invent options for mutual gain.**
   During the discussion, present options rather than demands. Assess the opposing side's interests and needs and see if there is a package of solutions that would meet the interests of both sides, or at least in part by trying the following:

   - brainstorming for alternatives
   - identifying shared interests
   - determining preferences to establish mutual gain

4. **Use objective criteria to negotiate a settlement**.
Even though organisational standards may exist, independent standards may be required when several parties or people with difficult personalities are involved, e.g. *fairness*, *efficiency, scientific merit*.

5. **Consider alternative ways**.
There are various ways of reaching a settlement, e.g., negotiating a logical solution on its merit, asking questions that may help the two sides to understand each other better, emphasising the areas of agreement or common ground, etc. Whichever way is adopted, it should aim at reaching a satisfactory outcome for both parties as efficiently and amicably as possible.

The key to resolving interpersonal conflicts is timely intervention so minor problems (peanuts) do not grow into major issues (coconuts). Thereafter, conflict resolution should include identifying all underlying causes. If these causes are not addressed, the conflict is likely to continue or re-emerge in the future.

Note: *Conflict within and between delegations and other disaster agencies is a more critical issue that calls for negotiation between more senior people, e.g., involving the Lead Agency or the overall Disaster Co-ordinating Committee.*

Preventing Conflict

Following is a summary of the measures that a team leader can take to *prevent* or minimise conflict:

1. **Build and maintain a sense of team identity by:**
   - Defining team priorities and objectives with the team.
   - Clarifying job descriptions and sharing individual responsibilities.
   - Creating a work environment that promotes fairness.
   - Encouraging shared values.

2. **Know your team in order to proactively manage personality conflicts by:**
   - Understanding the personnel dynamics within the team.

3. **Establish effective communication in order to minimise potential conflict by:**
   - Keeping lines of communication open. Be sure information flows up as well as down.
   - Being accessible for private discussion (including sensitive issues) with individual members.

4. **Provide a service/forum for conflict resolution and stress management by:**
   - Being available to the team as a mediator/facilitator.
   - Providing an escape from tension and stress (meetings, social events, sports) for the entire team as well as for individual members.
   - Providing access to professional resources for staff with severe stress.

5. **Address conflict as soon as it arises by:**
   - Actively seeking to reduce tensions between parties.
   - Insisting that parties keep disputes as far as possible from work.
   - Minimising contact between "warring parties."
   - Being prepared to make changes in work locations, jobs and relationships to prevent further conflict.
   - Never taking sides.
   - Avoiding any discussion of the conflict with third parties.

Responsibility Toward Managing Change and Conflicts

Human resource management functions for managing change and interpersonal conflicts can be divided as follows:

Responsibility of Headquarters

Headquarters can strengthen the capacity of field managers as follows:

1. Recruiting and selecting *teams* (people who can work together rather than groups of competent individualists) as the basic unit of work performance.
2. Selecting the right team leaders is critical.
3. Ensuring all team members have been well oriented and have adequate support, in order to minimise the potential for conflict in the team.

Responsibility of Relief Managers

Effective management of change and conflict requires ongoing team-building efforts. The team leader and members should adopt a problem-solving approach when faced with problems. The following table lists a few questions for the team to discuss:

Table 3-9: Questions for Team Discussion

Team Problem-Solving Enquiries for Defining Problems	Team Approach to Defining Solutions to Problems
• What appears to be the problem? • Is it professional or personal? • Is it a "peanut" (little problem) or a "coconut" (big problem)? • What do we know about the situation? • Any EI (Emotional Investment)? • What are the immediate causes? • Any personality problem? • What are the underlying problems?	• What is the objective? • What are seven possible solutions? • What is the most promising combination of solutions? • How shall we implement it? • How shall we evaluate the degree of success?

Individual Responsibility

Team leaders should help their team members to understand that the working atmosphere cannot always be perfect and encourage them to help reduce conflict through the following ways:

- Listening to other people's point of view.
- Accepting the fact that one cannot always be right; and that one cannot always win.
- Learning how to disagree and to put one's point of view in an assertive way without getting too emotionally involved or attacking the other person.
- Raising issues early so that minor disagreements do not grow into massive problems.
- Using humour or taking short breaks when things get heated.

STAFF SECURITY IN EMERGENCIES

Security risks are generally more frequent during complex emergencies than in non-emergency situations. Although the degree of risk will vary from country to country, security incidents can occur in all relief operations, sometimes resulting in the death of relief workers.

There are many reported cases of aid workers being threatened or attacked:
- by the local staff because of grievances about suspected dishonesty
- by the local population due to lack of diplomacy in dealing with the problems etc.
- as unfortunate bystanders of civil disturbances
- because the Red Cross emblem no longer guarantees immunity from attack

Reducing Security Risks in Relief Operations

In relief operations, security risks cannot be completely eliminated, but they can be greatly reduced. There are no golden rules that can be applied to every situation since most events are hard to predict. Security rules seek to ensure that the risk of harm to relief workers is minimised. The way the rules are applied in a given situation should always be based on *common sense* combined with a personal understanding of the situation.

Responsibility of Headquarters

Basic security regulations should be established at the headquarters for both normal and emergency situations on the following:
a. Personal items (always carry identity cards, official travel permits and visas, medical record)
b. Dress and behaviour (not offensive to local customs)
c. Keys (held only by authorised staff with minimum spares)
d. Movement and travel (work or private travel only with permission and usually not alone)
e. Curfews (respect local and delegation rules)
f. Vehicles (driven only by local drivers)
g. Photographs (no cameras to be carried)
h. Red Cross logo (always displayed but does not guarantee protection in armed conflict situations)

All staff (including volunteers) should respect the above regulations for their own safety. In addition, standard procedures should be established for systematic and immediate reporting of all security incidents affecting staff. The report, which may follow a standard format, should stick to facts and avoid making assumptions or conclusions. Any personal opinion or interpretation should be clearly indicated.

Responsibility of Relief Managers

The head of the mission is responsible for the safety of all field-workers and for deciding how to carry out the mission, based on the security situation. A duty roster can minimise security risks by specifying duty hours, meal-breaks, and after-hours arrangements. These rules apply to both local and international aid workers, where no other special security rules exist. To reduce further risk, the agency should ensure immediate support (transport, communications, protection, etc.) for staff members who are faced with security threats.

Below are security instructions that should be followed under normal situations and also under emergency situations:

1. **Normal Situations**
a. Ensure that security rules and regulations for the relief team are prepared, understood, and enforced. These rules must include an evacuation plan.
b. Establish a functioning system for collecting and disseminating information on security matters.
c. Encourage individual and collective responsibility for security. Attend to repeated breaches in security.
d. Establish, through personal example, good habits and proper attitudes.

2. **Emergency Situations**
When the relief operation is significantly affected by the security situation and the safety of the aid workers is threatened, the head of mission should develop additional security instructions for the operation based on the level of actual danger:
a. **Situation "Alert"**: when the overall security deteriorates such that normal security regulations do not help reduce risk. Staff may be asked to stay where they are, but communicate their whereabouts and the security condition while awaiting further instructions. If necessary they may be asked to move to an assembly point or remain in contact with the rest of the team to avoid unnecessary security risks.
b. **Situation "Red"**: critical situation and events possibly leading to the agency's evacuation. Staff must follow instructions and use their best judgement to respond immediately.
c. **Decide to evacuate** because the lives and health of aid workers are directly threatened. Staff must follow evacuation procedures.
d. **Emergency close down**: sometimes a temporary or more permanent close down of the delegation is necessary. A close down plan should be prepared in advance for handing over resources to local agencies or authorities.

All staff should be trained in security-related courses such as radio communication, local language and culture, and how to deal with checkpoints, road traffic accidents, criminal activity (theft, assault, etc.), or open conflict situations (being fired upon, shelling, direct threats by arms, mines, booby traps, etc.).

Individual Responsibility
It is important to recognise that the actions of one member of the team can affect the security of others, sometimes in ways that may not be obvious. Every staff member should take care of his or her own security and should try to minimise both individual and the group's security risks. Any serious breach of security may lead to an immediate dismissal of a relief worker from the operation.

The following **"Seven Pillars of Security"** may be useful in strengthening individual responsibility:
a. **Acceptance** — help workers to accept that their normal personal freedoms may be restricted.
b. **Identification** — always carry proper identification for operation, vehicles, staff, etc.
c. **Information** — each person is responsible for updating themselves about the security situation.
d. **Regulations** — follow appropriate security rules and regulations, e.g., travel, curfews, etc.
e. **Behaviour** — be honest and show self-discipline and respect for local culture and social habits.
f. **Communication** — observe security rules about *communicating* one's whereabouts, and promptly report any security incident to a manager and/or other team members.
g. **Protection** — take simple precautions to protect themselves and other team members and understand the evacuation procedures.

MAINTAINING STAFF HEALTH AND WELFARE

Health Risks and Consequences
The health of both local and expatriate staff may be threatened by the following:

1. Direct or indirect physical attack through accidents, open warfare, crime, riots, political unrest, indiscriminate use of weapons, land-mines, etc.
2. Endemic diseases that a staff member may not be immune to.
3. Increased risk of disease exposure due to the nature of work (TB, HIV/AIDS, etc.).
4. Stress of adapting to new cultures and social conditions and high-risk situations.
5. Excessive work load due to lack of support or staff.
6. Inadequate preparation (materially, mentally, culturally, etc.) prior to fieldwork.

The most frequently reported health consequences affecting field workers include:

1. **Physical illness**:
   - water-borne diseases (diarrhoea, poliomyelitis, hepatitis, typhoid, cholera etc.)
   - vector-borne diseases (malaria, dengue fever, TB, AIDS etc.)
   - skin diseases (fungal, abscesses, scabies etc.)
   - intentional and unintentional injuries

2. **Psychosocial consequences or effects**: basic, cumulative and traumatic stress leading to:
   - loss of self esteem, guilt and feelings of helplessness that undermine work capacity.
   - poor work performance may result from increased risk of illness, accident proneness, absenteeism, substance abuse (alcohol or drugs).
   - reduced productivity due to physical exhaustion and burnout.

The health and welfare of every expatriate and local staff member should be considered important. Prevention of health problems is always better than remedial actions. The "People in Aid" code of best practice presents seven principles for maintaining staff health and welfare:

Table 3-10: Seven Principles for Staff Health and Welfare

1. People who work for the agency are integral to the agency's effectiveness and success.
2. Human resource policies aim for best practices.
3. Human resource policies aim to be effective efficient, fair, and easy to understand.
4. Consult field staff when developing a human resource policy.
5. Plans and budgets reflect the agency's responsibilities towards field staff.
6. Provide appropriate training and support.
7. Take all reasonable steps to ensure staff security and well-being (e.g. vaccination, suitable accommodation, access to food and safe water, R&R).

Managing Stress
Stress may be defined as an adverse reaction in an individual as a result of the way one copes (or fails to cope) with problems or demands made on them. Most humanitarian workers experience some level of stress in their daily work, which involves critical issues of life, death, and illness. As disaster situations evolve, relief workers have to cope with changing levels of security and health risks, financial pressures, revised organisational policies, public opinion, etc.

Types and Symptoms of Stress
Team leaders must have a basic understanding of the types of stress that may affect relief workers. *Positive stress* is a normal healthy reaction to difficulty and challenge. This may even be motivating and rewarding to a relief worker. However, *negative stress* can become a serious threat to mental and physical health. Examples of negative stress are listed below:

- **Cumulative stress** should be maintained within reasonable limits, otherwise it may lead to "burn-out," the physical and psychological exhaustion resulting from working in overwhelming situations. Burn-out occurs where there is inadequate supply of workers among people who have an over-developed sense of responsibility (common in some managers). Sometimes, burn-out only appears after the mission is over.

- **Traumatic stress** is a normal response to "critical incidents" (witnessing or experiencing an act of violence, a road traffic accident, or sudden-impact natural disaster). It may develop into post-traumatic stress disorder (PTSD) if neglected. In PTSD, the symptoms of traumatic stress persist for at least a month and people affected require treatment by a specialist.

- **Secondary trauma** is a term used to describe the range of psychological and physiological effects experienced by people who work closely with traumatised individuals. Exposure to a refugee's trauma may trigger symptoms that resemble those of the patient, or effects of other trauma experienced by the therapist.

The symptoms of stress experienced by a staff member will depend on his or her prior level of function and social support and ability to cope, which may be influenced by one's culture. It is important for team leaders to know their team members well in order to recognise any significant signs of stress, such as:

- **physical symptoms** that have no obvious organic cause, e.g., fatigue, nausea, vomiting, headaches, abdominal and back pains, lack of sleep.

- **emotional symptoms** such as anxiety, guilt, fear, inexplicable mood swings, prolonged sadness, changes in temper.

- **cognitive signs** such as poor concentration, confusion, apparent loss of memory, poor decision-making, inability to do normal tasks.

- **behavioural changes** such as an increase in alcohol intake, a change in eating habits or sexual behaviour, an increase in risk-taking (e.g., dangerous driving), poor performance, etc.

Prevention of Stress
Stress management is the key to sustaining the mental and physical health of all relief workers (including managers). Most stress can be prevented *proactively* in the following ways:

- Ensure staff have a clear sense of their personal roles and mission objectives.
- Ensure adequate preparation and training of staff before missions and debriefing after the mission.
- Prescribe and enforcing suitable security rules and regulations.
- Ensure effective communication, including regular meetings.
- Adjust workload fairly and promoting reasonable working hours.
- Manage change and interpersonal conflict effectively.
- Address staff welfare issues, e.g., excessive use of alcohol or drugs, lack of privacy.
- Organise extracurricular activities and social events.
- Establish a system for sending staff members on vacation, rest and relaxation leave (where applicable).

Stress Management

Managers are responsible for helping staff members manage stress. The *reactive* response to stress is more complicated and costly to the relief operation, depending on the seriousness of the situation. Cumulative stress due to organisational problems can be improved only by addressing the root causes. Practical strategies for managing stress include:

- Send stressed staff on R & R, and additional leave.
- Reduce the team member's workload and/or responsibilities.
- Remove staff from the immediate source of the stress by reassigning different tasks or jobs.
- Grant the entire team a temporary retreat from the operation if everyone is stressed.
- Provide TIMELY counselling to staff members who are suffering from stress, or following a critical incident.

Counselling

> *Counselling refers to providing support (a sympathetic ear, and where appropriate, some advice) to a team member who is experiencing a personal problem of a serious, or potentially serious nature.*

Stress-related problems can lead to unsatisfactory performance and misconduct. Managers should monitor the staff's performance and feelings, regardless of their training or experience in relief work. Because relief work is indeed a major stressor, all workers should have easy access to counselling. Counselling helps people to openly acknowledge and resolve their physical, emotional or psychosocial problems due to stress. The manager or other team member can provide simple one-on-one counselling informally, without documenting it as counselling. Relief workers should not fear that the information they reveal confidentially could be used against them. Any worker with persistent problems of stress or trauma may need referral for specialised care and follow-up by a para-professional mental health worker.

Counselling can thus increase productivity of staff and prevent the need for formal disciplinary procedures. However, where the problem is excessive use of drugs or alcohol, address both the personal and the professional consequences of the problem. Standard procedures should be followed when faced with workers with persistent unsatisfactory performance or gross misconduct due to stress.

For details about dealing with stress and psychosocial disorders among displaced populations, please refer to the *Mental Health* and *Needs of Children and Adolescents* chapters.

Debriefing

> *Debriefing is a process by which information is obtained by management from those in the field. Field personnel contribute first-hand knowledge and provide management with important feedback.*

Once their assignment with a relief agency is over, staff members need debriefing. A properly organised and conducted debriefing is an important part of human resource management. A positive send-off will make staff members feel that the agency values their contribution to the relief program. In addition, it will improve the impressions that the staff member may have of the agency and its management. It may also provide an opportunity to seek constructive feedback from staff members about the management of the operation.

Managers must take time to carry out the debriefing. Particularly for staff members who have just concluded a difficult assignment. Debriefing then becomes part of stress management. It may be followed up by a medical examination or psychological debriefing, where necessary, to detect any long-term effects from the mission. Professional help should be made available for staff members with emerging or continuing problems. Other departing staff members should be made aware of possible delayed symptoms of stress and advised how to deal with them if they occur. Staff members returning to their families after a long mission need to understand that re-adjusting to normal life outside the relief operation takes time.

Responsibility Toward Staff Health and Welfare
Headquarters should try to improve staff health and welfare by:

a. Defining the organisation's responsibility to staff health and welfare before, during, and after the mission and for medical evacuation when necessary (for both local and international staff).

b. Selecting staff with good physical and mental health and conducting dental and medical examination (including tuberculosis) and psychological testing as practicable.

c. Providing effective malaria prophylactics and inoculations as needed (diphtheria-tetanus-polio, hepatitis A & B, yellow fever, meningitis, Japanese encephalitis, etc.).

d. Providing medical and accident insurance for all staff in the relief operation, which may extend beyond the mission for those who may become incapacitated by their work.

e. Ensuring all staff receive the following before their mission:
    - pre-mission briefing (origin of emergency, future prospects, work environment and job responsibilities)
    - practical advice on living conditions (appropriate dress, water, food, security, rest & recuperation)
    - counselling (stress, alcohol, STDs/HIV)
    - self-protection (clothing, bed nets, anti-malarial drugs, first aid kit, etc.)
    - basic skills training (first aid, security incidents, etc.)

f. Ensuring that accommodations or reasonable allowances are provided. Where necessary, R&R (rest and recuperation) should be permitted for all staff who have been recruited from outside the location or reside without their families.

g. Even though aid workers are on duty 24 hours a day, they must get some time off a week and annual leave during their mission. When the nature of work is urgent, demanding for long working hours, then as soon as the crisis period has passed, managers should ensure that working hours are normalised.

h. Ensure that a formal program for debriefing staff is in place within the operation.

Responsibility of Relief Managers
To ensure good physical and mental health of expatriate and local staff during their mission, relief managers should always be concerned about the health and welfare of their team members. This concern should be expressed from the initial work assignment through the entire mission to ensure healthy and motivated staff. In addition to rewarding staff for achievements in work, team leaders should reward staff for *sustaining* their health and welfare in terms of keeping suitable working hours and conditions, taking R&R (rest and recuperation) when necessary. Team leaders should strive to prevent health problems before they become critical. For example, they should not allow their team members to work 100 hours per week, week after week, without R&R. In addition, they should provide timely counselling and change work responsibilities for staff in stressful positions. This will prevent burn-out. Special efforts should be made to encourage staff to take anti-malarial prophylactics if indicated, and to reduce further health risks from stress, TB, HIV/AIDS and alcohol. Relief managers should ensure that all staff members leaving the project are given an appropriate send-off by their team.

CULTURAL PRIORITIES OF HRM

Culture is the collective understanding of what is and the norms for what ought to be.

Culture can be defined as the values, attitudes, and behaviour that unite and integrate people in the same community in a meaningful way. Attitudes depend on values, which influence the way people behave. Individuals adopt values from parents or other people that are important to them. Depending on the circumstances, however, values and attitudes may change over time and cause people to behave differently. For example, not everyone from a culture that values women taking care of the home may think negatively about women earning income outside the house. Factors that can lead to change in values or attitudes include education, exposure to other cultures, individual characteristics and stress.

Different nations or organisations create communities with different cultures. People from different cultures have different values, which sometimes create conflict. Despite these differences, every person in a nation or organisation must respect the equality of all human beings and the universal human rights.

Cultural Diversity

Many relief organisations are characterised by diverse groups of relief workers. Each individual or group of local staff, expatriate staff, or volunteers may come with different cultural perceptions and expectations. Cultural differences do not cause problems if all the relief workers carry out their duty, and dress and speak as they are expected to. However, when some relief workers (recruited from another nation or organisation) do not speak the common language, do not respect, or are not respected by their colleagues in the operation because of differences in cultural values or attitudes, teamwork may not be possible.

Relief workers (both expatriates and local) may be classified as follows:

- *Those who understand and appreciate cultural diversity.*

- *Those who do not appreciate cultural diversity because of inexperience.*
  Many relief workers are recruited with little experience in working in a multi-cultural environment. Individuals who do not understand the common language or culture may feel overwhelmed and isolated. Particularly if they are unsure about what other team members expect of them. This may result from poor orientation of new staff and inadequate team building.

- *Those who do not appreciate cultural diversity despite extensive experience.*
  Although some relief workers may have worked with other multi-cultural teams, they may not understand all the communication and relationship problems that can arise from simple cultural ignorance or lack of sensitivity. Some experienced staff may develop a deep-rooted artificial cultural insensitivity as an "emotional shield" against high stress. This can result from the culture of an organisation or nation.

Cross-Cultural Issues

The potential for cultural clashes may be greater where there is a high cultural diversity within a relief operation. A simple management requirement can produce significant cultural consequences as a result of cultural differences in sensitive areas. Typical examples where a clash of cultures is possible include:

- some cultures focus on individual achievement, while others emphasise on teamwork and consensus
- some organisations are very hierarchical and authoritarian, while others tend to be more democratic and flexible
- in some cultures, decision-making involves a complex process of consultation at all levels, while in others, it is quick, being carried out directly by the individual concerned
- attitudes and respect towards authorities, tradition, and deference to elders may differ
- cultures differ in the importance they give to loyalty and unity to the organisation and family

- attitudes towards women in the workplace can vary significantly
- cultures differ in their attitude to change, risk-taking and uncertainty
- there are differences in the relative importance given to providing job satisfaction, living wages or salaries
- other differences include: the importance given to social relationships in the office, formality in dress, greetings and relationships, punctuality and use of time, office privacy, acceptance of gifts or bribes, etc.

Promoting Cross-Cultural Sensitivity in the Team

Team leaders need to understand how much culture could influence the way a team works. Education and training on cross-cultural issues is necessary when developing working relations among relief workers from different cultures. If team members appreciate the value of cultural diversity within a relief operation, they will adapt their individual attitudes and perform satisfactorily. The table below shows some advice that can be given to an individual working in a multi-cultural environment.

Table 3-11: Suggestions for Working in a Multi-Cultural Environment

- Know your own culture – understand its values, obligations, and standards.
- Be prepared to learn and adapt to the organisational or community structure and way of thinking in order to develop rapport and avoid cultural clashes.
- Demonstrate respect and interest in other individual's or group's cultures and avoid stereotyping.
- Assume that there are cultural differences until sure of the similarities.
- Be non-judgemental, flexible, and tolerant of other people's customs. Every culture has special elements that can be appreciated. Don't assume that your own cultural ways are better; they are only different.
- Do not get upset when unsure of a situation or other people's reaction. Gather more information to understand cross-cultural problems or issues.
- Do not assume the worst; look for other explanations if an individual's behaviour seems offensive.
- Remember that you are representing your organisation.

Building Respect for Local Culture

Many relief operations recruit interpreters to act as mediators where professional or para-professional service providers do not speak the language of the beneficiaries. However, these interpreters have limited training in recognising psychologic al or unreported problems of clients. Without direct communication, the service provider may fail to gather the right information to assist the client effectively. As a result, the beneficiaries lose trust for the relief services, and seek assistance elsewhere. In addition, service providers who are unaware of their clients' unmet needs may become frustrated with clients who do not comply to their advice.

To overcome language and cultural barriers of communication with the beneficiaries, relief organisations should recruit para-professionals who speak two languages (the official language and the language of the beneficiaries); and, if possible, share the ethnic origins of the displaced population. These para-professionals may be identified among the beneficiary and the host populations. Training and development of "bilingual" and "bicultural" para-professional staff will be a visible symbol of integration and respect for the local cultural identity and tradition. This will build the local community's support and co-operation for the relief operation.

It will also ensure those providing services directly to beneficiaries are able to do the following:

- Communicate with all the beneficiaries, including the children and elderly, who may only speak the language of their homeland.
- Educate professional staff (expatriate or host country) on the beneficiaries' cultural values and beliefs to prevent violations.
- Serve as bridges to traditional helpers (healers, religious leaders, community elders) within the displaced community.
- Understand the cultural basis for problems faced by the beneficiaries in cross-cultural adaptation and recognise non-verbal signs.

The best evidence of an organisation valuing the local culture is giving incentives for expatriate and host country staff to learn the basics of the beneficiaries' language and culture. This is because using the basics of a common language with the appropriate "eye contact" are the essence of effective inter-cultural communication.

APPENDIX

Taking Disciplinary Action

Disciplinary action is compulsory where unsatisfactory performance or misconduct can cause an organisation to lose credibility with other stakeholders. It should be carried out by the most senior field manager to ensure that any decision to dismiss a team member from the operation is reached in a fair and transparent way. A field supervisor who is unsuccessful in handling an individual with unsatisfactory performance or misconduct or is unwilling to forward the problem to a senior manager may lose the respect of other team members. The direct supervisor may be asked to carry out the extraordinary performance evaluation. Depending on the seriousness of the problem, the three stages described in the above exhibit may not always be followed in sequence. For example, repeated minor offences may never reach the formal or termination stage, whereas gross misconduct may result in immediate termination of employment, without applying other procedures. It is important to document all discussions, decisions and actions taken.

The following Figure shows three disciplinary stages for handling staff with problems of performance or misconduct.

Figure 3-3: Disciplinary Stages
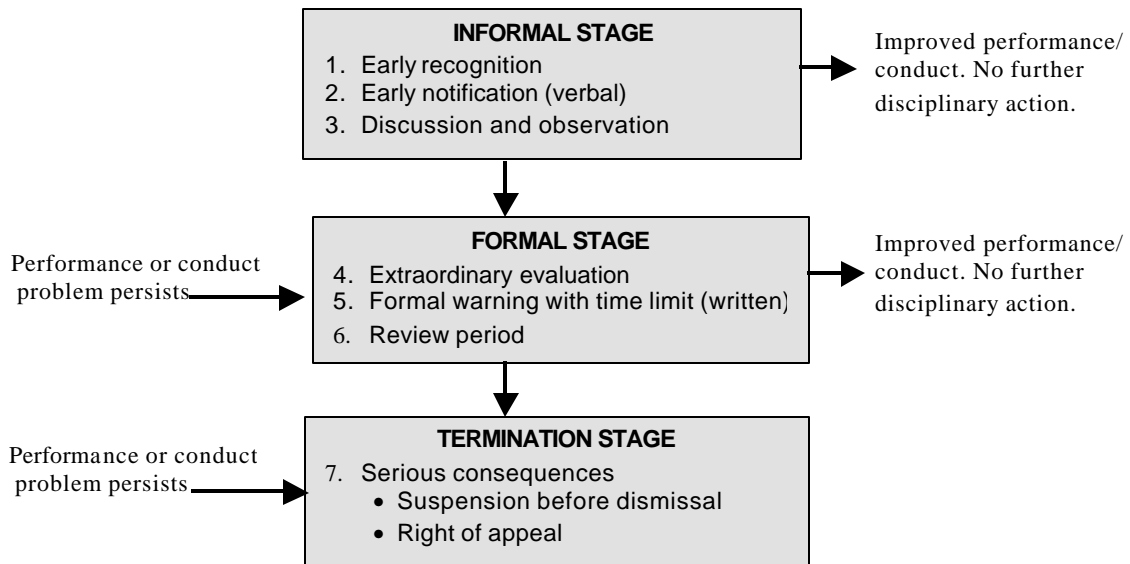
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DISASTER EPIDEMIOLOGY

Description
This chapter provides an overview of the key epidemiological principles and the epidemiological tools needed in managing emergency public health programs. The goal is to reduce morbidity and mortality among displaced populations.

Objectives
- To provide a basic understanding of key epidemiological principles and terminology.
- To develop skills for defining and calculating indicators.
- To describe standard methods for conducting needs assessment.
- To define the steps for setting up a surveillance system for emergency situations.
- To describe the main principles and practical methods for conducting a population survey.
- To identify key steps in investigating disease epidemics.
- To develop skills in analysing and presenting epidemiological information.

Key Competencies
- To recognise the main constraints in applying epidemiological methods to emergency situations.
- To calculate key indicators of the health status of a population.
- To plan a rapid needs assessment.
- To set up a surveillance system for emergency situations.
- To conduct a population survey using the appropriate sampling and analysis methods.
- To investigate an epidemic and apply findings to an epidemic control program.
- To analyse and present epidemiological data in a logical manner for use in program management.

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INTRODUCTION

Epidemiology is the study of the causes and distribution of disease in human populations. An epidemiological approach helps planners to focus on the main problems of a *community* rather than of *individual patients*, |and to identify measures for improving the health of the community as a whole. Commonly used terms in epidemiology are defined in the following table:

Table 4-1: Terms and Definitions

Access	The proportion of the population that can use the service or facility.
Age-Specific Rate	A rate in which the information in the numerator and denominator is limited to persons within a particular age range.
Attack Rate	The percentage of a well-defined population that develops an infectious disease over an outbreak period. Calculated by dividing the total number of people with the disease by the total population at risk at the start of the outbreak period.
Bias	Any effect while collecting or interpreting data that leads to a systematic error in one direction, e.g., recall bias.
Case	An individual who is identified as having a particular characteristic, e.g., disease, behaviour, or condition.
Catchment Area	The geographical area from which all the people attending a particular health facility come.
Census	The counting of all individuals in a particular population. Usually includes other details such as age, sex, occupation, ethnic group, marital status, housing and relationship to head of household.
Cluster Sampling	A sampling method in which each selected unit is composed of a group of persons rather than an individual, e.g., villages, households.
Convenience Sampling	Selection of a sample that is nearby, easily reached, e.g., selecting people attending a clinic or those with shelters next to the road, etc. It is very biased.
Coverage	A measure of the people who have received a service compared to all who need it.
Demography	The study of populations, with reference to size, age, structure, density, fertility, mortality, growth and social and economic variables.
Denominator	The lower portion of a fraction. In calculating rate, this number is the total population at risk.
Determinant	An attribute, variable, or exposure that increases (risk factor) or decreases (protective factor) the occurrence of a specific event.
Epidemic	The occurrence of cases of an illness clearly in excess of what is normally expected. This depends on the specific illness, the season, the location. Requires knowledge of previous incidence of the event in the same area.
Epidemiology	The study of the distribution and causes of disease in populations, and its application to the prevention and control of health problems and diseases.
Household	All members eating from the same pot, or sleeping under one shelter.
Hypothesis	A reasonable statement that is set up to be verified or proved.
Incidence	The number of new cases, events (illness, death, malnutrition, injury) or attendance that are diagnosed or reported, divided by the total number of persons in a population during a defined period of time (usually one year but shorter for outbreaks). Commonly used for acute, communicable diseases.
Indicator	A measure that reflects, or indicates, the state of a defined population, e.g., infant mortality rate.
Index Case	A person who acquires disease through exposure and brings it into a population
Mean	Commonly called the average. Calculated by adding the individual values in a group of measurements and dividing the total by the number of values.
Median	The central value in a range of measurements that divides the data set into two equal parts.
Mode	The most frequently occurring value in a set of observations.
Morbidity	An incidence rate used to include all persons in the population under consideration (e.g. specific gender or age-group) who become clinically ill during the stated time period.
Mortality **(death rate)**	The number of deaths occurring in a population in a stated period of time (usually a year) divided by the number of persons at risk of dying during that period. • Crude mortality rate – covers deaths from all causes • Death-specific mortality rate – covers death due to only one disease

Numerator	The upper portion of a fraction. In calculating rate, all people included in the numerator should be included in the denominator. This is not true for the numerator in a ratio.
Population	The total number of inhabitants or particular groups in a defined area or country. In sampling, population refers to the units from which a sample is drawn.
Population Pyramid	A graphical presentation of the age and sex composition of a population. A typical pyramid for developing countries has a broad base, sloping sides, and a narrow apex is due to high fertility rate and high mortality at younger ages.
Prevalence	The total number of persons sick or portraying a certain condition in a stated population at a particular time or period, regardless when it began, divided by the population at risk. • *Point prevalence* measures the proportion at a particular point in time. • *Period prevalence* measures the proportion within a defined period of time.
Probability Sampling	Uses the probability theory to select a specified number of persons for study such that every member in the target population has the same known and non-zero chance of being included. Provides a demonstrable degree of reliability.
Proportion	A ratio where the numerator (x) is part of the denominator (y). Expressed as x/y.
Random Sample	A selected subset of the population derived by random selection of sample units. Each individual unit (village, household or person) should have an equal chance of being included in the sample.
Rate	The likelihood that a particular event will occur in a specified period of time. Expressed as *x/y* x factor (e.g., 1000).
Ratio	The relationship between two quantities, represented by x and y. Expressed as *x/ y* or *x:y* (*x* need not be part of *y*).
Representative Sample	A selected subset of a population that resembles the original or reference population in every way.
Sampling	Selection of a specified number of persons in a population for study with the hope that they are representative of the entire population.
Sensitivity	The proportion of true positives correctly identified by a screening test.
Specificity	The proportion of true negatives correctly identified by a screening test.
Standard Deviation	A measure of the dispersion or variation of a set of quantitative measurements on either side of the mean.
Surveillance	Ongoing, systematic collection, analysis and interpretation of health data for managers of public health programs, combined with feedback to all.
Survey	Periodic, focused assessments that collect health data from a population.
Systematic Sampling	A sampling method that uses a list to select, after randomly picking the first unit, additional units at regular intervals.
Trend	A long-term change in frequency, either upward or downward. A downward trend in a disease implies it is becoming less frequent.
Validity	The degree to which a measurement actually measures what it is supposed to.
Variable	Any characteristic that can be measured (e.g., age, weight) or categorised (e.g., sex, marital status).

BASIC PRINCIPLES OF EPIDEMIOLOGY IN EMERGENCIES

Epidemiology can increase understanding about a disease and how it is transmitted even when the cause is unknown. In epidemiology, one believes that diseases do not occur at random, but follow predictable patterns that can be studied and expressed in terms of *WHAT*, *WHO, WHERE, WHEN, HOW, WHY*, and *WHAT NEXT*. The goal of epidemiology is to identify subgroups of the population who are at higher risk of disease and who will benefit the most from disease-specific interventions. Epidemiological information can be used to develop prevention strategies according to *time* (peaks at a particular season), *place* (limited to specific geographic areas) or *person* (groups at risk).

In emergencies, epidemiology has three elements:

1. **Descriptive Epidemiology —** determines the distribution of a disease among displaced populations. It describes the health problem, its frequency, those who are affected, where, and when. The events of interest are defined in terms of the period of time, the place, and the population at risk.

   Examples: Monitoring the health status of a population in order to detect cholera cases, such as, by age, sex, location, water source, and duration of stay in a camp.

   Conducting a nutritional survey to determine the prevalence of acute malnutrition among children under five years.

2. **Analytical Epidemiology** — examines those who are ill and those who are not to identify the risk of disease or protective factors (determinant of a disease). It examines how the event (illness, death, malnutrition, injury) is caused (e.g., environmental and behavioural factors) and why it is continuing. Standard mathematical and statistical procedures are used.

   Example: Investigating an outbreak of an unknown disease in a displaced population settlement.

3. **Evaluation Epidemiology** — examines the relevance, effectiveness, and impact of different program activities in relation to the health of the affected populations.

   Example: Evaluating a malaria control program for displaced populations.

Role of Epidemiology in Emergencies

Epidemiology in emergencies goes beyond simply understanding how diseases are contracted and spread. Humanitarian relief programs can be managed better if all decisions are based on epidemiological findings. Relief workers need training to help them collect more reliable information and use it to improve the health of the displaced population.

Objectives of epidemiology in emergencies include:
- To identify the priority health problems in the affected community.
- To determine the extent of disease existing within a community.
- To identify the causes of disease and the risk factors.
- To determine the priority health interventions.
- To determine the extent of damage and the capacity of the local infrastructure.
- To monitor health trends of the community.
- To evaluate the impact of health programs.

Epidemiology has many uses in emergency situations, including:
- Rapid needs assessment.
- Demographic studies – determining the population size, structure, etc.
- Population surveys for determining health status (death rates, incidence/prevalence of disease, nutrition and immunisation status), investigating an outbreak and assessing program coverage.
- Public health surveillance and management information system.
- Program monitoring and evaluation.

Constraints of Epidemiology in Emergencies

Constraints in using epidemiology in emergencies include:
- Poor understanding of basic epidemiological principles and measurement techniques.
- Rapid turnover of skilled staff.
- Lack of access to a significant fraction of the affected population due to chaos or insecurity.
- Limited resources for processing information.
- Difficulty in estimating the population size.
- Survey samples may not represent the total affected population.

Key Epidemiological Indicators

Indicators are measures that reflect the state of a population in terms of health, socio-economic status, etc. They may also reflect the process and outcome of existing services. In humanitarian emergencies, indicators are useful for measuring and describing the effects of a disaster on a population and for providing **baseline** measurements. Later, these measurements will help determine the outcome of the relief response.

Indicators may be defined from surveys or an existing health information system. They may be **quantitative** or **qualitative** in nature. Quantitative indicators are easily calculated from numeric information such as total number of people, the number of people according to age and sex, etc. Examples of quantitative indicators include:

- **Incidence** — the number of cases or events that occur within a defined population, divided by the total population in which the cases or events occurred in a specific period, e.g., incidence of measles among children.

- **Prevalence** — the proportion of the population with a particular condition, divided by the total number of persons at risk of dying during that period, e.g., prevalence of HIV/AIDS in a population.

- **Morbidity rate** – all persons in the population under consideration (e.g. belonging to a specific gender or age-group) who become clinically ill during the stated time period.

- **Mortality rate** — the number of deaths occurring in a population in a stated period of time (usually a year) divided by the number of persons at risk of dying during that period, e.g., mortality rate of infants during their first year of life.

Qualitative indicators, which measure people's attitudes and knowledge, are more difficult to measure. These indicators may be critical in explaining unexpected values of quantitative indicators. Examples of qualitative indicators include:

- **Awareness of the value of immunisation** — low awareness may explain the high incidence of measles in a population living within 5km from a health facility.

- **Compliance to universal precautions against HIV/AIDS** — poor compliance to the universal precautions may explain the increasing prevalence of HIV/AIDS in a population.

- **Equity in distribution of resources** — inequitable distribution may explain the increased mortality detected in a subgroup of a population.

It is important to define the most commonly used qualitative indicators, which include:

- *access:* the proportion of the target population that can use the service or facility

- *coverage:* the proportion of the target population that has received service

- *quality of services:* the actual services received compared with the standards and guidelines

- *availability:* amount of services compared with total target population (should be based on minimum standard requirements)

The following table summarises quantitative and qualitative indicators that may be used to evaluate the process and outcome of an emergency health program.

Table 4-2: Quantitative and Qualitative Indicators for Emergency Health Programs

INDICATOR	EXAMPLES
Health Policy (may be difficult to measure)	• Degree of political commitment • Compliance to national protocols • Level of community participation • Degree of inter-sectoral collaboration • Equity in distribution of resources • Inter-agency co-ordination • Compliance to universal precautions against HIV/AIDS • Compliance to minimum standards of the Sphere Project
Demographic Profile	Estimated size and structure of displaced population: • age and sex composition • migration patterns (proportion moving in and out) • proportion of high-risk groups • ratio to local resident population
Health Status	• Rate and causes of death (crude, infant, under fives, maternal) • Incidence and prevalence of common disease • Rate of under-five malnutrition
Program Inputs	Availability of the following resources: • Facilities and equipment (health centre, beds) • Staff (beneficiary population, local, expatriate) • Basic supplies (food, shelter material, domestic equipment) • Energy sources (fuel, charcoal) • Transport
Program Process	Access, coverage, and quality of the following services: • General food distribution and supplementary feeding • Potable water supply • Latrine construction • Immunisation • Ante-natal/pre-natal care • Health services

Calculating Rates, Ratios, and Proportions

The most readily available data is usually in the form of absolute numbers (e.g., the total number of measles cases, the total number of diarrhoea cases). Absolute numbers can be used to report on the health of a specific population in a confined area over a short time period. However, they cannot be used to compare events within the same population between population groups of different sizes or at different locations because they can lead to invalid conclusions. For example, no conclusion can be drawn from reports of 21 deaths in Refugee Camp A and 15 deaths in Refugee Camp B. To understand the significance of these reports and compare the death toll in the two camps, the frequency of deaths must be expressed as fractions such as **rates**, **ratios**, or **proportions** (percentages). These fractions contain a numerator and a denominator.

When calculating rates, ratios, and proportions, it is important to estimate, as accurately as possible, the **numerator** (the number of people with the problem or condition) and the **denominator** (the total population at risk for developing the health problem). A good estimate of the total population is essential for calculating indicators that are reliable and useful for planning emergency programs.

The following are general formulas for calculating rates, ratios, and proportions (with examples):

a) Rate $= x/y$ **x factor**

This formula expresses the likelihood that a particular event, case, or episode (x) will occur in a specified period of time among a population at risk (y).

Example: The significance of 21 deaths in Camp A and 18 deaths in Camp B depends on the time period they occurred and the size of the population at risk. Assuming they all occurred over a 7-day period, the crude death rate can be calculated for each camp based on the estimated total population — A (50,000 people) and B (5,000 people) as follows:

$$\text{Crude Mortality Rate (CMR)} = \frac{\text{Number of deaths x factor}}{\text{Total mid-interval population x time period}}$$

$$\text{CMR for Population A} = \frac{21 \times 10{,}000}{50{,}000 \times 7} = 0.6 \text{ deaths/10,000/day (indicates a stable situation)}$$

$$\text{CMR for Population B} = \frac{15 \times 10{,}000}{5{,}000 \times 7} = 4.3 \text{ deaths per 10,000 per day (indicates a critical situation)}$$

Note: A **factor** of 100, 1000, or 10,000 may be used to convert calculated rates into whole numbers.

During the initial phase of the emergency, a factor of 10,000 is used for calculating **daily** death rates in order to detect sudden changes. A crude death rate $\geq$ 1 death/10,000/day indicates an acute emergency phase.

The post emergency phase begins once the CMR drops below 1 death/10,000/day. Thereafter, death rates may be analysed once a month using a factor of 1,000 to calculate **monthly** death rates.

To convert CMR expressed as *deaths/10,000/day* into *deaths/1000/month*, divide the daily CMR by 10 and then by the total days in a month. From the above example:

$$4.3 \text{ deaths/10,000/day} = \frac{4.3}{10 \times 30} = 0.014 \text{ deaths/1000/month}$$

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b) Ratio = x/y

This formula expresses a relationship between a numerator (x) and a denominator (y), where x need not be part of y.

Example: If the estimated size of the displaced population is 20,000 with 8,000 males and 12,000 females:

$$\text{Then, the ratio of males to females} = \frac{\text{Total number of males}}{\text{Total number of females}} = \frac{8{,}000}{12{,}000} = 2{:}3$$

This ratio is better interpreted by dividing each side of the equation by the value on the left side i.e.:

Male:Female = 2/2:3/2 = 1:1.5

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c) Proportion = x/y

This formula expresses the relationship between a numerator (x) and a denominator (y), where x *is* part of y.

Example 1: If the 21 deaths in camp A were of patients diagnosed with malaria during the same month:

$$\text{Proportional mortality (\%) from malaria in hospitals} = \frac{\text{Number of deaths due to a certain disease}}{\text{Total deaths during that period}} \times 100 = \frac{21 \times 100}{100} = 21\%$$

Example 2: **Coverage** is also calculated as a proportion as follows:

$$= \frac{\text{No. of beneficiaries of a service}}{\text{Total target population}} \times 100$$

$$\text{Immunisation (\%) Coverage} = \frac{\text{(No. of children aged 12-23 months who got immunised)}}{\text{(Total number of children aged 12-23 months)}}$$

Selecting Indicators

Indicators should be carefully selected so that they are relevant and useful for program planning. They are defined to fulfill a specific purpose, for example:

- *Crude rates*: to summarise events in terms of the total population, e.g., crude mortality rates.

- *Specific rates*: to measure the number of events in a population in terms of a given age, race, or gender.
    - *Age-specific* rates: to define the status of the most vulnerable group, e.g., under-five mortality rate
    - *Sex-specific* rates*:* to assess whether both sexes have equal access to services, e.g., sex-specific incidence rate for malaria
    - *Cause-specific* rates: to define priorities by identifying the most serious diseases, e.g., measles.

- *Case-fatality rates*: to define the risk of people dying from a particular disease. It indirectly expresses the quality of care, e.g., case fatality rate for cholera should not exceed 1% for a well-run program.

- *Proportional morbidity*: to define the most common causes of disease. Measles, diarrhoea, acute respiratory infections and malaria may account for more than 90% of illness among children less than five years.

In emergencies, indicators describing the health status of displaced populations are commonly selected and defined as shown in the table below:

Table 4-3: Common Health Indicators in Emergencies

INDICATOR	NUMERATOR	DENOMINATOR
Case fatality rate (CFR)	Total deaths from specific disease in a time period	Total cases diagnosed with disease in same period
Cause-specific mortality	Total deaths from specific disease in a time period	Total population existing at midpoint of time period
Child mortality rate (CMR)	Total deaths in children aged 1-4 years old	Total children age 1-4 years alive at midpoint of time
Crude mortality rate (CMR)	Total deaths (for all ages) in time period	Total population at midpoint of time
Infant mortality rate (IMR)	Total deaths in children less than 1 year old	Total live births in one year
Maternal mortality rate (MMR)	Total deaths due to pregnancy and childbirth	Total women age 15-49 years
Maternal mortality ratio	Total deaths due to pregnancy and child birth	Total live births in 1 year
Proportional morbidity	Total cases due to specific disease	Total cases during that period
Under five mortality rate	Total deaths in children under five years	Total children under 5 years
Incidence rate	Total new cases with illness in a time period	Total population at risk in same period
Prevalence rate	Total existing cases with illness over a time period	Total population existing at midpoint of time period
Crude birth rate (CBR)	Total number of births in a time period	Average total population during same period
Global malnutrition rate	Total children under 5 years whose WFH is less than -2 SD (Standard Deviations)	Total children under 5 years
Severe malnutrition rate	Total children under 5 years whose WFH is less than -3 SD (Standard Deviations)	Total children under 5 years
Total fertility rate (TFR)	Total number of live births in one year	Total women aged 15-44 years at midpoint of time

Note: *The factor (1,000, 10,000, etc.) is not included in the numerator.*
The denominator population at midpoint of time can be calculated by taking the average of the population at the beginning of the time period (usually 1 year) and at the end of the time period.

To ensure that the correct data is collected, the numerator and denominator for each selected indicator should be clearly defined. For example, when the numerator represents the number of *cases*, it is important to specify whether this means:

- the number of individuals diagnosed or reporting new *episodes* of the disease (incidence).
- the number of *users* of health services with the disease (attendance).
- all the *people* affected by the disease (prevalence) during a particular time period.

Standard case definitions are necessary for calculating cause-specific morbidity and mortality indicators. This will avoid data for different conditions being combined under one label. For example, diarrhoea may be precisely defined as "three liquid stools within a 24-hour period."

(For more details on case definitions, refer to the *Control of Communicable Diseases* chapter. For information on how to collect information on indicators and how to analyse them, refer to later sections: Surveillance and Data Analysis.)

RAPID NEEDS ASSESSMENT

Objectives of Rapid Needs Assessment

The following may be defined as objectives for carrying out a needs assessment:

- To determine the magnitude of the emergency.
- To define the specific health needs of the affected population.
- To establish priorities and objectives for action.
- To identify existing and potential public health problems.
- To evaluate the capacity of the local response including resources and logistics.
- To determine external resource needs for priority actions.
- To set up the basis for a health information system.

Preparing for Needs Assessment

Adequate preparations are needed before a rapid assessment can be made. This includes the following steps:

1. Before the field assessment, collect background information on the emergency situation in terms of the geographic location, the population affected, and any political factors. Also collect the pre-emergency health data and information on the existing health system. Try to confirm all information with the UN, the host government, and other NGOs.

2. If a multidisciplinary assessment team cannot be recruited locally, get the proper authorisation (work permits, travel permits, vaccinations, etc.) for additional personnel from outside the country.

3. The assessment team should then plan the field assessment as follows:
   a. Define the terms of reference and the objectives of the assessment.
   b. Based on the nature of the emergency, determine the priorities to be considered.
   c. Select how and in what order the information will be gathered. If existing assessment checklists are to be used, they must be carefully reviewed and adapted to the local situation.
   d. Design or adapt the forms for recording and analysing the information that is collected.All should agree on how and when the information with be reported.
   e. Estimate the time frame and the resources needed (stationery, data processing tools, personnel) for each stage of the assessment — training field staff and volunteers, collecting and analysing data.
   f. Assign specific tasks and responsibilities to each member of the assessment team.

4. Inform all departments within the organisation that need to be directly involved with the assessment —
    logistics, finance, human resources, etc. and identify the person at headquarters who can be contacted
    from the field during the assessment.

5. Collect essential equipment — maps, first aid kits, etc.

6. Check the security situation in the field and make contact with local authorities and other organisations.

7. Ensure there is someone based locally to arrange the assessment team's transportation, communication,
    accommodations, and meals.

8. Be aware of the common mistakes that can occur during an assessment. Try to prevent errors by using the
    actions shown in the following table.

Table 4-4: Preventing Common Errors During an Assessment

COMMON ERRORS	PREVENTIVE ACTION
The assessment is poorly co-ordinated between various non-governmental organisations (NGOs) and excludes the host government and the affected community.	Appoint a team leader to co-ordinate the assessment with the host government, the affected community's leaders, and other agencies so results are shared and not duplicated and to ensure future support of relief activities.
The assessment team lacks the expertise needed.	Select members of the team with disaster-specific (prior experience), site-specific (geography, language, culture), or speciality-specific skills (epidemiologist, physician, public health nurse, logistician, environmental engineer).
The needs assessment is conducted too late. Collection of information requires a certain amount of time, yet often the time is limited.	Strengthen disaster preparedness by establishing an early warning system for detecting humanitarian emergencies.
The data collected is often incomplete (due to poor access) or inappropriate (does not cover all the important areas).	Plan the field assessment: define the objectives, the relevant information needed and methods for collecting data. Discuss plans with local authorities, community representatives, and other agencies.
The data collected is not linked to an ongoing information system.	Ensure that one of the main objectives for carrying out the needs assessment is setting up an information system.
More data is collected than is needed or used.	Collect only data that can be processed.
The estimated size of the target population — the critical denominator — is unreliable.	Make better estimates by mapping the location and dividing it into sections. Then determine the average family size in selected households of some sections and apply findings to the entire map.
The survey sample does not accurately represent the affected population.	Follow epidemiological procedures when carrying out population-based surveys.
The assessment report does not consider the affected population's perceived needs.	Involve representatives from the affected population at every stage of the assessment, including drawing conclusions from the local response and outstanding needs.
Causes of death are incorrectly attributed to the disaster even for slow-onset disasters, such as drought and famine.	Collect background information: interview former staff, local authorities, and the media; review field reports, country profiles, internet/medline.
the assessment team do not completes their task as they are drawn into setting up initial activities. Thus, there is not enough time for accurate assessments, the assessment period is extended and serious delays in vital action may occur.	Arrange for a local emergency response team (health, fire, police) to take care of the injured and limit harm from hazards (fire, disease epidemics, etc.) so the assessment proceeds smoothly.

Defining the Information Needed

Defining in advance what information is needed about the emergency can improve the coverage and quality of the needs assessment. It can also help to identify the sources of information to be contacted on arrival at the site. Many checklists for rapid assessments have been developed, some of which classify indicators under different data categories. They are supposed to guide assessment teams in thinking about the information they may want to collect in the "quick and dirty" needs assessment, as well as to ensure that they have covered the key issues. Assessment checklists should not be considered as simple exercises for filling out data forms. Checklists that are used should first be adapted to the context and culture of the specific emergency. Not all the information in the checklist may be needed or is relevant for every assessment. Below is an example of a checklist summarising the key items to include in a health assessment.

Table 4-5: Example of a Checklist for a Health Assessment

Background Information:
♦ Origin, extent and progression of disaster
♦ Political, social, and economic effects of disaster on displaced population
♦ Pre-disaster demographic and health data

Demographic Profile:
♦ Affected population: total and new arrivals, age/sex distribution
♦ Determine the average household size
♦ Identify vulnerable groups

Community Health Information:
♦ Common health problems at place of origin
♦ Previous sources of health care
♦ Determine important health beliefs and traditions
♦ Determine existing social structure
♦ Strength and coverage of public health programs at place of origin
♦ Access to services

Health Status:
♦ Calculate the crude mortality rates
♦ Determine the incidence rates of diseases of public health importance
♦ Determine pre-disaster nutritional status and eating habits
♦ Prevalence of protein-energy malnutrition in the < 5 years population
♦ Prevalence of micro-nutrient deficiencies in the <5 years populat ion
♦ Assess the need for reproductive health care

Environmental Conditions:
♦ Determine climatic conditions
♦ Identify geographical features of the site location
♦ Assess existing shelters
♦ Assess where and how human waste is disposed
♦ Identify where people are getting water
♦ Determine the local disease patterns
♦ Identify local disease vectors
♦ Assess security conditions

Needs and Available Resources:
♦ Identify and assess local, regional, and national food stocks
♦ Assess strength and coverage of local PHC services, including referral of patients
♦ Assess availability and capacity of local health staff
♦ Assess the availability of medical supplies
♦ Assess capacity of existing surveillance system
♦ Assess local availability of materials for shelter and fuel
♦ Assess current relief response by local and/or international groups
♦ Assess the relief supplies and distribution systems
♦ Assess the logistics of transport and storage
♦ Assess existing communication system
♦ Assess coping mechanisms and capacity of affected population

Future Prospects:
♦ How might the situation evolve: more disaster, influxes, dependency or exit strategy?

Note: *The above checklist has been extracted mainly from the* Field Operation Guide of the Office of Foreign Disaster Assistance, version 3.0.[i] *Initially, it may only be feasible to collect age-specific data as under five and for those aged five years and above (<5 years and >5 years).*

When documenting data from the assessment, it is important to note the following information about the data:
- **Period of Time**: for monitoring trends by mapping when events happened, (e.g., before and after flight).
- **Place**: for comparing different sites, (e.g., camp A and camp B, or with host population).
- **Person**: for calculating *age-specific* and *sex-specific* rates to identify the population subgroups at increased risk.

Sources and Methods for Collecting Data

Good sources of information for the initial assessment may be identified according to the background information and the type of information needed. The camp administrator and the health workers are usually the most important sources of information. How the data will be collected during field assessment will depend on the nature of the emergency and the time and resources available for the assessment, including the skills of the assessment team. Data may be collected through quantitative as well as qualitative methods such as observation, reviewing existing records, key informant interviews, focus group discussions, and surveys. Possible sources and methods of collecting data in emergencies are summarised in the table below. (For more details on qualitative research methods, consult texts listed under References and Suggested Readings.)

Table 4-6: Sources of Information and Methods of Data Collection for a Rapid Needs Assessment

SOURCE	* INFORMATION TO BE COLLECTED	METHOD OF DATA COLLECTION
Affected population	Background information, pre-/post-disaster community health information, environmental conditions, needs and available resources, future prospects	Surveys, observation, mapping, interviews, focus groups
Host government authorities	Background information, demographic profile of local and displaced population, needs and available resources, future prospects	Mapping, interviews, review census and survey reports (e.g., Demographic Health Survey)
Health authorities (local/central MOH)	Health status, environmental conditions, health policies, needs and available resources	Interviews, review registers, surveys, reports
Health facilities (MOH, private, NGO)	Health status of local (and perhaps displaced) populations, needs and available resources	Observation, interviews, review registers, surveys, reports
Humanitarian agencies (international & local), multi-lateral agencies (e.g., UN), media, internet web sites	Background information, pre-/post-disaster demographic and health status data, needs and available resources, future prospects	Interviews, review registers, surveys (e.g., Demographic Health Survey), situation reports

* Refer to the previous checklist for full details.

Conducting the Rapid Needs Assessment

A needs assessment can be carried out by following the same logical sequence as individual patient assessments, which includes: briefly observing the patient on arrival, taking history (interview and review existing records), doing a physical examination, making an interim diagnosis, then planning a follow-up assessment if necessary. Similarly, after collecting the background information, the following steps may provide a logical approach to a field assessment:

1. **Preliminary observation**: Where possible, on approaching the site by vehicle or aircraft, try to assess the environment and extent of damage by the disaster and population displacement.

2. **Interview** officials from the local government, the public health sector, local organisations, volunteers, health workers and the affected community (leaders of different ethnic groups, women), etc. in order to:

   • confirm or update background information on the health needs and local response.

   • identify individuals or groups of people in life-threatening situations.

   • suggest during the interview, if possible, new approaches to disaster response.

3. **Review existing records** at the local or national level (host country, agencies, media, health facilities), including maps, aerial photos, census health data, etc. This will help establish baseline information on demography, the health status of the displaced and host populations, function and capacity of existing services (e.g., relevance of the health information system).

4. **Detailed visual inspection** while walking around the displaced community and surrounding areas to investigate rumours and gather valid impressions about the following:

   - The layout of the camp or settlement (from the highest level, e.g., on top of a hill, tree, or building), the estimated number of people involved, the local infrastructure and the resources.

   - The living conditions: access to sanitation, water supply, food supply, and health services, and the level of insecurity.

   - How much normal life and the social structure has been disrupted, the coping mechanisms of the affected population, and any other issues of secondary priority (such as reproductive health needs and mental health).

5. **Rapid surveys:** Conduct "quick and dirty" surveys using convenience or cluster sampling of households to estimate the demographic profile, health status (includes immunisation status) and priority health problems.

6. **Prepare a basis for ongoing health information**: The assessment findings should be used to set up a health information system. Ongoing collection and analysis of information over time will refine the findings of the initial assessment. Population surveys may be organised soon after the assessment to:

   - provide valid base-line information, if this is missing

   - determine the priorities for the program (e.g., cholera prevention and control, selective feeding, measles immunisation, etc.)

7. **Preliminary analysis**: A timely and careful analysis of the assessment findings is necessary to provide a basis for program planning. However, the skills or the resources to carry out a detailed analysis may not exist. Simple analysis procedures may be performed in the field, including summarising statistics, frequency tables, calculating percentages, rates, and plotting graphs. The results may be compared to normal reference values or standards and the conclusions can improve understanding of the disaster situation more accurately and help determine the appropriate response. For more details, please refer to the section on Data Analysis.

8. **Report findings**: After the analysis, an assessment report should be written as soon as possible and distributed to all who need to know. It is important to give feedback to everyone who participated in the assessment. The report should include information about the following:
   - The assessment
   - The disaster
   - The affected population
   - The local response and capacity
   - The external resources needed
   - The recommended actions

ESTIMATING POPULATION SIZE AND FAMILY SIZE

Objectives of Estimating Population Size

A reliable estimate of the total population size (including age and sex distribution), is important for the following reasons:

- To be aware of the true population that is at risk of death and disease

- To have a census for planning and political reasons (required by host authorities, donors, media, etc.)

- To estimate the amount of basic needs required (food, water, shelter material)

- To draw budgets for relief programs

- To calculate the value of indicators for program monitoring and evaluation

- To plan long-term solutions

Different Methods for Estimation

Estimates of the total population, the population of children aged less than five years or women of child-bearing age, etc., represent **critical denominators** that are required for calculating rates. The most critical denominator is the estimate of the *total population*. This estimate must be **valid** since it provides the basis for all planning in PHC programs. These estimates may exist from a prior registration exercise or census. However, they may be grossly unreliable (e.g., over-stated or under-stated). One may either accept the best available data or apply current epidemiological knowledge about the effects of similar disaster situations on the population structure.

The ideal method for estimating the population size is by a census or a registration system, which can only be carried out several weeks or months after the relief operation has been established.

Acute Emergency Situations

Epidemiological procedures can be used to get better estimates of the population size and structure. For better estimation of the population size during the acute emergency phase, the following surveys or sampling methods can be used for the rapid assessment:

1. **Water Usage**: Determine the total amount of water the whole population in the camp consumes in one day. Then, interview a sample of people at their household or water collecting point to estimate the average amount of water used by each individual:

    If 200,000 litres of water are consumed in one day and individual water usage is estimated as 20 L/person/day, the total population in the camp should be 200,000/20 = 10,000 people.

    > **Note**: *The total food distributed and individual food baskets may be used to estimate the total population in the same way as water usage. However, these estimates should be interpreted carefully since food rations may be collected for sale or families may collect more than one ration.*

2. **Nutrition Screening**: Screen and count a specified fraction of children under five years. In emergencies, the number of women, children and elderly is very high. Assuming that the under-five children make up about 20% of the total population, multiply the estimated fraction of under-five by 5 to estimate the fraction of the total population, and therefore, get the total population estimate.

    > **Note**: *Mass immunisation campaigns can be used to estimate the population size in a similar manner, assuming that the immunisation coverage is 90% or more.*

3. **Mapping**: Maps are useful tools for gathering additional information. For example, a map can be used for sampling people from various ethnic and socio-economic groups for interviews, or for sampling households for rapid surveys, and for planning and evaluating programs. If no maps exist, then sketch maps to locate the affected population, (may either be settled in their own camps or integrated within the host population). Begin with a tour around the boundary of their location(s) to define the approximate shape, and the maximum and minimum length and width. The key landmarks (e.g., river, lake), the roads and any PHC facilities around the catchment area should be included in the map (see Figure below). If possible, the varying population density within the location(s) should be shown. Make a rough estimate of the population size using this information or continue to step 4.

Figure 4-1: Map of Catchment Area
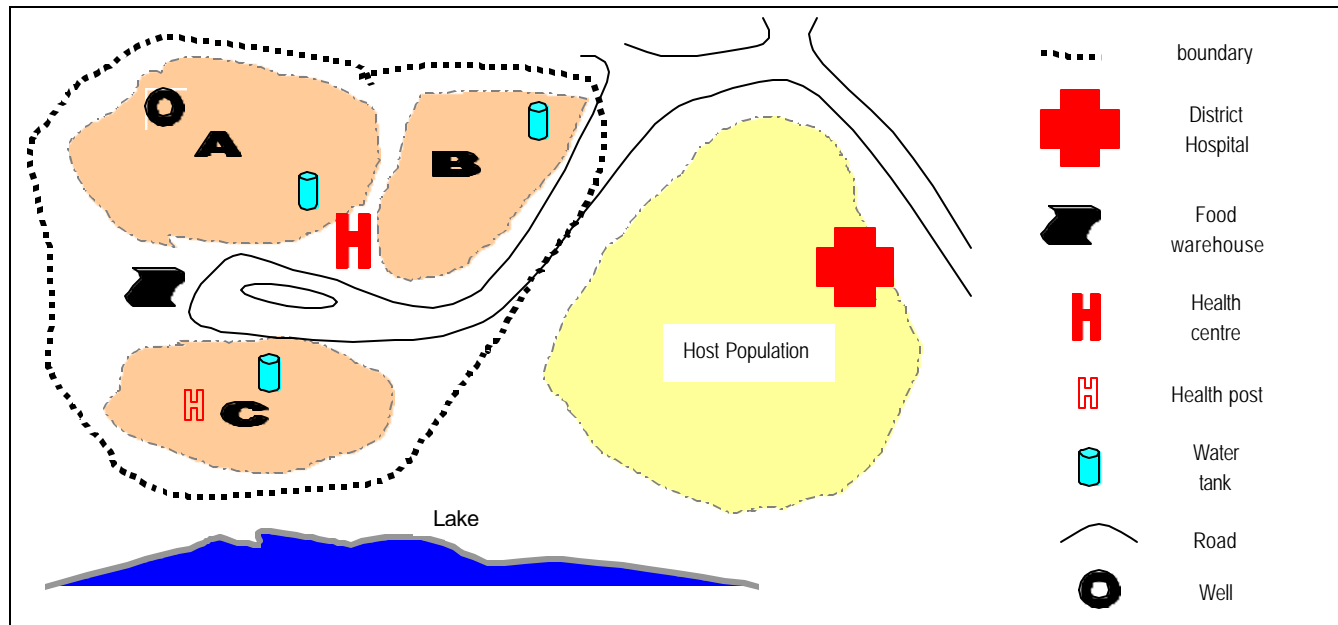
Note: *The legends (symbols and colours representing structures and boundaries) should be consistent and recognisable for all maps. Maps of sub-catchment areas may also be drawn, to show varying target groups for different PHC services.*

4. **Determining the Population's Size and Composition**: Divide the entire map into sections containing approximately equal numbers of households. To estimate the number of households in the entire location, count the number of households (shelters or cooking fires) in a typical section and multiply this by the total number of sections. Then, carry out convenience sampling and select a reasonable number of households (e.g., 50) that can be easily reached. Record the number of persons living in each household, including their age and sex breakdown. Calculate the average number of persons per household and multiply this by the total number of households. The age-sex pyramid can be plotted to show the estimated population structure (see Data Analysis section for an example an of age-sex pyramid).

> **Note**: *The above-mentioned **convenience** (or non-probability) sampling is useful for making crude estimates of the population size/composition and possibly for identifying the immediate health needs during the rapid assessment. Results from convenience sampling are biased and not representative of the entire population. They cannot be used for comparison with results of other surveys. Where possible, probability sampling surveys should be organised as soon as possible to obtain more reliable results. See section on Population Surveys for details on probability sampling methods.*

Chronic Emergency Situations

To estimate population size during chronic emergency situations, other techniques may be used if the information from census or registration exercises is unreliable:

1. **Participatory Mapping** of the catchment area may be done by inviting a group of the affected population to sketch a map of the entire community on the ground or on a large paper. They should first be asked to define the physical boundaries of the location of the affected community (see Figure 4-1 above) and the location of all key landmarks (e.g., rivers or lakes, roads, health facilities/services, water pumps, cemeteries, etc). Distances should be shown as accurately as possible. They should be asked to identify where different ethnic communities and the most vulnerable group(s) (e.g., the poorest or most malnourished) are located in the map of the catchment area.

2. **Household Registration**: If the information from the census or registration exercises is unreliable or more information is required as camp services are set up, household and camp registers should be developed. Reviewing existing administrative records or interviewing key persons may help in designing the registers and in determining the target groups for emergency health services. Community health workers can be trained to visit all households and gather the required information, e.g., record the households on the map and register each household member's personal details (name, age, sex), and any existing risk factor (such as malnutrition, illness, and disability). Household registers can later be used by health workers to locate vulnerable individuals who are most at risk of disease or death, and to target them for specific PHC interventions.

Camp registers can be developed from summaries of household registers. They can be useful for identifying the priority health needs of the population in the camp. Examples of camp and household registers are shown in the following table.

Table 4-7: Camp Register

Camp	Popu-lation	# House-holds	Camp Leader	'CHW'	Health Problems		Access to Health Facility	Available Transport	Remarks
					Priority	Addressed			
Omega	1000	150	Jacob	Sarah	sanitation immunisation	no yes	10 km	Donkey carts	Water source not reliable
Delta	1075	210	Noah	Adam	immunisation malnutrition	yes no	5 km	none	Easily floods in rainy season

Table 4-8: Community Health Worker Household Register

Household ID: 02/90/12 Head of Household: Aladdin Ali				Registration Date: 23/7/68 Prior Occupation: Teacher Camp/Zone: Omega / Blue				
Relation To HOH	Name	DOB/Age	Sex	Health Problem	Date of Death	Migration	Risk Factor	Remarks
wife	Delilah	17	F	pregnant			local beliefs	Poor access to formal health care,
son	Sinbad	3 months	M	diarrhoea			not breastfeeding	low literacy
father	Ali Baba	58	M	TB	20/6/68			

SURVEILLANCE

Surveillance is defined as the ongoing, systematic collection analysis and interpretation of health data, linked with giving feedback to people at all levels of the data collection system as well as applying the information to disease prevention and control measures.

Setting Up a Surveillance System
A surveillance system for emergency health care should be started from the initial needs assessment. The goal of surveillance is to give timely information about health problems so diseases and outbreaks can be detected early and health services can respond more effectively. Objectives of surveillance include the following:
- To monitor the health of a population and identify the priority health needs
- To follow disease trends for early detection and control of outbreaks
- To assist in planning and implementing health programs
- To ensure resources are targeted to the most vulnerable groups
- To monitor the quality of health care
- To evaluate the coverage and effectiveness of program interventions

The capacity and use of surveillance will vary according to the phase of the disaster. The following table presents differences between surveillance systems set up in the acute emergency and post-emergency phases:

Table 4-9: Surveillance Systems in Emergency and Post-Emergency Phases

	Emergency Phase	Post-Emergency Phase
Duration	1-4 months	From the first month(s) onward
Method of Data Collection	Screening, Initial assessment, Simple surveys, Observation by walking around	Regular population-based surveys, Ongoing Health information system
Main Priority	Reduce mortality rates	Detect disease outbreaks, Design and monitor programs, Monitor quality of programs
Type of Data Collection	Mostly active collection, Largely qualitative	Both passive and active collection, More quantitative
Defining Population Size	Sample survey methods	Census and supplemental surveys
Case Definition	Simple clinical signs and symptoms, A few common conditions	May include lab confirmation, More in number
Outbreak Investigation	Informal, Watch for measles, cholera	Formal with process in place, Reportable disease list
Surveillance and Use of Data	Simple, Data needed for immediate actions	Comprehensive, Used to assess quality, For longer term health needs, Addresses less urgent issues, (Emphasises public health approach)

Indicators and Sources of Information

Good surveillance requires standard data collection analysis and reporting procedures. Because the time and resources for collecting, analysing, and reporting data are limited, particularly in the acute emergency phase, only the most essential indicators should be selected based on practical use. The following indicators should be included in surveillance systems for all phases of an emergency:

- **Demographic Indicators** — estimates of total population, vulnerable groups, and in-and-out migration
- **Health Status Indicators** — mortality rate, morbidity rate, and nutritional status
- **Program Process Indicators** — coverage of immunisation, health services, food distribution, and water/sanitation

The sources and methods of gathering information should be carefully selected. The following table defines specific indicators and potential sources of information commonly used in emergency surveillance systems.

Table 4-10: Surveillance Indicators and Sources of Information

Surveillance	Indicators	Sources of Information
Demographic	• Total population • Population structure (age, sex) • Rate of migration (new arrivals, departures) • Identification of vulnerable groups • Births	Registration records, Population census, CHW reports
Mortality*	• Crude mortality rate (CMR) • Age-specific Mortality Rate (<5, >5) • Cause-specific mortality • Case fatality rate (CFR)	Hospital death registers, Religious leaders, Community reporters (including CHWs), Burial shroud distribution, Burial contractors, Graveyards, Camp administration
Morbidity 1. Routine 2. Outbreaks (daily)	• Incidence rate (new cases) • Prevalence rate (total existing cases) • Age-/sex-specific morbidity rate • Proportional morbidity rate	Outpatient and admission records, Laboratories Feeding centre(s) records, Community health worker records
Nutrition (Frequent surveys while malnutrition rate is high)	• Global malnutrition rate • Severe malnutrition rate • Rate of weight gain/loss in MCH clinics • Incidence of micro-nutrient deficiency disorders • Incidence of low birth weight • Average daily ration • Delayed age of menarche	Nutrition surveys MCH clinic records Feeding centre records Birth registers Camp administration
Program Process	• Feeding centre enrollment and attendance • Water and sanitation (quantity, quality, access) • Immunisation coverage • Maternal health coverage (ANC, assisted deliveries, PNC) • Outpatient and inpatient attendance • ORS distribution	Facility records, Immunisation surveys (annual), Traditional birth attendant records

*Note: *The **mortality** or **death rate** is the most important indicator of serious stress affecting a displaced population. Death rates in acute emergency situations have been known to exceed 5-60 times that of normal situations. However, measuring this critical indicator during emergency situations may be difficult because data from death registers of health facilities may be incomplete and other methods of data collection must be considered (e.g., hiring graveyard monitors, interviewing grave-diggers and shroud distributors, and doing community surveys). Each method or sources of gathering information should be evaluated for quality and reliability.*

Alternatives to Surveillance

Surveillance systems are often biased because they collect information passively, i.e., mainly focus on people who use existing services. Other methods of gathering information are necessary for detecting health problems and cases occurring outside the existing facilities. Following are other methods of collecting information:

1. Community Surveillance

In community surveillance, a limited amount of health information is gathered directly from the community (e.g., new cases with a common disease). This may require training of health workers to recognise and manage cases according to their diagnostic skills. Broad case definitions can help community outreach workers to recognise and refer all possible cases to health facilities. Qualified health workers in higher levels of the emergency health system can be trained to use more specific (but less sensitive) case definitions, which may require laboratory confirmation. This will ensure the surveillance system does not miss any person that is a probable or definite case with a communicable disease. The table below gives examples of case definitions that may be appropriate for workers at different levels of a primary health care program.

Table 4-11: Case Definitions from Home to Hospital

Diagnosis LEVEL OF CARE	Possible Case HOME	Probable Case FIRST LEVEL FACILITY	Definite Case HOSPITAL
MALARIA	Fever only	Fever + periodic shaking + chills	Positive slide for malaria parasites
MEASLES	Fever only	Fever + rash	Fever + rash + cough or Koplik's spots

Disease surveillance can be improved by encouraging the use of standard case definitions for diagnosing and managing patients and recording data in health facility registers. All patient and hospital records may be monitored regularly to ensure that the recorded diagnosis accurately represents the patient's condition.

Note: *Cases diagnosed at different levels of care should be analysed separately.*

2. Surveys

Sometimes it is necessary to organise focused assessments to gather information that is not immediately available through the existing surveillance system. For details on surveys, refer to the next section on Population Surveys. Key differences between surveys and surveillance are described in the following table:

Table 4-12: Differences Between Surveys and Surveillance

SURVEYS	SURVEILLANCE
Intermittent, focused assessments that collect population-based health data (active).	Ongoing, systematic collection, analysis, and interpretation of facility-based data (mainly passive).
Collect information on demography, morbidity, mortality, nutritional status (acute malnutrition) and program indicators (e.g., EPI, ANC, SFP, use of health services).	Collect information on demography, morbidity, mortality, births, nutritional (micro-nutrient deficiencies), health services and environmental health indicators.
May be limited to concerned agency/facility.	Should involve all health agencies and facilities.
With appropriate sampling, allows for filling of information gaps in community-level data.	Captures those who attend facility-based services, therefore not representative of all needy groups.
Requires more time and resources to organise, but is a one-time cost only.	Less costly since integrated within routine services and the existing system.

3. Outbreak Investigation

A surveillance system should be sensitive enough to pick up the first few cases with diseases that have epidemic potential (see table below). This can be achieved by training all data collectors to recognise cases with reportable diseases. In addition, they should be given guidelines for immediate reporting of a suspected disease outbreak. All reports should prompt immediate action by concerned health authorities, beginning with a preliminary investigation to confirm whether there really is an outbreak. (Refer to the section on Outbreak Investigation for further details).

Table 4-13: Examples of Diseases That Can Cause Outbreak

Reportable Diseases	Diseases of Public Health Importance
• Measles • Cholera • Meningitis • Hepatitis • Tuberculosis • Yellow fever • Haemorrhagic fever	• Rabies • Tetanus • Sexually transmitted infections (gonorrhoea, syphilis, chlamydia, genital ulcer disease, chancroid) • HIV/AIDS

Analysing and Reporting Surveillance Data

For a surveillance system to be useful, the information that is gathered should be analysed and reported in a timely manner. Data analysis includes summarising data into frequency tables, calculating rates, plotting simple graphs, and comparing all information with earlier information. As much data analysis as possible should be done at the field level, where it can be used. This will improve the program's effectiveness. Staff responsible for analysing and reporting surveillance data should do the following:

- Focus on mortality rates and key causes of illness.
- Display disease trends in form of graphs.
- Ensure information is passed promptly to decision-makers in a manner they can easily understand.
- Give feedback to the data collectors after analysing and interpreting the information. Refer to the Data Analysis section for further details.

Table 4-14: Example of a 2x2 Frequency Table

Age of Patients	Cases with ARI		Total
	Males	Females	
Under five years	a	b	a + b
Over five years	c	d	c + d
Total	a + c	b + d	a+b+c+d

Since the main sources of information are health facilities, the most senior person at each health facility should be held responsible for performing simple data analysis (e.g., sorting and summarising data and calculating rates) and forwarding it to the health co-ordinator. At the project office level, the health co-ordinator may perform additional data analysis and interpretation before reporting the findings to the HQ level and lead agency. The analysis and interpretation of all health information should be linked with feedback to the data collectors. Copies of the surveillance reports should also be forwarded to the district and national health offices (either weekly or monthly). However, when a potential disease outbreak is suspected, the district health office should be notified immediately. (For more details, please refer to the section on Data Analysis and Reporting at the end of this chapter.)

Evaluating a Surveillance System

A surveillance system should be evaluated and updated from time to time. The following table describes the criteria for evaluating surveillance systems:

Table 4-15: Criteria for Evaluating the Function of a Surveillance System

Criteria	Description
Simple	Data is easily collected and recorded in a logical, transparent manner.
Representative	Indicators used are in line with the defined problem, e.g., use Weight-For-Height, not Weight-For-Age to assess for *acute* malnutrition.
Relevant	Limited to relevant public health information that can and will be acted upon, e.g., prevalence of intestinal worms is not a priority indicator of health status during the acute emergency phase.
Timely	In detecting any outbreak (may depend on the frequency of reporting data)
Reliable	Information is gathered in a standard manner (case definition, tools, procedure) and can be reproduced.
Standardised	Indicators should mean the same to data collectors at a particular level, e.g., the case definition for malaria is the same for all CHWs.
Continuous	Performs repeated measurement of the same indicator to detect trends.
Acceptable	To both the affected population and to the authorities.
Flexible	Can adapt to new health problems or sudden program changes.

The following indicators may also be used for evaluating the surveillance system:

- Percentage of cases or deaths reported as "Unknown" or "Other"

- Suitability and use of standard case definitions

- Ways of disseminating findings from surveillance

- Who gets and who uses the surveillance data

- Procedures for making inquiries and for direct reporting of epidemics

- Use of surveillance findings in decision-making and action

POPULATION SURVEYS

Surveys are defined as periodic, focused assessments that are carried out to collect additional health data from a population. They aim to gather information that is not routinely collected by the existing information systems (e.g., to find out if the displaced population has access to food, water, health care, etc.).

Basic Principles

There are two types of surveys – exhaustive surveys (that study the entire population) and sample surveys (study a subset of the population). Exhaustive surveys can involve too much time, money, and manpower, and create many errors. Well-designed sample surveys can provide more valid information about the entire population than interviewing each member of the population.

Relief workers will encounter many situations where they may need to carry out a survey. Because surveys consume many resources (staff, time, and money), relief workers should always confirm that the survey information is not available from all possible sources and that a survey is the best way of obtaining it. Surveys may investigate the entire population or only a fraction of the target population (sample surveys). Most health related surveys are sample surveys. The following table outlines the necessary steps for planning and organising surveys:

Table 4-16: Checklist for Conducting Surveys

PLANNING	ORGANISING
1. Plan the Survey • Identify the health problem and its importance • Determine what additional information is required to solve the identified health problem • Establish why a survey is the best way of obtaining the necessary information 2. Survey Design • Define the survey objectives, e.g., to determine the prevalence of malnutrition among children less than 5 years • List the main questions the survey should answer to achieve the survey objectives • Outline the methods and instruments for gathering the information • Estimate the time and resources needed for the survey (training, collecting and analysing data, etc.) 3. Plan How Results Will Be Analysed and Reported • Work out the main end-results expected from the analyses in form of "dummy tables" • Draw an outline of the survey report: section headings, tables, graphs, etc. 4. Sampling • Define the population to be surveyed and their location based on the survey objectives, e.g., for malnutrition, the under-five population may be adequate • Decide on sampling method and calculate the sample size • Outline the sampling plan 5. Design the Survey Questionnaire • Select indicators and appropriate questions • Test the questionnaire, methods, equipment and analysis procedure	6. Prepare the Community • Inform the community leaders about the purpose and method of the survey • Get their agreement and co-operation 7. Train the Supervisors and Interviewers • To sample respondents as needed • To keep their respondents interested in the interview • To ask each question in a standard way • To correctly take measurements and record data on the questionnaires 8. Conduct the Survey • Involve community leaders • Arrange for supervision and regular discussion • Review completed questionnaires with the interviewers 9. Analyse and Interpret the Data • Manually tabulate the data (tables, frequencies) • Calculate averages, percentages, rates, etc. • Graph and tabulate analysis results • Interpret results in light of other information 10. Survey Report • Write a survey report and present findings to and receive feedback from the community, MOH, other NGOs, and survey data collectors • Incorporate data and feedback into health information system • Develop recommendations and action plan from survey results and feedback (no survey without action) 11. Evaluate the Survey • If survey objectives were achieved, key lessons learned in the process • Program changes resulting from the survey • Effectiveness of revised program in addressing the health problem and needs identified under step 1

Survey Design

A population survey is carried out in order to achieve particular objectives. These objectives will depend on the main problems affecting a displaced population. Objectives for the population survey may be selected from the following:

- To measure the incidence or the prevalence of a disease or health condition, such as malnutrition.
- To measure past events, such as mortality rate, during a certain period.
- To estimate the coverage or use of specific services, such as immunisation and outpatient clinics.
- To identify groups at increased risk of specific conditions (vulnerable populations) that should get treatment or referral to health services.
- To learn about local beliefs, customs, practices, etc. relating to health.
- To test a hypothesis (an educated guess or theory) about the link between risk factors (e.g., hook worm infection) and presence of a health condition (e.g., anaemia).

After setting the objectives, the next step is to define the main questions that the survey will try to answer. For example, for a population with high levels of anaemia, a survey may help determine whether the presence of anaemia is related to hookworm infection. These questions need to be compiled into a questionnaire, which may be used for gathering the required information.

Planning the Analysis and Reporting

How information from a population survey will be analysed and reported should be determined early in the planning stage. "Dummy tables" are useful for summarising survey findings, as shown below.

Figure 4-2: Examples of Dummy Tables for Hookworm Survey

Distribution of Hookworm Infected People by Age and Sex

Age of Patients	Cases with Hookworm Infection		Total
	Males	Females	
Under five years			
Over five years			
Total			

Distribution of Hookworm-Infected Cases by Levels of Haemoglobin

Haemoglobin Level	Hookworm Infection		Total	% with Hookworm
	Present	Absent		
Less than 10 g%				
10g % or more				
Total				
% with anaemia				

Estimating Sample Size

Table 4-17: Estimating Sample Size

Estimating Sample Size for Simple Random or Systematic Sampling	Estimating Sample Size for Cluster Sampling

$$N = \frac{Z^2 pq}{d^2}$$
 • N = size of sample
 • Z = level of statistical certainty chosen, or confidence interval:
    95% => Z = 1.96; 90% => Z = 1.68
    value of z usually rounded to 2
 • d = degree of accuracy desired = half the confidence interval
 • p = estimated level/prevalence/coverage rate being investigated.
 (When in doubt, use 50% for maximum sample size.)
 • q = 1 – p
 	
 Example:
 To calculate the largest sample within a 10% margin of error and confidence limits of 95% (z = 1.96):
 	
 $$N = \frac{(1.96)^2 (0.5)^2}{(0.1)^2} = \frac{3.84 \times 0.25}{0.01} = 96$$
 	
 Note: *Confidence interval is the range of values obtained from the sample survey between which we are 95% confident that the true value in the overall population lies.*
 	
 EPI-INFO[ii]: the above calculations can easily be performed using the STATCALC function.
	$$N = \frac{2(Z^2 pq)}{d^2}$$
	
	 Because this type of sampling has some degree of selection bias, one should approximately *double* the sample size. Doubling would maintain the same degree of precision as simple random sampling:
	
	 • N = 2 X 96 = 192
	
	 • The WHO immunisation coverage survey uses a minimum of 7 subjects per cluster (7 x 30 clusters = 210, which is greater than 192).
	
	 • The rapid KPC 30-cluster survey (of Child Survival Projects) uses a sample size of 300 (10 per cluster) to ensure that sub-samples are large enough to obtain management type information within statistical margins adequate for making management and program decisions.
	
	 Note: *A cluster sample is recommended for collecting information on a condition that is common. It does not give sufficiently accurate estimates for rare conditions.*

The above table shows formulas for calculating the appropriate sample sizes for different sampling methods. In general, the larger the sample, the more reliable will be the estimated results of the entire population. Therefore, the size of a selected sample should be large enough to give reliable estimates, but not so large that it wastes limited resources.

A sample size of 100-200 randomly selected individuals from a population of up to 20,000 is usually adequate to assess for a common condition. However, a larger sample size is needed when greater accuracy is required or to investigate conditions that have a low prevalence (e.g., maternal deaths).

Note: *Sample size tables in standard statistics textbooks may be used to determine the actual sample size needed.*

Sampling Methods

Sampling is defined as the selection of a specified number of persons in a population for study with the hope that they are *representative*, i.e. the characteristics of the sampled population (study population) are similar to the population from which it is drawn (reference population). In **probability sampling**, every person in the target population has the same known (and non-zero) chance of being included in the survey. It allows investigators to form conclusions about a reference population based on information collected only from a subset of the population. Probability sampling therefore enables the collection of reliable information at a minimal cost. Results from these surveys can also be compared with results of similar surveys performed in another time, place or population. The following are probability sampling methods:

1. **Simple Random Sampling**:
   - Begin by constructing the sampling frame. List every sampling unit (persons, household, village, etc.) from which the sample is to be drawn.
   - Randomly select the required number of units from the sampling frame by drawing lots or using a table of random numbers.

   Note*: This method is more likely to produce a representative sample, but it can be expensive and difficult to make a sampling frame where a population is scattered.*

2. **Systematic Sampling**:
   - Begin by randomly selecting the starting unit, in order to fulfil statistical requirements in systematic selection.
   - The next sampling units are systematically selected by adding a certain number "n" (e.g., 10, 20, 50 depending on the sample size relative to the total population) to the starting unit.

   Note*: A systematic sample can be drawn without an initial listing (e.g., choose from a line of people or according to the time patients enter a clinic.*

3. **Cluster Sampling**: The following is a description of two-stage sampling, which may be extended to more stages of sampling if needed.

   Cluster sampling begins with a list of clusters (community or administrative subdivisions, e.g., sub-location, village, zone, plot, etc.). For the first stage, a certain number of clusters (usually 30) are randomly selected, based on the cumulative frequency distribution of a population. For the second stage, a specific number of *sub-units* (a minimum of 7) are randomly selected *within each selected cluster*.

   - Determine the direction line by spinning a bottle on the ground.

   - The starting sub-unit (e.g. household) is randomly selected by picking a random number between 1 and the total number of households along the direction line between the geographical centre (e.g. market, mosque, church) and the cluster boundary.

   - Subsequent households may either be the nearest household from the entrance of the one just sampled or every nth household (where the sampling frequency may be the total number of households along the direction line, divided by the required number of subjects per cluster, (e.g., 7).
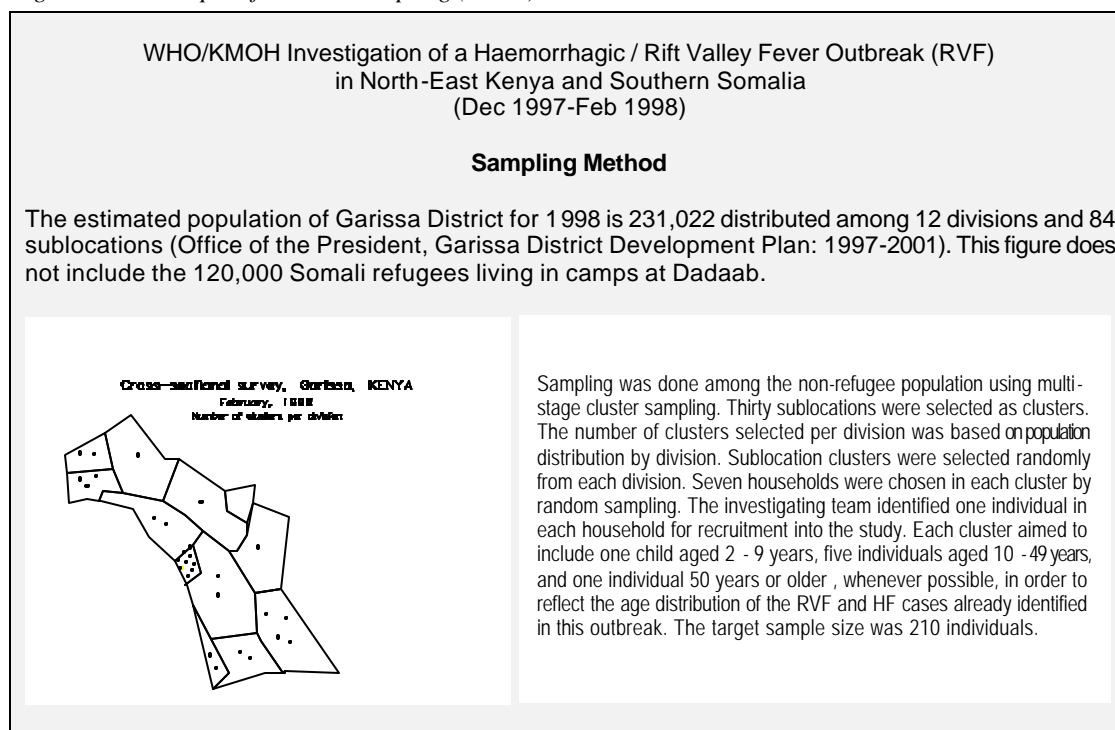
- In each *selected household*, a suitable subject (e.g., child less than five years) is sampled and examined if present. The selection continues until all the required *subjects per cluster* have been interviewed.

  Note: *Consider the following points when selecting subjects in a cluster:*
  - *If the suitable subject in a selected household is not available, then the next household in the same direction is selected.*
  - *If there are not enough subjects in the cluster, then the survey team for that cluster should go to the next nearest house in the next nearest cluster.*
  - *If the last household has more than one suitable subject present (e.g., 3 children less than 5 years), then the other children should also be included in the survey.*

The following Figure shows an example of cluster sampling.

Figure 4-3: Example of Cluster Sampling (WHO)

WHO/KMOH Investigation of a Haemorrhagic / Rift Valley Fever Outbreak (RVF)
in North-East Kenya and Southern Somalia
(Dec 1997-Feb 1998)

Sampling Method

The estimated population of Garissa District for 1998 is 231,022 distributed among 12 divisions and 84 sublocations (Office of the President, Garissa District Development Plan: 1997-2001). This figure does not include the 120,000 Somali refugees living in camps at Dadaab.

Sampling was done among the non-refugee population using multi-stage cluster sampling. Thirty sublocations were selected as clusters. The number of clusters selected per division was based on population distribution by division. Sublocation clusters were selected randomly from each division. Seven households were chosen in each cluster by random sampling. The investigating team identified one individual in each household for recruitment into the study. Each cluster aimed to include one child aged 2 - 9 years, five individuals aged 10 - 49 years, and one individual 50 years or older, whenever possible, in order to reflect the age distribution of the RVF and HF cases already identified in this outbreak. The target sample size was 210 individuals.

4. **Exhaustive Sampling:** Sometimes the entire population must be surveyed, e.g., when investigating a disease outbreak or when selecting only a group of people for the study may create a strong feeling of discrimination in the population.

Choosing a Sampling Method

The type of sampling method selected will depend on whether a sampling frame — a list of individual people from which a sample is to be drawn — exists. When a map with a prior census is available, subjects can be selected using simple random sampling or systematic sampling. However, a "second-best" cluster sampling procedure, may be the only option where a population has not been settled in an orderly manner (as in many refugee camp settings). The most commonly used sampling methods are systematic sampling and cluster sampling. The following table describes the main differences between these two methods:

Table 4-18: Systematic Sampling and Cluster Sampling

Systematic Sampling	Cluster Sampling
Ideal where shelters are arranged in an orderly manner.	Most suitable method where the site is not arranged in an orderly manner and the population is large and spread out in groups.
Requires more effort to construct a detailed list of individual subjects (from census or registration) as a sampling frame.	Survey is faster since people are grouped together. Less effort since only a simple sampling frame, lists of clusters (e.g., villages) with population estimates, is needed.
Systematic selection may not necessarily produce a random sample.	Potential for errors if the variable (e.g., disease) being studied is clustered within the population.
Provides more precise estimates of the reference population from a similar sample size.	Less precise, therefore, requires a larger sample. The sample size formula is used but, because of the design effect, "n" is multiplied by 2.

Designing a Questionnaire

Questionnaires are useful for collecting information that may be difficult to obtain in any other way. Although designing a questionnaire may look simple, it is in fact rather difficult. Whenever possible, use pre-tested questionnaires from the local or international organisations (such as the host MOH, WHO, DHS). Then, develop new questions for any additional information. Pictures are useful for illustrating questions that are difficult to state in words or for illiterate data collectors. To develop complete questionnaires, focus group discussions can be used to develop the first draft.

Key Steps for Designing Questionnaires

The following steps outline the process for designing a questionnaire:

1. Define indicators that meet the survey objectives, including definition of cases and events.

2. Identify the easiest method for assessing each indicator.

3. Develop questions which can produce the required information for each indicator.

4. Check each question against the survey objectives. Keep only those questions that provide the most essential information.

5. Ensure each question is clear, simple, short, and easy to ask.

6. Decide whether to make the questions open-ended or closed.

7. Test new questions on dummy tables (see Planning the Analysis and Reporting section) to confirm that they will assess the selected indicators.

8. Translate the questionnaire into the local language and then translate it back to the original language to identify any mistakes.

9. Ensure there is a logical flow of questions in each section. Begin with general questions and end with the more sensitive questions.

10. Place instructions for the interviewers at the beginning of each section.

11. Provide enough space between questions for recording responses.

12. **Pilot test** (try out) the questionnaire and other survey instruments (e.g., weighing scales, tape measures) in an area that is not to be surveyed. Check that no essential information has been left out and the interview is short (less than 20 minutes).

13. Review the questionnaire and make final changes.

Figure 4-4: Sample Questionnaire for a Childhood Mortality Survey

Questionnaire for Childhood Mortality Survey
1. Are there any children less than 5 years of age currently living in this household? (Yes/No) _____
If yes, how many? _____
2. Have any children less than 5 years of age in this household died during the past year? (Yes/No) _____
If yes, how many? _____
3. How old was each child at the time of death? _____
4. Did the child have any of the following during the week before death:
❑ Fever with cough?
❑ Fever without cough?
❑ Diarrhoea?
❑ Fever with rash?
❑ Accident?
5. Which other symptoms did the child have? _____
6. Which of the health problems do you think was the cause of death in your child? _____
7. Did the child visit the health post during the week before he/she died? (Yes/No) _____

Common Problems with Questionnaires

The following are common problems with questionnaires:

- Too many questions — after questions on personal details (name, age, sex, etc.), add another 10-15 questions to limit the interview to a total of 10-20 questions.

- Leading questions — ensure questions are neutral. Do not suggest that a particular answer is correct.

- People are asked about events that they cannot recall. In general, the maximum recall period that can be relied upon is 2 weeks (except for major events such as admission to hospital or death).

- Interviewers are left free to interpret the answers. Use pre-coded answers or record exactly what the subject says.

- The questionnaire is constructed in one language but administered in another.

- Interviewees may be concerned about the nature of the questions and who will be informed of their responses. A full explanation about the survey should be given prior to the interview, with strong reassurances about the confidentiality of their participation and use of the information.

Training and Supervising Interviewers

It is important to train all interviewers to administer the revised questionnaire in a standard way. They should be made aware about how they may influence responses to the questions. They should be trained to ask questions in a neutral way and refrain from giving advice.

Even if samples were carefully selected, surveys can still give misleading results. Interviewers should be closely supervised in order to prevent the following from occurring:

- **Non-response bias** — This can occur if a high proportion of the sample population or individuals are missing or did not answer the questions. For example, a survey done during the day may miss young men and women who have gone to work. People may not be willing to answer sensitive questions. Non-response bias can be minimised by the following:
  - Ensuring that at least 80% of the original sample population responds during the survey.
  - Following up all non-responders at least once.
  - In many cultures it is important that women interview women and men interview men, particularly for sensitive subjects like family planning, STDs, and HIV/AIDS.

- **Observer error** — Inaccuracies commonly occur because of the interviewers taking or recording faulty measurements, not because of faulty instruments or unreliable subjects. Observer errors can be reduced by the following:
  - Making all interviewers sign their names on each questionnaire they administer.
  - Checking that interviewers follow standard guidelines when taking and recording measurements.
  - Checking instruments daily and adjusting the zero reading on weighing scales.

Analysing and Reporting Survey Findings

After carrying out the survey, the information in the completed questionnaires needs to be processed and analysed in order to be meaningful. It may be transferred into dummy tables and simple calculations performed in the field by hand or with the help of a pocket calculator. Further analysis may only be possible at the project office and the MOH levels. Thereafter, it is important to share findings and recommendations with all concerned.

The following table shows a general outline of a report which may be used to present the data to program decision-makers in a way that they can understand. A shorter report, which focuses on the survey results and recommendations from the survey, should be sent to the affected community.

Table 4-19: General Outline for a Survey Report

Outline for a Full Survey Report
Introduction
Purpose of survey
Survey area
Dates of survey
Methodology
Indicators
Sampling frame
Questionnaire used
Survey Results
Highlights
Graphs with charts and tables
Conclusions and Recommendations
Significant findings
Problem areas
Potential actions
Further investigations

OUTBREAK INVESTIGATION

Disease outbreaks (or epidemics) occur when many people in a community or region develop a similar illness — in excess of normal expectations — through a common source or carrier. An outbreak may be declared following the detection of a single case in a non-endemic area (such as cholera or measles). Or after the number of reported cases reach the *threshold incidence rate* of a particular disease (e.g., threshold for meningitis is 15 cases per 100,000 people in a two-week period). (Please refer to the *Control of Communicable Diseases* chapter for more details about epidemic thresholds.)

Objectives of Investigating an Outbreak

The following may be defined as objectives for investigating an outbreak:

- To identify the cause(s) and risk factors for the disease.
- To identify the appropriate prevention and control measures that will reduce the impact of the disease.
- To determine the extent of the disease.
- To provide a foundation for developing public health policy.

Key Steps

Table 4-20: Checklist for an Outbreak Investigation

KEY STEP	DESCRIPTION
1. Notify the host health authorities.	• Provide essential information on the affected sites, the time period, the frequency and profile of cases, the clinical presentation and disease outcome, a possible diagnosis and suspected source of infection.
2. Confirm the outbreak.	• Define a "case" and count the number of reported cases (the numerator): Is the disease known? Are the causes partially understood? • Define the denominator: What is the population at risk of developing the disease? • Calculate the attack rates. • Review previous levels of disease and local knowledge of disease outbreaks.
3. Describe the outbreak in terms of *time*, *place* and *person.*	• Graph reported dates of disease onset for all cases to establish the *timing* (incubation period) and the source of disease (single or multiple sources). • Map the residence of all reported cases to identify the most affected areas and the direction of the disease spread (see spot map in the DATA ANALYSIS section). • Calculate the age- and sex- specific rates to identify *who* is most vulnerable. • Collect population data for the communities at risk (more denominators).
4. Analyse *what* caused the outbreak.	• Look for links or interaction between relevant factors (e.g. floods increasing the *Aedes* mosquito population and reducing access to health care resulting in an outbreak of dengue fever).
5. If necessary, conduct additional studies.	• Interview cases with disease and non-cases to identify possible *sources* and method of disease *transmission* (common source or person-to-person). • Determine the proportion of cases and non-cases that had possible *exposure* to infection. • Identify important differences between the cases and non-cases to define the individuals/groups at increased risk of contracting the disease. • Collect specimens from cases and non-cases for laboratory investigation.
6. Assess the environment, if necessary, based on the analysis of the outbreak.	• Investigate for vectors, faecal contamination, toxic chemicals.
7. Initiate prevention and control strategies.	• Source reduction (treat cases and carriers, isolate cases, control animal reservoirs). • Prevent transmission (health education, personal and environmental hygiene, vector control, restrict movements). • Protect vulnerable people (immunisation, chemo-prophylactics, personal protection, nutrition). • Continue surveillance: maintain routine reporting, follow-up suspects, and set up special surveillance for new cases.
8. Prepare a report on the outbreak that covers the following points:	• The causative agent and probable routes of transmission. • Description of the trend in the disease outbreak, the geographic distribution and the clinical presentation among cases. • The reason for the outbreak. • Disease control measures that were introduced. • Recommendations for prevention of future outbreaks.

Even though different disease outbreaks may occur, there are key steps that are carried out in most outbreak investigations. These steps are summarised in the table above. The order of the steps may depend on the nature of the outbreak and the existing knowledge about the disease. For example, in suspected cholera outbreaks, appropriate disease control measures need to be initiated at the beginning, before identifying the cause or risk factors for disease.

When investigating an outbreak, the first step is usually to confirm that there really is an outbreak. A local public health team may be capable of doing this, and sometimes even identifying the possible causes and risk factors. The most effective ways of controlling the spread of disease should be initiated as soon as possible. Sometimes, there is not enough information for identifying the cause of the outbreak or appropriate control measures. If the outbreak seems to be spreading and causing many deaths, rather than phasing out naturally, a special team of investigators (e.g., epidemiologists, entomologists, microbiologists, etc.) may be invited to support the local team. The epidemiologists may help organise a case-control study that compares risk factors among people with the disease and those who do not have the disease. At the end of the investigation, a report should be written and shared with all concerned.

Carrying Out the Investigation
Because investigating a disease outbreak involves many people, it needs careful planning, organisation, and supervision. Key procedures must be followed. If the disease is spreading rapidly, speed in carrying out the investigation may be critical.

1. **Planning the Investigation**
   - Consider access to the site and the willingness of the community to help with the investigation.
   - Consider the local climate, the daily family activities, and the migration patterns when scheduling the time for data collection.
   - Design appropriate questionnaires based on how the information will be analysed.
   - Train interviewers to ask questions in a standard way and to practice using the survey instruments (the questionnaires and equipment) before the investigation.
   - Arrange for translators and chaperones to be present during interviews if needed.
   - Standardise the sequence of data collection procedures. Most investigations involve epidemiological, clinical, and laboratory procedures. Data should be collected as follows:
     - First, collect information directly from the affected person or family member where necessary.
     - Then, perform a physical examination after the interview.
     - Lastly, collect any required laboratory specimens (blood, stool, etc.). Preserve all laboratory specimens appropriately.

2. **Organising the Investigation**
   - Involve local authorities for security clearance, publicity, and introducing the investigation team to the affected community.
   - Sketch an organisational chart, which shows the lines of authority, the roles of different teams, and the link between functions.
   - Remember, "no survey without services." Prepare incentives to maintain community participation during the investigation. This may include providing some medical services or essential drugs.

3. **Supervising the Investigation**
   - Supervise field workers by checking how they conduct interviews during the survey, and their accuracy in recording data.
   - Evaluate the collection and processing of laboratory specimen for quality control.
   - Carry out and check data entry daily and perform simple calculations.
   - Conduct frequent staff meetings to identify and address any problems.

At the end of the investigation, organise a final meeting with all supporters and participants to thank them and give them feedback about the investigation, and to recommend any long-term measures to prevent and control future outbreaks.

DATA ANALYSIS AND PRESENTATION

Objectives of Data Analysis
The following are objectives of analysing data:
- To identify the possible root causes of problems.
- To investigate further to verify the actual causes of a problem.
- To define needs that have not been met.
- To develop an action plan for dealing with problems.
- To improve the quality of programs.

All data that is collected, by whichever means — routine information system, surveillance systems, an outbreak investigation or a survey – has to be processed, analysed, and presented in a form that decision-makers can easily understand. The methods, time and resources needed to analyse data should be planned in advance. Projects can save time and effort by analysing only the priority problems being tackled by the project.

Analysing data can be simple and straightforward, and most of it can be done by hand with a pocket calculator. Basic data analysis includes the following steps:

1. Sorting the data records.
2. Performing summary statistics (for numerical data).
3. Summarising data into frequency tables.
4. Calculating percentages and rates.

Where staff members lack the knowledge and skills for analysing data, on-the-job training should be organised with follow-up supervision. Where computers and staff with computer skills are available, EPI INFO, a public domain software, may be used to set up questionnaires, store databases, perform basic and advanced data analysis, and to print results. Results of data analysis should be carefully interpreted and then presented as tables and graphs, which are easier to understand.

Basic Data Analysis and Interpretation
Data should be analysed and interpreted in a logical sequence. The following steps may be used to analyse data in the field:

1. **Define the Major End-Results Expected from the Analysis** (e.g., mortality and morbidity rates, coverage and access to food ration, water supply, and sanitation).

   Note: *This step may have been done when planning for the data collection.*

2. **Process All Data.** Data on people attending health facilities or feeding centres is usually recorded directly from individual patient cards into facility registers on a daily basis. Data in these registers will usually be summarised as shown in the following table:

Table 4-21: Summary Sheet for ARI Survey Data on 200 Displaced People in Camp A

RECORD No.	DATE	ZONE	AGE	SEX	WEIGHT	ARI INFECTION
1	1/1	R	4	F	20	+
2	1/1	Q	6	F	25	-
3	1/1	S	8	F	30	+
4	1/1	Q	3	F	15	-
5	2/1	Q	4	M	15	+
6	2/1	P	4	M	20	-
7	2/1	P	11	F	40	-
8	2/1	Q	2	M	12	-
9	2/1	R	2	M	8	+
10	3/1	R	1	F	7	+
.	.	.	.	.	.	.
.	.	.	.	.	.	.
200	7/1	S	3	F	10	+
TOTAL						

Data from surveys is usually received in individual questionnaire forms. These questionnaires first need to be sorted by record number and date, from the earliest to the most recent. The information then needs to be recorded onto a summary sheet similar to the one shown above.

Note*: All data received should be inspected for inconsistencies or for missing data and appropriate actions should be taken (e.g. verify, omit, etc.).*

3. **Analyse Categorical Data.** Categorical data such as age, sex, occupation, location, etc. must first be tabulated follows:

a) **Hand-tally data** from the above registers or summary sheets of observations into the corresponding box as shown below. Ensure that no observation is recorded more than once and that all the observations are contained in the table.

Table 4-22: Examples of Two-Way Tally Sheets

Example of a two-way tally sheet showing age and gender

	Male	Female	Total
			26
< 5	⦀⦀⦀	⦀⦀	
> 5	⦀⦀	⦀⦀⦀	24
Total	25	25	50

Example of a two-way tally sheet showing ARI cases by age

	ARI +	ARI -	Total
			30
< 5	⦀⦀	⦀⦀⦀	
> 5	⦀	⦀⦀⦀	20
Total	15	35	50

c) **Classify data into frequency tables:** Transfer total counts from tally sheets into corresponding *cells* (intersection of a row and a column) of empty but labelled **dummy tables** (should be prepared during the planning stage). These may be one-way or two-way frequency tables. One-way tables may be appropriate for classifying data by **PLACE**. Two-way tables may be used to classify data by **PERSON** (age and gender or other characteristic).

Table 4-23: Examples of One-Way and Two-Way Frequency Tables

A one-way frequency table: Distribution of ARI cases by location

CAMP	P	Q	R	S	Total
No. of ARI cases	10	30	70	40	150

A two-way table: Distribution of ARI cases by age & sex

	No. of ARI Cases		Total
	Male	Female	
< 5 years	50	50	100
> 5 years	10	40	50
Total	60	90	150

c) **Calculate percentage of observations**: Divide the count in each cell by the grand total and multiply the result by 100. Percentages may be expressed to one decimal point or rounded to a whole number.

Table 4-24: Example of Calculating Percentage of Observations

	ARI Male		ARI Female		ARI Total	
	No.	%	No.	%	No.	%
< 5 yr	50	33.3	50	33.3	100	66.6
> 5yr	10	6.7	40	26.7	50	33.4
Total	60	40.0	90	60.0	150	100

The distribution of ARI cases by age and gender

Tables of categorical data can later be used for comparison with other data, for presentation of graphs or to carry out statistical tests.

d) **Compare frequencies and percentages** as follows:
- By PERSON: compare frequency tables for gender/age (e.g., male with female, under-five with total population, etc.)
- By PLACE: compare frequency tables for different camps or population settlements
- By TIME: compare frequency tables with baseline or previous month's frequencies to follow trends

For all comparisons, ensure the population size and structures in the frequency table are similar. For example, the above results of ARI distribution in one camp may be compared to results of another camp whose population size and structure is similar. Otherwise the conclusions drawn may not be valid. (For details about how to compare populations with a different structure or size, please refer to standard statistical texts.)

These comparisons can also be illustrated by graphs. Information in the one-way frequency table is better understood on a spot map that shows where the disease distribution is greatest. A spot map is easily created by pushing pins on a map of the study areas. (See Presenting Data for an example of a spot map.)

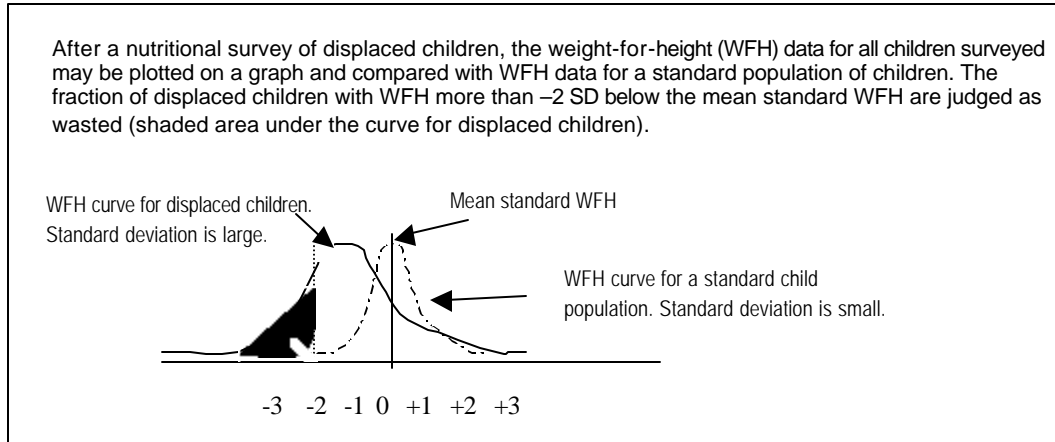4. **Analyse Numerical Data:** e.g., age, weight, height, haemoglobin levels, etc.

a) **Descriptive Analysis: Summarise data by defining the following**:
- *Range* —- scan the data set in each category. The range is the difference in values between the lowest and the highest observed values.
- *Median* —- sort the data in each category from the lowest to the highest value and note the middle value that divides the data set into two equal halves. *Note: The median is preferred to the mean when the data is biased or tends to lie in one direction.*
- *Mode* — scan the data set to identify the most common observation.
- *Mean* —- calculate the mean (also known as the "average") by summing all the data in a category (e.g. birth weight) and dividing the total sum by the number of observations.
- *Percentage* —-define the proportion of subjects above or below particular data categories.

Table 4-25: Examples of Summary Statistics

Data Set for Ages of 15 People with ARI Infection	
Original data set	{2,21,3,1,4,2, 8,1,6,11,10} — can begin with a disorganised data set
Sort data set:	{1, 1, 2, 2, 2, 2, 3, 3, 4, 4, 6, 8, 10, 11, 21}
Age range:	1 – 21 years
Median age:	3 years
Mode:	2 years
Mean age:	(1+ 2 + 3 + 3…. + 10 + 11) / 11 = 80/15 = 5.3 years
Percentage:	10/15 = 66.7% of people with ARI are below the mean age of 5.3 years

- *Standard deviation (SD)* —- The standard deviation describes the scatter of observations around their mean. A large SD implies a wide scatter in the observed data, while a small SD implies a narrow scatter with little difference between the observations. In emergencies, the SD is commonly used to estimate the prevalence of malnutrition or to show the normal range of laboratory tests. (For details on calculating standard deviation, please refer to standard statistical texts).

Figure 4-5: Applying Standard Deviation

After a nutritional survey of displaced children, the weight-for-height (WFH) data for all children surveyed may be plotted on a graph and compared with WFH data for a standard population of children. The fraction of displaced children with WFH more than –2 SD below the mean standard WFH are judged as wasted (shaded area under the curve for displaced children).

WFH curve for displaced children. Standard deviation is large.

Mean standard WFH

WFH curve for a standard child population. Standard deviation is small.

-3   -2   -1 0   +1   +2   +3

b) **Classify numerical data into frequency tables.** Frequency tables can be used to classify numerical data under suitable class intervals. The class intervals in dummy tables may need to be revised after data collection, according to the observed range of data. For example, dummy tables for a survey may have been drawn for two class intervals for age (< 5 years and > 5 years), but after the survey, the analysts may feel they can draw better conclusions by classifying age as < 5, 5-14, 15-49, 50+ years.

Table 4-26: Population Distribution by Age and Gender

Age	No. of Males	No. of Females	Total
< 5 years	20	20	40
5-14 years	45	35	80
15 - 49 years	15	45	60
50+ years	10	10	20
Total	90	110	200

5. **Analyse Indicators**

a) **Calculate rates, ratios and proportions**: data for numerators and denominators for selected indicators can be obtained from frequency tables developed according to the previous steps. Then, calculate the values of each indicator (disease incidence, mortality, etc.) as demonstrated earlier in this chapter.

b) **Compare selected indicators:** Ensure the indicators being compared represent a similar population size and time period.

- By TIME: to follow trends, compare indicators (incidence, mortality, etc.) with baseline values or those from the previous week or month

- By PLACE: compare indicators for several locations or settlements.

- By PERSON: compare indicators for a sub-group of the population (e.g., under-five mortality) with those of the total population, or if data is available, compare indicators for two sub-groups (e.g., morbidity of male and female or of two different ethnic groups in the camp).

6. **Interpret Data**

Consider normal reference values or targets when interpreting health indicators. Follow trends to determine if the situation is improving.

a) **Demographic Indicators**

The following table lists the population structure (in percentages and ratios) of a typical developing country. These percentages can be applied to a total population estimate to define the estimates of population sub-groups when data on the displaced population is lacking or unreliable. Depending on the information in the demographic table available, the vulnerable population may also be estimated (e.g., all pregnant women, children less than 5 years, etc.). The population pyramid may also be drawn to display the age and sex composition of a population (see the table and figure below).

Table 4-27: Population Structure of a Developing Country

Population Composition	Average Population
Total Population	100%
Infants (0-1 year)	4%
Children 0-5 years	18%
Sex ratio	1:1
Women of child-bearing age	24%
Pregnant women	5%
Expected births	4.4%

Figure 4-6: Example of a Population Pyramid

Demographic profile of
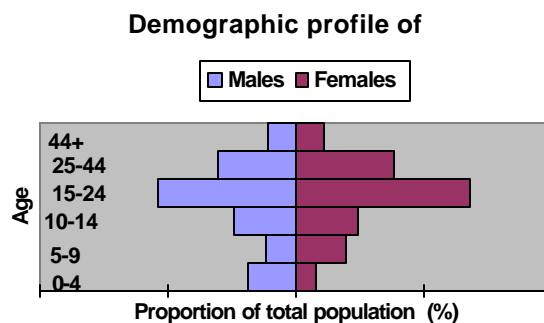
b) **Health Status Indicators**

Mortality: The table below shows how crude mortality rates (CMRs) can be used to assess the status of an emergency situation. A CMR >1 death/10,000/day implies an acute emergency situation. The crude mortality rate of displaced populations is expected to fall below 1.0 deaths/10,000/day within 4-6 weeks of starting a basic support program (following the provision of sufficient food and water, sanitation and health care). For well-run relief programs, CMR should not exceed 1.5 times those of the host population. The baseline CMR from the initial assessment may later be compared with other CMRs to determine the effectiveness of the relief efforts.

Note: *Cut-off values for the under-fives CMR are almost double the CMR for the whole population.*

Table 4-28: Classifying Emergency Situations by CMRs

BENCHMARKS FOR CRUDE MORTALITY RATE Total Population	Age under Five Years	INDICATION
CMR 0.3-0.5 /10,000/ day	CMR 0.7-1.0 /10,000 / day	Normal for stable situations in developing countries.
CMR > 1.0 / 10,000/ day	CMR > 2.0 /10,000 / day	Very serious situation. Should investigate.
CMR > 2.0 / 10,000/ day	CMR > 4.0/10,000 / day	Emergency out of control. Demands immediate actions.

Morbidity: Determine the importance of identified diseases in the following terms:

- How common each disease is, and what are the risk factors.
- Whether the condition is potentially life-threatening or disabling (severity).
- Whether the control measures being implemented locally are effective in reducing the disease incidence, prevalence, severity or death from the disease.
- Whether the existing disease surveillance system is capable of detecting and monitoring the disease or if new indicators for the disease should be added.

Nutritional Status: The nutritional status of a displaced population may be projected from the nutritional status of children less than five years. Two types of indicators may be used:

- *Clinical indicators* of malnutrition include detection of oedema (excess fluid in tissues of lower extremities), skin changes (scaling, baggy skin), hair changes or signs of micronutrient deficiency disorders. Clinical indicators must be interpreted against anthropometic indicators.

  Note*: The presence of oedema indicates severe malnutrition, regardless of the WFH indicator.*

- *Anthropometic indicators* are based on measurements of age, sex, weight, and height. There are several anthropometric indicators, but the ones most commonly used for measuring malnutrition in children are Weight-for-Height (WFH) and Mid-Upper-Arm-Circumference (MUAC). The following table shows MUAC and WFH cut off values for global and severe acute malnutrition:

Table 4-29: Cut-off Values for MUAC and WFH for Acute Malnutrition

	MUAC	WFH	
		Percentile	Z-score
Severe malnutrition	11.5	<70	< -3 SD
Global malnutrition	12.5	<80	< -2 SD

Care should be taken when interpreting findings from anthropometric surveys. WFH may be interpreted as a *percentile*, *median*, or *Z-score*. For developing countries with lower "normal" nutritional intake levels, up to 5% of children may have a Z-score below -2 SD when compared to the reference population. Thus, relief organisations should consider that a nutritional emergency exists if more than 8% of children sampled have a Z-score below -2 SD. Finding even as few as 1% of the children with a Z-score below -3 SD indicates the need for immediate nutrition interventions.

Note: *See the Nutrition chapter for details on calculating WFH.*

After determining the global and severe malnutrition rates for a displaced population, it is essential to interpret these rates against the following factors:
- morbidity and mortality rates for children under 5 years
- time of year (e.g. harvest or planting season)
- food availability and consumption
- trends in food security

c) **Program Process Indicators**
Identify any gaps in coverage and quality of services being provided (food supply, water supply, sanitation, immunisation, health services, etc.) by comparing the actual values of the process indicators to pre-defined targets or standards. The table below identifies where the practices and/or coverage of immunisation fall short of what is desired or expected.

Table 4-30: Comparing Standards to Current Practices

Set Standard	Actual Practice and Coverage	Conclusion
80% access to immunisation	DPT1 coverage = 82%	Good practices and coverage
90% immunisation coverage	DPT3 coverage = 70%	Mixed practices and coverage
No drop-out	DPT1 – DPT3 = 12%	Mixed practices and coverage
80% Compliance	Measles = 50% Fully immunised = 45%	Poor practices and coverage
Latrine coverage: 1 per family	1 per 20-25 people	Good practices and coverage
Global malnutrition rate less than 8%	10-15% of children have Z-score < -2 SD of reference mean	Mixed practices and coverage

Graphs may also be drawn to show the trends over time of the gaps between the actual practices and the set standards. Possible solutions can then be found to address the causes of gaps in service.

d) **Program Input Indicators**

To assess availability of inputs consider the following:
- Availability of essential drugs
- Daily staff attendance
- Expenditures compared to budgeted amounts
- Quality and use of food rations (food basket monitoring)

To assess the adequacy of inputs, check whether:
- Enough stocks are maintained and the use of supplies is monitored.
- Minimum standards are being followed, e.g., pesticides being sprayed are safe for the user and the environment.
- Local skills and resources (including traditional healers) are fully used (e.g., most of the critical jobs should be assigned to the affected population).

8. **Before drawing conclusions about the data, scan all the analysis results**: summary statistics, tables, graphs, and indicators as follows:

a) **Check that the results are**:
- *Consistent* – cross-check data gathered by different sources/methods to build a more accurate understanding of the results
- *Convincing* – findings should be consistent with existing scientific knowledge of disaster experiences
- *Unbiased* – search for a systematic error at any stage of the study that produces results that systematically differ from the true estimate due to selection, reporting or information bias.

b) **Do not generalise findings from a small area** to the whole population since they may not be representative (e.g., hospital morbidity reports only represent those who use the services, not the entire population).

c) **Look for patterns among data variables**: For example, if all children who were interviewed were weighed, check from the summary statistics and tables whether there are more ARI cases among underweight children compared to those with normal weight. Some of these patterns may become more obvious after graphing the data. Also consider the possibility of interaction between indicators (e.g., increased malaria incidence with season of the year, reduced water supply and under-five mortality, etc.)

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Advanced Data Analysis

Sometimes, after carrying out special investigations or surveys, more advanced data analysis may be needed to determine the following:

- **Relative risk** — to compare the probability of disease in two different study populations, one with a risk factor and one without. Relative risk is usually applied to longitudinal (cohort) studies.

- **Odds ratio** — to compare the probability of having a risk factor in two different study populations: one with the disease and one without the disease. Odds ratio is usually calculated for case-control studies in a representative sample, with results applied to the entire population.

- **Sensitivity, specificity, and predictive values** — to assess whether a screening test or procedure can sufficiently detect a condition or if further tests are needed (e.g., clinical diagnosis of anaemia, pneumonia, etc.)

- **Confidence limits**, which indicate the probability (usually 95%) that the estimate obtained from the sample will not differ from the true population rate by more than the range defined by the confidence limit. For example, in a sample of 100 individuals in which a prevalence rate of 20% is observed, there is a 95% probability that the prevalence for the whole population will lie between $(20 – 5) = 15$ and $(20 + 5) = 25\%$.

- **Significance tests** (e.g., Chi^2 test) are performed to establish whether two quite different factors, e.g., the diagnosis of anaemia and hookworm infection could be statistically associated, or whether the apparent relationship may have only occurred by chance. Results will be expressed as a statistical probability, where a **P-value** less than 0.05 implies association.

  Significance tests can also be used to establish whether the observed differences between different study populations are real or due to chance alone. For example, following a malaria survey, a resulting P-value of less than 0.05 would indicate that there is a real difference between the spleen rates of males and females that is not due to chance factors from sampling. However, this finding should be interpreted against existing scientific knowledge about malaria transmission before drawing the final conclusion of confirming the finding or repeating the survey in another population.

Note: *Carrying out the above-described statistical analysis procedures is beyond the scope of this book. If EPI-INFO is available, it may be used to perform these tests. Otherwise, please refer to standard statistical texts for full details.*

Presenting Data

Data may be presented in the form of tables or graphs because they create a clearer impression than numbers alone. However, basic rules should be followed when drawing and presenting graphs and tables, such as:

- Neatly draw and label all presentations and include a description of the data.
- Present only the most essential features of graphs. Otherwise, the simplicity and clarity of the information is destroyed.
- Limit the number of graphs, tables, etc. because too many may be confusing.
- Each presentation should be of reasonable size – not too big or too small.
- Use different colours/shadings/lines to increase contrast between data categories. This makes it easier to understand.

A few tables were shown in the previous section on analysing and interpreting data. Graphs are very useful because they help define patterns in the data. The Figures below show examples of graphs:

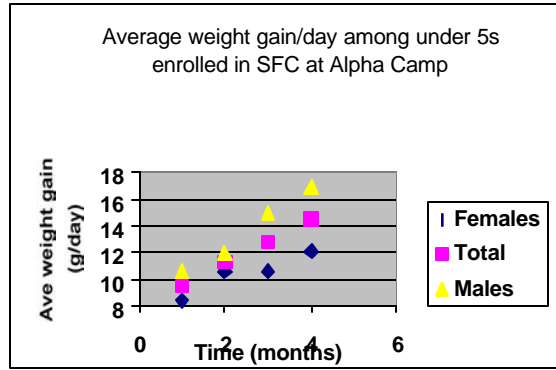*a.* **Histogram** — to show the frequency distribution of large samples of quantitative data.

Incidence of ARI in Alpha camp by age and sex
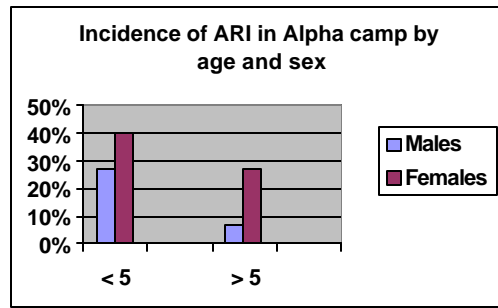
b. **Pie chart** — to show proportions of different segments of a whole, e.g., specific causes of death.

Proportional Morbidity in < 5 children in Alpha camp
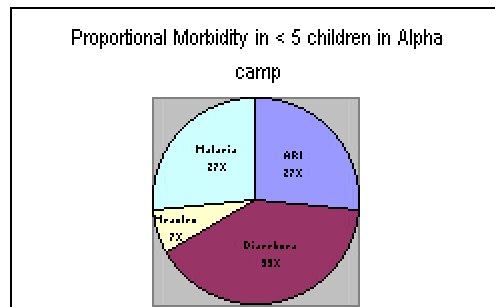
c. **Time chart** — to show trends and changes in health of the population and disease occurrence over time. The time variable is usually placed on the x-axis and the frequency or rate on the y-axis.

Prevalence of diarrhoea among displaced population in Alpha camp 1995
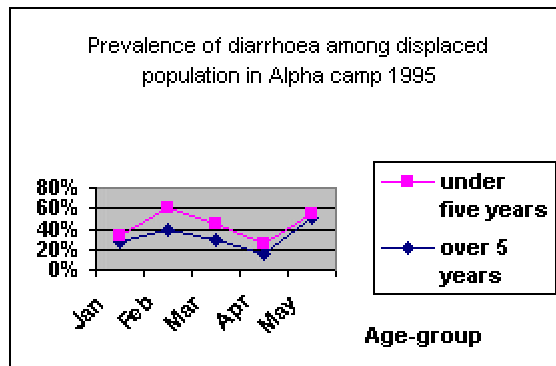
d. **Scatter diagram** — to show relationship between a limited number of observations.

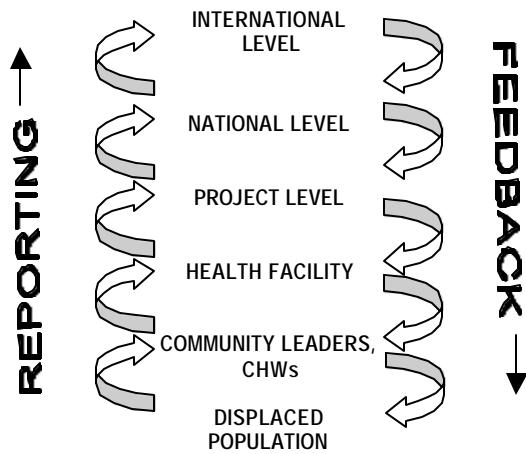Average weight gain/day among under 5s enrolled in SFC at Alpha Camp

e. **Spot map** — to show distribution of cases within an area.[iii]
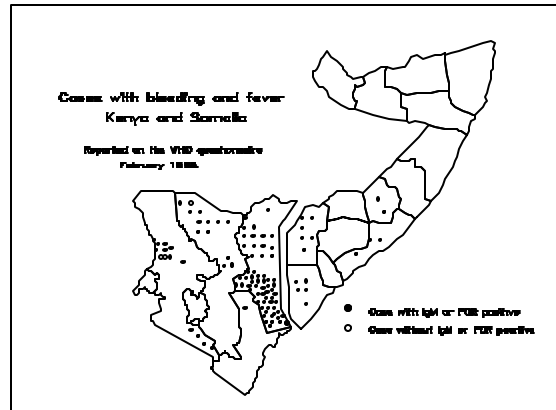
Communicating and Using Information

Figure 4-7: Flow of Information in Emergencies

Information in emergencies must flow two ways. The objective of surveillance, surveys, outbreak investigations and health information is not simply to collect and report data. The objective is to improve how the relief program is managed as well as provide feedback to data collectors so that they can feel motivated. After analysing data, the results should be communicated in a form that everyone who needs to know can understand. The table below gives a summary of the reports and recipients of the information.

Table 4-31: Description of Different Reports and Recipients

Type of Report	Recipient
Full detailed report for those in a position to improve situation and provide additional resources	• Decision makers at the national and international level so that appropriate control measures can be organised • Agencies and service providers of similar programs • Senior health workers responsible for data collection to improve diagnosis and management of disease cases
Summary of report for those who gave support or helped to collect data	Community health workers so they will be motivated to continue collecting data
Very brief summary of most important findings and conclusions	General population to be aware of health risks and to improve how they manage their illnesses at home

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[i] The Field Operation Guide version 3.0 can be downloaded from the US Office of Foreign Disaster Assistance web-site (www.info.usaid.gov/ofda/fog/).

[ii] Epi-Info is a public domain software package that can be used to process questionnaires, manage epidemiological databases and perform statistical calculations, including sample size calculations and data analysis. The software can be downloaded from the Internet website and is also available in CD-ROM. (www.cdc.gov/epo/epi/epiinfo.htm).

[iii] WHO/KMOH Investigation of a Haemorrhagic/Rift Valley Fever Outbreak in North-East Kenya and Southern Somalia. Dec 1997 – Feb 1998.

ENVIRONMENTAL HEALTH

Description

This chapter reviews the general principles of environmental health and the relationship between environmental conditions and the health of displaced populations in humanitarian emergencies. The critical factors for managing the water supply, sanitation, and vector-control programs are discussed, as well as the strategies for preventing and controlling environment-related diseases.

Learning Objectives

- To describe the underlying principles of environmental health management and the main problems of environmental control in emergencies.
- To discuss various sanitation concepts and the recommended options for excreta disposal and personal hygiene.
- To define the limitations of various water sources, and the standard levels of service for water quality and availability.
- To define the steps for setting up an environmental health program.
- To discuss the public health control measures for diarrhoeal diseases affecting displaced populations.
- To describe the methods by which water and sanitation programs can be monitored.

Key Competencies

- To recognise the environmental health risk factors and the main constraints of environmental health management in complex emergencies.
- To understand the basic function of a sanitation program, both at the individual and community level.
- To understand the value of various water sources and minimum standards for water quality and quantity.
- To design a simple environmental health program.
- To describe diarrhoeal outbreak control strategies.
- To identify key indicators for monitoring environmental health programs.

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OVERVIEW OF ENVIRONMENTAL HEALTH

Table 5-1: Definition of Key Terms

Key Term	Definition
Chemical Quality	Acceptable levels of arsenic, mercury, lead nitrates, fluorides, salts and other hazardous components in water.
Contamination	Becoming impure or unusable due to contact or mixture with certain pathogens that are transmitted through faeces or urine. Contamination with human faeces is of major concern, although animal faeces may also cause disease transmission.
Cross-contamination	Process by which contaminated liquids (usually sewage) are transferred into potable water pipes. Common causes include a break in the water pipe or changes in pressure inside the pipe.
Disinfection	Killing of infectious agents (bacteria, viruses, and protozoa) outside the body by direct exposure to physical or chemical agents.
Faecal Coliforms	A category of bacteria that match the characteristics of bacteria found in the stool of warm-blooded mammals. Finding these bacteria in water indicates faecal pollution and the water sample potentially dangerous. Other indicator bacteria are E. coli, faecal streptococci, or total coliforms.
Faecal-Oral Diseases	Diseases transmitted by ingesting faecal pathogens through water or food. Includes water-borne diseases.
Filtration	Passing water slowly through filters—usually specially constructed sand filters—to remove solid particles, protozoa, and most bacteria.
Flocculation	Gentle stirring of water to encourage the formation and settling of heavy colloidal particles called *flocs*.
Free residual chlorine	Hypochlorite ion form of chlorine that is lethal to most bacteria and viruses
Microbiological Quality	Based on normal levels of indicator bacteria such as coliforms or E. coli. Sometimes includes total viruses.
Pathogen	Anything that causes disease, especially micro-organisms.
Personal Hygiene	Tasks that are primarily carried out by an individual to promote or preserve his or her health, such as keeping hands and body clean by bathing, avoiding contaminated articles, clothing, etc.
Physical Quality	Acceptable taste, smell, and appearance of water.
Potable Water	Water that is of sufficient quality to be drunk and used for domestic and personal hygiene without causing significant health risk from short term use due to water-borne diseases or to chemical or radiological contamination.
Sedimentation	The removal of suspended particles in water by gravity.
Settling	Storing water undisturbed for 1-2 days to allow heavy matter to settle (sedimentation) and many viruses, protozoa, and bacteria to die off. Aluminium sulphate speeds up the sedimentation process but not the dying off of pathogens.
Spring	A location where groundwater flows naturally upwards to the earth's surface.
Water-Borne Diseases	Diseases acquired by drinking contaminated water (e.g., diarrhoea, cholera, amoebiasis, leptospirosis, infectious hepatitis).
Water-Washed Diseases	Diseases arising due to lack of water (e.g., scabies, skin infections, eye infections, lice (typhus), salmonellosis (food).
Well	A deep hole in the ground that is dug or drilled to obtain water.

General Principles of Sanitary Engineering

The field of environmental health is based on the concept that certain *hazards,* (disease-carrying organisms, chemicals, etc.) move through the environment and cause harm to humans. Control measures need to be focused on the following areas:

- preventing the *creation* of the hazard
- preventing the *transport* of the hazard
- preventing people from being *exposed* to the hazard once they encounter it

These three types of preventive approaches will apply whether the sanitation technician is trying to prevent diarrhoea or vector-borne diseases, or to control toxic waste. The principal hazard of water and sanitation programs in humanitarian emergencies is usually human **faeces**, which can transmit various types of pathogens. In vector control, the disease-carrying vector or rodent is the main hazard (refer to the *Vector Control* chapter for more details).

Because *creation* of faeces is unavoidable, a sanitation technician must ensure the following:

- minimise the *transport* and spread of faeces in the environment by setting up a sanitation system for proper disposal
- minimise the displaced population's *exposure* to faeces. For diseases that are transmitted by the faecal-oral route, this means minimising oral ingestion through personal hygiene measures, food hygiene and water treatment.

Examples of environmental health strategies to control malaria and cholera are shown below:

Table 5-2: Environmental Control Measures for Malaria and Cholera

Disease	How to Prevent Creation	How to Prevent Transport	How to Limit Exposure
Cholera	Cook shellfish in areas where cholera has an ecological niche	Chlorinate water Disinfect and sterilise contaminated material	Promote food hygiene and consumption of acidic foods Promote home water treatment
Malaria	Drain stagnant water to stop mosquitoes from breeding	Spray against mosquitoes	Use impregnated bed-nets Apply insect repellents

No environmental control measure functions perfectly 100% of the time. In wealthier countries, this shortcoming is dealt with by putting **multiple sanitary barriers** between the hazard and a population. How free a population is from an environmental hazard depends on how concerned the public health officials are about the consequences of the hazard, and how willing they are to invest in multiple barriers to keep the population's risk low.

In the case of surface water supplies, water sources can be *protected* from pollution by preventing individual consumers from having direct access to the source, e.g. by covering the surface or building a fence around the water source. This dramatically reduces the amount of pathogens in the water before it reaches the treatment plant. After this, solids and most of the pathogens are *settled* out. Then the water is *filtered* and *chlorinated* before being distributed to the public. If one of these four sanitary barriers is not working properly, the others will keep the risk of the hazard reaching the public relatively low. In developed countries, water-borne disease outbreaks often occur where most of the multiple sanitary barriers have failed.

Similarly, carrying out multiple control measures is often the most effective way to control outbreaks of vector-borne disease. For example, a malaria outbreak may be controlled by minimising mosquito breeding sites and, at the same time, spraying shelters, using mosquito nets and repellents, and giving appropriate anti-malarial treatment to all suspected cases.

Another sanitary principle is **distance.** The more dangerous a substance is and the more volume that exists, the greater the distance needed to separate the hazard from a population. This is because:

- The greater the distance between a hazard and a population, the more time will pass between any accidental release of a hazard and the time when the population is exposed.

- Distance provides more opportunity for the hazard to be detected, and time for the population to take measures to protect itself.

- Finally, distance allows most pollutants to degrade or become dispersed.

Therefore, increasing the distance between a population and hazardous materials helps to reduce the risk of the hazard. It may cut down on human exposure regardless of how the hazardous material is treated or contained. For example:

- The distance between a hazardous waste dump and the people living near it is usually greater than the distance between city dwellers and a city refuse dump.

- For vector control, moving camps of displaced populations away from vector-infested areas can significantly reduce the number of deaths and illness. In the early 1980s, moving the Cambodians on the Thai border away from the forested areas cut the malaria mortality rate by half and the incidence rate by two-thirds.

In summary, environmental control aims at interrupting the creation, transport and spread of diseases. The following table shows various sanitary engineering and personal measures that can help to achieve this aim:

Table 5-3: Summary of Sanitary Engineering and Personal Measures

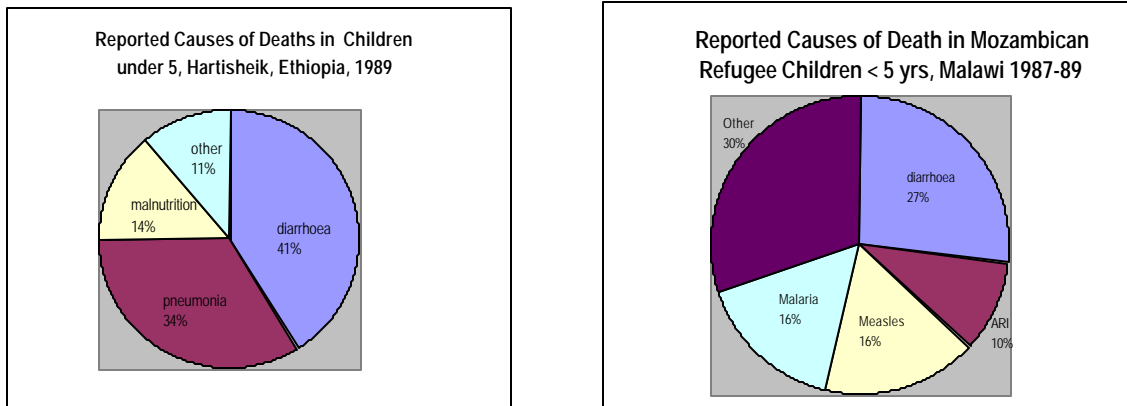| Sanitary Engineering	Personal Measures
Provide treated water	Safely collect and drink potable water
Provide sufficient water	Wash and clean regularly
Provide latrines	Dispose excreta safely
Ensure adequate drainage	Dispose wastewater safely
Provide refuse disposal sites	Dispose refuse safely
Reduce vectors and rodents populations	Individual protection and home management
Provide domestic equipment and fuel	Handle and cook food properly

Problems of Environmental Health Control in Emergencies

Environmental control may be compromised when it is applied to refugee settings. In many humanitarian emergencies, large populations that have fled from their homes typically settle at the nearest place that they feel safe. Because time and resources are limited, water and sanitation systems are not usually set up before their arrival. Displaced people are normally shifted onto the only unclaimed land available where setting up multiple sanitary barriers may not be practical. It is impossible to get "extra" space to separate people from the nearest hazard if the land is only a few square kilometres. As the settlement area becomes overcrowded and the living conditions unhygienic, preventing the transport or exposure of people to environmental hazards may be difficult.

Large-scale outbreaks of diarrhoea and other environment-related diseases are frequently reported among displaced populations, particularly during the acute emergency phase (refer to exhibits below). These outbreaks may be a sign of insufficient efforts in controlling environmental hazards and the monitoring risk of disease outbreaks. Planners of emergency relief programs have to make environmental health control (sanitary engineering as well as personal measures) their top priority.

Control measures should be started immediately and improved gradually (based on urgency and resources) to achieve the Sphere Project's minimum standards of services by the end of the acute emergency phase.[i]

Figure 5-1: Reported Causes of Death in Children Under 5 Years

Reported Causes of Deaths in Children under 5, Hartisheik, Ethiopia, 1989

- other 11%
- malnutrition 14%
- diarrhoea 41%
- pneumonia 34%

Source: MSF

Reported Causes of Death in Mozambican Refugee Children < 5 yrs, Malawi 1987-89

- Other 30%
- diarrhoea 27%
- Malaria 16%
- Measles 16%
- ARI 10%

Source: MSF

SANITATION

Basic Concepts

In humanitarian emergencies, establishing a sanitation system for large, displaced populations should be among the first priorities. This is because epidemiological studies in developing countries have shown that use of latrines or other excreta containment facilities provides greater protection against diarrhoeal diseases than any other environmental health measure. Even though the type of facility varies between settings and cultures, several basic concepts always apply:

1) *The purpose of a sanitation system is to contain human excreta at the moment of defecation so that it is not free to spread throughout the environment.*

   Getting as many people to use excreta containment facilities as often as possible is the goal of all sanitation programs. Sanitation workers should clearly communicate to the affected population how it is essential for *everyone* to always defecate in the excreta containment facilities. Whatever the circumstances, an appropriate sanitation program must be developed that considers the following:
   - In some cultures, there is need to build separate latrines for men and women and special latrines for children.
   - In some settings, latrines may be needed at places of work or public gathering areas (market, health facility, etc.)

   Note: *Although animal faeces and urine may also transmit disease, the danger is much lower than from human faeces.*

2) *People's excreta poses little hazard to themselves.*

   Faeces from one's family members may be less hazardous than other people's faeces because families are more likely to have common immunological histories as a result of exchanging pathogens on an ongoing basis. Where possible, different households should not share latrines or toilets. Because latrine cleaning and maintenance is an unpleasant task in virtually all cultures, having a latrine for every household helps maintain clean facilities. However, the health benefits of having enough latrines for each family must be balanced against the time, effort, and expense of building them. Populations that are unstable or are expected to move within a short time are perhaps better served by a communal latrine system. The

minimum standards of the Sphere Project recommend having a minimum coverage of 20 people per latrine. (This level of coverage is rarely achieved in transit and reception centres).

3) *Mortality and morbidity rates among displaced populations in the first days and weeks of a crisis are often many times higher than for the same population once it is settled.*

Providing some type of sanitation facilities during the first days of a crisis is critical for preventing outbreaks of diarrhoeal diseases. Either some latrines should be built before the population arrives at a site (which is rare) or defecation fields should be established immediately following their arrival. A proper site must be reserved for defecation fields at the outset of a crisis. These fields must be away from water sources but not too far from the dwellings to discourage people from using them. (For more details about defecation fields, refer to the section on Sanitation Options.)

4) *Young children pose a particular concern for excreta control programs.*

Children experience a disproportionate amount of diarrhoea compared to other members of the population, and they shed the most hazardous faeces. Their defecation habits are particularly difficult to control. The solution to this problem involves two steps:

- First, educate child-care providers about proper handling of children's faeces and the importance of washing their hands after cleaning children and/or handling children's faeces.
- Second, child-friendly latrines need to be available. Child-friendly latrines are not dark (perhaps even have no walls) and have a squat hole that is smaller than in an adult latrine.

5) *The habits and beliefs of the displaced people will determine what structures and materials are most appropriate.*

Most latrine/toilet options perform the primary task of containing excreta, whether they are **above-grade barrels**, **pit latrines**, or **solar-heated composting toilets**. It is best to let the displaced population match the proper hardware and educational inputs according to their own beliefs and habits. Letting displaced populations design and construct sanitation facilities, especially if each household can construct latrines for themselves, is perhaps the most effective way to assure that facilities will be used and maintained properly.

Sanitation Options

The following factors should be considered when selecting sanitation systems:
- *Acceptance* – cultural factors are considered in the design.
- *Access* – the population has access to latrines.
- *Use* – the population is educated on proper latrine use.
- *Maintenance* – proper maintenance of latrines is organised.
- *Drainage* – the latrines are protected from surface water drainage.

Defecation Fields

In arid and semi-arid climates, reserving specific areas for defecating can be an acceptable means for keeping people separate from their excreta. In all settings and climates, defecation fields may be a necessary choice in the first days of an acute emergency. To provide optimal health protection, defecation fields should have the following characteristics:
- They should not be near or uphill from water sources or living areas if there is a chance that rain will occur.
- They should be close enough to the population so that they will be used, even in the evening hours.
- Defecation areas should be clearly delineated.
- Because the need for privacy varies between cultures, local representatives should be consulted to determine if separate facilities for males and females are mandatory or if screens are adequate.

Defecation fields should be managed so that some areas are used for a day or two and then closed as unused areas are opened. If the defecation field is on a slope, it is wise to start using a strip at the bottom that runs across the slope (not up and down) and then move up. People can be guided to the open portions of the defecation zone either by ropes or tapes, by a screen (which can provide some privacy), or by gangplanks. Whatever mechanism is used to guide people, it should be moved periodically to prevent them from having to wade through areas with excessive faecal contamination.

Trench Latrines

A communal type of latrine is often used when sanitation facilities are needed quickly and defecation fields are inappropriate. The fastest and easiest type of communal latrine to construct may be a trench latrine. This latrine is simply a trench measuring about 0.5 to 1m in depth and width, and of varying length. Such a trench can be dug very quickly with a backhoe. A board or logs are placed across the trench so that people can squat over the void and defecate. Most often, the dirt from the trench is left in a pile beside the latrine and a thin layer of soil is shovelled on top of the excreta on a daily basis. This acts to reduce odours and control flies. It also causes the trench to fill quickly. Therefore, depending on the number of people served per trench and the size of the trenches, digging of new trenches may necessary every few days. Because a trench latrine can be dug fast and easily, it allows a large population to be served by many facilities quickly.

Barrel Latrines

A barrel latrine is an option in places where the water table is high, the soil is too hard to dig, or the weather is cold; thus, demanding indoor latrines. Typically, there are two designs:

1. The first type uses the bottom half of a 200-liter metal barrel. A piece of plywood or other material (with a squat hole in the middle) is placed over the top of the barrel to serve as a platform. People step onto the platform to defecate into the barrel. When the barrel is approximately half filled, the platform is removed and the barrel is taken to a dumpsite and emptied, and then brought back for reuse. Some military manuals suggest pouring gasoline into the barrel and burning the contents. This is only recommended when sanitary disposal is not possible (e.g., where there is a very high water table) and should be used with great caution.

2. The second type of barrel latrine uses an entire 200-liter barrel as a collection vessel. But, because a 200-liter barrel is more than a meter high, a platform with steps must be built so that people can get above the barrel and defecate into it. The barrel is periodically emptied as with the half-barrel design.

Pit Latrines

The most commonly selected sanitation option for displaced populations is the pit latrine. A pit latrine is a wide hole in the ground that is covered by a platform with a squat hole to defecate through. Designs vary from a simple latrine made of a hole in the ground with two logs across it, to elaborate composting latrines that separate faeces and urine and have a vent to make them odour free. Most areas in the world have a local latrine design that usually has a superstructure with walls to provide privacy. Preferably each household or family, will usually build culturally appropriate latrines if they are given the proper construction materials and some guidance. As mentioned earlier, the key point is for everyone involved to understand that the goal is for as many people as possible to use a latrine with as little sharing as possible.

Note: *Pit latrines are not an option where the water table is high or the soil is shallow or hard.*

Figure 5-2: Ventilated Improved Pit (VIP) Latrine with Illustration of Air Flow (WHO)
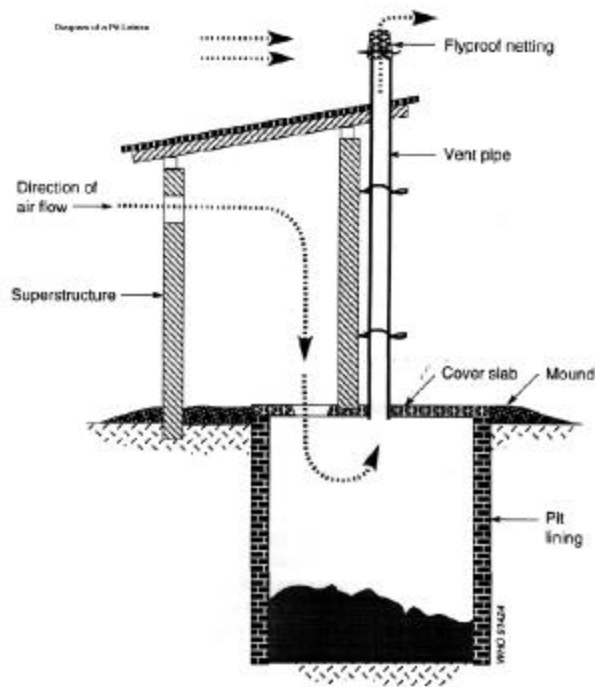
Pour Flush Latrines or Flush Toilets

Toilets that are flushed with a bucket of water or those that flush on their own are the norm in many parts of the world, but they are rarely appropriate during a complex emergency. A pour flush toilet is a basin with a water trap at the bottom and a pipe to carry sewage to a soak-away pit or sewer. The water trap (a tube that curves up from the bottom of the basin a few centimetres above the bottom and then curves downward again) causes the basin to hold between 200ml and 2 litres of water. After defecating in the basin, 2 to 5 litres are poured onto the basin. This causes the waste to be flushed away. The advantage of this system is that it is relatively clean and odour free. However, the disadvantages of pour flush latrines are greater. Not only do such designs use large amounts of water, but they also require a sewage collection system that is expensive and time consuming to build. Where piped water or other plentiful water sources are available, water-flushing options may be suitable.

Personal Hygiene

Personal hygiene refers to those tasks that are the primary responsibility of the individual, such as keeping hands and body clean by hand washing, bathing, avoiding contaminated articles, clothing, etc. Personal hygiene promotes health and limits the spread of infectious diseases that are transmitted by direct contact.

No area of environmental intervention is more difficult than promoting personal hygiene. Not only do cultural practices vary between people, but some languages often do not easily translate words such as privacy or faeces. Therefore, as in sanitation, local professionals are the people who are best suited to develop and deliver hygiene education. Regardless of the setting, several basic premises seem universal including:

1. People need to be able to clean themselves after defecating. If anal cleansing is done with paper or sticks, these materials must be readily available in or near the latrine. If anal cleansing is done with water or with people's hands, water and soap must be made available at the latrines.

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2. Hand washing, particularly after defecating and before preparing food, has been shown to be protective against faecal-oral illnesses. No studies examining the impact of personal hygiene found health benefits associated with education alone[1]. Therefore, any efforts to promote hand-washing should be monitored to ensure that increased hand-washing is actually occurring.

3. Soap provides protection from diarrhoeal illness independent of any educational program that may accompany it. Therefore, providing soap should be a priority in settings where diarrhoeal diseases and dysentery are likely to occur.

4. Educational messages should be short and focused. All messages and pictures included in an educational campaign should promote ways that are known to prevent the specific health threat at hand. They should also focus on behaviours that are not being practised by a significant fraction of the population.

An educational campaign promoting six messages about hygiene was organised in Tajikistan, by ICRC, during a typhoid fever outbreak in 1997. An evaluation of the campaign found that people who received and understood the messages were as likely to develop typhoid fever as those who had not. In this case, only one of the six messages, "boil your drinking water," had any relationship with the way the disease was being transmitted.

The following tables show examples of short and focused messages on hygiene and defecation:

Table 5-4: Example of Educational Messages on Hygiene

- Wash hands with soap after defecation.
- Wash hands with soap after cleaning babies.
- Wash hands with soap before preparing food.
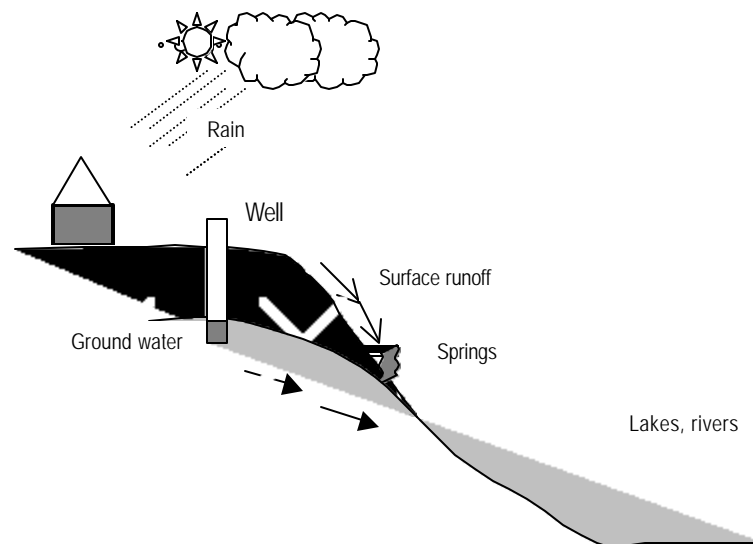- Wash hands with soap before eating.

Table 5-5: Example of Educational Messages on Defecation

- Go to the defecation zone and help children to go to the defecation zone.
- Use the shovel to dig a little hole in the ground.
- Cover the excreta with soil after defecation.

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[1] studies included in a recent review by Bull. WHO 1991; 65(5): 609-21

WATER SUPPLY

Figure 5-3: Sources of Water

Sources of Water

Water sources fall into three general categories (refer to the Figure above):

1. **Rainwater***: In general, rainwater, though pure, is not reliable or a sufficient source to provide for a large displaced population and is rarely considered during complex emergencies.

2. **Surface water***: Surface water from lakes, ponds, streams, and rivers have the advantage of being accessible (water easily collected) and are predictably reliable and plentiful. They have the disadvantage of generally being microbiologically unsafe, and therefore, requiring treatment.

3. **Groundwater**: Groundwater from wells, springs, etc. tends to be of higher microbiological quality (having undergone natural soil filtration underground). However, it is relatively difficult to extract. More technology and energy is needed (compared with other water sources) to bring water from within the earth up to the surface.

The following factors are important when selecting the type of water sources for displaced population:
1. the reliability of available water sources
2. the water needs in relation to population size
3. the intended length of intervention
4. the locally available skills and resources
5. the capacity of the implementing agency

Water Quantity

In developing countries, evidence shows that providing people with *increased amounts* of water is more effective in protecting against faecal-oral pathogens than providing them with *cleaner* water. The minimum standards of the Sphere Project states that at least 15 to 20 litres per person per day (l/p/d) is needed to maintain human health. While the availability of water is influenced by the situation, more water can almost always be obtained with more resources (more wells, trucks, or pipes). Because obtaining water in arid areas is expensive and the relationship between water quantity and health is not well understood, there is a tendency not to invest enough in water infrastructure when other demands seem more serious. This makes monitoring the availability of water during emergency situations an essential component of a public health program.

During the acute emergency phase, water consumption should be estimated weekly. Often, the utility company or relief organisation providing water to a displaced population has these estimates. It is important to realise that water consumption means *what people receive* not what the *water team produces*. Disagreements may arise between "production" and "consumption" estimates because:

- Water can be lost or wasted during pumping and transport.
- Lack of water containers can prevent people from collecting enough water.

Surveys or household interviews that document the amount of water collected at watering points or people's actual use of water are preferable to simply dividing the amount of water produced at a well or a plant by the number of people served. Cholera outbreak investigations have repeatedly shown that not owning a bucket puts families at increased risk of illness or death. Thus, not only should the average water consumption be 15 l/p/d or more, but there should not be anyone in the population with very low water consumption (<7 l/p/d). In addition, all families should be provided with suitable water containers for daily collection and storage of water. Special drainage pits should be constructed to manage runoff water at distribution points.

Water Quality

Water quality is usually measured by the presence of specific groups of micro-organisms. This indicates the possible presence of faeces. Because human faeces typically contain tens of millions of bacteria per gram, even the smallest trace of faeces in water is often detectable by bacterial monitoring. Faecal coliforms are a category of bacteria that match the characteristics of bacteria found in the stool of warm-blooded mammals. Other indicator bacteria, such as E. coli, faecal streptococci, or total coliforms, are maintained by the same premise — absence implies safe water.

The following table shows the recommended guidelines for assessing water quality.

Table 5-6: Guidelines for Water Quality (UNHCR)

Faecal Coliforms (per 100 mls of water)	Interpretation	Recommendation
0-10	Reasonable quality	Acceptable
10-100	Polluted	Better protection and simple treatment
100-1000	Very polluted	Treatable, but look for alternative source
Over 1,000	Grossly polluted	Source to be avoided

Note*: Water quality testing may be performed by a competent local laboratory (must be done within 6 hours of sampling), or by using field testing kits, e.g. the Oxfam/Del Agua Kit or Milliflex Kit from Millipore. However, these kits are expensive and require trained people to use them and interpret results.*

The above table shows that *no* faecal coliforms in water is a good indication that there are no faecal-oral bacterial pathogens present, whereas finding *low* levels of faecal coliforms in water does not mean that the water is dangerous.

Note: *Contaminated water sources should not be closed until equally more favourable sources become available.*

While water sources may differ in water quality, it is how water is handled and stored by consumers that will finally determine whether the water is safe for drinking. Studies have shown that dipping hands into household storage buckets causes considerable contamination and that water quality declines over time after the water is initially collected. The best way to keep water safe in the household is to add a chlorine residual to the water (refer to the next section on water treatment for details on chlorine residuals). This means that in unsanitary settings, or during times of outbreaks, it may be necessary to chlorinate otherwise safe groundwater.

Getting and Treating Surface Water

Water is not usually consumed directly from the surface water sources. It first needs to be transported, stored, and purified before it is distributed to the people who need potable water. All along this chain of delivery, potable water needs to be protected from contamination by human and animal faeces, urine, or any other hazardous material.

Bucket Collection

When people collect water directly from water sources in buckets, the only treatment that can be done easily is chlorination. Health workers can chlorinate water at the point of collection or in the home. Ideally, enough chlorine should be added to the bucket so that after 30 minutes there is still at least 1.0 mg/l of free chlorine in the water. Typically, an initial dose of 2.5 mg/l of chlorine will be sufficient to react with the organic material in the water and leave an adequate level of chlorine residual. (Free residual chlorine is the hypochlorite ion form of chlorine that is lethal to most bacteria and viruses). People should wait for 30 minutes after chlorination before consuming the treated water in order to allow disinfection to occur.

Pipe Distributions

When water is drawn from a surface water source and distributed through a piped system, there is the potential for dramatically improving the quality of the water. In general, three measures are taken to purify water at surface water plants and to ensure it remains safe until it reaches the consumer:

- *Settling* removes solids (through sedimentation) and protozoa, e.g. giardia (by causing them to die). It is often speeded up by adding coagulants such as aluminium sulphate (alum) and *flocculation* (gentle stirring to encourage the formation and settling of heavy colloidal particles called flocs).

- *Filtering* through sand removes particulate matter including microbes (e.g. bacteria, amoeba).

- *Disinfecting* with chlorine deactivates all major water-borne bacteria. Within a piped system, chlorine levels are typically adjusted to ensure that 0.2 to 0.5 mg/l of free chlorine is in the water at the tap level where it is consumed. For systems with many breaks along the distribution pipes or during times of diarrhoea outbreaks, it is appropriate to aim at having 0.5 to 1.0 mg/l of free chlorine. Water treatment plant attendants can be trained to perform a simple test for free chlorine levels by using a pocket size chloroscope (chlorine comparator kit).

  Note: Although *boiling of water is the surest method of water sterilization, it is not appropriate for large-scale water treatment because about 1 kg of wood is needed to boil 1 litre of water*.

Figure 5-4: Standard Water Treatment System
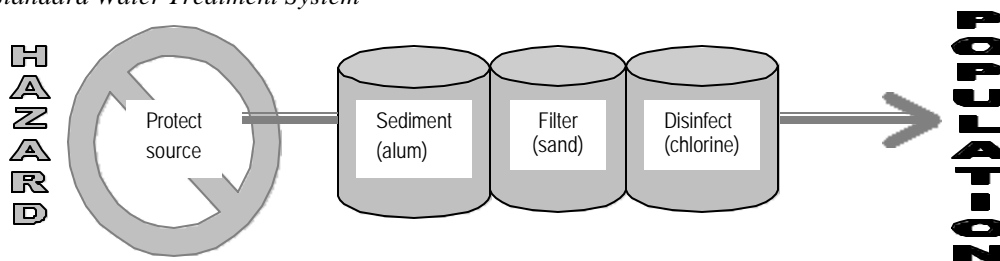
Removing solids by coagulation and filtration greatly improves the chlorine's effectiveness. Therefore, these three measures are not simply multiple barriers, but when combined produce a synergistic effect on water quality.

It is not enough to focus on water treatment methods because shortcomings in the distribution system have been the main cause of major waterborne outbreaks in the world during the 1990s. Sometimes, piped water systems break down. The resulting drop in pressure allows contaminants to get into pipes through cracks, which during times of constant pressure only allow water to seep out. The process of drawing contaminated water into potable water pipes is called **cross-contamination**.

During times of armed conflict, electrical outages, explosions, and the inability to conduct routine maintenance make the problem of cross-contamination particularly serious. Two things can be done to prevent this process:

1. *Increase the pressure in the water pipes* — pressure can be raised by increasing the rate of pumping into the system, by cutting down on water waste, or by closing off sections of the distribution system.

2. *Increase the level of residual chlorine* — because cross-contamination occurs sporadically along the distribution system, the level of chlorine residual must be kept high throughout the entire pipe network. Levels of residual chlorine should be increased until there is free chlorine virtually everywhere (at least 95% of locations).

Getting and Treating Groundwater

Water that has been collected from groundwater sources is usually considered safe for drinking. It only needs to be extracted and transported in a way that prevents contamination. The most serious threat to the safety of groundwater supply is human faeces.

Springs

A spring is a location where groundwater naturally flows upward to the earth's surface. Because the volume of water flowing from a spring is controlled by underground physical and hydrological factors, the amount of water produced by a spring is fixed. The only task required for a spring is to protect the water so it can be collected without being contaminated. This is usually done by building a spring box, which is a collection basin with an outflow pipe that is placed at or just below the point where the water comes to the surface.

Wells

A well can be constructed by digging or drilling to raise ground water through a pump or other device. The type of well (tube well, dug well, borehole) depends on the depth of the water table. The deeper it is, the more difficult and expensive it is to raise the groundwater. Again, the priority is to prevent the groundwater from being contaminated at the surface. This is usually done by lining the well or by sealing off the top of the well. To line a well, a skirt is built around the opening of the well. The following issues are important when constructing a well:

• A well may never be used if it is not located in a suitable place or was not constructed properly.

• Wells typically operate for a while and then fail because they are not maintained or repaired properly.

Agencies or groups planning to build wells need to choose the site carefully and budget from the start for funds to maintain the wells (spare parts and personnel) until the local wealth and economic activity can sustain the water system, otherwise the wells will be abandoned.

Chlorination

Groundwater from wells and springs is usually safe for drinking without chlorination. However, when household water contamination is high or when the groundwater is of poor quality, water disinfection may be necessary. As with surface water, buckets can also be chlorinated as the water is collected, or people can be equipped to treat their water at home. Many agencies have chlorinated wells as a public health measure. This is done by the following methods:

• **Shock Chlorination:** Shock chlorination is conducted by adding 5-10 mg/l of chlorine solution to water in a well and allowing it to sit unused for a number of hours. The first water drawn from the well after the disinfection period is discarded. Normal use of the well can then be resumed. Shock chlorination does not mean that the water given to people for their homes is chlorinated. After the first few hours of use post-treatment, there will be little or no residual chlorine in the drawn water.

Shock chlorination can be performed to eliminate a temporary threat to water quality of a well, e.g. in newly dug wells, or for groundwater that has been contaminated by people or an unusual event (such as a major rainstorm).

- **Pot Chlorination**: The chlorination pot is usually a vessel, such as a 1-liter plastic bottle, with a few holes punched in it. This vessel is filled with a chlorine powder and gravel mixture and then placed in a larger vessel (such as a 4-liter milk jug or a clay pot) which also has a few holes punched in it. The chlorine disperses from the double layered pot slowly. The number and size of holes determines the dose of chlorine released into the well.

The pot chlorination method protects against a continuous source of contamination in the groundwater. It also counteracts any new contamination in the well, and it provides a protective chlorine residual in the water people use. Unfortunately, to operate this type of system effectively, extensive monitoring is needed. The ideal target dose of free chlorine in water drawn from a well is 0.5 to 1.0 mg/l. The number and size of holes in the vessels have to be tailored to match a specific well volume and withdrawal rate. The first water drawn in the morning will have an offensively high level of chlorine. If a well has certain periods of very high use, the dose may become too low. Therefore, the pot chlorination method is not widely used. This method is particularly unsuitable during the acute phase of a crisis when lack of time and attention can prevent proper monitoring and adjustment of the chlorine levels.

PLANNING ENVIRONMENTAL HEALTH PROGRAMS FOR EMERGENCIES

To establish an effective environmental health program in humanitarian emergencies requires a good understanding of the relationship between the human and socio-economic parameters and the physical landscape. Therefore, the need for a proper assessment cannot be overemphasised. Environmental control measures that have a rapid impact but a long-term view should be selected. They should also achieve the minimum standards in emergency response within three to six months. Because maintaining a clean environment depends on the co-operation of the affected people, a representative group should take part in planning and implementing the environmental health program. To get the maximum impact from environmental control measures, there must be similar improvements in health services and other sectors.

Assessment

The Planning Cycle

Environmental health assessments should involve multiple sectors (water and sanitation, food, shelter, health services), the local authorities and representatives from the displaced population and other local NGOs. Appropriately qualified personnel (such as the environmental health technician or sanitation inspector) should lead it. Assessment checklists are useful for ensuring all the key questions have been examined, but they must be adapted to the particular disaster situation. The following checklist may be used to assess health needs, the local conditions and identifying local resources.

Table 5-7: Checklist for Environmental Health Assessment

1. General
- How many people are affected and where are they?
- What are the people's likely movements? What are the security factors for the population and relief interventions?
- What are the current or threatened water and sanitation-related diseases? What is the distribution and expected evolution of problems?
- Who are the key people to consult or contact?
- Who are the vulnerable people in the population? What special security risks exist for women and girls?

2. Water Supply
- What is the current water source? Are alternative sources nearby?
- Is the water source safe/protected?
- How much water is available per person per day?
- What is the daily/weekly frequency of the water supply?
- Is the water available at the source enough for short term and longer term needs?
- Are water collection points close enough to where people live? Are they safe?
- Is the current water supply reliable? How long will it last?
- Do people have enough containers or the right size or type?
- Is the water source contaminated or at risk of contamination?
- Is treatment necessary? Possible? What treatment is needed?
- Is disinfection necessary, even if supply is not contaminated?
- Are there alternative sources nearby?
- Are there any obstacles to using available supplies?
- Is it possible to move the population if water sources are inadequate?
- Is it possible to tanker water if water sources are inadequate?
- What are the key hygiene issues related to water supply?
- Do people have the means to use the water hygienically in this situation?

3. Solid Waste Disposal
- Is solid waste a problem?
- How do people dispose of their waste?
- What type and quantity of solid waste is produced?
- Can solid waste be disposed of one site, or does it need to be collected and disposed off site?
- Are there medical facilities and activities producing waste? How is this being disposed of? Who is responsible?

4. Excreta Disposal
- What is the current defecation practice? If it is open defecation, is there a designated area? Is the area safe?
- Are there any existing facilities? If so, are they used/ sufficient/ operating w ell? Can they be extended or adapted?
- Is the current defecation practice a threat to water supplies or living areas?
- Is the current defecation practice a health threat to users?
- Are people familiar with the construction and use of toilets? Which type of toilet are they familiar with?
- Are people prepared to use latrines, defecation fields, trenches, etc.?
- What are current beliefs/practices, including gender-specific practices, about excreta disposal?
- Is there enough space for defecation fields, pit latrines, etc.?
- What is the slope of the terrain?
- What is the level of the groundwater table?
- Are soil conditions suitable for one-site excreta disposal?
- What local materials are available for constructing toilets?
- Do current excreta disposal arrangements encourage vectors?
- Do people have access to water to water and soap after defecation?
- Are there materials or water available for anal cleansing?
- How do women deal with menstruation? Are there materials or facilities they need for this?

5. Vector-Borne Diseases
- What are the vector-borne disease risks and how serious are they?
- If vector-borne disease risks are high, do people at risk have access to individual protection?
- Is it possible to make changes to the local environment to discourage vector breeding (drainage, refuse disposal, etc.)
- Is it necessary to control vectors by chemical means? What programs, regulations and resources for vector control are there?
- What information and safety precautions need to be provided to households?

6. Drainage
- Is there a drainage problem?
- Do people have the means to protect their shelters and latrines from local flooding?

Source: Sphere Project, 2000

There are various techniques for gathering assessment information, and these should be carried out in a systematic way. Key people may be interviewed first followed by a review of existing records. Thereafter, existing water and sanitation systems should be inspected. A rapid survey may be organised to collect information from a sample of the displaced population. The goal is to ask as few questions as possible about the key topics.

The following Figure gives an example of a questionnaire for assessing water consumption and latrine coverage:

Figure 5-5: Example of a Survey Questionnaire

HOUSEHOLD WATER SURVEY

Date:_____   Interviewer:_____

Location:_____   Household number:_____

1. *Introduce yourself and explain the purpose of the survey.*

    _____

2. *Ask the person who collects water for the household*:

    How much water did you and other family members collect yesterday (for all purposes)? _____

3. How many water vessels do you have? Number _____; Estimate total volume _____

4. a.   How many members are there in your family?   _____

    b.   How many of them consumed water yesterday? _____

5. Does your family have a latrine?   _____

6. How many other families share the latrine? _____

7. Do you own livestock? _____

    If yes, what kind of livestock and how many? _____

After the assessment, all the information should be analysed and presented in a way that allows for transparent and consistent decision-making (refer to the *Disaster Epidemiology* chapter for details on Data Analysis and Presentation).

For example, average water consumption and latrine coverage may be calculated using data from the above questionnaire shown in the following Figure:

Figure 5-6: Calculations Drawn from Questionnaire

1. *Average Water Consumption =* $\dfrac{\text{Total amount of water collected}}{\text{Total number of family members present}}$

2. *Give the family credit for ½ or 1/3 of a latrine, depending on their sharing habits with other families.*

    Latrine Coverage = $\sum \dfrac{\text{Number of latrines}}{\text{Total number of families interviewed}}$

The assessment should help relief planners determine whether external resources are needed, depending on the national standards for water supply, sanitation and vector control of the host country. The following exhibit outlines the conclusion of an environmental health assessment report:

Figure 5-7: Conclusions of an Environmental Health Assessment

1. **Main hazard** affecting the disaster situation (human excreta, vectors) should be stated.
2. **Current measures** to control the hazard (note whether they are adequate).
3. **Immediate and future actions** if necessary should be outlined, using a phased approach. Actions may include the following environmental health interventions:
   - setting up temporary defecation areas until other solutions are available to improve the general hygiene
   - providing sufficient quantities of quality water and restoring damaged water system
   - reducing the vector and rodent populations to acceptable levels
4. **External resources required** (technical skills, chemicals, equipment or spare parts, staff to organise culturally and technically appropriate defecation facilities or areas).
5. **Further investigations** if necessary (e.g. by a road or water and sanitation engineer).

Problem Identification

The assessment information should identify the displaced population's health needs and risks related to water supply and sanitation, such as:

1. There is improper disposal of human faeces because:
   - sanitation facilities are too far or there aren't enough.
   - sanitation facilities are poorly maintained.
   - people are not motivated to use sanitation facilities.

2. There is not enough water for hygiene and domestic use because:
   - the demand for water and sanitation exceeds the local resources.
   - people do not have vessels for collecting and storing water.
   - the wells and springs have dried up or were damaged by the disaster.
   - lack of security prevents collection of water.

3. There are an increased number of cases with vector-borne diseases among displaced population because:
   - the number of breeding sites (wet, swampy areas, shade, etc.) have increased.
   - the population has higher health risks (non-immune, poor nutrition, crowded conditions) of disease.
   - there are unusual weather conditions that have given rise to the disaster (floods).

Setting Priorities

When identifying the priority problems and conditions related to water and sanitation programs, consider the question: Which of the defined conditions cause or can solve the identified problems? The table below list possible problems and conditions. It is important to involve local experts and to consider the views of the both the displaced and the local (host) populations.

Table 5-8: Identifying Priority Problems and Conditions

Define the Problems	Define the Conditions
- Mortality data, - Causes of death, - Public opinion, - Social factors (time spent in essential activities, violence patterns)	- Water consumption (litres/person/day), - Sanitation coverage, - Proportion with safe drinking water), - Proportion with access to soap, - Proportion with adequate water vessels.

Ranking is another method of identifying the priority environmental health problems or the most appropriate interventions. The following example shows how ranking can be used to prioritise mosquito control measures:

Table 5-9: Prioritising Mosquito Control Strategies

	Health Education	Hygiene Measures	Barrier Methods (bed nets)	Chemical Control (spraying)
Feasibility of long-term (Low = 1, High = 3)	3	2	2	1
Community acceptance (Low = 1, High = 3)	3	2	2	1
Cost (High = 1, Low = 3)	1	3	2	1
Effectiveness (Sceptical = 1, High = 3)	1	3	2	2
Total Additive Score	8	10	8	5
Total Multiplicative Score	9	36	16	2

Each vector control intervention is scored according to four criteria — **feasibility of long-term implementation**, **community acceptance**, **cost of implementation**, and **effectiveness of intervention**. The four scores are then added together to obtain the *total additive score*. If two or more interventions have the same total additive score, then multiply the four scores to obtain a *total multiplicative score*. In the above chart, hygiene measures are considered to be the highest priority, and chemical control as the lowest.

Defining Goals and Objectives

Environmental health programs should be based on set goals and objectives that address the priority public health problems. The following goals may be considered for the environmental health program:

1. To preserve the overall wellbeing of the affected population living under high risk conditions.

2. To restore the environmental health conditions and services to levels with reduced risk of disease outbreaks.

Table 5-10: Examples of Program Objectives and Targets

Objective	Target
To provide sufficient quantities of acceptable quality water	Supply at least 2 l/p/d of potable water, while aiming for at least 15 l/p/d for domestic use and personal hygiene.
To establish adequate sanitation services to contain faeces	Provide a minimum of 1 latrine per family or 1 per 20 people, sufficiently close to households
To increase the affected population's awareness of the basic rules of sanitation	Promote appropriate use of water and sanitation facilities and increase awareness of hygiene risks
To protect the population from excessive exposure to disease-bearing vectors and pests	Provide insecticide treated nets and minimise potential breeding sites

The above table defines objectives that may be considered for environmental health programs. In extreme emergency situations, it may be difficult to meet priority needs (provide sufficient drinking water and sanitation facilities). A phased approach may be necessary, which ensures survival while aiming to achieve minimum standards for environmental health programs, as much as existing constraints or resource limitations allow.

Defining the Plan of Action

The next step is to define a plan for implementing the environmental control actions that will achieve set objectives. Complement and build on local capacities by asking the affected population to define the methods that they are familiar with. Local authorities should be consulted to ensure the program is developed within the local context. Key staff members should be made responsible for critical tasks. For example, materials and supplies can only be procured after a water engineer has designed the appropriate water and sanitation systems. The following worksheet outlines a possible plan of action for an environmental health program:

Table 5-11: An Example of an Action Plan for an Environmental Health Program

STRATEGY	ACTIVITY	TASKS	WHEN	BY WHOM
Set up an interim water supply while organising medium term measures	Protect existing water sources	Prevent direct contact with users or excrement, Chlorinate if risk of outbreak of water-borne disease is high	From day #1...	Water team
	Organise regular water supply	Short-term water trucking, Design water supply system, Prepare sites for tanks & pipes	First 4-6 weeks	Water engineer, Community leaders Water team, Contractor
	Extend distribution procedure	Provide water vessels Put up water reservoirs, Spread water collection points, Ration water supply	From week #2...	Logistics team, Water team
Set up temporary sanitation facilities while organising for medium term measures	Control indiscriminate defecation	Localise defecation areas, Equip for anal/hand cleansing, Supervise & maintain, *IEC for proper latrine use	Day #1-3...	Sanitation team,
	Arrange for permanent facilities	Design suitable latrines, Provide tools & materials for latrine construction	Week #2...	Sanitation technician, Community leaders, Logistics team
Control vector breeding	Environmental measures	Encourage changing of stored water for domestic use every 7 days, Reduce breeding sites (cans, jars, packages, etc.)	From month #1	Community leaders, CHWs, community, Sanitation team
	Promote personal and household hygiene	Provide soap, *IEC on personal and household cleanliness and refuse disposal	From week #1	Community leaders, CHWs, community, Sanitation team
	Chemical measures	Residual spraying of shelters, Spraying latrines, refuse pits	From month #1	Section leader, Spray team, Community leaders

*IEC – Information, education and communication

Consider Alternatives

All selected environmental control measures should be justified against possible alternatives, such as:

- temporarily trucking water to control a critical emergency situation while arranging for installation of a water pipeline or sinking of wells.

  Note: *Water trucking is very expensive and may experience interruptions.*

- conducting bucket chlorination while preparing to protect the water source or to set up a water treatment program.

- contracting donkey carts to transport water to areas with poor access roads rather than moving large non-immune populations closer to water sources where they may be at increased risk of malaria.

Identifying Resources

Resources for carrying out environmental control measures should be based on the identified health needs, protocols of the host country, and minimum standard of services. It is important to use materials and techniques that can be managed and maintained by local resources.

Material Resources

The equipment and established facilities should be sensitive to the traditional practices of the affected population and should ensure a minimum level of dignity and comfort. Resources for an environmental health program can be estimated by applying the total population size to Sphere Project's minimum standards, e.g.:

- *Water supply*: provide to each household two water collecting vessels (10-20 L) plus water storage vessels (20 L) vessels. All vessels to have narrow necks and/or covers.

- *Hygiene*: provide 250 g of soap per person per month; and 1 washing basin per 100 persons where communal laundry facilities are necessary.

- *Refuse*: provide one refuse container (100 litres volume) per 10 families, where domestic refuse is not buried on site; also provide refuse pits, bins or specified areas at markets and slaughtering areas.

- *Tools*: provide sufficient numbers of appropriately designed tools to people for small drainage works and maintenance where necessary.

- *Shelters*: All populations at risk of vector-borne diseases have access to shelters equipped with insect-control.

The materials and equipment for the water supply system can be determined after estimating the total water requirements for the displaced population. The following table shows the Sphere standards for water quantity based on various needs:

Table 5-12: Minimum Standards for Water Quantity/Consumption (Sphere Project)

Need	Minimum Standards for Water Quantity
Health centre	5 litres/outpatient 40-60 litres/inpatient Additional water for laundry, toilets, etc.
Therapeutic feeding centre	15-30 litres/person/day 15 litres/care/day, if appropriate
Cholera centre	60 litres/patient/day 15 litres/carer/day, if appropriate
Community health needs: • Religious centres • Livestock	 5 litres/visitor/day 20-30 litres/large or medium animal/day 5 litres/small animal/day
Public toilets	1-2 litres/user/day for hand washing 1-2 litres/person/day for anal washing 2-8 litres/cubicle/day for cleaning toilet

Human Resources

Staff recruitment should be based on the estimated workload, the skills of the local environmental health workers, and the capacity of the displaced population to actively participate in program implementation. Short job descriptions should be written before hiring the environmental health team. The environmental health team that is recruited should include the following staff and volunteers:

- A technical and management team — water and sanitation engineer, public health technician, public health nurse.

- Community health team — community leaders, community health workers or HITS (health information teams) to mobilise the community, promote hygiene and gather information.

- Manual labourers — construction workers, sprayers, water and sanitation workers, refuse collectors, cleaners and guards. They must be adequately equipped and supervised when carrying out their tasks.

To ensure successful implementation of the environmental health program, resources should be identified for training staff to perform the required tasks as well as to ensure they are adequately managed and supported.

Implementing

Emergencies demand very quick action. The priority actions should be to set up functioning water and sanitation systems. However, implementing an environmental health program is not simple. The following approach may be useful:
- Promoting co-operation and collaboration
- Getting organised
- Recruiting and training staff
- Contracting services
- Building facilities
- Addressing constraints
- Monitoring environmental health activities (see next section)

Promoting Co-operation and Collaboration

Before implementing an environmental health program, the relief agency should seek the support of the affected population, other relief sectors and agencies, representatives from central authorities and the host population. It is not enough to get approval to use land to settle displaced people. It is also essential to seek permission from local authorities and individual landowners to exploit the land, for example, to extract ground water or to lay pipelines.

Getting Organised

Key resources must be available for environmental health activities (water supply, sanitation, etc.) to be carried out. It may be necessary to arrange for staff accommodations, transport, and communication. All equipment (e.g., pumps, water testing kits, spraying equipment, etc.) should be in working order and maintenance and repair technicians should be identified from the beginning. Essential supplies should be available on demand (e.g., by arranging for storekeepers on weekend calls). Supplies for environmental control require the appropriate storage and security, and must be monitored regularly to minimise loss (from spoilage or theft). In addition, safety precautions for handling all chemicals (chlorine, pesticides) should be enforced according to supplier guidelines and international protocols.

Recruiting and Training Staff

It is important to take advantage of local skills, since people usually know their own areas well. Trained technicians can be found who are experienced in dealing with the local environmental conditions and understand the local variability of vector-borne diseases. However, on-the-job training of the environmental health team may be required in the following areas:

- the proper use and minor repair of equipment (e.g., water quality kits, sprayers, etc.)
- following standard procedures (e.g., water chlorination, seeking permission before spraying shelters, etc.)
- carrying out health education activities related to water, sanitation and personal hygiene
- data collection and recording – for monitoring environmental health activities
- safety precautions and first aid measures – to ensure safety of volunteers, train staff and all who are involved in environmental health activities.

Contracting Services

Environmental control measures may involve hiring contractors, particularly at the beginning of a relief response or in an insecure region. These services may include trucking water, drilling boreholes or building communal latrines. All contracts should be drawn carefully, clearly identifying the expected output. For example, the amount of water trucking to be contracted could be determined as follows:

$$\text{Number of truck loads per day} = \frac{\text{Total amount of water required per day}}{\text{Capacity of 1 truck}}$$

$$\text{Number of trucks required per day} = \frac{\text{Number of truck loads}}{\text{Maximum number of trips per day}}$$

Standards for each contracted service should be specified and safety measures enforced. Close monitoring is necessary to minimise delivery of low quality services. Contractors should be paid only for services that were delivered satisfactorily and incentives or penalties may be issued, according to the quality of their services.

Construction

The affected community should be involved in designing, building and maintaining the environmental health facilities. Locally available materials should be used whenever possible. To ensure access, these facilities should be organised according to the following minimum standards of the Sphere Project (with consideration to the terrain and available space):

- No dwelling should be further than 50 M from a toilet and toilets should be available in public places.
- No dwelling should be further than 500 M from any water point.
- No dwelling should be further than 15 M from a refuse container or household refuse pit, and no further than 100 M from a communal refuse pit.

Other considerations when setting up environmental health facilities include the following:

- Water distribution points should have concrete pads and wastewater trenches that lead to soakaway pits to minimise mosquito breeding and contamination of water sources.
- Latrine slabs should be used for construction of all latrines
- Communal latrines should be built at all public places (health facilities, feeding centres, markets, etc.)
- Environmental control plans should consider possible future population growths as well as the eventual closure of the relief program.

Addressing Constraints

The following are examples of constraints that may need to be addressed:

- Staff may be required to maintain hygiene at public facilities (health facilities, feeding centres, markets, and communal latrines).
- People selling items such as soap or bed-nets meant for health promotion
- Staff should meet regularly with the affected community to identify any obstacles (e.g., why latrines, refuse pits, or bednets are not used as required).
- Separate water source may be required for domestic animals.
- Provide lemons or chlorine so that people can treat their water during a cholera outbreak.

ENVIRONMENTAL HEALTH SURVEILLANCE

The performance of water supply and sanitation program should be monitored and evaluated in order to:

- Evaluate the coverage and effectiveness of the program in responding to health problems related to water and sanitation.
- Guide the implementation of environmental health interventions.
- To identify changes in health needs and priorities.
- Provide early warning of water-borne disease outbreaks.

Monitoring

Monitoring provides information about the effectiveness of the program in meeting identified health needs. The process of collecting information keeps workers in touch with the people they are servicing. This enables them to notice additional issues. Only the most useful information that can be acted upon should be collected; either daily or weekly during acute emergency phase or a severe disease outbreak, and monthly thereafter.

Key environmental health indicators always call for a numeric estimation as follows:

1) **Access to Excreta Disposal Facilities**
   The ratio of number of people per latrine can clearly show both the availability of latrines and the amount of sharing that is occurring. This ratio may be determined from information collected from walking around the camp or interviewing a representative group of people:
   - If people are being interviewed in, for example, a food distribution line, people who say they have a family latrine should be asked how many members are in their family and if anyone else shares that latrine.
   - Where communal latrines are used, sanitation coverage is the total number of people using latrines divided by the number of latrines being used.
   - If people are living in their apartments or houses but not everyone's toilet is working, monitoring the fraction of households with a functioning toilet or latrine is a reasonable way of estimating the sanitation coverage.

2) **Water Consumption**
   Water consumption depends both on water availability and the people's ability to obtain the water. Shortage of buckets, concern for security, and long lines can all prevent plentiful water sources from being used fully. Water consumption is always stated in terms of *litres per person per day*.
   - Water consumption estimates can be obtained by carrying out 24-hour recall interviews with a representative sample of the population, or by
   - Water consumption can also be estimated by monitoring how much water is collected at the various sources and dividing this by the number of people being served.

3) **Percentage of People Consuming Safe Water**
   The host government or concerned UN agency usually has a microbiologically-based criteria for considering water safe. If none is available, consider water to be safe if it has less than 10 faecal coliforms per 100 ml. of water. Any water with a detectable amount of free chlorine residual should also be considered safe. The fraction of people who are getting "safe" water at the time it is collected should be monitored. In a piped system, water samples should be taken throughout the system at various water points, with each sample being taken to represent a similar number of people (e.g., 1 sample per 10,000 people). In this case, the fraction of water samples that are safe corresponds to the fraction of people whose water arrives at the water point safe.

In settings where groundwater supplies at wells or springs are determined to be safe, monitoring should report the fraction of people obtaining water from the safe sources versus unsafe surface water or other sources.

Note: *Collecting safe water at the well does not assure that the water is still safe when consumed.*

4) **Other Indicators**
- *Incidence of waterborne diseases* should be monitored. By far, the greatest risk associated with unsafe drinking water is the spread of diarrhoea, dysentery, and infectious hepatitis. For more details, please refer to the *Diarrhoeal Disease Control* chapter.
- *Incidence of water-washed diseases* such as eye infections, scabies and other skin infections that often arise where there is lack of water may also be monitored.
- *Fuel* and *soap availability* need to be monitored only when necessary (e.g. outbreaks of diarrhoeal diseases). In unusual settings, where people live in houses that have electricity, and people depend on electricity for fuel, monitoring the average hours of electrical service is a better indicator of the availability of fuel.

In the post-emergency phase, program monitoring may be expanded to include indicators of other environmental health activities:
- **Vector control** (total units sprayed, quantity of insecticide used, total surface area treated — refer to the chapter on Vector Control for further details)
- **Solid waste management** (quantity and frequency of disposal)
- **Waste water drainage** (including drainage of storm water)
- **Hygiene promotion** (hygiene promotion activities, hygiene risks and behaviours)

To detect significant changes resulting from the program, the indicators should be analysed as follows:
- Comparing what was done against what was planned (the targets).
- Following trends of indicators over time (e.g., increasing consumption of ORS, abnormal increase in diarrhoea, unusual weather conditions).
- Assessing access and availability of services through population surveys

Giving feedback about the surveillance to the environmental health team can help to improve their performance by identifying mistakes and making them feel accountable. Because the success of the environmental health program also depends on the support and co-operation of the affected community and other sectors, systems should be in place to enable the regular exchange of information and feedback. Results should be graphically displayed in a public location. This will increase the awareness of the environmental health efforts underway. Programs showing positive results will inspire other relief efforts, while programs that are not meeting their goals may get sound advice or encouragement from others.

It is only by determining that the water available is not enough that relief organisations can request for more resources to tackle the problem. Failure of relief NGOs to assess the amount of water available for displaced populations may result in loss of available resources to other less severe but better managed crises. Monitoring household levels of free chlorine by IFRC in Dushanbe during the latter part of 1997 through 1998 was largely responsible for confirming the effectiveness of adding enough chlorine to the water and thus avoided another widespread typhoid outbreak during 1998.[ii]

Evaluating

Programs should be evaluated in order to assess the achievements of the environmental control measures with reference to stated objectives and agreed standards (e.g., the Sphere standards). Evaluation is important for:

- Assessing the effectiveness and impact of the control measures on the affected population.
- Ensuring that the environmental control technology and resources used match the scale and nature of the program.
- Measuring the program's long-term consequences on the environment.
- Identifying lessons for future environmental health programs.
- Promoting accountability to stakeholders (e.g. donors, beneficiaries)

Evaluation may be carried out in two ways:

1. **Internal program evaluation**: normally carried out by staff in form of regular review of monitoring information. The implementing agency must also evaluate the effectiveness of its programs and compare them across different situations.

2. **External evaluation** may be part of a wider evaluation exercise by many agencies and donors and may be carried out, for example, after the acute phase of the emergency.

The resources and techniques used for the evaluation should be consistent with the scale and nature of the program. A report of the evaluation should be written that describes the methods used and the processes followed to reach conclusions about the program. The report should be disseminated to all the stakeholders, including the affected population.

SUMMARY OF GENERAL WATER AND SANITATION PRINCIPLES

While all situations are different, there are several guiding principles that almost always apply. While judgement must be used in applying these principles, the following points are generally true:

- In the absence of an ongoing epidemic waterborne illness, the highest priority in environmental services is to provide the displaced population with access to sanitary facilities.

- Providing people with <u>more</u> water is typically more important for maintaining health than providing people with cleaner water. 15 litres per person per day should be seen as a minimum acceptable amount.

- Displaced population settlements should be located where sufficient water is at or near the site because accessing and transporting water can be logistically difficult and expensive.

- Chlorinating water is the best way to assure its quality, both at the time of collection and for some hours thereafter. Whenever an outbreak of a potentially waterborne disease occurs, the water supply must be treated with chlorine.

- Environmental monitoring should be established and displayed publicly from the first day of the crisis. Sanitation coverage, water consumption, and water quality should be monitored on a regular basis.

REFERENCES AND SUGGESTED READINGS

1. The following are excellent general texts for suggesting facility designs and guiding construction activities. Specific details on well and latrine construction can be found in other texts.

   - Engineering in Emergencies: A Practical Guide for Relief Workers. Davis J and Lambert R. Intermediate Technology Publications, 1995.

   - Environmental Health Engineering in the Tropics, 2nd Ed. by Cairncross S. and Feachem R. (John Wiley & Sons Ltd., 1993)

   - Public Health Engineering in Emergency Situation (1994) by Medecins Sans Frontieres

   - Water Manual for Refugee Situations, Programme and Technical Support Section, UNHCR, Geneva 1992.

   - Emergency Water Sources, Guidelines for Selection and Treatment by House S and Reed B. Water Engineering Development Centre (WEDC), Loughborough University, 1997.

2. The following are excellent texts for reviewing general principles and standards of water and sanitation programs:

   - International Federation of the Red Cross and Red Crescent Societies, Emergency Response Units. Basic Health Care: Water and Sanitation Module.

   - International Federation of Red Cross and Red Crescent Societies. The Sphere Project: Humanitarian Charter and Minimum Standards in Water Supply and Sanitation.

   - International Committee of the Red Cross. Water and War, Report on the Symposium on Water in Armed Conflicts (Montreux, Nov. 1994)

   - Handbook for Emergencies. Second edition, UNHCR, Geneva, 2000.

   - Guidelines for Drinking Water Quality. Second edition, WHO, Geneva, 1993.

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[i] Humanitarian Charter and Minimum Standards were produced by the Steering Committee for Humanitarian Response, InterAction and other agencies. They aim to improve the effectiveness of assistance and accountability to stakeholders.
[ii] ICRC. Water and War

VECTOR CONTROL

Description
This section is a supplement to the Environmental Health chapter. It gives an overview of the unique factors that influence the spread of vector-borne diseases in disasters. It also includes the appropriate vector control strategies for humanitarian emergency situations. It focuses on vectors that cause major problems in emergency situations (mosquitoes, non-biting flies, rodents, and fleas). Readers interested in vectors that cause less common problems are referred to additional sources of information. The characteristics, biology, and ecology of the major vectors are described and then applied to the appropriate vector-control strategies. In addition, a word of caution on safe pesticide use is included. Emphasis is placed on the proper management techniques of vector control programs, including monitoring.

Note: *For details on the clinical features and management of common vector-borne diseases, refer to the* Control of Communicable Disease *chapter. For details on the investigation of an outbreak of vector-borne disease, refer to the* Disaster Epidemiology *chapter.*

Learning Objectives
- To describe the public health importance of vector-borne diseases among large displaced populations.
- To characterise the major vectors commonly encountered in humanitarian emergencies.
- To define a logical approach to developing vector control strategies.
- To define the safe use of pesticides.
- To describe the methods used to monitor and evaluate vector control programs.

Key Competencies
- To recognise the risk factors for vector-borne diseases in emergency situations.
- To distinguish between various vector species.
- To plan appropriate strategies for controlling mosquito and housefly population.
- To promote the safe use of pesticides.
- To monitor vector control measures in emergencies.

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PUBLIC HEALTH IMPORTANCE OF VECTOR-BORNE DISEASES

Table 5a-1: Terms and Definitions

Definitive Host	Person or other animal in which a parasite reaches maturity or passes through its sexual stage.
Ecology	The relationship between organisms and their environment.
Habitat	The area or environment in which an organism normally lives.
Infectious Agent	An organism (virus, bacteria, fungus, protozoa, helminth) that is capable of producing infection or infectious disease.
Larvicide	(*noun*): pesticide used to kill arthropod larvae; (*verb*): killing of arthropod larvae
Pathogen	Any disease-producing organism.
Pesticide	Any substance used to kill or control organisms which are considered to be pests.
Repellent	A chemical applied to the skin, clothing or other places to discourage arthropods and other disease agents from landing on or attacking an individual.
Reservoir	Any person, animal, arthropod, etc. on which an infectious agent depends for its survival where it reproduces itself for transmission to a susceptible host.
Indoor Residual Spraying (IRS)	Applying a long-lasting insecticide (with a hand-compression sprayer) on the inner walls of houses and animal shelters so that insects are driven away by the insecticide or are killed when they rest on treated walls.
Rodenticide	Pesticide used to kill rats or mice.
Transmission	Any mechanism by which an infectious agent is spread from a source or reservoir to a host.
Vector	Any animal or arthropod capable of carrying disease pathogens from one host to another either mechanically or through its body functions.

Transmission of Vector-Borne Diseases

Vectors may be defined as arthropods or animals that are capable of carrying disease pathogens from an animal, human, etc. (**reservoir**) to another. The pathogens are transmitted either *mechanically* (e.g., trachoma by, non-biting flies) to a **susceptible *host, or** after *biological transformation* (e.g., malaria parasites by mosquitoes) to a **definitive host**, as illustrated in the following Figure:

Figure 5a-1: Transmission of Vector-Borne Diseases
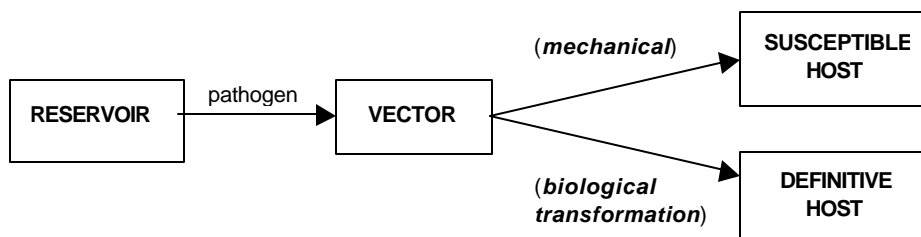
Each emergency situation may be characterised by different types of vectors and vector-borne diseases. In addition to transmitting diseases, some vectors may also be considered a nuisance because of their painful bites, e.g. mosquitoes, biting flies, fleas, and lice. The most troublesome vectors in evacuation sites and refugee camps are the non-biting flies. The following table summarises the vectors and vector-borne diseases that are common among displaced populations.

Table 5a-2: Main Diseases Transmitted by Vectors

VECTOR	DISEASE TRANSMITTED
Mosquitoes	
• Anopheles	Malaria, filariasis
• Culex	Japanese encephalitis, filariasis, other viral diseases
• Aedes	Yellow fever, dengue fever, filariasis, other viral diseases
Lice	Skin infections, epidemic typhus, relapsing fever
Fleas	Plague, murine typhus
Ticks	Tick-borne relapsing fever, tick paralysis
Rodents	Rat bite fever, leptospirosis, salmonellosis

Risk Factors for Vector-Borne Diseases

Displaced populations often have an increased risk of vector-borne diseases, even for diseases that may not have been present in the area before they arrived. Therefore, just because there has been no history of a particular disease outbreak in the area does not mean that it can never occur. Factors that make displaced populations more susceptible to vector-borne diseases include the following:

1. **Immunity and Disease Status**
   Stress, lack of good nutrition, and lack of previous exposure to the disease will lower a population's immunity to vector-borne diseases. This is especially true for malaria when a non-immune population has moved from urban or highland areas to lowland areas that are warmer or wetter. In urban or highland areas there may be very little exposure to malaria; whereas in warmer climates, there is an increased chance for the disease to be transmitted. When the weather is wetter than where the non-immune population came from, the vector populations increase rapidly.

   Displaced populations may also transfer certain parasites and diseases from their former homes to new locations where they multiply and spread. This makes the vectors and humans at the new location susceptible to diseases they would not normally be subjected to.

2. **Increased Exposure to Vectors**
   Displaced populations may be more exposed to vectors because of the following reasons:
   - Overcrowding makes it easier for lice and mites to spread from person to person. It also increases the chance that there is an infectious human (e.g., a person with circulating yellow fever virus, and a non-immune susceptible host, both living within the 50 meter flight range of the mosquito vector, *Aedes aegypti*).
   - Poor housing results in closer contact with sandfly vectors of leishmaniasis, flea vectors of rodent-borne diseases, or tick-borne relapsing fever.

3. **Increased Number of Breeding Sites**
   - Mosquito populations can multiply in great numbers in poorly drained water distribution points. There may be and increased number of breeding sites, either due to more pools of water or more domestic water containers. This can significantly increase the incidence of mosquito-borne diseases, as follows:
     - More water-storage containers increase breeding of the dengue fever vector *Aedes aegypti*.
     - More water-filled pit latrines increase breeding of the encephalitis vector *Culex quinquefasciatus*.
     - More groundwater pits, ponds, and footprints increase breeding of the malaria vector *Anopheles gambiae*.

- While evacuation sites and newly established camps may have severe problems with flies, lice, and mosquitoes, problems with rodent populations usually takes some time to build up. Poor storage or disposal of food will increase the rodent population. These rodents bring fleas and possibly diseases.

- Flies are attracted to areas with food and wastewater disposal problems, especially around feeding centres. Fly problems are often severe at the very beginning of the camp, before sanitation systems can be established.

- Natural disasters (e.g., El-Nino floods and hurricanes in 1997-98) may change the environment and increase the breeding sites of other vectors of less urgent concern, e.g. ticks, tsetse flies, etc., resulting in less common disease outbreaks including viral haemorrhagic fevers.

4. **Temporary Nature of the Camp Site and Reduced Peri-Domestic Hygiene**
   The temporary nature of a refugee camp means that it is not intended to be "home" for long. Displaced populations may not care as much to protect themselves or their household from vectors or pests as they normally would. They may be too worried about stresses of their situation, such as lack of resources, to be concerned about a few mosquito bites or accumulation of refuse. With the disturbed community structure and huge numbers of new neighbours, it may be difficult to develop a "community responsibility" for sanitation.

5. **Interruption of Vector Control Measures**
   In emergencies, vector control programs may lack the resources to support the control measures (chemicals may be too costly). As a result, epidemics of vector-borne diseases may occur once routine vector control measures (e.g., insecticide spraying) and health care services are disrupted.

6. **Access to Basic Treatment**
   Epidemics can occur amongst vulnerable displaced and host populations in complex emergencies due to poor access to effective treatment. In complex emergencies, a general break down of the health infrastructure is common, possibly compounded by gradual deterioration over many years. In the case of displaced populations, health services often become overwhelmed and many cases simply go undetected and untreated.

COMMON VECTORS IN EMERGENCIES

I. Mosquitoes

A. Mosquito-Borne Diseases[i]
There are many different species of mosquitoes, each living in a specific habitat and capable of transmitting a variety of diseases. Fortunately, there are just a few mosquito species that need to be studied to determine the most essential vector control measures. In this section, the most common species will be reviewed, namely:

- the *Anopheles* mosquito that is a vector for malaria and filariasis
- the *Aedes* mosquito that is a vector for yellow fever and dengue
- the "nuisance" *Culex* mosquito that may also be a vector of filariasis and the encephalitis virus is generally not a critical vector control issue in complex emergencies

Figure 5a-2: Summary of Mosquito Life-Cycle

All mosquitoes go through the same life cycle: **egg**, **larval stage**, **pupa stage**, and **adult**.

1. The duration of each stage depends on the temperature. In general, it takes 10 days for mosquitoes to develop from egg to adult. The egg stage lasts about 2 days, then goes through 4 larval stages in 6-7 days followed by the pupal stage lasting 1 or 2 days.

2. Then, the male and female adults emerge from the pupae. All female mosquitoes have antennea that are thinly scattered across their bodies, while the males have bushy antenna.

3. The male mosquito will mate with two or three females, drink plant juices (males cannot bite or take blood meals), then die after just a few days.

4. The female will mate only once in her life and store the sperm in a special sac to fertilise every batch of eggs she produces.

5. After mating, the female will seek for a source of blood (she needs the protein for her eggs), feeding on a man or animal, and sometimes two or more, until she is engorged. She will then rest for two or three days as the eggs develop.

6. Then, the female will fly to oviposit her eggs. Then, she will go to seek another blood meal, engorge, rest for two days, oviposit her eggs again. Generally, a female mosquito lives for one or two weeks. Her entire adult stage is spent undergoing this feed-engorge-oviposit cycle up to seven or more times. Each bite is an opportunity to become infected or to infect a victim.

   Note: *Oviposit means "to lay eggs through an ovipositor." An ovipositor is a tubular structure extending outside the mosquitoes abdomen.*
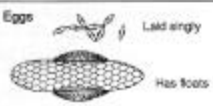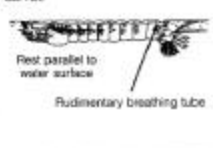
B. Mosquito Biology, Identification, and Ecology
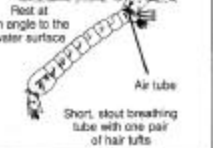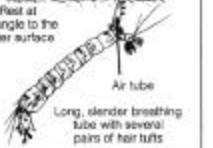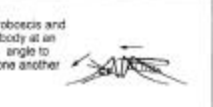
It is important to understand the differences among mosquito species when planning a mosquito control program. The three species, *Anopheles*, *Aedes*, and *Culex,* can easily be distinguished from each other as shown in the following table and illustration:

Table 5a-3: Characteristics and Ecology of Different Mosquito Species

Feature	**Anopheles**	**Aedes**	**Culex**
Species of Public Health Importance	*Anopheles gambiae, Anopheles funestus*	*Aedes aegypti*	*Culex quinquefasciatus*
Egg Deposit	Deposit individual eggs on water surface	Deposit individual eggs inside containers just above water surface*	Deposit eggs in rafts on water surface
	Larvae rest parallel to water surface	Larvae hang down at an angle, suspended by breathing tubes	Larvae hang down at an angle, suspended by breathing tubes
		Larvae swim in sinuous S-shaped motion	Larvae swim in jerky motion
	Adults have long palps and rest against wall with a straight back	Adults have short palps and rest hunched up against the wall	Adults have short palps and rest hunched up against the wall
Flight Range	Short, generally less than 1-2 km	Short, generally less than 1-2 km	Short, generally less than 1-2 km
Biting Time	The later hours of the night (11pm-6am)	Rests on hanging clothes in the house and bites during the day	Earlier in the evening just after dusk

* Note: Aedes aegypti *glue their eggs just above the water surface on the sides of containers where they can remain dry for 6 months. The next time the container is filled with water, the eggs are flooded and two days later the larvae hatch out of the egg.*

Figure 5a-3: The Main Characteristics for Differentiating Anopheles, Aedes, and Culex Mosquitoes (WHO[ii])

II. Non-Biting Flies

A. Common Species and Fly-Borne Diseases
The non-biting flies of medical interest in refugee camps are the *synanthrophic flies*: **housefly, blow fly,** and **flesh fly**. These flies usually hover around food, carrion, garbage, and human and animal waste. When they land, they may either transfer or carry disease pathogens that attach on their legs and other parts of their bodies. These pathogens may then be mechanically transported or transferred to humans, animals. Even though they can also be transmitted via fly faeces, pathogens do not undergo biological transformation in the flies. In unhygienic conditions, flies have more opportunities to cause the following:

- Flies of the *Musca* and *Chrysomyia* genera are known mechanical vectors of intestinal infections such as dysentery and typhoid.

- Flies can transmit poliomyelitis and certain eye infections, such as trachoma.

- Large fly populations can be extremely bothersome, interfering with human comfort. In fact, some people think that the word "bother" is derived from a cattle fly known as "Bot Fly."

   Note: *Flies are not usually associated with cholera. A larger dose of cholera bacteria is required for cholera transmission than the flies can carry.*

B. Fly Biology, Identification, and Ecology

There are four stages in the fly life cycle: *egg, larvae (*or *maggot), pupa,* and *adult* (see illustration below). A single female housefly, *Musca domestica*, can lay up to 2,000 eggs a month. Eggs are deposited in various habitats, especially in garbage and human and animal wastes. Depending on the temperature, the life cycle may extend anywhere from 6 days to 6 weeks before the adult emerges. This can result in enormously dense fly populations developing in a short period of time. In warmer climates, the adult fly may live for only 2-3 weeks, whereas, in cooler climates, they can live up to 3 months.

Figure 5a-4: Life Cycle of a Fly (WHO[iii])
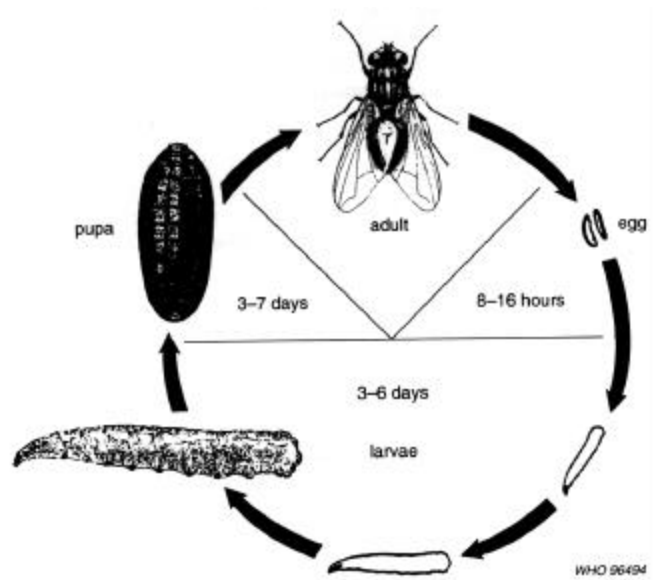
The key to fly control is to identify and eliminate their breeding sites. The main breeding sites of the non-biting fly species are listed in the following table:

Table 5a-4: Breeding Sites of Non-Biting Fly Species

Common Name	Scientific Name	Breeding Sites
House fly	*Musca domestica*	Refuse, animal or human faeces
Filth fly	*M. sorbens*	Human faeces
Bush fly	*M. vestutissima*	Cattle droppings
Blow fly	*Chrysomya spp.*	Latrines, meat, fish
Blue Bottle, Green Bottle flies	*Calliphora spp. Lucilia spp.*	Meat, fish and garbage
Flesh fly	*Sarcophaga spp.*	Meat, animal faeces
Lesser house fly	*Fannia spp.*	Animal faeces
Stable fly	*Stomoxys calcitrans*	Straw stacks, piles of weeds, animal faeces

III. Biting Flies

In addition to causing painful bites and sucking blood, some biting flies transmit important diseases, for example:

- **Tsetse flies**: where known to transmit sleeping sickness (trypanosomiasis), tsetse flies must be considered a serious threat to life. Sleeping sickness is 100% fatal without complete treatment, which is often very hard to access in emergencies (costs $500-1000, depending on the stage of disease). There are an estimated 250,000 cases in total in just Southern Sudan, DRC and Angola. Refugees can be infected with sleeping sickness in different ecological habitats including both forest and scrub/river areas.

- **Sandflies**: sandflies can transmit two types of leishmaniasis: *cutaneous* and *visceral.* Visceral leishmaniasis is highly fatal and is reported in IDP and refugee areas of Southern Sudan.

- **Blackflies**: *Simulium* blackflies are vectors of onchocerciasis (commonly known as river blindness).

III. Rodents and Fleas

A. Important Disease-Carrying Species

Rodents and rodent-borne diseases may become serious problems in displaced population camps that have existed for some time. These problems may result from uncontrolled and accumulating solid waste, which greatly increases rat breeding. Increased rat populations discourage other efforts on environmental health improvement and also leads to an increase in diseases transmitted by rats, including the following:

- Rats cause disease through their fleas, especially *Xenopsylla cheopis*, which can transmit plague (*Yersinia pestis*) and murine typhus (*Rickettsia mooseri*). Studies in refugee camps in Asia have shown murine typhus to be a major cause of Fever of Unknown Origin (FUO).

- Rats can spread diseases such as salmonelloses, leptospirosis, hanta virus and lassa fever through their excreta.

- Rat bites can transmit pathogens that can cause fever and rabies.

- People can contract leptospirosis from handling the dead bodies of infected rats, or get trichinosis from eating undercooked meat from pigs that have eaten the dead bodies of infected rats.

- The multi-mammate rat (*Mastomys natalensis*) is the natural reservoir of the lassa fever virus. Outbreaks of lassa fever have been reported among refugee populations in Sierra Leone and Liberia.[iv]

- Finally, rats can cause enormous economic damage by destroying or contaminating food stores and damaging other materials around the house.

B. Rodent Identification and Ecology

The following table describes four most important rodent species:

Table 5a-5: Four Most Important Rodent Species

COMMON NAME	NORWAY RAT (Brown or sewer rat)	ROOF RAT	HOUSE MOUSE	MULTI-MAMMATE RAT
Rodent Species	*Rattus norvegicus (Norway rat)*	*Rattus rattus*	*Mus musculus*	*Mastomys natalensis*
Appearance	Small eyes and ears, thick tail	Wide ears, pointed snout, long slender tail	Only 1-2 cm wide, smaller head and paws	No more than 25 cm from tip to tip
Weight	Up to 500 g	Up to 250 g	No more than 20 g	Small
Common Habitat	Hole in ground, piles of refuse, warehouses, sewers	Under roofs along beams and tops of partitions (excellent climber)	Smaller range: search for food around homes. Attracted to flour, cereals, grain	Less domestic than others
Geographic Distribution	Ocean coastal areas of Africa	Throughout Africa except desert and semi-desert areas	Spreading southward from north of Africa	Africa, south of Sahara

IV. Other Vectors and Pests

Other vectors of concern in displaced population camp settings include:

1. **Lice** — among the species of lice, only body lice are vectors of diseases that can cause epidemics. Migrating populations easily transport body lice from their places of origin. Body lice are common where a large number of people live in unclean, crowded conditions and they can transmit pathogens for the following disease:

   - Epidemic typhus is a highly contagious disease, which can be transmitted by contaminated lice faeces penetrating the skin while scratching,

   - Relapsing fever can be transmitted by crushed lice penetrating the skin while scratching.

   - Bites of body lice can cause skin irritation leading to various skin infections.

   Note: *Typhus or relapsing fever should be suspected if many cases of "fever of an unknown origin" do not respond to an anti-malarial treatment.*

2. **Mites** — mites commonly cause scabies and other skin infections in displaced populations, particularly children. Overcrowding and poor personal hygiene favour the spread of mites within a refugee population.

3. **Ticks** — ticks are usually not a problem in camp settings. But they can transmit several diseases, (e.g., Q-fever, hemorrhaegic fever, and tick-borne relapsing fever).

4. **Bedbugs** — bedbugs can become a great nuisance after displaced population camps have been established for several months. Bedbug bites cause significant discomfort and loss of sleep. In heavily infested areas, young children may show signs of anemia.

5. **Cockroaches** — cockroaches contaminate unprotected food and may transmit various pathogens including poliomyelitis virus, amoebae and intestinal viruses.

6. **Snails** — snails are intermediary hosts for the schistosoma flukes that cause urinary schistosomiasis and intestinal schistosomiasis.

DESIGNING A VECTOR CONTROL PROGRAM

Designing a vector control program should begin with an assessment of the risk of vector-borne diseases as well as the clinical evidence of the diseases among the displaced population. Advice should be sought from local authorities on local disease problems and the available vector-control resources. The assessment should focus on the following:

- differentiate between epidemic and non-epidemic disease, or risk
- the immune status of the population
- the pathogen type and prevalence
- the vector species and habitat
- vector numbers (season, breeding, etc.)
- any existing individual protection and avoidance measures

The vector control program should be based on clear objectives that address the priority vector-related problems identified in the assessment. Common objectives of a vector-control program include the following:

- to prevent or control outbreaks
- to stop preventable deaths from vector-borne diseases
- to minimise illness from vector-borne diseases
- to protect the population subgroups with reduced immunity

The control of vector-borne diseases requires efforts of several sectors, including relief, water/sanitation, health services and food and nutrition. To ensure the displaced community shares the responsibility of determining their health care, representative members should be involved in all phases of vector control. Otherwise, it may be difficult to convince displaced people to use the simple, inexpensive and effective method of self-protection or home improvement, if they are not greatly bothered by bites from the vectors present. (See the *Environmental Health* chapter – Planning Environmental Health Programs for more details on assessment and defining priorities and objectives.)

Vector Control Strategies

Vector control strategies may range from simple treatments (self-protection and home improvement) to more complex measures that require participation from vector control experts (entomologists). Control strategies may be classified as follows:

- **environmental control**: alter breeding sites by draining or filling sites, regular disposal of refuse, maintain clean shelters, and personal hygiene.

- **mechanical control**: use screens or bednets, traps, food covers, lids or polystyrene beads in latrines

- **biological management**: use living organisms or products against vector larvae, such as fish that eat larvae (e.g., tilapia, carp, guppies), bacteria (*Bacillus thuringiensis israelensis)* that produce toxins against larvae, free-floating ferns that prevent breeding, etc.

- **chemical control**: use chemicals for personal and household protection and treatment or for environmental control. There are many forms including repellents, insecticides for residual spraying, adulticides, or larvicides that minimise risk of infections. Previous data on resistance to insecticides will be useful in helping to ensure the best one is chosen.

The objectives of the vector control program can only be achieved by implementing appropriate vector control measures. Each emergency situation is different, and may require different vector-control options. A vector control measure that is appropriate for one disease may not be appropriate for another disease or vector species. **Vector control experts (national and international) should be consulted to give advice about the most appropriate vector control measures and chemicals to use**. All measures should be based on the national and international protocols. The following criteria may be used to select the most suitable vector control measure:

Table 5a-6: Criteria for Selecting Vector Control Measures

Criteria for Selecting Vector Control Measures
• epidemiological situation and risk factors
• appropriate for controlling the specific vector species, given it's breeding, flight and resting, behavior
• simple to understand and apply
• affordable and based on locally available resources (equipment, consumable supplies, and technical skills)
• acceptable and compatible with local customs and practices (post-emergency phase)
• safe for the user and the environment

Linking with Other Sectors

Vector control activities must be coordinated with other sectors to ensure that objectives are met and gaps and overlaps are avoided. Other sectors may carry out the following activities that relate to vector control:

1. **Site Planning** – It is important to select a site that does not expose the displaced population to excess risk of vector-borne diseases. However, sometimes the choice of the site is limited by politics, security, or other factors.

2. **Water and Sanitation** – Basic sanitary engineering measures should be taken whenever possible to reduce the opportunities of insect vectors breeding within the camp settlement (e.g., sanitation arrangements, adequate water supply, drainage of waste water, and providing soap).

3. **Food and Nutrition** – Ensuring access to adequate food and providing supplementation (e.g., micronutrients) where necessary can improve the nutritional status. This builds the displaced people's immunity, enabling the body to fight against vector-borne infections.

4. **Health Services** – Health care activities that may reduce the prevalence of the disease pathogens include the following: prompt diagnosis of the vector and pathogen, effective treatment (essential drugs, referring cases that do not respond to treatment), chemoprophylaxis for those at risk, and immunisation, where available.

5. **Epidemiological Surveillance** – Health data can be collected and used to identify and monitor vector-related problems.

Note: *Vector control measures are still required because the vector-related activities of other sectors may have some impact on their own, but they are not enough to solve the problem of vector-borne diseases.*

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[i] Note that the WHO "Roll Back Malaria" (RBM) Technical Support Network for Complex Emergencies was formed officially in April 1999 and is producing, technical guidelines and training materials, and providing direct technical support for malaria control in complex emergencies

[ii] WHO. "Vector Control - Methods for use by individuals and communities", by Jan A Rozendaal 1997 ISBN q2 4. Permission to use this diagram is needed as it is copyright protected by WHO

[iii] Ibid

[iv] Allan et al, (1998) The progression from endemic to epidemic Lassa fever in war-torn West Africa, Emergence and Control of Rodent-Borne Viral Haemorrhagic Diseases, Fondation Marcel Merieux - Elservier, p 197-205. Based on personal experience managing the 1997 Lassa epidemic in Sierra Leone and all SL lassa services until Feb 2000 with Merlin, prior to joining WHO.

VECTOR - SPECIFIC CONTROL STRATEGIES

I MOSQUITO CONTROL
Control of mosquito populations will depend on the mosquito species:

1. *Anopheles* – malaria

There are various strategies to control the *Anopheles* mosquito:

a. To Reduce the Source:
Site selection: From a malaria control perspective, any displaced population camp or evacuation site should be located one to two kilometers upwind from potential vector breeding sites (some natural water sources) whenever an additional clean water source (pumps, tanks, or capped wells) can be provided for the camp population. In this case they have less direct need to be sited close to natural water sources.

Environmental control: If the *Anopheles* breeding sites are limited and circumscribed (a rare circumstance), then larval control may be possible through draining[i] or applying a larvicide. However, in most rural situations in Africa, larval control for malaria prevention is not usually practical or possible as common vectors breed in a variety of water sources. *Anopheles gambiae* breeds in temporary water bodies without vegetation and in open sunlight, where as *Anopheles funestus* breeds in permanent water bodies with vegetation, including ponds and swamps.

Chemical and biological control: If larviciding is chosen, there are only two main larvicides that can be safely applied on water that is used for drinking. Dosing and precautions can be found in a number of manuals.[ii],[iii]

- temephos (an organophosphate insecticide better known as Abate®) — widely used in control of dengue, onchocerciasis, and guinea worm
- *Bacillus thuringiensis israelensis* (a biological insecticide)

b. To Minimise Transmission:
For control against the adult *Anopheles* mosquito, it is important to remember that in Africa this species generally bites late in the night[iv]. Therefore, if repellents (including soaps that contain repellents), coils, fumigants, and aerosol sprays are applied in the early evening, the protection they provide may not last long enough to have a significant impact. Where available, repellants and coils may be in use on an individual basis and their use should be encouraged

The malaria-control methods of choice are *indoor residual spraying* (IRS) within the inside surface of houses or tents[v] and *insecticide treated materials*[vi] (ITMs, e.g., mosquito nets or curtains). Both are about equally effective against any mosquito species that feed and rest indoors at night. In acute emergencies, agencies normally depend on IRS initially as this can be implemented over a wide area quickly, requires less community education (as it is done by trained teams and not the community themselves) and ITMs are rarely available on the ground in less than two months. Once they become available, prevention programs should sensitize displaced communities and distribute ITMs. Once distribution is complete, the IRS program can cease in ITM protected communities, but may need to be maintained for "refugee transit accommodation and other community structures where groups may continue to sleep without nets"[vii]

In areas with year-round malaria transmission, re-treatment of nets as well as residual spraying should be done once every six months. All shelters (tents, huts, mud houses) should be sprayed to give a mass protective effect rather than spraying only a single shelter which gives little personal protection since mosquitoes rest on walls *after* feeding.

Note: *Shelters made of plastic sheeting cannot effectively be treated with insecticides. Therefore, treated tents rather than plastic sheeting should be distributed for shelter in malaria endemic regions.*

In the long run, ITMs are cheaper and more readily accepted by the population than IRS.[viii] The community needs to be sensitised before distribution to ensure that:

- nets are used by the most vulnerable,
- they sleep under them and use them correctly,
- the education used to reinforce good practice also reinforces treatment seeking behavior,
- the need for re-impregnation, times and methods.

Mosquito nets are available from a variety of sources.[ix] For details about the recommended specifications for mosquito nets, refer to the Appendix.

Figure 5a-6: Benefits of an Insecticide-Treated Mosquito Net (WHO – Vector Control[x])
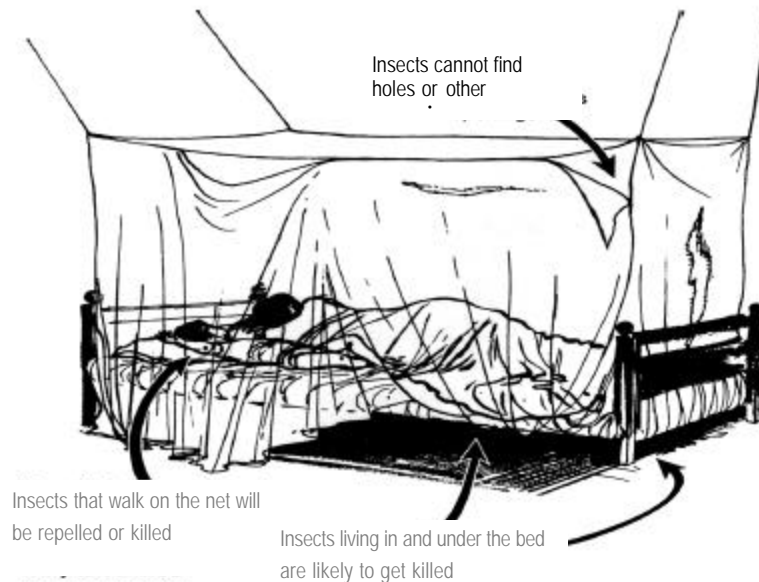
There are six pyrethroid insecticides approved for treating mosquito nets or curtains:[xi]

- Permethrin
- Deltamethrin
- Lamda-cyhalothrin
- Etofenprox
- Alphacypermethrin
- Cyfluthrin

These are available in the form of litre bottles for communal net treatment, or in the form of individual tablets or sachets for individual treatments.

Note: *There are now "long lasting" insecticide treated bed nets under WHOPES testing that will last up to 24 washes, and possibly longer. These are commercially available and may reduce the need for frequent re-impregnation, or eliminate it altogether, if impregnation is confirmed to last as long as the bed net itself*

2. *Aedes* **- yellow fever and dengue**
   a. It is important to remember that *Aedes aegypti* is a daytime biting mosquito that does not rest on walls. It prefers to rest on hanging clothing.
   - Therefore, neither insecticide-treated materials (ITMs) nor indoor residual spraying are effective control measures.
   - Many programs carry out space spraying with thermal fogs or ultra-low volume insecticides. This is very expensive, but may be necessary during epidemics and should always be combined with larval control.

   b. The following three methods are effective for larval control:
   - *Environmental sanitation:* Clean-up, bury or dispose of "non-essential" water containers, including old tires, tin cans, broken jars, plastic bottles, etc.
   - *Prevent breeding*: empty and clean domestic water containers once a week. Since it takes 10 days for the mosquito to develop from egg to adult, cleaning and covering the jars once a week will prevent adults from emerging.
   - Use *larvicide* such as temephos (Abate), or *Bacillus thuringiensis israelensis*.

3. *Culex quinquefasciatus*
   Culex mosquitoes are more often nuisance biters and are less easily controlled by insecticide-treated mosquito nets or residual house spraying. Larval control can be achieved through environmental sanitation, improved latrines, and applying insecticides, oils, and polystyrene beads on the surface of pit latrines and cesspools.

II NON-BITING FLY CONTROL

There are various strategies to control non-biting fly populations:

To Reduce the Source:

a. The most important control measure is to ensure there are enough fly proof latrines:
- Provide a water seal or functioning VIP latrines (refer to exhibit in the section on Sanitation).
- Provide covers for other types of latrines.
- If defecation fields are used in the early stages of a refugee settlement, they should be at least 500 metres down wind from the nearest household and 30 metres from a water source.

b. A second important control measure is to regularly dispose of all garbage.
- Collect refuse from households, markets as well as from refuse sites at least twice a week in order to limit the number of flies that reproduce.
- All refuse should be finally disposed in covered garbage pits or by burying. Studies have shown that food scraps from communal feeding centres were often stored in baskets on the ground. This shaded, damp environment with organic matter mixed with mud provides a perfect breeding site for houseflies and bottle flies.

c. Dead animals and wastes from slaughter houses should be buried as soon as possible.

Figure 5a-7: Market with Large Amounts of Food and Piles of Refuse (WHO – Vector Control[xii])

To Prevent Transmission:

a. *Traps and Screens*: Large numbers of flies can be caught with non-poisonous traps and screens, for example:

- A simple trap can be made by cutting off the upper third of a plastic bottle and placing it upside-down inside the lower portion of the bottle which is half-filled with bait. Ripe mango waste and fish flour mixed with water make excellent bait. The traps are suspended above the ground near breeding sites. Flies entering the trap will not be able to leave and soon die. The traps become active in 2-3 days and can last 2-4 weeks. [xiii] (Refer to Figure 5a-8.). Traps can be efficient only if well maintained, or simply become additional breeding sites for flies, as commonly seen.

    Note: *Poison baits should never be used in refugee camps.*

Figure 5a-8: Diagram of a Fly Trap Made from a Plastic Bottle (UNHCR)

Bait
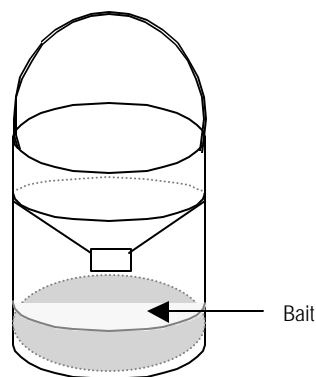
- Sticky strings and sticks suspended in latrines and around food preparation areas also help reduce fly populations.
- Putting screens on doors and windows may not be practical in most refugee situations. However, food and utensils can be protected by placing netting over them or keeping them in fly-proof containers or cupboards.

b. *Chemical Control:* Environmental sanitation is the basis of long-term fly control. Insecticides should be used only during outbreaks of vector-borne diseases and as a supplement to sanitation. Because flies can develop resistance to insecticides very quickly, chemical control should be used for only a short period of time and only when absolutely necessary. Specialised manuals should be consulted before beginning any insecticide applications.[xiv] [xv]

Sticky strings are not very practical in emergency situations and not commonly used. Residual spraying of the inside of pit latrine shelters to control adult insects, and use of floating polystyrene beads on the pit latrine fluid to discourage vectors from breeding in the fluid surface are more common and effective approaches in emergencies.

III BITING FLY CONTROL

It is important to control biting flies such as tsetse flies, sandflies wherever they cause major disease epidemics.

1. *Tsetse Fly –* sleeping sickness
There are various ways of controlling tsetse fly populations.

a. *Traps*: The *biconical trap, pyramidal trap* and *vavoua trap* are made up of blue and black cloths and mosquito netting. Flies get attracted to the brightly colored mosquito netting over the traps and are unable to escape after entering. Traps are cheap, easy to transport, completely safe for the user and very effective means for control of biting flies. Because they do not require any specific training to use, they are ideal for use by individuals or communities.

b. *Insecticide Treated Targets*: these consist of impregnated traps and screens, which are more effective since they kill any flies that land on them. They may be impregnated by the same pyrethroids used for impregnating mosquito nets (may be effective for upto 3 months).

c. *Insecticide Spraying*: Aerial and ground spraying of insecticides may be the preferable method of control during acute epidemics of sleeping sickness, river blindness or leishmaniasis. Daytime resting places such as tree trunks, twigs and roots should be target, Because of its high cost, need for special equipment and trained workers, spraying is not recommended as a routine control measure.

Traps attract more flies than screens and require less handling. Screens are much cheaper than traps and can cover a larger area. However, traps continue to be effective in catching flies once the insectide wears out, screens are only effective as long as the insecticide is active.

2. *Sandflies* - leishmaniasis
 The infection and spread of leishmaniasis may be controlled in the following ways:

* *Personal Protection*: avoid being bitten by keeping away from areas that sandflies are known to breed or rest, and by using bednets, repellents, clothing.

* *Residual Spraying*: although spraying the interior and exterior sides of doorways and windows, and the inner walls is effective against indoor-resting sandflies, malaria control is the primary reason for spraying wherever leishmaniasis is a problem.

* *Control of animal reservoir*: controlling the animal reservoir population (e.g. rock hyrax in Ethiopia, dogs or other domestic animals) may reduce the incidence of leishmaniasis.

IV FLEA CONTROL

When controlling flea-borne diseases such as plague and murine typhus, never attack the rodents before first getting rid of the fleas. Otherwise, when the rats are gone, the fleas will attack humans. There are two effective ways to get rid of fleas:

a. *Chemical control*: dusting rodent footpaths with insecticide dust/powder is effective for large scale flea control (during outbreaks of typhus or plague). When the rats groom themselver, the dust spreads on their fur, thus killing the fleas. Resistance to pyrethroid insecticides is common.

b. *Rat Control*: see below

>   **Note***: Where fleas are a biting nuisance, simple hygiene measures may be effective, such as taking bedding outside to air in the sun weekly.*

V RODENT CONTROL

There are various ways of controlling rodents:

a. *Mechanical Protection and Sanitation*: These are the only permanent methods for reducing rodent populations in refugee camps. Efforts should be made to store all food in rat-proof containers. The final disposal of solid waste should be done in a location and manner that does not encourage rat breeding or create other environmental health risks. Burial or incineration may be used to finally dispose of household waste and refuse from markets and slaughtering areas.

b. *Traps*: Trapping rats is good for publicity but generally catches only the sick and the stupid rodents. As long as there is enough food and nesting places, the rodent population will grow and quickly reach its former population levels. In one camp in Thailand, offering rewards for children to bring in rat tails resulted in children *breeding* rats!

c. *Poisons*: Rodenticides are generally not recommended for refugee camps. The large number of children, having little to do and few things to play with, make it risky to place poison bait traps around the camp environment. Documents on rodent control are available from WHO[xvi], and the following poisons can be used:

  - *Multiple dose anti-coagulants* are the safest to use. They generally interfere with the Vitamin K cycle, thus inhibiting blood coagulation. This causes the rodent to die by internal bleeding within 3 to 5 weeks. Examples of commonly used anti-coagulants include Warfarine, Rozol, Fumarine, Difenacoum, and Bromadiolone.
  - *Acute rodenticides* such as zinc phosphate and arsenic oxide, while used in some industrial applications (e.g., on ships), are too toxic to be considered for use in refugee camps.

d. *Caution to Rodent Trapping/ safe handling:* Lassa fever is common in Sierra Leone and Liberia. It causes several hundred cases of severe disease a year (in 1997 = 553 severe cases) and three expatriates have died this year from Lassa fever in eastern Sierra Leone. The virus is spread through the urine of rats. If trapped, these rats have to be disposed of without direct contact between the human and the rat corps as they urinate wildly and their bodies become covered in the virus. Rodent trapping campaigns could cause outbreaks of Lassa fever if this inadvertently increases host virus contact through normal handling and disposal of the corpse.[xvii] This might also include safe handling of rodents in regards to *rabies* risk, especially with live animals.

Summary of Vector Control Measures

The following table gives a summary of the various control measures for major vectors in emergencies:

Table 5a-7: Control Measures for Major Vectors of Public Health Importance

| VECTOR | VECTOR CONTROL IN THE COMMUNITY | | INDIVIDUAL PROTECTION |
	Source Reduction	Prevent Transmission	
Mosquitoes			
• *Anopheles*	Prevent breeding in field, larviciding	Residual wall spraying	Impregnated nets, repellents
• *Culex*	Prevent breeding around house Environmental sanitation	Residual wall spraying*	Repellents and impregnated nets*
• *Aedes*	Prevent breeding in field (larviciding, bacteria) Prevent breeding around house (dispose containers, tires, jars)	Space spraying	Repellents, protective clothing, immunisation (yellow fever)
Flies	Refuse disposal, Waste water disposal, Latrine covers	Fly traps, space spraying	Personal hygiene, insect screens
Fleas	Clean shelters and surroundings	Environmental sanitation and dusting, Rat control immediately after flea control	Insecticide powdering of clothes, bedding, and rodent burrows and runways
Rodents	Clean shelters and surroundings	Rat traps, rodenticides	Make food stores rat proof

* represents a less effective control measure

Controlling Other Vectors and Pests

Vectors and pests of less urgent concern can be controlled through environmental, mechanical, biological, or chemical control, as summarised below:

Table 5a-8: Possible Vector Control Measures

VECTOR	POSSIBLE CONTROL MEASURES
Lice	mass laundering in hot water; mass delousing with insecticide powder
Mites	mass laundering; supply adequate water for washing and distribute soap for the community
Ticks	clearing vegetation or insecticide spraying is difficult to apply
Bedbugs	household and personal hygiene; insecticide spraying
Black Flies	larviciding breeding sites in surrounding rivers
Cockroaches	protect food; insecticide powder or spraying
Snails	sanitation measures, drain water or speed up water flow, spray molluscicides

SAFE USE OF PESTICIDES

Vector control measures should address two principle concerns: efficacy and safety: They should be carried out according to internationally agreed methods and ensure that staff and the affected population are adequately protected.

There are three points about pesticide safety that should be emphasised in refugee camp settings:

1. *Safe Use and Storage of Pesticides*: Extra precaution should be taken in choosing insecticides and deciding when, how, and for how long to apply them. Strict procedures must be followed when handling insecticides and other related equipment. Pesticides and the spray machines should never be transported in vehicles that are also used for carrying food. They must be stored in locked and ventilated buildings. There is an increased danger of pesticide poisoning among displaced populations. Poisoning may be unintentional, but the danger exists because of the lack of toys for children to play with, the novelty of the situation, and the traumatic experience of being displaced.

2. *Safe Storage and Disposal of Used Insecticide Containers:* Strict guidelines have been developed for this and they should be implemented to ensure that the displaced community cannot obtain used pesticide containers.

3. *Safety of the Spray Staff:* Recruitment guidelines usually call for sprayers who:
   - have had prior training on the safe use of pesticides
   - have protective clothing (uniforms, gloves, masks etc.)
   - never smoke, drink, or eat during the job
   - have access to good washing facilities after the job is done

   It is rare to find sprayers that meet all of the above conditions in refugee situations. So appropriate training, protective clothing and equipment, and washing facilities should be provided. Guidelines on safety training, medical surveillance, and diagnosis and treatment of insecticide poisoning are available from the World Health Organisation (WHO).[xviii]

MONITORING AND EVALUATING VECTOR CONTROL PROGRAMS

Vector control in humanitarian emergencies is very important, but may have no impact if it targets the wrong vector, uses inappropriate or ineffective methods, or targets the right vector in the wrong place or at the wrong time. In addition, vector control can be very expensive and wasteful if there is inappropriate use of the insecticides. It is essential for planners to invest enough resources toward epidemiological surveillance, planning, monitoring and evaluation of vector control measures. Monitoring will ensure a vector-borne disease outbreak is detected early and will prevent any waste of resources on inappropriate control measures. Evaluation will measure the effectiveness and impact of the program.

Strategies for Monitoring
It is important for the vector control unit to work closely with the health care providers and those responsible for epidemiological assessment and monitoring. The health care team can provide clinical evidence of vector borne disease problems while the surveillance team can monitor risk factors and the effectiveness of vector control. All major (and expensive) vector control decisions should be supported by epidemiological findings. For vector control monitoring, the focus should be on the following:

A. The Human Population

1. *Standard Case Definitions with Laboratory Confirmation*: It is important that common case definitions are adopted, especially when more than one agency is assessing and monitoring vector-borne diseases in different populations. Whenever possible, laboratory confirmation of the initial suspected cases should be sought.

2. *Emergency Alert Reporting*: In addition to the routine health information system, there must be a standard procedure for immediately reporting vector-borne diseases with epidemic potential. The health information system should monitor significant increases of cases with "fever of unknown origin" in peripheral health facilities, or increased consumption of anti-malarial drugs.

3. *Geographic Location of Suspected Cases*: While it is often not a part of routine health monitoring, the vector control unit needs to be informed about the location of suspected cases with vector-borne diseases. If it is believed that disease transmission is occurring outside the camp (e.g., all the malaria cases are in adult males and not women and children), recent travel history of all suspected cases should be recorded.

B. The Site

From the very outset, a map of the area should be sketched showing where population clusters, suspected cases, and potential vector breeding sites are located. A simple hand-drawn map with pushpins hung on the wall should be adequate at the beginning of a vector-control program (before the data begins to evolve too much over time). This type of map is certainly more accessible. A computerised Geographic Information System (GIS) can make it easier to manage epidemiological and environmental data and predict the distribution of vectors and disease transmission levels in the long run, but it is certainly not the only means for mapping the vector breeding sites and affected populations. (See New Technologies in Emergencies chapter for details on GIS).

C. The Vectors

This section highlights the need for vector control expertise. The number of disease-bearing vectors and nuisance pests posing a risk to the people's health and well-being should be monitored and reduced to a tolerable level. The types of vector breeding sites may vary in and around the camp, or may be confined to a particular stream, dambo[xix], or waste disposal areas. Breeding sites should be identified and possibly mapped during initial vector control assessments in order to inform camp planning strategy, identify risks, and inform vector control planning.

Because each vector species has a characteristic breeding and biting habit, they should be monitored using different vector-specific methods and indicators:

I   Mosquitoes

Monitoring mosquito populations is essential for guiding insecticide spray operation. Often huge sums of money are wasted on insecticide applications without any idea of the impact on the mosquito population.

- *Anopheles* are most easily monitored in their *adult* form through the following methods: night-time capture on human bait, morning *indoor* pyrethrum spray collections, or alternatively battery powered light trap collections.

- *Culex* are better monitored and controlled through *larval* surveys of heavily organic drains and pit latrines because they often breed in enormous numbers.

- *Aedes* are also better monitored through *larval* surveys of domestic water containers. For example, in larval surveys for yellow fever and dengue control, the results are expressed in terms of standard indices of *Aedes aegypti* (the House Index, the Container Index and the Breteau Index) to predict the chances of disease transmission in a population.[xx]

II   Flies

It is more difficult to monitor non-biting fly populations than mosquito populations. Rather than *counting the number of flies collected over time per sticky trap,* monitoring of fly populations is best carried out as part of larval control and sanitation inspections, especially around feeding centres, hospitals, latrines, and refuse disposal areas.

III   Rodents and Fleas

Rodent and flea surveys can be conducted through *periodic trapping* and *chloroforming* of the rodents (and their fleas), followed by *combing* the rodents' hair over a white basin and *counting* the number of fleas that drop off.

IV   Other Vectors

Techniques for monitoring for less common vectors can be found in many of the references listed at the end of the chapter.

Evaluating Vector Control Programs

The performance of a vector control program needs to be evaluated with reference to stated objectives and standards in order to measure its overall effectiveness and impact on the affected population. Vector-borne disease incidence rates and parasite counts (for malaria) are the simplest indicators for measuring the impact of most vector control activities. However, they are insensitive indicators and should be used with caution because of the following reasons:

- Incidence data cannot always describe the seasonal variations of vector-borne diseases.
- In many areas, most patients are diagnosed clinically, using different criteria, including different cut-off levels for parasite counts.
- Most deaths from vector-borne diseases occur at home without any medical diagnosis or documentation.
- The population size, which is necessary to calculate incidence rates, may be grossly unreliable.

Evaluation may be largely based on direct observation while walking through the refugee settlement. Other ways of gathering information may be necessary for more accurate data. Pit latrines, food preparation sites and refuse collection sites may be assessed to determine the effect of vector control measures. The following are more appropriate indicators for evaluating vector control activities.

1. **Indicators for Evaluating Individual and Family Protection**
    The following indicators may be used to assess whether the displaced people have the means to protect themselves from disease vectors and nuisance pests that are considered to be a significant risk to health or well-being:
    a. *Control of human body lice is carried out to an agreed standard where louse-borne typhus or relapsing fever are a threat.*
    b. *All populations at risk of vector-borne diseases have access to shelters that are equipped with insect control.*

    Other indicators that may be used evaluate individual and family protection include:
    - Number of households with ITMs
    - Number of households timely sprayed with appropriate, effective and safe insecticide
    - Number of households using chemical repellants, coils etc.
    - Number of households placing bedding in the sun daily
    - Number of households with access to sufficient water and soap

2. **Indicators for Evaluating the Physical, Environmental, and Chemical Protection**
The following indicators may be used to assess whether the number of disease-bearing vectors and nuisance pests are kept to an acceptable level:

- Number of displaced communities that have their camps established in areas of minimal disease vector breeding site risk (relative to the region)
- Number of infective malaria mosquitoes reduced
- Number of water supply points effectively managed to ensure minimal risk of creating temporary breeding sites
- Number of natural vector breeding sites are reduced by land fill (or larvicide)
- Number of other vectors, including rats, biting and non-biting flies, and other mechanical vectors and nuisance pests, effectively reduced and maintained at low levels
- Number of intensive vector control interventions carried out in communities with high risk of disease outbreaks

3. **Indicators for Evaluating Solid Waste Collection and Disposal**
The following indicators may be used to assess whether the people have an environment that is free of solid waste contamination:

a. *Domestic refuse is removed from the settlement or buried on site before it becomes a nuisance or a health risk.*
b. *There are refuse pits, bins or specified areas at markets and slaughtering areas, with a daily collection system.*
c. *Final disposal of solid waste is carried out in such a place and in such a way as to avoid creating health and environmental problems.*

4. **Indicators for Measuring Drainage**
The following indicators may be used to assess whether people have an environment that is acceptably free from risk of water erosion and from standing water:

a. *There is no standing wastewater around water points or elsewhere in the settlement.*
b. *Storm water flows away.*
c. *Shelter, paths and water and sanitation facilities are not flooded or eroded by water.*

5. **Indicators for Evaluating the Safe Use of Chemical Vector Control Methods**
The following indicators may be used to assess whether the use of pesticides is carried out according to international standards:

a. *Personnel are protected by providing training, protective clothing, supervision, and a restriction on the number of hours handling pesticides.*
b. *The purchase, transport, storage, and disposal of pesticides and application equipment follows international norms and can be accounted for at all times.*
c. *People are informed about the potential risks of pesticides and about the schedule for application. They are protected during and after the application of pesticides according to internationally agreed procedures.*
d. *The choice of pesticide and application method conform to national and international protocols.*
e. *The quality of pesticide and of treated bednets conform to international norms.*

6. **Indicators for Measuring Hygiene Promotion**

The following indicators may be used to assess whether the affected population is aware of priority hygiene practices that create the greatest risk to health and able to change them:

a. *Bedding and clothing is aired and washed regularly.*

b. *In areas where malaria is endemic: people with mosquito nets keep, use and retreat them correctly; people avoid exposure to mosquitoes during biting times, using the means available to them; containers which may be mosquito breeding sites are removed, emptied of water regularly or covered.*

c. *Waste is put in containers daily for collection, or buried in a specified refuse pit.*

7. **Indicators for Evaluating Vector and Parasite Characteristics**

The following indicators may be used to assess whether the correct vector and parasite are being targeted for control:

a. *Changes in parasite susceptibility to drug treatments* — this is essential to maintain effective treatment.

b. *The susceptibility of the vector to insecticides*— this is necessary to estimate resource needs (chemicals, equipment, personnel).

c. *Identifying vector species and characteristics* — this is necessary for planning vector control.

Note: *All indicators in lower case alphabet bullets, except those for measuring hygiene promotion, are from the Sphere Project[xxi].*

Mosquito Net Specifications

Interim specifications for polyester and proposed design of nets and labeling for institutional buyers (from a WHO Informal Consultation held in Geneva June 2000) are described below:

Material:	Polyester netting
Fabrication:	Warp knitted (ISO 8388)
Fibre analysis:	100 % polyester (ISO 1833), optional
Filaments:	multifilament, 36 filaments
Mesh size:	Minimum 156
Denier:	75 or 100 (ISO 2060, DUPRO), optional
Weight:	75 denier: 30 gr/m2 (ISO 3801)
	100 denier: 40 gr/m2
Dimensional stability:	shrinkage less than 5 % (ISO 5077)
Bursting strength:	75 denier: minimum 220 Kpa (ISO 2960)
	100 denier: minimum 405 Kpa
Fire safety:	16 (CFR 1610)
Labeling on the net Specific data:	Size in cm (L,l,H)
	Water absorption in ml per net
General pictograms: (ISO 3758)	Washing 30°C
	No bleaching
	No drying machine
	No ironing
	No dry cleaning

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[vii] For more details about residual insecticide spraying, refer to WHO/CDS/WHOPES/GCDPP/2000.3 publication; Manual for Indoor Residual Spraying

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[x] World Health Organisation (WHO) publication "Vector Control - Methods for use by individuals and communities", by Jan A Rozendaal 1997 ISBN q2 4. Use of figure requires permission from WHO and the artist, Lois Robertson

[xi] Insecticides listed under here are WHOPES tested and approved as active ingredients in one or more commercially available formulations. WHOPES hold a database of all approved products and formulations. For further information, contact the WHO Pesticide Evaluation Scheme, 20 Avenue Appia, CH-1211 Geneva 27, Switzerland

[xii] World Health Organisation (WHO) publication "Vector Control - Methods for use by individuals and communities", by Jan A Rozendaal 1997 ISBN q2 4. Use of figure requires permission from WHO and the artist, Lois Robertson

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[xviii] Contact World Health Organization

   Communicable Disease Control
   Prevention and Eradication
   WHO Pesticide Evaluation Scheme
   20 Avenue Appia
   CH-1211 Geneva 27
   Switzerland

[xix] Dambo — small valley wetland commonly found on the plateau savanna regions of eastern and southern Africa. Dambos are a multi-purpose land and water resource used for water supply, grazing, and cultivation

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FOOD AND NUTRITION

Description
This chapter reviews the impact of disasters on food and nutrition and the principles of food aid. It provides basic guidelines for assessing food security and nutritional status during humanitarian emergencies. It also describes various food aid strategies for reducing malnutrition and micronutrient deficiency diseases among the displaced.

Learning Objectives
- To identify the common issues surrounding food and nutritional emergencies.
- To define the causes of malnutrition and micronutrient disorders.
- To review the principles of food and nutritional interventions in emergencies.
- To identify indicators for nutritional surveillance.
- To define the special needs of refugees and design programs for addressing these needs.
- To describe different types of emergency nutrition interventions.
- To review the supply and distribution of food aid in emergencies.
- To discuss the practical approaches to fortifying relief foods.
- To monitor and evaluate food and nutrition programs.

Key Competencies
- Recognise the effect of disasters on food security and the risk factors for malnutrition in complex emergencies.
- Discuss how to treat malnutrition and micronutrient deficiency disorders.
- Understand the role of food aid in emergencies.
- Describe different methods of assessing food security and nutritional status in emergency situations.
- Design short-term and long-term food and nutrition programs.
- Understand the criteria for establishing and closing selective feeding programs.
- Describe ways of overcoming problems of food supply and distribution for large displaced populations.
- Recognise the advantages of field-based fortification.
- Define indicators for monitoring and evaluating food and nutrition programs.

TABLE OF CONTENTS

Overview

Of all the deaths that occur in major humanitarian emergencies, between 33% and 50% are associated with malnutrition. Particularly in emergencies where there are many deaths, the mortality rate is closely associated with the severity of malnutrition.

Malnutrition is already the highest risk factor for illness and death in Africa. Four to five million children die in Africa each year from malnutrition-related problems. These deaths are not due to man-made or natural emergencies, but because of a combination of factors, such as gross poverty and gross under-development in the form of high illiteracy, unclean water, and inadequate health facilities.

Not surprisingly, food and nutrition programs cost up to 50% of the budget for humanitarian aid. The cost of transporting bulk food exceeds the costs of health, shelter, and water and sanitation programs combined.

This chapter reviews food security and nutrition problems in emergencies and focuses on how to use food aid to reduce malnutrition. It is structured around the planning cycle.

FOOD SECURITY AND NUTRITION ISSUES IN EMERGENCIES

Introduction

The right to food is more critical than almost any other human right. Food is usually the last thing that people will give up when they have to make economic decisions. This is because without food, you die.

Food security means all people having access at all times to the food needed for an active and healthy life. Three things are required for overall food security:

1. Adequate and stable food availability or a consistent food supply in the affected area.

2. Food access, or the ability of the displaced population to get to the food and be able to afford it.

3. Bio-utilisation, or the body's ability to properly eat, digest, absorb, and metabolise the nutrients in food. This is often compromised by weakness (which reduces appetite), fever (which increases both caloric and protein requirements), and parasite load (which can deplete the body's nutrients).

It has been recognised that there is enough food to feed everyone in the world, but some people do not have access to it. This lack of access, or *food insecurity,* may exist at any level: the national, community, or household level. When a large number of people experience food insecurity, a *food emergency* may occur. In most cases, a food emergency is not a sudden event, but one that develops over time. A food emergency is not common during natural disasters that occur suddenly, such as earthquakes or hurricanes.

Decreased rainfall may be one of the early signs of a food emergency, followed by a decline in food supply and an increase in food prices. Many families may be forced to sell their household assets (e.g., some livestock and tools) to buy grain. Selling critical household assets may gradually lead to a loss of livelihood and a large-scale population displacement. The final stage of a food emergency is a *nutritional emergency* in which reduced access to food is associated with actual or threatened increases in morbidity and death.

Table 6-1: Terms and Definitions

Anaemia	A condition in which the haemoglobin in blood is lower than normal. May be caused by disease or a deficiency of one or more essential nutrients, such as iron and folate.
Anthropometric Indicators	Measurements of the body (e.g., height, weight, age, and arm circumference) compared to similar measurements of a reference population to indicate nutritional status, for example: • Height for Age (HFA) • Weight for Age (WFA) • Weight for Height (WFH) • Mid-Upper Arm Circumference (MUAC) • Birth Weights • Body Mass Index (BMI)
Average Dietary Energy	The average number of calories needed to sustain normal levels of activity and health, taking into account age, sex, body weight, and climate. On average, about 2,350 calories are needed by each adult per day.
Blended Foods	A mixture of foods (e.g., cereals, pulses, oilseeds, soya beans or vegetable oil, and sugar) that have been milled, cooked and fortified, for example: Corn-Soya Blend (CSB), Wheat-Soya-Blend (WSB), UNIMIX.
Breast Milk Substitutes	Any foods used to fully or partially replace breast milk.
Drought	A condition of climatic dryness severe enough to reduce soil moisture and water supplies below the minimum necessary for sustaining plant, animal, and human life.
Famine	A condition of a population in which a substantial increase in deaths is associated with inadequate food consumption.
Food Access	The availability of enough food (through production, markets, gathering in the wild, gifts, etc.) and people's ability to acquire it (through their own labour, purchase, exchange, etc.). Access is central to food security (defined below) and should account for seasonal variation and supply mechanisms.
Food Availability	Sufficient quantities of appropriate and necessary types of food from domestic production, commercial imports, or donors that are consistently available to individuals or are within their reach.
Food Basket	A collection of food items that make up the rations for a particular general feeding program. Consists of the following: • Basic foods — foods that supply most of the energy, protein, and fat in the ration. • Complementary foods — food commodities that add nutrients, taste, and variety to basic foods and enable people to make or improve their traditional foods.
Food Security	Access by all people at all times to enough food for an active and healthy life. Its essential elements are the availability of food and the ability to acquire it.
Food-for-Work Programs	Projects that pay people with food for working on public works or community-development projects.
Fortification	Adding one or more nutrients to foods to restore or enhance the quality.
General Ration	A complete basket of food commodities given in sufficient quantities to families to meet their basic nutritional requirements. Estimated as average dietary energy (kilocalories/person/day).
Growth Monitoring	Following a child's growth by regular weighing, plotting the weight on a growth chart, and comparing the child's rate of weight gain with weight gains of reference children.
Household	A group of people who eat from the same pot. Usually contains a family, i.e., the people related by blood or ritual (e.g., marriage). May include people who are not members of the family.
Kwashiorkor	A severe form of malnutrition, attributed to inadequate protein intake and/or the stress of infection. It is characterised by oedema, flaking, skin lesions, hair changes, and enlarged liver.

Malnutrition	A condition in which health is impaired due to a lack (undernutrition), imbalance, or excessive intake of one or more nutrients. It may be expressed in many forms, including wasting, stunting, nutritional oedema, and micronutrient deficiencies.
Malnutrition Rate	The proportion of children aged 6 months to 3 or 5 years whose weight falls below -2 Z scores or 80% of the reference value.
Marasmic Kwashiorkor	Mixed type of undernutrition with oedema, gross wasting, stunting, and mild liver enlargement.
Marasmus	Severe deprivation of energy and protein, resulting in severe weight reduction, muscle and subcutaneous tissue wasting, marked stunting, apathy, and irritability.
Micro-Nutrient Deficiency Disorder	A condition resulting from a lack of certain vitamins or minerals, for example: • *xerophthalmia* — vitamin A • *beriberi* — vitamin BI • *pellagra* — vitamin B3 (niacin) • *scurvy* — vitamin C • *anaemia* — iron or folate • *rickets* — vitamin D • *goitre* — iodine
Nutrients	Parts of food that can be absorbed and or used by the body, such as carbohydrates, proteins, fats, vitamins, and minerals. They are essential for human growth and development.
Nutritional Emergency	When a population has reduced access to food, associated with actual or threatened increases in morbidity and mortality.
Nutritional Surveillance	The continuous or periodic collection of agricultural and economic information, as well as anthropometric data.
Oedema	Abnormal collection of water in the interstitial space, often on the upper surface of the foot. Usually diagnosed as pitting oedema. A key clinical sign of kwashiorkor.
Ration	The amounts and types of foods specified per person per day.
Social and Care Environment	The social environment within the household and local community that directly affects the ability of a family and individual family members to care for themselves and ensure good nutrition.
Stunting (chronic malnutrition)	Low height for age. Height (or length) is below the normal range of healthy (reference) children of the same age.
Supplementary Feeding	Distributing extra food, in addition to the general ration, to selected groups who are malnourished or at risk of malnutrition, e.g., young children, pregnant or nursing mothers, the elderly, and those with chronic diseases.
Sustainable Development	The reduction of hunger and poverty in environmentally sound ways, e.g., meeting basic needs, protecting and enhancing the environment, expanding economic opportunities, and promoting pluralism and democratic participation in a way that can be maintained.
Therapeutic Feeding	Special feeding of severely malnourished individuals under medical supervision.
Undernutrition	Condition resulting from lack of nutrients in which normal activity, growth, and protection from disease is impaired.
Wasting (acute malnutrition)	Low weight for height. Weight is below the normal range of weights for healthy reference children (aged 6-59 months) of the same height (or length).
Weaning	Familiarising a child to foods other than breast milk or formula.
Z-Score	Expresses a child's weight as a multiple of the standard deviation of the reference population. This is statistically a more accurate indicator than a percentage of the median height or a percentage of the reference population.

Food Security in Famine, Drought, and Conflicts

The type of emergency and context will determine the rate of onset and severity of food insecurity.

Famine

A **famine** is a condition of a population in which a considerable increase in deaths is associated with inadequate food consumption. Most famines occur when large numbers of people in a region, who are already undernourished, cannot obtain enough food. The problem is often economic and political, rather than a shortage of food supply. Causes of famine include:

- War, civil conflict, or social upheaval.

- Failure of a harvest due to climatic or other environmental conditions, such as drought, flood, wind, or insect infestation (usually locusts).

- Disruption or collapse of the food-distribution network and/or the marketing system, affecting a significant percentage of the population. This may be the result of a political, economic, or environmental crisis.

- Lack or disruption of an emergency food-support system that ensures the rural poor have access to food during shortages.

The consequences of famine may be physiological, psychological, or social, as follows:

- *Physiological* — a significant increase in deaths, which is mainly due to malnutrition, diarrhoea, and measles.

- *Psychological* — altered patterns of behaviour. All thoughts and activities are directed toward seeking food, resulting in the sale and consumption of assets. People become more depressed and apathetic. Relief aid that goes on for a long period of time can make people unmotivated to return to agricultural production.

- *Social* — weakened family ties as some members leave home to search for food, and mass migration as the situation worsens. Social bonds grow weak as people begin to care only for themselves. Traditional leadership becomes threatened.

Note*: Malnutrition is a risk factor that emerges over time. It will be more severe and cause higher death rates if the emergency-affected population had a high malnutrition rate before the emergency onset. In famines, it is uncommon for peak mortality to occur before the second year of a prolonged food shortage.*

Drought

A **drought** is any unusual, prolonged dry period that is severe enough to reduce soil moisture and water supplies below the minimum level necessary for sustaining plant, animal, and human life. Droughts may occur as a result of human activities such as overgrazing, poor cropping methods, and improper soil conservation measures. The effects of drought may be immediate or secondary:

a. *Immediate* — occurs due to overtaxing and drying up of water supplies; this results in loss of crops, livestock, and other animals and no water for washing, bathing, and drinking.

b. *Secondary* — occurs due to a depletion of crops and grazing for livestock
   - Causes temporary migration of families to areas with better grazing for remaining livestock, or to cities for alternative sources of income.
   - Famine may develop if depleted food supplies are not replaced.
   - Prolonged droughts may result in permanent changes in settlement, social, and living patterns.

- Major ecological changes, e.g., desertification, flash flooding, and soil erosion.

Conflicts and Complex Emergencies

A greater share of the world's hunger and malnutrition occurs in countries with large numbers of uprooted people and civilian populations cut off from markets and aid due to violent conflict. Many famines have been triggered by conflicts and war in recent decades. On the other hand, conflicts can create famine as well as disrupt famine-relief operations in the following ways:

- by disrupting the agricultural cycle
- by driving farmers from the land
- by interfering with the marketing processes
- by destroying stores of harvested foods
- by creating food shortages that drive prices to levels that low-income families cannot afford to pay
- by decreasing access to displaced persons

Complex emergencies may be caused by multiple factors, e.g., war and drought in Ethiopia, Mozambique, and Somalia. Refugees and *internally displaced persons* (IDPs) have a high risk of becoming malnourished because they are cut off from their local food stocks and are restricted from growing foods in the areas to which they flee. The risk of malnutrition is even greater among children who become separated from their families. Access to stable diets becomes a problem for these children, particularly for infants. In addition, their survival is at risk due to high levels of violence and outbreaks of diseases such as measles, tuberculosis, malaria, and respiratory infections. This results in high death rates among populations affected by complex emergencies. In recent years, between 200,000 and 300,000 displaced people died each year from preventable causes because they were denied access to basic health services, shelter, and food.

Malnutrition, Displacement, and Increased Mortality

Alone among continents, Africa's nutritional status has not improved, according to WHO data. Due to the population increase, the absolute number of underweight children has grown from 28.8% (19.9 million) to 29.9% (28.2 million).[1] In addition, Africa's agricultural production has lagged behind the other regions of the world. Between 1989 and 1990, almost the entire African continent experienced a decline in coarse grain production ranging between 5-20%.

Over the past 25 years, the number of people in sub-Saharan Africa with inadequate access to food has doubled to 215 million.[2] Because Africa is home to at least half of the world's complex emergencies today, it suffers a disproportionate burden of related famine. The biggest killer in emergencies is either child malnutrition recorded as a direct cause of death or malnutrition as a cause of increased vulnerability to infection.

Figure 6-1: Number of Displaced Persons Over Last 30 Years

Displaced Persons
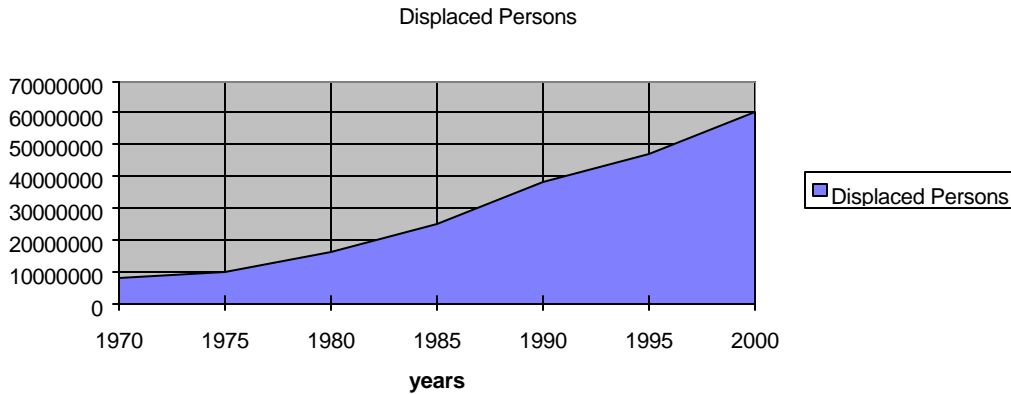
Some historians feel that malnutrition problems increased whenever human populations swelled without an increase in food production. For example, populations in Ireland swelled as large amounts of potatoes were harvested. However, large supplies did not mean stable supplies, and the Irish food and economic system did not have any fallback provisions. So, when the potato crop suffered, massive levels of malnutrition and hunger-related deaths occurred. The same scenario appeared whenever populations in the past swelled, or moved to urban areas because they relied on only one crop, e.g., as in the Middle East. In the Old Testament, drought and pestilence wiping out grain crops brought on famine. This consequence is less common where the basis of livelihood is more varied, as in pastoral herding societies or in hunter gathering societies (the Kung bushmen of southwest Africa appear to rarely suffer food stress).

Heightened Deaths from Preventable Diseases

Death rates of displaced populations may be ten to twenty times higher than death rates for the same populations during normal times. These extraordinarily high mortality rates are often observed during the first few months of displaced people arriving in camps. Many Rwandan refugees died within the first weeks of their flight from Rwanda to Zaire, as well as numerous other displaced populations including the Southern Sudan and Ethiopian refugees.

There is a strong link between malnutrition and infections such as measles, diarrhoeal diseases, and acute respiratory infections. Severe malnutrition, including micronutrient deficiencies, increases the incidence, duration, and severity of infection, while frequent infections often lead to malnutrition. The relationship between nutritional status and the incidence of infections is shown in Figure 6-2.

Figure 6-2: Malnutrition Infection Cycle
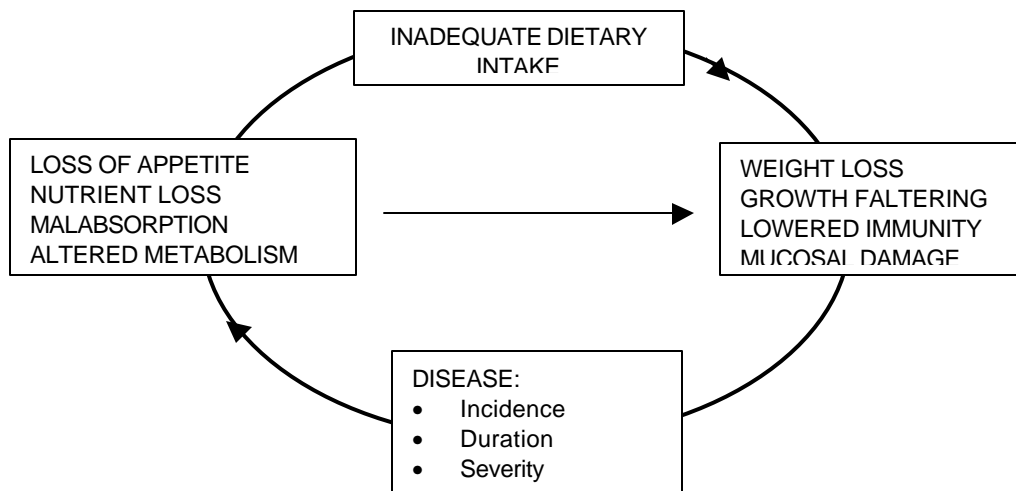
Source: Tomkins and Watson, 1989

International assistance for displaced people often encourages large refugee settlements with high population densities. However, the risk of disease epidemics with high levels of mortality is higher in large settlements, particularly among rural populations that have not been previously exposed to urban diseases. When possible, arrange for populations to receive aid at their homes, or if they are already displaced, in small camps with strong referral networks.

MALNUTRITION AND MICRONUTRIENT DEFICIENCIES

Hunger is not caused by a scarcity of food but a scarcity of democracy.
Those who go hungry are those without a voice in their societies.

— Frances Moore Lappe

Causes of Malnutrition

Good nutrition is vital for the body to grow, function, and resist disease. All foods contain one or more of the following **nutrients** (parts that may be absorbed and/or used by the body):

- *Carbohydrates* — a primary source of energy; found in starches, sugar, cereals, etc.

- *Fats and oils* — secondary sources of energy even if they contain more energy than carbohydrates.

- *Proteins* — essential for the body's growth and repair; found in almost all foods, especially in animal products (milk, meat, eggs, cheese, fish)

- **Micronutrients** — required in very small quantities to help the body stay alive and healthy, for example:
  - *Vitamins* — essential for adequate functioning of the body; commonly found in raw fruits and vegetables, animal products, cereals, and legumes.
  - *Minerals* — essential for the formation and function of cells in the body. Deficiencies in some minerals (e.g., iron) may be critical. Different minerals can be found in vegetables, pulses (e.g. chickpeas, soybeans), animal products, seafood, etc.

Malnutrition is a condition in which health is impaired as a result of a lack, an imbalance, or an excess intake of one or more nutrients. It is a common problem in many developing countries, even in normal situations. Anyone can develop malnutrition (including young infants, older children, adolescents, and adults), but children between the ages of 6 months and 5 years are the most vulnerable.

Malnutrition may result from a combination of factors, including political, economic, biological, social, and cultural factors. This means that poor maternal health, inadequate access to health care, lack of education, etc. may be as important in causing malnutrition and death as inadequate food intake. Figure 6-3 shows the framework of the causes of malnutrition in emergencies, defined at the individual, family, and society level.

Figure 6-3: A Conceptual Model of the Causes of Malnutrition in Emergencies
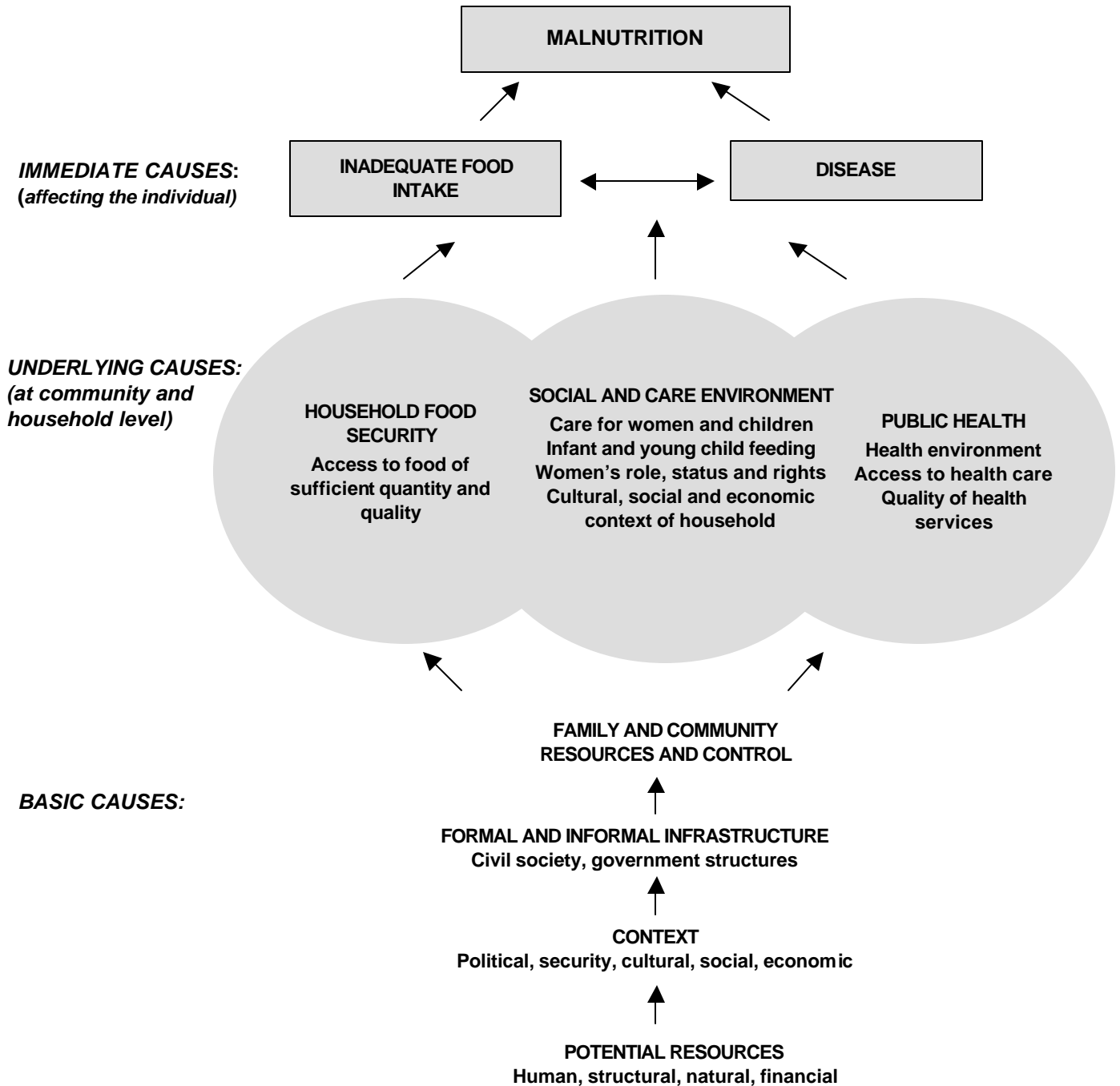
Source: Sphere Project, 2000

The following key points may be drawn from the conceptual model of the causes of malnutrition in emergencies (shown in Figure 6-3):

1. Nutrition status is the outcome of multiple processes in society.

2. Malnutrition is a result of immediate, underlying, and basic causes.

3. Access to sufficient food, adequate care of children and women, and access to basic health services, together with a healthy environment are necessary conditions for nutritional well-being.

4. The availability and control of family and community resources determine the potential for fulfilling the three necessary conditions for nutritional well-being.

5. Formal and informal infrastructure influences how resources are used in efforts to achieve the three necessary conditions.

6. The political and security context of the emergency situation depends on the availability and management of the potential resources.

Effects of Malnutrition and Micronutrient Deficiencies

Malnutrition may affect people in various ways, e.g., interfering with their normal growth and development, causing permanent disability or reducing their ability to work, learn, and enjoy themselves.

1. **Wasting and/or Oedema (Acute Malnutrition)**
   Children with severe acute malnutrition can appear with **wasting** and/or **oedema** (accumulation of interstitial water within limb extremitie s). Wasting results from recent, rapid weight loss or failure to gain weight due to inadequate food intake or disease. The risk of death is high among malnourished children with oedema. The emotional and social development of these children may also be affected. The table below describes the clinical forms of severe acute malnutrition that may occur in children less than five years.

Table 6-2: Signs and Symptoms of Severe Forms of Malnutrition

SEVERE MALNUTRITION	KEY SIGNS/SYMPTOMS	OTHER SIGNS/SYMPTOMS
Marasmus	Wasting, hunger, old-man appearance	Hunger, old-man appearance
Kwashiorkor	Oedema, poor appetite, flaky paint dermatosis, moon face, sparse, loose, straight hair, irritable	Poor appetite, flaky paint dermatosis, moon face, sparse, loose, straight hair, irritable
Marasmic kwashiorkor	Wasting + oedema; Any of the above	Any of the above

Even though a significant number of older children, adolescents, and adults may be acutely malnourished, only a few may show clinical signs and symptoms. Adolescents may experience delayed growth and maturation. Malnutrition may increase the risks of pregnancy and child-birth complications in women, such as low-birth weight babies, maternal mortality, and impaired lactation. Elderly people may become more vulnerable to disability and death.

2. **Stunting (Chronic Malnutrition)**
   Stunting may result from long-term nutrition problems that existed before the emergency. Children may look normal but have a low height for their age. By the age of two years, any deficit in height may be irreversible. Stunting in women increases the risks of childbirth complications and death of the mother and the baby.

3. **Micronutrient Deficiency Disorders**
   Micronutrient deficiencies are other forms of malnutrition that result from lack of certain vitamins and minerals. These disorders can lead to severe disability or even death. They often co-exist with acute malnutrition but emerge only during treatment of or recovery from severe malnutrition. Crises in Africa have repeatedly led to epidemics of scurvy, pellagra, and beriberi. Even though food baskets may contain

protein, grain, and oil, they may not provide enough vitamins and minerals. As a result, the following micronutrient deficiency disorders can occur among displaced populations:

a. **Iron deficiency anaemia:** In refugee camps world-wide, anaemia (defined as low haemoglobin levels) due to lack of iron is often recorded as one of the top medical complaints in refugee outpatient and inpatient clinics, whether in Thailand, Sudan, or Honduras. In addition to interfering with the growth of children and reducing adult work output, iron deficiency anaemia increases the risk of death during pregnancy and childbirth for millions of refugee women.

b. **Vitamin A deficiency** is almost as widespread as anaemia, particularly among displaced populations that depend on food aid that lacks vitamin A. (Vitamin A is mostly found in meats and green leafy vegetables.) Because deficiency of vitamin A makes children vulnerable to respiratory and diarrhoeal diseases, it is a major contributor of illness and death in emergencies.

c. **Zinc deficiency:** It is increasingly suspected that populations that mainly live on bulk grains for long periods are prone to deficiency in zinc (a mineral) that can lead to stunted growth.

d. **Niacin deficiency**, or **pellagra**, is likely to occur among populations that use maize (corn) as their main food source. This is because niacin is trapped in maize and is biologically unavailable. A large pellagra epidemic in the late 1980s among Mozambican refugees in Malawi showed why paying attention to the niacin content of diets is important. Pellagra is not only associated with emergencies, but also appears regularly in maize-reliant countries in sub-Saharan Africa, from Tanzania to Mozambique.

e. **Thiamin (vitamin B1) deficiency** is known as **beriberi,** which is observed in various refugee communities that primarily consume polished rice, without other sources of B vitamins. Because it is associated with rice-based diets, this deficiency has often been observed in emergencies that occurred in Southeast Asia.

f. **Vitamin C deficiency**, or **scurvy**, is even more localised than niacin and B1 deficiencies. Almost all outbreaks of scurvy in emergencies have been reported among Ethiopian and Somalis populations, principally those who have been cut off for months from camel milk markets. Though scurvy is an obvious indicator of poor variety in one's diet, it is not considered to be a serious or life-threatening risk (unlike vitamin A deficiency).

g. **Iodine deficiency:** Though uncommon in emergencies, iodine deficiencies may be a problem among populations living in isolated, inland or mountainous areas. Iodine deficiency is associated with a wide range of disorders, such as goitre and cretinism, which affects infants born to mothers who lack iodine. It is important for aid agencies, like WFP, UNHCR, and other NGOs to promote salt iodisation by only purchasing iodised salt for ration distributions. This can reinforce national efforts to encourage small-scale salt sellers to iodise salt as per regulations.

h. **Other micronutrient deficiencies:** Other disorders may result from lack of other vitamins and minerals, such as the following:

osteoporosis — calcium	rickets — vitamin D
bleeding disorder — vitamin K	anaemia — folic acid or vitamin B12

The following table summarises the signs and symptoms of micronutrient deficiency disorders that may affect displaced populations. Most signs of micronutrient deficiencies are sub-clinical. So, reported epidemics may only reflect the obvious deficiencies, when actually there are many more hidden deficiencies.

Table 6-3: Micronutrient Deficiency Disorders

Micronutrient	Deficiency Disorder	Key Signs & Symptoms	At-Risk Populations
Vitamin A	**Xerophthalmia**	• Night blindness • Bitot's spots • Corneal xerosis/ulcers	• Many populations in developing countries. Highest prevalence rates in SE Asia and Africa. • Displaced population reliant on food aid for many years. • Children suffering from measles, diarrhoea, respiratory infections are at increased risk.
Thiamin	**Beriberi**	Several syndromes: • Infantile beriberi: vomiting, restless, pallor • Wet beriberi: oedema, cardiac failure • Dry beriberi: neuritis, limb paralysis	• Populations who consume non-parboiled polished rice as a staple are at risk, particularly where the rice is contaminated with moulds.
Niacin	**Pellagra**	• Diarrhoea, dementia and dermatosis (of exposed areas)	• Maize-eating populations who do not treat the maize to release niacin. • Emergency affected populations whose ration does not include legumes, e.g. peanuts. • Women at higher risk than men; risk increases with age.
Vitamin C	**Scurvy**	• Infants: painful, swollen bones/joints • Others: bleeding, swollen gums (no pus), slow healing of wounds	• Populations with no access to fruits, vegetables. • Emergency affected populations dependent on inadequate rations. • Women (especially if pregnant) at higher risk than men; risk increases with age.
Iron	**Iron-deficiency anaemia**	• Mild/moderate: no definite pallor • Severe: tiredness, pallor (palms, tongue), headache, breathlessness	• Populations in areas where malaria and intestinal parasitic infestations are prevalent. • Women of child-bearing age. • Pregnant and breastfeeding women. • Babies exclusively breastfed beyond the age of 6 months. • Weaning-age children.

Iodine	Range of iodine deficiency disorders (IDDs)	• Goitre: swollen thyroid gland • Cretinism: mental defect • Deaf-mutism, squint	• Populations in mountainous areas of Europe, Asia, America and Africa with limited access to sea foods. • Prevalence increases with age and peaks during adolescence. • Affects girls more than boys. • Affects women more than men because of increased thyroid activity during pregnancy.

Management of Malnutrition and Micronutrient Deficiencies

In emergencies, prevention and treatment of malnutrition is necessary since it is associated with a high risk of illness, disability, and death.

Prevention of Malnutrition and Micronutrient Deficiencies

Ensuring that displaced people have adequate food and micronutrients can reduce the risk of acute malnutrition. This will improve their survival by increasing resistance to diseases and reducing disability. All displaced people should consume sufficient quantities of the following foods:

a. an *appropriate staple food* — usually cereals (maize, wheat, rice, millet, or sorghum)

b. a *protein-rich food* — usually legumes (lentils, beans, peas, etc.) or groundnuts

c. a *rich source of energy* — for example, vegetable oil

d. *an adequate intake of micronutrients* — usually found in fresh or fortified foods. Among the food aid commodities for displaced populations in Africa, only **blended foods** are fortified. The following foods are milled, cooked, and fortified together to make blended foods:
   - Cereal – maize, sorghum, millet, wheat or a combination, providing carbohydrate and protein
   - Pulses – chickpeas or soya beans as an additional source of protein
   - Oilseeds (groundnuts, dehulled sunflower seeds, sesame), soya beans or stabilised vegetable oil as an additional source of oil
   - Vitamin/mineral supplement (1 kg vitamin premix plus 3 kg mineral premix per metric ton of finished product)
   - Sugar if required, replaces an equivalent amount of cereal

Treatment of Malnutrition and Micronutrient Deficiencies

Severe malnutrition is easily reversible with appropriate health care and nutrition intake. The primary concerns when treating individuals with severe acute malnutrition are fluid and electrolyte imbalance, infections, hypoglycaemia, prevention of measles, hypothermia, and congestive heart failure. Initially, these individuals require precise quantities of specially prepared food (usually composed of dry skim milk, oil and sugar). Depending on their rate of recovery, their diet will be changed gradually until they can resume their normal diet. The following table summarises the management of severely malnourished children:

Table 6-4: Management of Severe Malnutrition

	THERAPEUTIC CARE
PHASE I About 1-7 days (24-hour care)	• Keep warm and treat or prevent hypoglycaemia by feeding every 2-3 hours • Treat or prevent dehydration with ReSoMal* • Correct electrolyte imbalance: Potassium supplements or bananas • Treat incipient or developed septic shock: broad spectrum antibiotics • Feed the child: Therapeutic Milk or High energy milk (nasogastric tube if necessary) • Treat infections: cotrimoxazole, ampicillin, gentamycin, chloramphenicol • Give measles vaccination • Treat micronutrient deficiencies: vitamin A, folic acid, fortified foods • Manage complications: severe anaemia, cardiac failure
PHASE II About 14 days (day care)	• Nutritional rehabilitation: Therapeutic Milk or High Energy Milk/Porridge, local meals, • Re-initiate or encourage breastfeeding • Emotional and physical stimulation • Preparation for discharge: counselling of caregivers, social support, replace with family diet, provide missed immunisations

Source: WHO, 1999

* Severely malnourished children require a special ORS solution that contains less sodium but more potassium than the amount found in standard ORS. Resomal may be prepared by diluting the standard WHO-recommended ORS in 2 liters of water instead of 1liter, and adding 50 g of sucrose and 40 ml of a mineral mix solution.

Treatment of micronutrient deficiencies is complicated because of difficulty in identifying them. Simple, rapid diagnostic tests are currently available only for xerophthalmia and goitre, which can easily be identified and corrected through population-level interventions (vitamin A supplements and salt iodisation). The following table summarises the recommended treatment protocols for micronutrient deficiencies:

Table 6-5: Treatment Protocols for Micronutrient Deficiency Disorders

DISORDER	**TREATMENT**
SCURVY	1 g ascorbic acid daily for 2-3 weeks
BERIBERI	*Acute beriberi*: Infants: give 25-50 mg thiamine IV then 10 mg IM daily for 7 days then 3-5 mg orally daily for at least 6 weeks Adults: 30-100 mg thiamine IV then 10 mg/day orally for 7 days then 3-5 mg/day orally for at least 6 weeks. *Moderate beriberi*: Infants & adults: 10 mg/day orally for 1 week then 3-5 mg/day orally for at least 6 weeks
PELLAGRA	300 mg nicotinamide daily in 3-4 divided doses for 3-4 weeks
XEROPHTHALMIA	3 doses of 200,000 IU vitamin A orally on 1st day, 2nd day and 4 weeks later Use half the dose (100,000 IU) for infants 6-11 months and one-fourth the dose (50,000 IU) for infants below 6 months of age. Children/adults with severe malnutrition – full treatment as above Children with persistent diarrhoea and other infections – 200,000 IU orally once
ANAEMIA*	Children 0-23 months – give 3 mg iron /kg body weight daily Children 2-5 years – 2 mg iron /kg body weight daily (up to 30 mg/day) Children of school age and adolescents – 30 mg iron + 250 ug folate daily Women of child-bearing age – 60-120 mg iron + 400 ug folate daily Pregnant women – 60-120 mg iron + 400 ug folate daily

	Other adults – 60 mg iron daily **Note**: *Treat all anaemic patients living in a malaria endemic zone with an effective anti-malaria cure*
IODINE DEFICIENCY	If iodised salt is not available: 400 mg iodine in iodised oil covers needs for 12 months and prevents births of cretins. Is especially important for children and pregnant and fertile women. For non-breast-feeding infants, 200 mg iodine.
RICKETS	25 ug calciferol daily for 6 months

*Iron therapy for severe anaemia: Individuals may present with haemoglobin concentrations below 25 g/L (2.5 g %). Blood transfusion should be avoided because of the danger of circulatory overload and transmission of infectious diseases, including HIV/AIDS. However, if congestive heart failure or a need for emergency surgery arises, it is advisable to give a potent diuretic (such as intravenous furosemide), and transfuse blood as packed red cells, while performing a simultaneous venesection to prevent volume overload from occurring.[3]

PRINCIPLES OF FOOD AID AND NUTRITION

Every man, woman and child has the inalienable right to be free from hunger
(Declaration from the First World Food Conference in Rome, 1974)

It is important to understand the basic principles of food and nutritional interventions in emergencies when planning emergency nutrition programs.

1. Recognise and Build on How Refugees "Cope" and Spend their Time?

Principle 1: Long-term expectations (durable solutions, i.e., repatriation) greatly influence refugees' behaviour and attitudes, and their approaches to food exchange and self-reliance. Refugees who believe that they are likely to repatriate soon (within less than 18 months) will not invest time in building roads, clearing land, irrigation channels, dikes, etc. They will not undertake to learn the local language, customs, and market data (what sells, where to sell it, etc.).

The following have been identified as coping mechanisms for refugees faced with food shortages:
- Search for wild foods and game
- Sending children away to be cared for by others
- Plucking fruits from trees in the area
- Travel to local markets
- Stealing from food stores

Observation: Relief programs are designed so as to maximise output and minimise costs incurred by international humanitarian organisations. They rarely take into account the tremendous resourcefulness and time costs on the recipient populations.

Principle 2: Place supplementary feeding sites at regular intervals in the middle of camps. This will reduce the transit time of women and older children who are responsible for bringing malnourished children for feeding. This increases compliance/attendance.

Refugee women face severe tradeoffs between the time they spend on childcare, complying with supplementary feeding programs, processing and cooking food, collecting and disinfecting (boiling) water,

and searching for food and fuel. If all observational surveys are taken as accurate, then women would spend more than 24 hours per day performing all these tasks.

2. Provide Culturally Appropriate Food

Principle: Foods that are not consumed have no nutritional value.

Emergencies are not a suitable time to introduce a new type of food. Yet a common problem with food aid is that the foods provided are not culturally acceptable. Disaster victims may be forced to accept unfamiliar food, which may not be consumed or can cause diarrhoea or other side effects. To achieve long-term nutritional recovery of affected populations, relief food for displaced populations should be:
- fit for human consumption
- nutritionally suitable
- culturally acceptable (particularly the cereal or staple)
- readily prepared and usable by the beneficiaries, using available facilities and fuel supplies

The following table lists the primary sources of food for typical refugee households:

Table 6-6: Primary Sources of Food for Refugee Households

a. Ration food aid (whole grains, oil, beans)
b. Selective feeding food aid
c. Market purchases (vegetables, meats, processed foods, biscuits, alcohol)
d. Growing crops:
- day labour, commercial farms (cash crops)
- refugee plots – allocated or leased   (staple and beans)
- household garden plots at living compound (vegetables, sunflower seeds, leaves)
e. Inter-household sales
f. Sharing, or communal cooking
g. Special supplementary feeding programs (oil, milk, blended foods, dried milk, biscuits)
h. Gifts, feasts, cultural obligations
i. Stored food brought by displaced persons from country of origin (grains, livestock)
j. Raise poultry

Relief planners can identify the appropriate foods by consulting the "List of Major Foods Consumed in Selected Countries" report.[4] Fresh foods, spices, tea, yeast, etc. should also be made available to the population where possible. They will provide an additional source of micronutrients and increase the palatability and acceptability of prepared foods. They also enable the beneficiaries to prepare meals in a more familiar manner.

3. Anticipate and Account for How Refugees Use Foods

Principle: The more desperate refugees are, the more they invest their time into finding transactions that give them the most income value for their assets. Therefore, a great deal can be learned from examining the self-reliance strategies of self-settled refugees who quickly become self-provisioning.

The following table summarises how food aid that is received by average households is typically used:

Table 6-7: How Food Aid Is Used

> a. Consume in diet (all of sugar, 1/2 of grain, 2/3 of lentils, 1/3 vegetable oil). Children will consume more of lentils
> b. Exchange between households (milk, lentils/beans), partly to balance hot/cold attributes
> c. Barter for other foods (more sugar, tea, coffee, flour, pasta, bread, spices, fresh fruits)
> d. Men will eat more of meats
> e. Barter or sell to obtain other goods (shoes, shirts, antibiotics, painkillers)
> f. Barter or sell to afford other essentials (bus fare, school fees, medical fees, savings for return)
> g. Give as gifts (to wayfarers, non-registered refugees, celebrations)
> h. Pay as taxes (to community leaders, militia…)
> i. Feed to household animals (milk to pigs, chaff to chickens, lentils to goats…)
> j. Store for later (packaged, canned goods, particularly foods that are unfamiliar)
> k. Waste (foods that rot, flour, beans).

Observation: Nutritionists spend a significant amount of time calculating whether the required total food energy is 1850 or 2100 kcal per day (while adjusting for workload, temperature, etc.). They imagine that fine-tuning these requirements will correspond with actual consumption. However, the following table shows that the ideal ration in a camp rarely reflects the actual diet:

Table 6-8: Comparing the General Ration to Typical Consumption Practices

General Ration Provided		Typical Consumption	
• Maize	350 kcal/capita/day	• Maize	150 kcal/day
• Red Beans	60 kcal/cap/day	• Beans	10 kcal
• CSB	50 kcal/cap/day	• CSB	0
• Sugar	10 kcal/cap/day	• Sugar	20 grams
• Vegetable oil		• Vegetable Oil	0
		• Local meats/fish	5 grams
		• Breads, pasta	10 grams
		• Mango, papaya, etc.	20 grams
		• Cassava, millet…	50 grams
		• Leaves, vegetables	50 grams
		• Coffee/tea/soft drinks	a lot

4. **Assess the Impact of Food Aid on the Market**

    Principle 1: All food programs have a "market" impact. Any food brought into a country has the effect of depressing local prices and reducing incentives to farmers to expand their crop. All efforts in local purchases have a corresponding incentive on local food production.

    Often, the aid agencies are part of a "cycle of trade" with the refugees.

    Principle 2: High-value foods reap higher returns when traded by the recipients while low-value foods are "self-targeting" to the poor and vulnerable. Choosing low-value foods means these foods are more likely to be eaten by those you are seeking to feed.

    Emergency-affected recipients of aid *will* sell much of it. It is their main or only opportunity to exchange for other needs. The general order of food preferences from highest to lowest value is as follows:

- sugar
- vegetable oil
- rice
- wheat flour
- maize flour
- coarse grains

Principle 3: Markets always exist. If you have something valuable to trade, outside merchants will find you. If you have the means to buy food, merchants will bring goods to you.

Observation*:* Every refugee camp in the world has stores and stalls for selling food and other items established within the first week of existence. By the end of one or two years, many large camps have a thriving marketplace for trade, as any highly populated village. Because refugee camps are more densely populated than local towns or villages, the major trading centre for a whole region may be located inside a refugee camp. Efforts to prohibit markets in a refugee camp always fail to shut off trade, as markets merely go underground. This increases the transaction costs for the refugees and locals, and reduces the total income and diet for refugees.

Observation: Livestock are rarely consumed directly by refugees. Most valuable livestock belonging to refugees are sold to locals for higher prices.

5. **Need for Uniform Standards in Food Aid**

   Although absolute standardisation of food aid may be neither possible nor appropriate, the following principles should be followed:[5]

   - *Competition between agencies must be avoided — all organisations should provide similar general food rations to different communities in generally similar conditions.*

   - *Provisions for refugees and displaced persons should not exceed what is available to the local population. If necessary, provisions should be made for the surrounding population.*

   - *The same standards for food aid should be followed for refugees in similar situations in different countries.*

   Observation: Food baskets (the collection of food items which make up the rations for a general food program) for displaced people in different regions may differ greatly, as shown in Table 6-9.

Table 6-9: Food Baskets for Various Regions of the World[6]

	EUROPE	**ASIA**	**AFRICA**
Food Basket	- Wheat flour - Beans - Oil - Pasta - Canned meat - Dried milk - Yeast - Salt - Tea/coffee - Dried fruits - Sugar	- Rice - Lentil - Oil - Salt - Sugar - Blended food - Fresh vegetables	- Maize grain - Beans - Oil - Salt - Sugar - Blended food
Quantity/g	838	650	575
Energy /kcal	3,129	2,049	1,878

	115	48	60
Protein/g	115	48	60
Cost/ USD	0.75	0.18	0.12

6. Recognise the Prevalence of Sub-Clinical Nutritional Deficiencies

Principle: Uprooted people are always at heightened risk of developing micronutrient deficiencies due to their narrowed dietary variety. In camp situations, where the main source of food for long periods (sometimes 10 years) is the food aid (i.e., one type of staple, beans and vegetable oil), epidemics of micronutrient malnutrition are inevitable and easy to predict.

Disability and death may result from micronutrient deficiencies that emerge during treatment of or recovery from severe malnutrition. The minimum daily requirements of essential vitamins and minerals must be assured in the diet of populations fully dependent on food aid. Possible ways of ensuring an adequate supply of micronutrients for displaced populations include the following (in order of preference) [7]:

- Promoting the production of vegetables and fruits
- Providing fresh food items
- Adding to the ration a food rich in a particular vitamin or mineral
- Providing fortified food (blended food)
- Distributing micronutrient supplements, e.g., vitamin A, vitamin C, iron, and folic acid with supplementary and therapeutic feeding and prenatal care

Note: *Selling of food aid by recipients often increases dietary diversity and nutrient consumption.*

7. Correct Common Misconceptions on Nutrition of Refugees[8]

Although inadequate organisation and resources limit the effectiveness of a nutrition program in emergencies, correcting the following misconceptions can safeguard the life, health, and well-being of displaced populations.

Table 6-10: Common Misconceptions on Nutrition of Refugees

MISCONCEPTION	CORRECTION
Starving people can eat anything.	- Starving people are often ill and may not have a good appetite. - Even if hungry, people do not often consume adequate quantities of unvaried and unfamiliar food for long periods. - People fail to thrive on a monotonous diet of three commodities (e.g., wheat, beans, and oil) from month to month.
Refugees can manage with less.	- Refugees have the same basic human rights to food, shelter, and care as non-refugee populations. - Refugees will often need more than normal food requirements if they were malnourished and sick before arriving at a camp or have inadequate protection against the elements.
A standard ration (2000 kcal) is suitable for all populations.	Using a single figure (e.g., 2000 kcal/person/day) is likely to lead to either a deficit or waste. The daily caloric requirements for a refugee population will vary according to the following:* - the demographic composition - the nutritional and health status of the population (allowing for "catch-up" growth where people are malnourished) - the level of activity - the environmental temperature - the likely waste along the food supply chain
Energy (kcal) adequacy means nutritional adequacy.	The diet should be adequate in both quality and quantity, providing the required calories, proteins and micronutrients.

	• Often, a ration is designed to meet the minimum energy needs, while micronutrients are left to look after themselves. How micronutrient needs are to be met must be specified.
	• The ration must be designed to fully meet the nutritional requirements where refugees are completely dependent on the ration provided (e.g., during the acute emergency phase), or cannot trade to diversify their diet.
	• Foods should be diverse and palatable, and the special needs of weaning children must be met.
Trading foods indicates that people do not need all of the rations.	• If the food basket does not provide all the required nutrients, then trading may need to be encouraged to prevent undernutrition and micronutrient deficiencies among the refugees.
	• The fact that some foods may be traded to add variety to the diet is no justification for reducing the ration.
Children with diarrhoea should not be fed intensely.	• Any child with diarrhoea must be fed, with a nasogastric tube if necessary, while being rehydrated. Not feeding a severely malnourished child who has diarrhoea can be fatal.
	• Even if diarrhoea is profuse, some nutrients are absorbed and can start the recovery process.

* For a healthy population with a typical African demographic composition, under normal nutrition conditions and environmental temperature of 20° C, the average requirement is estimated as 1,950-2,210 kcals/person/day for light activity (1.55 BMR).

8. Recognise the Role of Women in Household Food Security

Typically, women are primarily responsible for preparing daily meals for the family. During emergencies, the burden of women increases as family units often break down and men may be absent. They are forced to adopt the most direct coping mechanisms to obtain food for the family. Some of these mechanisms may be at the cost of the family's health and livelihood.

Relief agencies should recognise the value of women as sources of information about the local food economy. They should also consider the impact of their projects on women, taking care not to increase their responsibilities or burdens. When planning food aid programs, every opportunity should be taken to empower women and other disadvantaged groups, both economically and socially.

OVERVIEW OF EMERGENCY NUTRITION PROGRAMS

Direct Food Aid

The key to successful food aid is to supply enough food resources for people to survive and recover with dignity. Direct food aid should be short term, ensuring that the general ration meets overall survival needs. Any food supplements should be in addition to, not a substitute for, the general ration, as described below:

General Rations

This is the distribution of food commodities in sufficient quantities to meet a family's basic nutritional requirements. The food basket and rations are designed to bridge the gap between the affected population's requirements and their own food sources. The same amount of ration is given to every family member, regardless of age or individual needs, while providing a buffer against shortages or spoilage. The general ration usually consists of basic foods (e.g., staples, pulses, oil, and sugar). *Complementary foods*

(such as fruits, vegetables, blended foods, spices, iodised salt, tea, and coffee) may be given to add nutrients, taste, and variety to basic foods and to enable people to make or improve their traditional meals.

There are many problems associated with the supply and distribution of the general ration. Many problems arise because of inadequate food supplies or nutrients. Adequate food supplies does not guarantee that it will be fairly distributed and consumed by each family and individual. Completing the registration of the affected population as soon as possible can minimise these problems.

Selective Feeding Programs

Two types of selective feeding programs are commonly set up during nutritional emergencies — *supplementary feeding* and *therapeutic feeding*. Each feeding program is described below:

1. Supplementary Feeding Programs (SFP)

    Supplementary feeding is the distribution of additional foods to the general ration. This supplement covers the needs of individuals who are malnourished or at risk of being malnourished, such as:
    - Children under 3 years whose family is short of food (using the height cut-off for 3 years as less than 90 cm).
    - Moderately malnourished children under 5 years (using MUAC less than 13.5 cm or weighing less than 80% WFH).
    - Any individuals who have been discharged from therapeutic feeding programs.
    - Pregnant women of 4 months or more and nursing mothers till 6 months post-delivery.
    - Any pregnant women or nursing mothers who look thin (using MUAC less than 22 cm as the cut-off indicator for pregnant women.
    - Older children, adolescents, adults, elderly persons and medical referrals who are malnourished (based on WFH, BMI, MUAC or clinical signs).

    Supplementary feeding may be carried out in two ways:
    1. *Take Home* or *Dry Rations* — provide 1,000-1,200 kcal/person/day and 35-45 grams of protein for off-site preparation and consumption. How frequent these rations are distributed depends on the objectives of the program.
    2. *On-Site Feeding* or *Wet Rations* — provide from 500-700 kcal/person/day and 15-25 grams of protein in the form of prepared meals for targeted individuals once or twice daily for on-site consumption.

    The following table compares the advantages of dry and wet rations.

Table 6-11: Comparison of Dry Rations and Wet Rations

DRY RATIONS	WET RATIONS
• Less time to set up, fewer resources needed • Can serve larger numbers. • Particularly appropriate for dispersed populations who would have to travel long distances to attend daily. • Carries less risk of cross-infection since large numbers of malnourished and sick children do not have to be near each other while feeding. • Costs mothers less time to participate, leading to better coverage and lower default rates. • Keeps the responsibility for feeding the child within the family.	• Ensures the target individual consumes the whole ration. • Feeding problems can be identified and dealt with effectively. • Allows provision of complementary health services on-site (e.g., immunisation, health education, micronutrient supplementation, deworming and growth monitoring). • Participants do not need a supply of fuel or cooking utensils. • Provides security if beneficiaries fear being robbed of weekly food supplies on the way home.

The benefit of supplementary feeding has been increasingly questioned. Although most field workers of supplementary feeding programs consider them valuable , they are not cost-effective. In addition, supplementary feeding may lead to the following consequences:

- If supplementary rations are given as incentives for improving attendance (e.g., prenatal care, school), there is the risk of attendance decreasing when supplies are interrupted.
- Availability of food for SFP may discourage health workers from investigating and dealing with other causes of malnutrition.
- Distributing supplementary rations may distract health workers from activities with a longer-term impact, such as nutrition education.

2. Therapeutic Feeding Programs (TFP)
    Therapeutic feeding is an intensive, round-the-clock nutritional and medical treatment program that is only provided under the supervision of health workers. The following may be enrolled into a TFP:

- Children under 5 years (or less than 110 cm tall) who are severely malnourished (weight less than 70% WFH and/or nutritional oedema)
- Severely malnourished older children, adolescents, and adults (based on available WFH standards or presence of oedema)
- Low birth weight (LBW) babies
- Orphans younger than one year (when traditional care is unavailable or inadequate)
- Mothers of children less than 1 year with breastfeeding failure

Because many children enrolled in TFPs are in fragile condition—due to underlying infectious diseases such as measles, diarrhoea, and tuberculosis—they do not survive. More efforts should be directed toward preventing people from deteriorating to an extent where they require therapeutic feeding.

It is not necessary to set up selective feeding programs in response to every nutritional emergency. Relief planners need to understand the criteria for starting and closing selective feeding programs, which are summarised in the following table:

Table 6-12: Criteria for Setting Up and Closing Selective Feeding Programs

	WHEN TO START	WHEN TO CLOSE
SUPPLEMENTARY FEEDING PROGRAM	• At onset of an emergency, before food distribution systems are in place. • If there are problems in delivering or distributing the general ration. • If the prevalence of acute malnutrition is above 10% or expected to worsen. • In case of micronutrient deficiency, to provide micronutrient-rich food to target population.	• Once general food distribution is adequate. • If prevalence of moderate malnutrition is stable at, or declining to, acceptable levels. • If there are no cases of scurvy, beriberi or pellagra. • Once disease control measures are effective. • No deterioration in nutritional status is expected.
THERAPEUTIC FEEDING PROGRAM	• When the number of severely malnourished individuals cannot be treated adequately in other facilities. **Note:** *Availability of trained health staff is a prerequisite for establishing TFPs.*	• When the number of patients in TFP is decreasing (e.g. less than 20). • If there is adequate medical and nutritional treatment in the clinic or hospital for all severely malnourished patients.

Source: UNHCR Guidelines

Note: *UNHCR/WFP have developed the "UNHCR/WFP Guidelines for Selective Feeding Programs in Emergency Situations" to help design, implement, and monitor Selective Feeding Programs in emergency situations. See the Appendix for the basic principles for these guidelines.*

Other Emergency Interventions

To sustain improvement in nutritional status, direct food aid must be combined with other public health measures, such as:

1. **Promoting Breastfeeding and Safe Infant Feeding**
    In emergency situations, where hygiene is poor and risks of infection are increased, breastfeeding remains the healthiest way to feed infants. Breast milk is ideal because it contains antibodies that help prevent or reduce infant morbidity and mortality. WHO estimates that up to 1.5 million infant deaths world-wide could be prevented through improved breastfeeding practices.[9] Even when clean water and fuel to sterilise feeding utensils are available, breast-milk substitutes are not recommended, because they do not provide antibodies that protect infants from infections. Thus, artificially fed infants have more than 20 times the chance of dying from diarrhoea and other infectious diseases than those who are exclusively breastfed.[10] In emergencies, safe and adequate nutrition for infants can be achieved in the following two ways:

    a. *Promoting and Supporting Breast-Feeding* – Table 6-13 describes how breast-feeding among displaced populations can be promoted and supported:

    Table 6-13: Ways to Promote and Support Breast-Feeding Among Displaced Populations

    - Educate the community on the superiority of breast milk over other infant foods.
    - Encourage all mothers to start breastfeeding within one hour of birth and thereafter feeding on demand (including night feedings).
    - Encourage mothers to exclusively breastfeed their children until the age of six months, and thereafter to sustain breastfeeding at least till the age of two years while introducing appropriate complementary foods.
    - Encourage mothers to increase the frequency of breastfeeding during and after illness.
    - Provide extra rations for breastfeeding mothers (including sick and malnourished mothers) to build their body stores of nutrients and to help conserve their strength.
    - Some women are willing to breastfeed babies of other women who died or are unable to produce milk. Encourage women to do this, give them extra rations.
    - Encourage mothers known to have HIV infection to breastfeed their babies, where the risk of death from infectious diseases and malnutrition is high.

    Note: *Re-stimulation of lactation is possible for mothers who have ceased breast-feeding.*

    b. *By Restricting the Donation and Use of Breast Milk Substitutes* — Infants whose mothers cannot produce enough breast milk, orphans, and unaccompanied minors younger than one year are at increased risk of becoming malnourished. Unless a wet nurse can be found, breast milk substitutes are the only option. However, these substitutes should only be provided if the milk can be prepared safely and sufficient supplies can be guaranteed.

    Note: *Even in the worst famine, do not introduce other foods or liquids to infants for at least 6 months. For no crisis is it advisable to hand out breast milk substitutes to the general population.*

2. **Nutrition Education**
    Information, education, and communication (IEC) of nutritional information is one of the most efficient interventions, particularly when it targets women. The aim of nutrition IEC is to change existing behaviour and reinforce positive food practices among mothers, families, and the community. Nutrition education

may be delivered at health units, feeding centres, schools, or within the community, in various ways, such as group talks, role-plays, individual or family counselling, posters, and food demonstrations. It should raise public awareness in the following areas:

- The planned food aid interventions and the reasons for implementing them.

- How to improve the family diet using available resources (general rations, kitchen gardens).

- The causes of malnutrition (including non-food causes, such as frequent infections, closely-spaced births).

- The special food needs of sick or vulnerable individuals (young children, pregnant and nursing mothers, and the elderly)

- The value of nutrition-related health activities (e.g., prenatal supplements, breastfeeding, growth monitoring)

- The need for family planning/child spacing (particularly where prolonged food shortages are expected)

- Available sources of information on food and nutrition (at schools, health clinics, feeding centres)

3. Disease Control Measures

Disease prevention is a key component of nutrition programs. This requires collaboration with other sectors. Strengthening the following disease control measures will ensure a greater improvement in overall food security and nutritional status of a displaced population:

- Providing vitamin A to all young children
- Promoting measles immunisation
- Improving water supply, hygiene, and the environment
- Ensuring availability of ORS for anyone suffering from diarrhoea
- Controlling mosquitoes
- Deworming all children periodically
- Promptly identifying and treating anyone who is acutely sick
- Preventing the spread of HIV/AIDS
- Carrying out disease surveillance

NUTRITIONAL ASSESSMENT AND SURVEILLANCE

Improving the nutritional status of displaced populations has been slow despite decades of nutrition interventions. Better assessment and surveillance in emergencies may improve decision-making and ensure that nutritional interventions are more effective.

Nutritional Assessments

There are various ways of conducting nutritional assessments:
- **Anthropometic assessments** for nutritional status of individuals or a population
- **Clinical assessment** of nutritional status (wasting, micronutrient deficiency disorders)
- **Assessment of food security** at the household and community level

Anthropometric Assessments

Anthropometry is the measurement of human growth and body size to obtain information about an individual's health status in terms of his intake of nutrients and past illness. The aim of carrying out anthropometric assessments may include:

- To assess the prevalence of malnutrition in a community or population (initial assessment).
- To monitor trends and changes in the nutritional status of a community or population (follow-up surveillance).
- To monitor the nutritional status of individuals attending a nutrition rehabilitation program.

Various **anthropometric measurements** may be used to assess the type and degrees of growth failure, e.g., *height* (or *length* for children less than 2 years), *weight, age*, and *mid-upper arm circumference*. Anthropometric measurements are usually carried out in children less than 5 years because their growth responds more rapidly to the effects of food shortages, disease outbreaks, or inadequate health care. Even though anthropometric measurements can be done in adults, they are more difficult because:

- They may involve carrying less portable equipment.
- Not all the adults may be at home during the time of the interview (particularly males).
- Decision-makers may not consider adult undernutrition a priority.

Because comparing different anthropometric measurements is meaningless, each individual's measure is compared to similar measures of a reference healthy (or normal) population to obtain **anthropometric indicators**.[11] This allows comparison between different populations.

The following are examples of anthropometric indicators:

a. *Height for age* (HFA) — expresses the height of a child in relation to the standard height for a normal child of his age. It is useful for measuring stunting (chronic malnutrition).

b. *Weight for age* (WFA) — expresses the weight of a child in relation to the standard weight for a normal child of his age. It helps determine if an individual is underweight, but does not explain why.

c. *Weight for Height* (WFH) — expresses a child's weight in relation to the standard weight for a normal child of his height. it is useful for measuring wasting. This chapter uses weight-for-height and weight-for-length interchangeably for children younger than 24 months of age, less than 85 cm tall, or too ill to stand.

d. *Mid-Upper Arm Circumferences* (MUAC) — defines wasting in terms of fat and muscle mass in the mid-upper arm. It is stable (about 14 cm) for healthy children aged between 1-5 years.

e. *Birth Weight* — any weight below 2500 g is considered as low birth weight. Although a good indicator for social development of the population or the nutritional status of the mother before delivery, it is not useful for populations that prefer delivering outside health facilities.

f. *Body Mass Index* (BMI) — a measure of thinness or energy deficiency in adults (expressed as weight/height^2). The normal lower limit of BMI for adult men and women is 18.5. It is useful for measuring acute or short-term adult malnutrition. BMI is also a useful indicator of the welfare of populations.

In emergencies, Weight for Height (WFH), Weight for Age (WFA), and the Mid-Upper-Arm Circumference (MUAC) of children between the ages of 6-59 months are commonly used for nutrition assessments. (Height cut-offs of 65-110 cm are used when the ages of children cannot be determined). The advantages and disadvantages of using these indicators are summarised in the following table:

Table 6-14: Advantages and Disadvantages of Commonly Used Anthropometric Indicators

INDICATOR	ADVANTAGES	DISADVANTAGES
WFH	• Best index for acute malnutrition (wasting) • Permits useful comparisons, based on reference populations • Useful where assessment of correct age is not possible • Permits monitoring of individual growth	• More time-consuming to measure • Requires training and certain experience
WFA	• Most widely used in health centres because of simplicity and availability of scales	• Does not clearly distinguish between wasting and stunting • Not possible when the age is not known
MUAC	• Easier and quicker to measure than WFH • Low cost – requires a strip of tape and little training • More practical where interviewers have to walk long distances • Useful for screening large numbers of children, as well as adults* • No need for reference data**	• Needs supervision to ensure accurate measurement • Less sensitive to individual weight change than W/H • Preferentially identifies younger children as malnourished • Variable cut-offs used to classify malnutrition • Tends to work better for younger ages

* Appropriate cut-offs need to be defined for adults. For pregnant women MUAC less than 23.0 cm indicates moderate risk of growth failure in the foetus, less than 20.7 cm indicates severe risk.

** Reference data for MUAC is now available, including: MUAC-for-Age (for boys and girls aged 6-59 months, WHO); MUAC-for-Height (QUAC stick for adjusting AC measurements for height, ICRC); MUAC-for-Height (reference values, CDC)

Note: *Weight-for-Height, Weight-for-Age, and Height-for-Age can be expressed in two ways:*

- *Percent of median   e.g. % WFH   = $\dfrac{Actual\ weight}{Median\ weight\ of\ reference\ children} \times 100$*

- *SD-score or Z-score   e.g. WFH   = $\dfrac{(Actual\ weight - Reference\ weight)}{Standard\ deviation\ of\ reference\ population}$*

Malnutrition may be defined in terms of different anthropometric indicators, such as the following:

- Median WFH less than 80% indicates wasting
- Median HFA less than 90% indicates stunting
- Median WFA less than 80% median indicates underweight
- MUAC less than 12.5% indicates wasting
- BMI less than 17 indicates wasting in adults
- Malnutrition rate is the proportion of children aged 6 months to 5 years who are below –2 Z-scores or the median 80% of the reference value.

Note: *Refer to the Appendix for a summary of anthropometric cut-off levels for different age groups.*

Clinical Assessments

Anthropometric measurements do not reveal all the signs of nutritional deficiencies that affect mortality or productivity. Clinical assessments are needed to identify the following:

a. *Presence of nutritional oedema* — kwashiorkor (sign of severe malnutrition)

b. *Signs of vitamin deficiencies* — e.g. night blindness and damaged eyes (vitamin A); diarrhoea and skin rash on exposed body parts (vitamin B1); bleeding gums or swollen painful joints (vitamin C)

c. *Signs of mineral deficiencies* — e.g., anaemia (iron), goitre (iodine)

d. *Signs of infectious diseases* — observed anthropometric values must be weighed against past illness, such as a child with moderate malnutrition who is suffering from dehydration or pneumonia should receive the care for severe malnutrition.

The prevalence of mineral deficiencies in a population may be assessed in various ways:
- Measuring the level of haemoglobin in a finger prick blood sample. This is only practical for individuals, not at the community level.
- Carrying out surveys on the household food consumption over the last 24 hours.
- Collecting salt from different households and testing it for iodine content, etc.

Food Security Assessments

Assessing the causes of food insecurity and how people cope with the changes in food security can help planners determine the most appropriate interventions. The following indicators may be monitored:

- *Food Security indicators* — markets, food production, livestock, household assets, employment, food gathering, sufficiency of food and fuel, food preparation and consumption, breastfeeding, endemic micronutrient deficiencies, etc.

- *Public Health indicators* — disease patterns, access to health services and feeding centres, nutrition education, environmental risk factors, hygiene measures, traditional medicinal practices, etc.

- *Social and Care Environment indicators* — especially with respect to vulnerable populations (such as minority or separated groups, pregnant women, breastfeeding mothers), infant and young child feeding practices, shelter and overcrowding, and social support systems.

Nutritional Surveillance

Reducing mortality requires monitoring the evolving nutritional emergency, as well as the relief response. Most nutritional surveillance has been limited to nutrition surveys and growth monitoring. These assume that lack of food is the primary cause of malnutrition. Less attention has been given to indicators of health, access to food, and care. This is because most surveillance systems are not based on the conceptual framework of the causes of malnutrition, which considers the larger aspects of the problem. In addition, decisions to increase food aid are usually based on political factors or past practices rather than on nutritional surveillance information.

Any surveillance system that is set up should be able to detect existing food security and nutrition problems, identify the causes and possible solutions, and communicate this information in a way that can help decision-makers take appropriate actions. Figure 6-4 below shows how a surveillance system can help identify the underlying causes of a disaster situation:

Figure 6-4: Using a Surveillance System to Identify Causes of Disaster

In May/June 1994, several hundred thousand Rwandans crossed into Tanzania, settling into three large camps around Benako, and a dozen smaller camps further north in the Kigoma area. Because EPI was so good in Rwanda, there was very little excess mortality from vaccine-preventable diseases.

In mid-July 1994, approximately 700,000 Rwandans crossed into North Kivu, around the town of Goma. 80,000 people died in the next few weeks. Excess mortality of 80,000.

Why did they die? Because of cholera shigella plus unknown mediating factors.
Why did they die? Because of transit, fatigue, worry, and malnutrition.
Why did they die? Because NGOs were unable to provide rehydration.
Why did they die? Because NGOs were not well organised and many of the staff did not know how to organise ORS Programs.

A nutrition information system should be set up to operate at the household, community, program, and district level. The following objectives may be defined for various levels of nutritional surveillance:

- To monitor the nutritional status of individuals undergoing nutritional rehabilitation
- To monitor the nutritional status of a community or population
- To improve decisions about targeting of nutrition-related services
- To improve decisions on the use of existing resources for nutrition improvement
- To improve availability and access to resources for nutrition improvement

The key functions of various nutritional surveillance systems are summarised in the following table:

Table 6-15: Examples of Nutritional Surveillance Systems

SYSTEM	KEY FUNCTIONS
1. Surveillance of individuals (Growth monitoring)	• Weigh each child under five years monthly. • Plot each child's weight on a chart and connect points and compare the rate of weight gain to weight gain of healthy children. • Investigate the possible causes of growth failure through discussions with the mother.* • Provide appropriate nutrition intervention when necessary.
2. Community surveillance	• Conduct nutritional surveys to estimate the number of malnourished. • Compare results with those of other surveys and discuss findings with the health committees. • Review morbidity data on malnutrition from hospitals, health centres and the community. • Initiate community-level and household-level interventions.
3. Surveillance for program management	• Monitor the number of children attending monthly weighing sessions. • Monitor food distribution, including number of calories per person per day (food basket surveys). • Monitor the number of admissions and the progress of patients (cured, dropouts, deaths) in therapeutic feeding programs. • Investigate the reasons for declining attendance. • Develop a plan with community leadership for improving attendance.
4. Surveillance of policy and planning	• Identify vulnerable groups with a high prevalence of malnutrition. • Determine reasons for high prevalence among these groups. • Recommend targeting of public health or other development programs toward the most vulnerable.
5. Surveillance for timely warning	• Review agro-meteorological reports biweekly. • Collect information from existing famine early warning systems. • Compare findings with historical values and agreed cut-off points. • Recommend immediate and long-term relief interventions that can prevent a crisis.

* Growth failure may be defined as a loss of 1 kg or more in 1 month, or any weight of 2 kg or more below 80% of the median or no weight gain for at least 2 months.

Analysing Nutritional Data

It is not enough to carry out nutritional assessments and surveillance. The information must be analysed and presented to decision-makers in a manner they can understand. Any actions recommended from the analysis should be based on the following:

- The type and extent of malnutrition
- The relative importance of the underlying causes of malnutrition
- The perceptions and priorities of the affected population, including coping strategies
- The available resources, including technical, financial and infrastructure
- The practical constraints, including access to resources and the time-frame for response.

The following table summarises benchmarks for nutritional data that can guide decision-making on nutritional interventions:

Table 6-16: Benchmarks for Nutritional Data

FINDING	INTERPRETATION	ACTION REQUIRED
Malnutrition rate greater than or equal to 15% OR 10-14% with aggravating factors*	Serious situation	• General ration • Supplementary feeding for at-risk groups • Therapeutic feeding for severely malnourished individuals
Malnutrition rate 10-14% OR 5-9% with aggravating factors*	Risky situation	• No general rations • Supplementary feeding to malnourished individuals among at-risk groups • Therapeutic feeding for severely malnourished individuals
Malnutrition rate under 10% with no aggravating factors OR 5-9% with aggravating factors*	Acceptable situation	• No need for population level interventions • Attend to malnourished individuals through regular community services
Household food availability less than 2100 kcal	Unsatisfactory situation	• Improve general rations until local food availability and access becomes adequate

Source: WHO – Rapid Health Assessment, 1999

* Aggravating factors include:
   - General food ration below the location-specific mean energy requirement
   - Crude death rate greater than 1/10,000/day
   - Epidemic of measles or whooping cough (pertussis)
   - High prevalence of respiratory or diarrhoeal diseases

PLANNING EMERGENCY FOOD AND NUTRITION PROGRAMS

An effective response to nutritional emergencies involves more than simply providing food aid. Since multiple factors contribute to malnutrition, planning of food and nutrition programs must involve people from different relief sectors (e.g., the public health nurse, nutritionist, water and sanitation engineer, and logistician), local authorities, and the affected population. It should begin with a rapid assessment. All identified problems should be prioritised in order to find the most appropriate solution. Planning of the nutrition program should be based on clear goals and objectives in order to allow for monitoring and evaluation.

Assessment

A rapid nutritional assessment may be organised and carried out in 4 to 7 days. Objectives of the assessment may include the following:

- To confirm that a nutritional emergency or the risk of a nutritional emergency exists.

- To assess the severity and geographical extent of the nutritional emergency.

- To identify the main causes of the nutritional emergency.

- To assess the possible evolution and impact of the emergency on health and nutritional status.

- To determine who is most affected or vulnerable (which age, social or ethnic group).

- To identify measures that can minimise or prevent the nutritional emergency.

- To assess the local response capacity and needs.

- To establish or expand nutritional surveillance.

Several methods can be used to collect data, including direct observations, quick surveys, and interviews. Possible sources of information include the affected community (including women), the health workers, the local authorities, any famine early warning system, and sometimes the media. The following table summarises some of the information that may be gathered during the assessment:

Table 6-17: Checklist for Nutrition Assessment

Indications of an ongoing nutritional emergency:	Assess the severity, geographical extent, and groups at risk:
• Problems with access to food • Deteriorating nutritional status • Obviously elevated mortality Indications of nutritional risk: • Rumours of famine and malnutrition • Drought or flooding • Major pests affecting crops or livestock • Reports of excessive sale of household assets • Shift to eating crisis food • Declining food stocks at household/district/national level • Rising market prices • Disruptive conflicts • Large population displacements Identify main causes of nutritional emergency: • Types and quantities of food available at the household, community, district (& national) level • Availability of staple foods and changes in price • Current and expected availability of food • Purchasing power (income, employment, sale of assets) • Availability and cost of other essential commodities (e.g., water, fuel) • Access to land • Availability of seeds and fertiliser • Recent migrations (inwards, outwards) • Food distribution (frequency, type, energy content) • Inaccessible areas, logistic problems	• Occurrence of epidemics and endemic diseases • Coverage of health services, environment, water, sanitation and food safety programs • Patterns of settlement, displacement, shelter and clothing • Change in work patterns and sources of household food supplies • Signs of family disruption, violence, abandoned children and elderly, interruption of breastfeeding, decreased school attendance Assess the population's health and nutritional status: • Presence of kwashiorkor and/or marasmus, micronutrient deficiencies among children • Presence of adult malnutrition • Assess child morbidity and mortality Identify measures to minimise/prevent emergency: • Need for direct food interventions • Need for indirect food interventions • Need for technical support (e.g., nutritionist) • Other public health responses (e.g. immunisation) Assess the local response capacity: • General response – coping mechanisms, priority nutrition interventions and constraints • Technical capacity – for setting up food and nutrition programs • Availability of food stocks – central, district level • Logistics and managerial capacity – roads, warehouses, security, registration, communication • Public health response capacity – shelter, water

	supply and sanitation, immunisation services

After the assessment, key findings should be analysed and presented to all concerned. This will ensure co-ordinated assistance. Assessment findings can also be used as baseline data for monitoring the future response. If necessary, more thorough population-based surveys may be carried out later.

Identify Problems and Priorities

It is not enough to identify and treat all the individuals that are identified as malnourished. After the rapid assessment, a food security and nutrition survey (which requires two to three weeks to organise) may be carried out to define the causes of malnutrition and guide intervention strategies. The following causes of malnutrition may be identified:

- Basic causes of malnutrition
  - family unable to earn any form of income
  - children lack access to supplementary feeding
- Underlying causes of malnutrition
  - not enough food available to households
  - inadequate public health measures
  - mothers lack understanding of the nutrition needs of children

- Outcomes of nutritional stress
  - high prevalence of moderate to severe malnutrition
  - excessive loss of calories due to diarrhoea and other infections
  - micronutrient deficiency disorders

All identified problems should be reviewed and prioritised. Particular attention should be given to micronutrient deficiencies that may have existed prior to the emergency situation. Planners may use various criteria to rank different options for correcting micronutrient deficiencies, such as:

- Improving the nutritional quality of food rations by adding one or more micronutrients to staples (fortification)

- Providing special food stuffs that are rich in micronutrients as a supplement to rations

- Promoting nutrition education and kitchen gardens to improve the quality of family diets

- Distributing micronutrient supplements to target groups, e.g., vitamin A, iron and folate.

In the table below, adding micronutrients to staples and promoting nutrition education/kitchen gardens are ranked as the most suitable options for correcting micronutrient deficiencies existing in the displaced population.

Table 6-18: Ranking Different Options for Correcting Micronutrient Deficiencies

	Add nutrients to staples	Supplementary feeding with specialty foods	Nutrition education and kitchen gardens	Distribute capsules of micronutrients
COVERAGE (1 = poor, 4 = good)	4	1	2	3
RELIABILITY (1 = uncertain, 4 = high)	4	2	1	1

COST (1 = high, 4 = low)	2	1	4	4
LONG-TERM BENEFITS (1 = low, 4 = high)	3	2	4	1
RISK OF OVERDOSE (1 = high, 4 = low)	3	3	4	2
NEED FOR SUPERVISION (1 = significant, 4 = low)	4	1	3	2
VALUE IN UNSTABLE SETTINGS (1 = low, 4 = high)	4	3	2	1
TOTAL	**24**	**13**	**20**	**14**

Adapted from Steve Hansch[12]

Define Strategies for Promoting Access to Food

Strategies for food aid will depend on the nature or phase of the emergency, the physical condition of the general population, and the needs of vulnerable groups, as follows:

- During the early phase of a food emergency, families may need help to increase their economic security. Populations experiencing a later stage of a food emergency require both economic assistance and direct forms of food aid for the most needy. Implementing counter-famine measures early will ensure access to food and maintain the nutritional status of affected people.

- Victims of nutritional emergencies require life-saving measures that address the immediate and some underlying causes of malnutrition. Combining direct feeding programs with public health measures (e.g., oral rehydration therapy (ORT), vitamin A supplementation, immunisation) will improve nutritional status and increase disease resistance. Economic assistance at this stage is not a priority.

- As affected populations recover from nutritional emergencies, more productive forms of assistance should be provided such as employment, income generation, and market interventions. This will depend on many factors, e.g., the health status of the target population, their ability to grow food or engage in other income generating activities, the security situation, and host government policies.

Note: *This chapter will focus on strategies for addressing nutritional emergencies. For details on counter-famine strategies, refer to the suggested readings listed at the end of the chapter.*

Strategies for Acute Emergency Phase

During the acute phase, direct food aid strategies for correcting malnutrition should address the immediate, basic and underlying causes in ways that foster the recovery of the affected population.

Figure 6-5: Feeding Program Strategy (Adapted from UNHCR/WFP: Guidelines for Selective Feeding, 1999)

```
                        ┌──────────────────┐
                        │  DIRECT FOOD AID │
                        └──────────────────┘
                   ┌──────────────┴──────────────┐
        ┌──────────────────┐          ┌──────────────────┐
        │  GENERAL FOOD    │          │ SELECTIVE FEEDING│
        │  DISTRIBUTION    │          │    PROGRAMS      │
        └──────────────────┘          └──────────────────┘
                               ┌──────────────┴──────────────┐
                   ┌──────────────────────┐      ┌──────────────────────┐
                   │ SUPPLEMENTARY FEEDING│      │ THERAPEUTIC FEEDING  │
                   │   PROGRAMS (SFP)     │      │   PROGRAMS (TFP)     │
                   └──────────────────────┘      └──────────────────────┘
                   ┌───────────┴───────────┐
          On-Site Supplementary        Take Home
          Feeding Programs             Supplementary Feeding
                                       Programs
```
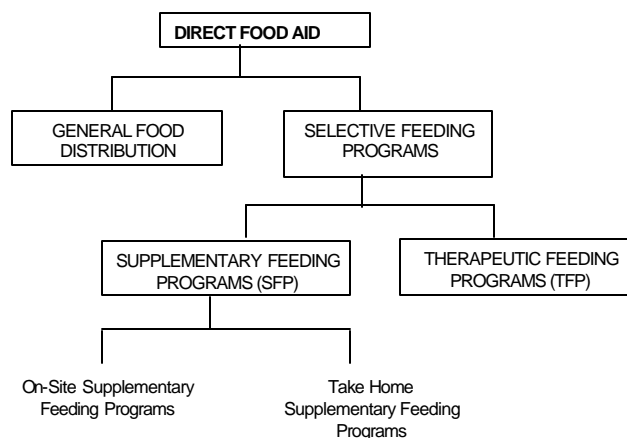
Strategies for the Post-Emergency Phase

The following Figure shows strategies that may be used after the emergency phase to phase out direct food aid and promote self-reliance.

Figure 6-6: Strategies for the Post-Emergency Phase

```
                        ┌──────────────────────┐
                        │ INDIRECT INTERVENTIONS│
                        └──────────────────────┘
        ┌────────────┬───────────┴────────┬──────────────┐
   ┌─────────┐  ┌─────────────┐  ┌─────────┐  ┌──────────────┐
   │ FOOD FOR│  │   MARKET    │  │ CASH FOR│  │   INCOME     │
   │  WORK   │  │ INTERVENTIONS│ │  WORK   │  │ GENERATING   │
   └─────────┘  └─────────────┘  └─────────┘  │  PROJECTS    │
                ┌──────┼──────┐               └──────────────┘
           INTERNAL MONETIZATION LIVESTOCK
           PURCHASE             SUPPORT
```
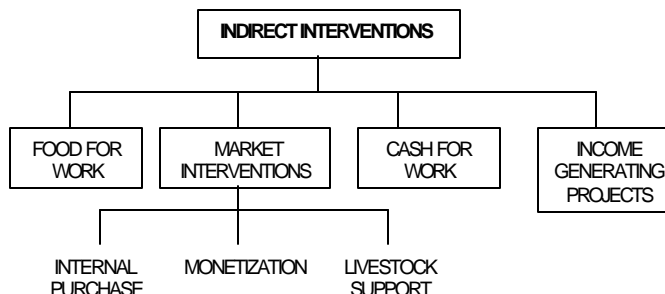
Set Program Goals and Objectives

Defining the goals and objectives of the program will help identify the necessary inputs, activities, and outputs. In addition, they are needed for evaluating the outcome of food and nutrition programs. The goal of most humanitarian programs is to reduce or prevent excess mortality. Closely associated with this goal is eliminating excess disability. Objectives for specific interventions may have short or long-term benefits. The following table gives examples of objectives for different programs:

Table 6-19: Examples of Objectives for a Food and Nutrition Program

PROGRAM	OBJECTIVES
General Ration	• To restore as soon as possible people's ability to obtain and produce food. • To provide an income transfer with which people can recover their health, welfare and a reasonable existence.
Supplementary Feeding Program (SFP)	• To reduce the prevalence of acute malnutrition in children under 5 years. • To increase the attendance of pregnant and nursing mothers in health clinics. • To provide follow-up for those discharged from Therapeutic Feeding Programs.

Therapeutic Feeding Program (TFP)	• To rehabilitate individuals who are severely malnourished.
	• To reduce the risk of excess mortality and morbidity in children under 5 years.
Food Fortification	• To enhance the quality of food available to displaced populations.
	• To reduce the level of morbidity and disability in a target population.
Nutrition Education	• To improve the use of general ration by displaced families.
	• To increase awareness about the food and non-food causes of malnutrition.
Food for Work	• To prevent or relieve hunger among vulnerable families.
	• To improve food security by developing the land and infrastructure.
Market Interventions	• To revitalise local food markets.
	• To improve access to foods for affected populations.
Income Generating Projects	• To provide alternative sources of income for most affected families.
	• To increase the ability of families to obtain or produce food.
Seeds and Tools Distribution	• To increase the amount of grain harvested.
	• To build the capacity and increase self-sufficiency of displaced families.

Identify Resources for Emergency Nutrition Programs

This section defines the steps for identifying resources for direct food aid. The same approach may be used to identify resources for other food and nutrition interventions.

1. Resources for the General Ration

a. Determine the Nutritional Requirements

In the first stages of an emergency situation, when no other information is available and only the number of affected people is known, an estimated energy requirement of 2,100 kilocalories (kcals) should be used for the immediate provision of food.[13] Once population-specific information is available, this figure may be adjusted. The following table summarises the recommended nutritional requirements for the initial emergency phase:

Table 6-20: Nutritional Requirements for the Initial Phase

NUTRIENT	MEAN REQUIREMENTS/PERSON/DAY
Energy	2,100 kilocalories (kcals)
Protein	10-12% of total energy (52-63 g), but < 15%
Fat	17% of total energy (40 g)
Vitamin A	1666 IU (or 0.5 mg RE)
Thiamine (B1)	0.9 mg (or 0.4 mg/1000 kcal intake)
Riboflavin (B2)	1.4 mg (or 0.6 mg/1000 kcal intake)
Niacin (B3)	12.0 mg (or 6.6mg/1000 kcal intake)
Vitamin C	28.0 mg
Vitamin D	3.2-3.8 ug calciferol
Iron	22 mg (low bioavailability 5-9%)
Iodine	150 ug

Adapted from WHO 1997 Draft, WFP/UNHCR 1997

b. Select the Food Basket for General Distribution

It is important to consider the objectives of general distribution when selecting the food basket. The energy and nutrient content of the food basket is important where the objective is to improve

the nutritional status. If possible, the food basket should consist of locally available and culturally acceptable foods. The following table shows examples of food rations that may be appropriate.

Table 6-21: Food Basket for General Rations

ITEMS	RATIONS (Quantity in g/person/day)				
	RATION 1*	RATION 2*	RATION 3*	RATION 4**	RATION 5*
Cereal flour/rice/bulgur	400	420	350	420	450
Pulses	60	50	100	60	50
Oil (vitamin A fortified)	25	25	25	30	25
Canned fish/meat	-	20	-	30	-
Fortified blended foods	50	40	50	-	-
Sugar	15	-	20	20	20
Iodised salt	5	5	5	5	5
Fresh vegetables/fruits	-	-	-	-	100
Spices	-	-	-	-	5
Energy: kilocalories	2113	2106	2087	2092	2116
Protein/g (% kcal)	58g (11%)	60g (11%)	72g (14%)	45g (9%)	51g (10%)
Fat/g (% kcal)	43g (18%)	47g (20%)	43g (18%)	38g (16%)	41g (17%)

Source: WFP/UNHCR Guidelines, 1997

* The cereal used for calculation of this ration is maize meal.
** This ration has rice as a cereal.

Note: *Adequate fuel and cooking utensils should be given with the selected food basket, and mill and grinding facilities made available, where necessary.*

Populations that are fully dependent on food aid for more than three months should also receive complementary foods to prevent micronutrient deficiencies that are most likely to occur (due to lack of vitamins A and C, iron, and folate). Long-term measures for enhancing the nutritional value should be encouraged (e.g., barter, germination, kitchen gardens.).

c. Estimate the Population's Total Food Needs

The table below can be used to determine the overall metric tons of food needed for a specific population size for a fixed number of days.

Table 6-22: Food Needs for Displaced Persons

FOOD NEEDS FOR DISPLACED PERSONS Food in MT (1 MT = 1,000 kg), based on 500 g/person/day							
Population Size	**1 day**	**20 days**	**60 days**	**90 days**	**120 days**	**180 days**	**365 days**
250	.13	3.8	7	11.3	15	22.5	45.6
500	.25	7.5	15	22.5	30	45	91.25
1,000	.5	15	75	45	60	90	182.5
5,000	2.5	75	150	225	300	450	912.5
10,000	5	150	300	450	600	900	1,825
20,000	10	300	600	900	1,200	1,800	3,650
50,000	25	750	1,500	2,250	3,000	4,500	9,125
100,000	50	1,500	3,000	4,500	6,000	9,000	18,250
500,000	250	7,500	15,000	22,500	30,000	45,000	91,250
1,000,000	500	15,000	30,000	45,000	60,000	90,000	182,500

Source: USAID-OFDA DART Field Operation Guide

Note: *A general rule for estimating the amount of storage space is 2 m³/MT of commodity, especially whole grain. Storage space for flour and oil will vary.*

2. Resources for Selective Feeding Programs

a. Estimate the Target Population

Where information about the prevalence of malnutrition is lacking, it can be assumed that 15-20% of children less than 5 years will be moderately malnourished and 2-3% may be severely malnourished during the acute emergency phase. These figures can be used to estimate the target population (as shown in the example below), as well as the requirements for the food commodities and facilities.

Example:
- Estimated number of displaced people within and outside settlement   = 30,000
- Estimated number of children aged less than five years (15-20%)   = 4,500-6,000
- Estimated number of moderately malnourished children (15%)   = 675-900
- Estimated number of severely malnourished children (2%)   = 90-120

b. Select Food Commodities for Selective Feeding Programs (SFPs)

Food for SFPs should be rich in energy (supply at least 100 kcal per 100 grams, with at least 30% of energy from fat) and nutrients (including micronutrients). In addition, it must be locally available, culturally appropriate, easily digestible, and palatable. The following table shows examples of typical rations for SFPs.

Table 6-23: Examples of Typical Rations

Item	Take-Home or Dry Ration		On-Site Feeding or Wet Ration (g/person/day)				
	RATION 1	**RATION 2**	**RATION 3**	**RATION 4**	**RATION 5**	**RATION 6**	**RATION 7**
Blended food, fortified	250	200	100	-	-	125	100
Cereal	-	-	-	-	125	-	-
High Energy Biscuits	-	-	-	125	-	-	-
Oil, fortified with vitamin A	25	20	15	-	20	10	10
Pulses	-	-	30	-	30	-	-
Sugar	20	15	-	-	-	10	10
Salt, iodised	-	-	5	-	-	-	-
Energy (kcal)	**1250**	**1000**	**620**	**560**	**700**	**605**	**510**
Protein (g)	**45**	**36**	**25**	**15**	**20**	**23**	**18**
Fat % (kcal)	**30**	**30**	**30**	**30**	**28**	**26**	**29**

Source: UNHCR/WFP Guidelines, 1999

c. Select Food Commodities for Therapeutic Feeding Programs (TFPs)

Diets for therapeutic feeding are based on milk or blended foods. The following table describes the basic ingredients of therapeutic feeds that may be used for the first and second phase of treatment:

Table 6-24: Composition of Therapeutic Feeds

	Therapeutic Feeds	Basic Ingredients
Phase I 80-100 kcal/kg/day	Therapeutic milk F-75*	Dried whole or skim milk, sugar, cereal flour, oil, water, mineral mix, vitamin mix
	High energy milk feed	DSM, sugar, oil, water
Phase II 150-220 kcal /kg/day	Therapeutic milk F-100**	Dried whole or skim milk, sugar, oil, water, mineral mix and vitamin mix
	High energy porridge	Corn soy milk, sugar, oil, water
	High energy biscuits	N/A
	Breast milk substitutes	Cow's milk, DSM or dried whole milk + sugar, oil, water
	Enriched local meals	Cereal flour, pulses, vegetables, meat/fish, oil, DSM, water

* Formula diet F-75
** Formula diet F-100

d. Identify Non-Food Commodities for Selective Feeding Programs (SFPs)

Medecins Sans Frontiere's (MSF) Nutrition Kit was designed to contain all non-food items needed for a feeding program. Nutrition workers can refer to this list to determine what is needed. Most materials may be purchased locally, but if essential utensils are lacking, order kits from MSF or OXFAM.

Table 6-25: Contents of MSF Nutrition Kit

CONTENTS OF MSF NUTRITION KIT	
Nutrition Surveys/Screenings	• Salter scales (25 kg), weighing pants, MUAC armbands, height boards, W/H tables, standard 1 kg weights, measuring tapes, nylon rope • Stationery: clipboards, notebooks, pens, pencils, erasers, sharpeners, rulers, permanent markers, calculator, manual counter, scissors • Instructions for survey staff, MSF nutrition guidelines
Screening and Registration for Nutrition Program	• ID bracelets, register books, individual monitoring cards, W/H tables, card boxes • Pens, pencils, rubbers, sharpeners, rulers, graph paper
Therapeutic Feeding Program **(1 per 60-100 children)**	• Cooking pots (100 L, 50 L), wooden paddles, plastic cups, plastic bowls, metal and plastic teaspoons, measuring jugs (1 L), measuring spoons, scoops, ladles, whisks, tin openers • Salter scales (25 kg, 50 kg), weighing pants, adult bathroom scale, alarm clocks/batteries • Large food mixing /washing up bowls, scrubbing brushes (floor, pots/pans), plastic water containers (20 L), plastic buckets, torches/batteries, marker pens, plastic potties, soap • Naso-gastric tubes (CH # 8, 10), syringes (60 ml, 200 ml), pestle and mortar • Water filter, water purifying tablets (chloramine) • MSF Nutrition guidelines, milk cards
On-Site Supplementary Feeding Program **(1 per 250 children)**	• Salter scales (25 kg, 50 kg) and weighing pants • Cooking pots (100 L, 50 L), wooden paddles, large food mixing bowls, plastic cups/bowls/teaspoons, metal spoons, scoops, measuring jugs (5L, 1L), measuring spoon, whisks, tin openers • Scrubbing brushes (pots/pans, floor), buckets, water containers, water purifying tablets, bars of soap • MSF Nutrition guidelines, marker pens, alarm clocks/batteries

Source: MSF: Nutrition Guidelines

Other supplies needed for therapeutic or wet feeding programs include:

- **Water** — 30 L/child/day
- **Sanitation** — 1 latrine/50 persons, bed pots for smaller children, waste buckets
- **Shelter** — buildings, tents or plastic sheets, beds/mats, blankets, bed-nets, lamps, torches
- **Fuel** — average 1 m^3 firewood to boil 1000 L water
- **Medical Drugs/Supplies** — micronutrient supplements, ORS, intravenous fluids, antimicrobials, measles vaccine and immunisation kits, etc.

e. Estimate Staffing Needs

A successful selective feeding program requires a team of health and non-health staff. The actual number of staff recruited will depend on their skills and prior experience in food and nutrition programs. The following table gives an example of staffing for selective feeding programs:

Table 6-26: Staffing for Selective Feeding Programs

Supplementary Feeding	Therapeutic Feeding
• 1 general supervisor per feeding centre • 1 trained nurse per feeding centre • 1 nutrition assistant per 30 children • 2 outreach workers per feeding centre • 1 cook plus assistant per 50 children • 1 cleaner per 50 children • 1 or more watchmen per feeding centre	• 1 medical doctor or medical assistant per feeding centre • 2 trained nurses (for overall program) • 10 nutrition assistants (1 per 10 children) • 2 outreach workers per feeding centre • 1 storekeeper • 4 cooks/assistants • 4 cleaners (2 for feeding centre, 2 for compound) • 1 or 2 watchmen • Caregivers: mothers or other family members

Source: MSF – Nutrition Guidelines

f. Staff Training

Emergency nutrition programs should be implemented by staff members who have the appropriate skills and experience to perform the necessary tasks. In emergencies, most recruited staff need training (on-the-job or periodically) to be able to perform the following tasks satisfactorily:

- Identify individuals with common nutritional disorders and micronutrient deficiencies.
- Advise the affected population on good feeding practices and care of vulnerable groups.
- Advise on safe and appropriate use and preparation of blended foods.
- Keep records of the amount of the number of rations distributed, attendance at selective feeding programs, the quality of food, etc.

Once trained, all staff members need to be adequately managed and supported. See the *Human Resource Management* chapter for further details on supervision of staff.

THE LOGISTICS OF FOOD AID IN EMERGENCIES

*The aim of food supply and distribution is to deliver the right amount of food
to the right number of refugees at the right time in the right place.*

Food Logistics Systems

Most food aid is provided by a few key donors who procure food from their domestic markets, and then pass the food to the World Food Programme and other non-governmental organisations (NGOs). For example:

- The World Food Program provides over $1 billion a year in food aid to refugees and emergency-afflicted populations.
- UNHCR and other NGOs provide another $1 billion per year in assistance operations for medical care, environmental health, water and sanitation, and overall operations to ensure livelihood.
- NGOs, the Red Cross, or local government representatives are responsible for implementing food distribution and nutritional programs in the disaster-affected areas.
- Food storage and distribution is carried out largely by members of the affected populations.

Procurement and Transportation of Food

The main costs of food aid programs is the purchase and transportation of food. Food costs may vary from $100 per metric ton of grains to $1,500 per metric ton of oil. The largest amounts of procured food are the bulk grains, followed by beans and oil. Specialty foods such as Corn Soy Blend, F-100 re-feeding formula or high-energy biscuits are procured in limited quantities due to their high cost.

Food should be procured as locally as possible because transportation and storage of imported food is very costly. In addition, imported food may upset local market prices and discourage food production. The type of transportation will depend on the urgency of delivering food aid. The following table shows the capacity of various means of transport, in decreasing order of cost.

Table 6-27: Food Aid Carriers and Payloads

CARRIER	PAYLOAD
C-130 Hercules aircraft	21 MT
Truck & Trailer	21-30 MT
Railway freight car	30 MT
Pick up truck (large)	1 MT
Camel	250 kg
Donkey	100 kg

Challenges to Food Aid

Distributing food aid can be very challenging. Food supply and distribution for a large displaced population is one of the most difficult operations to organise. Major problems can arise, which may be complicated by politics and corrupting influences. The relief operation may even seem a wasted effort during the initial phase of an emergency when the beneficiary receives only a meagre supply. The main reason is that procurement and transportation of bulk quantities of food takes several weeks, no matter how well the operation is managed and co-ordinated, or where the food is purchased.

Common problems of food aid include the following:

1. **Food Supply Failures**

   Failures in the food pipeline can interrupt the availability of one or more important commodities. The following steps can be taken to maintain distribution until the food pipeline is restored:

   a. Replace food commodities that are not available with other food items to maintain adequate energy and protein level in the food basket. The following substitution ratios are recommended for common food items:[14]
      - Blended food for beans = 1:1
      - Sugar for oil = 2:1
      - Cereal for beans = 2:1
      - Cereal for oil (not oil for cereal) = 3:1

   b. Decrease the distribution of the missing commodity in the general ration

   c. Safeguard the supplies to TFPs

   d. Distribute the deficient commodity via SFPs in the following order of priority: children under five years, pregnant/nursing mothers, older children, and other at-risk groups.

   e. During a prolonged interruption in the food pipeline, the SFP can be expanded to include other at-risk groups, depending on food availability.[15]

2. **Low Coverage of Vulnerable Groups**

   Carrying out large-scale food and nutrition programs for complex emergencies covering whole regions can be very difficult and demanding. Local agricultural production and commercial markets are often interrupted or arrested. Identifying and reaching all the vulnerable groups among the entire affected population can be almost impossible, particularly in areas such as western Sudan or intensely disputed areas such as Liberia and Burundi. Increasing the number of delivery points for food aid can help but does not guarantee that all the vulnerable groups will be reached.

3. **Excessive Food Losses**

   Most agencies accept up to 10% losses of the food aid during transportation, storage, and distribution. However, greater quantities of food may be lost due to the following:

   - Packing errors — factory may decrease the contents in the bags
   - Losses during transportation — bags may get lost or may leak
   - Poor quality foods — food may spoil due to poor transport, storage, and handling
   - Lack of security — bags may be stolen during transportation, storage, or distribution
   - Possession of multiple ration cards or altering the family size information on the cards
   - Over-scooping — distributors may give larger amounts to their relatives and friends
   - Diversion by staff or beneficiaries

   Humanitarian NGOs must establish accounting and inventory systems as soon as possible to manage, track, and account for the movement of food commodities. These are essential for reporting to donors and for determining the priority needs of the beneficiaries. In addition, the quality of food should be monitored, and food safety should be promoted at all levels of the food pipeline. The following commodity or inventory records and accounting systems are commonly used:

   - Warehouse ledgers (arrivals, issues)
   - Commodity losses and damage
   - Stock reports (balance sheets, stock cards)
   - Releases from the warehouse (release orders)
   - Reports of food in transit (monthly)
   - Delivery notes (waybill)

4. Dependency on Food Aid

Assisting displaced people in relief camps is not simple, and reaching those settled among host populations it is even harder. On one hand, the displaced are often fully dependent on external food aid to survive. On the other hand, food aid can induce large populations to uproot themselves and take advantage of relief supplies. This often develops when food is provided at central locations. As a result, dependency is created and indigenous efforts to produce food are disrupted.

5. Declining Food Supply

Each agency will contribute as much emergency assistance as they can at the beginning of an operation. As support for emergency programs declines, programs are scaled down to reduce dependency. However, in complex emergencies, the focus is always short-term, in response to changing circumstances such as movements of armies and bandits. Any significant reduction in food supplies may lead to increased deaths. Programs experiencing declining food supplies can minimise the number of deaths by doing the following:

- Give full ration to only a proportion of the population, and the rest receive nothing.
- Distribute a reduced ration to all people (hard rationing).
- Distribute food to members of the population according to need, i.e., age, sex, size, occupation, pregnancy (fair-share strategy).
- Use nutritional status to determine how much food to allocate to a family or group.
- Better targeting through more accurate data on needs of individual families.
- Reduce or halt food distribution after a harvest.
- Discharge healthy people from the food aid program.

LONG-TERM FOOD INTERVENTIONS

Indirect Food Aid

Successful relief agencies have learned that effective food assistance involves far more than distributing general rations and providing supplementary feeding. When people are starving, most agencies respond by sending food aid, assuming the cause is shortage of food. However, prolonged food aid is expensive, inappropriate and ineffective in promoting the recovery of the affected people. Once nutritional levels have stabilised (for at least three months), relief agencies should shift their focus from direct food aid to developing indirect ways of increasing the food supply and building food security. One or more of the following programs may be used to phase out direct food aid programs:

1. Seeds and Tools Distribution

The aim of seeds and tools distribution is to rehabilitate vulnerable families for future self-sufficiency. It may be carried out as a short- or long-term project since any skills and knowledge gained from the project can benefit displaced people after they return to their place of origin. Local farmers and experts may be consulted to identify the varieties of seeds and plants that grow in the area. Selecting and distributing the seeds and tools to be used should be decided with the beneficiaries. Distribution may target women to ensure that the seeds and tools are not sold. It may be carried out after food distribution to reduce the likelihood of seeds being consumed. Simple planting and growing instructions may be provided in the local language for those who have little experience in farming. After providing the initial inputs, local production of seeds and tools should be encouraged, e.g., through community projects. Further inputs and training may be necessary for long-term projects.

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2. **Income-Generating Projects (IGP)**

    Relief agencies may issue small loans and training to the most affected families in order to provide them with alternative sources of income once food aid is phased out. These projects should have a direct impact on improving food production, e.g., digging wells, raising poultry and small livestock, fishing or milling projects.

3. **Food-For-Work (FFW) Projects**

    In these projects, food is given as full or partial payment of wages to people working in land improvement or community development projects. This strategy is very effective during food shortages, particularly when it targets the poor. It allows able-bodied individuals to earn food rather than become reliant on food handouts. The types of food used for payment will depend on the objectives of the project. The cash value of food to be distributed should be the primary consideration if the aim is income transfer. People are often paid every two or four weeks, at a rate of one family ration per day worked. The amount of food they receive should be sufficient to motivate them to work, without upsetting local food production or markets.

Table 6-28: Advantages and Disadvantages of Food-For-Work (FFW) Projects

ADVANTAGES OF FFW	DISADVANTAGES OF FFW
• Gets food to needy families • Less likely to create dependencies • Effective in getting projects done	• Requires more food than general distribution • People may sell food for other needs • May lower market prices and discourage local food production

To ensure that FFW projects do not interfere with local productivity, they should be carried out over a short period of time, and not during planting and harvesting seasons.

4. **Cash-For-Work (CFW) Projects**

    The aim of these projects is to provide income for people involved in public works or community development projects. CFW programs can be designed to improve local food production (e.g., planting wind breaks). People are paid for completing a piece of work. Families that cannot afford to purchase food at any price are given priority for employment in these projects. Women are also employed. Organising CFW programs is simpler than FFW programs since they do not depend on a food distribution system. Paying workers a modest wage preserves their dignity and gives them a choice on what to spend their money on (which may not be food, as it is intended), whereas high wages may attract skilled workers (and farmers) from other jobs.

5. **Market Interventions**

    During periods of food shortages, food prices usually rise so much that the poorest are not be able to purchase food. Distributing food to needy people will not make the food prices more affordable. Market interventions are more effective in lowering or controlling food prices. They reactivate markets faster, cost less, and require fewer people to implement them. The following market interventions may be appropriate for emergencies:

    - *Internal purchase programs* — The amount of food available in areas of conflicts, famines, or other emergencies is much higher than expected. Food shortages occur because of problems in distribution or access. Instead of importing food aid, local food reserves may be purchased and sold at lower prices to local vendors or distributed to affected people through selective feeding programs. Purchasing food aid locally is faster, cheaper, and helps reactivate the local markets. In addition, the

food commodities are more familiar to the affected population. Care must be taken to ensure the internal purchase programs do not disrupt the local economy.

- *Monetisation* — This involves selling food aid directly to local vendors (particularly women) at subsidised rates so that food prices remain affordable for the poor. After the sale, vendors should be monitored to ensure they sell their food within the normal retail price range. Those who sell their food at higher prices or to wholesalers are not allowed to purchase any more food aid.
  Note*: Some donors may limit food aid to free distribution only.*

- *Livestock interventions* — Relief agencies may pay grain in exchange for livestock whose health is deteriorating due to existing food shortages. This helps to preserve the value of livestock and provides income for pastoralists.

*For further details about the long-term food interventions, please refer to the texts listed under the References and Suggested Readings section at the end of the chapter.

Fortification of Relief Foods

Fortification is the addition of nutrients to food somewhere in the food processing cycle for the purpose of restoring or enhancing the nutritional quality. *Micronutrient fortification* (the addition of vitamin A, thiamin, niacin, vitamin C, iron, iodine, or other micronutrients to foods) is one of the most cost-effective programs known for improving health and reducing disability.

It is possible to fortify emergency foods with about 20 vitamins and minerals using low-cost technology. Costing less than $10 per metric ton of delivered grain, fortification may be performed at the field-level or regional level, as follows:

1. **Field-Based Fortification**
   Relief agencies may fortify food aid in camp-based grain mills to meet the nutritional needs of a target population. Carrying out fortification at the field level is less expensive for three reasons:
   - the addition of micronutrients does not involve other processes
   - the closer to the point of consumption, the fewer the problems of storage and spoilage
   - fortifying flour during milling in a refugee camp reduces the cost of labour and increases the shelf-life of the grain mix since vitamins and minerals are added close to the time of consumption

   However, due to lack of equipment for mixing or dosing with micronutrient premix, mills in refugee camps usually do not guarantee proper fortification. Opportunities for improvement are limited because most mills are privately owned and the millers lack incentives to fortify foods properly. In order to relieve individual refugees of the burden of pounding their grains or paying high fees to commercial millers, humanitarian agencies are becoming interested in providing equipment and sometimes resources for maintenance. Not only do milling projects produce economic benefits, but they allow refugees to spend less time travelling outside camps for fuel wood required to cook bulk grains. Supporting milling projects, therefore, may initiate and promote the practice of fortification into a local industry.

2. **Regional Fortification**
   Building local and regional capacity for fortification of emergency food aid may help make fortification a standard practice across Africa. Food aid may be passed through sophisticated roller mills at a regional level to produce fortified food. However, many commercial millers lack the necessary equipment, micronutrient premix, or experience. In addition, processing and fortifying large quantities of food at a centralised location increases the likelihood of spoilage (especially in high humidity areas). Therefore, fortification at the regional level is appropriate where relief food or locally purchased food commodities pass through major industrial centres or where food is stored for contingency purposes.

Challenges to Fortification

Certain challenges to fortification have been identified, such as the following:

1. Except for blended food, few other relief foods provide sufficient micronutrients. However, blended foods such as Corn Soy Blend, Unimix, and Wheat Soy Blend tend to be considerably more expensive than bulk grains.

2. Whole grains cost between $90 and $200 per metric ton. On the other hand, processing and packaging blended foods increase the cost by as much as $350 and $500 per metric ton. Because two or three times more emergency victims can be fed using bulk grains than blended foods, most aid agencies reserve the enriched foods primarily for selective (supplementary) feeding programs that target those people who already show signs of nutritional deficiencies.

3. Blended foods spoil more readily than whole grains. This is because mixing and blending grains and infestation at the factory site reduces their shelf-life. Despite manufacturer claims that their food products have many years of shelf-life, many relief agencies confirmed the spoilage of flour after a few weeks or months. They frequently have had to condemn and destroy entire batches.

4. Studies have shown that among displaced families, foods are consumed in different proportions. Only bulk grains appear to be eaten by everyone (in varying quantities). Therefore, it has been recommended that one effective way of achieving broad coverage of a population with micronutrients, is through the fortification of bulk grains, such as wheat, maize, and rice.

   Note: *The number of food aid commodities that are likely to be fortified in the near future is increasing. These include staples, maize/wheat flour, blended cereals, dry skim milk, oil, salt, and sugar.*

MONITORING AND EVALUATING FOOD AND NUTRITION PROGRAMS

Once the food and nutrition program is established, monitoring can determine whether the program is achieving the expected results, using resources effectively, and reaching the expected standards and targets. (Refer to the *Management* chapter for more information.)

Monitoring Food Aid

Food aid programs must be monitored in a systematic manner in order to:
- document the effectiveness of the program in meeting its goals, objectives, and targets
- monitor the use of the food aid distributed
- monitor the impact of the program on the food security status of the target population

The following indicators may be used to monitor food supply and distribution:
- Periodic Inventory Reports produced every 14 days — inventory reports detailing receipts, issues, and stock balances are available for program planners
- Inventory Information used as a basis for program planning — system provides information on pledges, expected arrivals, and stocks available for programming.

It is expected that NGOs involved in distributing food aid will monitor how the food is used by the affected population. This monitoring will include the following:

- accounting and reporting along the supply chain (from origin to delivery to distribution sites)
- distribution to intended beneficiaries confirmed through records and random checks
- random household-level end-user visits to determine the acceptability and usefulness of the ration received

Monitoring end-users through household-level visits and interviews will provide feedback from the beneficiaries about the effectiveness of the food security intervention. Program evaluations should be conducted periodically and findings used to improve the running of the program, where necessary, and to provide "lessons-learned" for future operations.

Monitoring Emergency Nutrition Programs

Indicators for monitoring the outcome of nutrition programs need to be developed and agreed upon when designing the program. Indicators that may help measure the impact of the general distribution on the population include: morbidity, mortality, nutritional status, or income/self-provisioning levels.

The efficiency and effectiveness of Selective Feeding Programs should be monitored through ongoing data collection and analysis. This may include growth monitoring, nutrition surveys, and feeding centre records. Specific indicators for each selective feeding program are listed in the table below.

Table 6-29: Examples of Indicators for Selective Feeding Program

	ACCEPTABLE	**ALARMING**
SFP INDICATORS		
1. Recovery rate	Greater than 70%	Less than 50%
2. Death rate	Less than 3%	Greater than 10%
3. Defaulting rate	Less than15%	Greater than 25%
TFP INDICATORS		
4. Recovery rate	Greater than 75%	Less than 50%
5. Death rate	Less than 10%	Greater than 15%
6. Defaulter rate	Less than 15%	Greater than 25%
7. Weight gain	Greater than or equal to 8 g/kg/day	Less than or equal to 8 g/kg/day
8. Coverage	Greater than 50-70%	Less than 40%
9. Mean length of stay	Less than 3-4 weeks	Greater than 6 weeks

It is important to monitor the number of cases presenting in health facilities with *scurvy, pellagra,* and *beriberi*, the most commonly observed micronutrient disorders in emergencies. Individual cases are most likely the result of limited access to certain foods. This may indicate a population-wide problem that requires population-wide interventions. Special attention should be paid to iron deficiency anaemia, which may be a common cause of death.

Evaluating Food and Nutrition Programs

Evaluating food and nutrition programs is important because it measures their effectiveness, identifies lessons for future preparedness, mitigation, and assistance, and promotes accountability. Sometimes, it helps determine a need to shift strategies in response to changes in the needs or disaster context. All programs should be evaluated in terms of set objectives and agreed standards. Information from the initial assessment and ongoing monitoring should be fed into program reviews and evaluations.

The following minimum standards from the Sphere Project can be used for evaluating the effectiveness and impact of an emergency food aid and nutrition program:

Note: *For more details about monitoring and evaluating relief projects, refer to the* Management *chapter.*

Table 6-30: Minimum Standards in Food Aid

MINIMUM STANDARDS IN FOOD AID	
1. ANALYSIS	Before any program decisions are made, there is a demonstrated understanding by policy makers and program implementers of the basic conditions that create risk of food insecurity and the need for food aid.
	The performance and effectiveness of the food aid and nutrition programs and changes in context are monitored and evaluated.
	The disaster-affected population has the opportunity to participate, where possible, in the design and implementation of the assistance program.
2. REQUIREMENTS	The food basket and rations are designed to bridge the gap between the affected population's requirements and their own food sources.
3. TARGETING	Recipients of food aid are selected on the basis of food need and/or vulnerability to food insecurity.
4. RESOURCE MANAGEMENT	Food aid commodities and program funds are managed, tracked, and accounted for using a transparent and auditable system.
5. LOGISTICS	Agencies have the necessary organisational and technical capacity to manage the procurement, receipt, transport, storage, and distribution of food commodities safely, efficiently, and effectively.
6. DISTRIBUTION	The method of food distribution is equitable and appropriate to local conditions. Recipients are informed of their ration entitlement and its rationale.
7. HUMAN RESOURCE CAPACITY & TRAINING	Food aid programs are implemented by staff who have appropriate qualifications and experience for the duties involved, and who are adequately managed and supported.
	Local capacity and skills are used and enhanced by food aid programs.

Table 6-31: Minimum Standards in Nutrition

MINIMUM STANDARDS IN NUTRITION	
1. ANALYSIS	Before any program decisions are made, there is a demonstrated understanding of basic nutritional situation and conditions that may create risk of malnutrition.
	There is a clear description of the problems and a documented strategy for a proper response.
	The performance and effectiveness of the food aid and nutrition programs and changes in context are monitored and evaluated.
	The disaster-affected population has the opportunity to participate in the design and implementation of the assistance program.
2. GENERAL NUTRITIONAL SUPPORT	The nutritional needs of the population are met.
	Food that is distributed is of sufficient quality and is safely handled so as to be fit for human consumption.
	Foods that are provided are appropriate and acceptable to the entire population.
	Food is stored, prepared, and consumed in a safe and appropriate manner, both at the household and community level.
3. NUTRITIONAL SUPPORT	The public health risks associated with moderate malnutrition are reduced.

FOR THOSE WHO ARE MALNOURISHED	Mortality, morbidity, and suffering associated with severe malnutrition are reduced.
	Micronutrient deficiencies are corrected.
4. HUMAN RESOURCE CAPACITY AND TRAINING	Nutrition interventions are implemented by staff who have appropriate qualifications and experience for the duties involved, and who are adequately managed and supported.
	Members of the disaster affected population receive support to enable them to adjust to their new environment and to make optimal use of the assistance provided to them.
	Local capacity and skills are used and enhanced by emergency nutrition programs.

APPENDIX

Table 6-32: Definitions of Malnutrition

	TOTAL MALNUTRITION	MODERATE MALNUTRITION	SEVERE MALNUTRITION
CHILDREN AGED 6-59 MONTHS	• Less than -2 Z scores WFH or • 80% median WFH or • Less than 12.5 cm MUAC +/or nutritional oedema	• -3 to less than -2 Z scores WFH or • 70% to 80% median WFH or • 11.0 to less than 12.5 cm MUAC	• Less than -3 Z scores WFH or • Less than 70% median WFH or • Less than 11.0 cm MUAC +/or • Nutritional oedema
CHILDREN AGED 5-9.9 YEARS	• Less than -2 Z scores WFH or • 80% median WFH +/or • nutritional oedema	• -3 to Less than -2 Z scores WFH or • 70% to 80% median WFH	• Less than -3 Z scores WFH or • Less than 70% median WFH +/or • nutritional oedema
ADOLESCENTS AGED 10-19.9 YEARS*	• Less than -2 Z scores BMI-for-age or • Less than -2 Z scores BMI-for-height +/or nutritional oedema	• -3 to less than -2 Z scores BMI-for-age or • -3 to less than -2 Z scores BMI-for-height	• Less than -3 Z scores BMI-for-age or • Less than -3 Z scores BMI-for-h height +/or nutritional oedema
ADULTS AGED 20-59.9 YEARS**	• BMI < 17 +/or • Nutritional oedema	• 16 to < 17 BMI	• < 16***

Source: The Sphere Project, 1999

* The BMI cut-offs for adolescents have not been agreed upon. Therefore they should be used with caution, and always combined with clinical assessment.

** BMI cut-offs for adult malnutrition are for chronic energy deficiency.

*** Need to correct for variations of BMI between populations. Should also distinguish between those with rapid-onset, severe malnutrition to those who are chronically energy deficient.

Note: *There are no agreed anthropometric cut-offs for malnutrition in infants below six months apart from the presence of nutritional oedema. To determine whether malnutrition is a problem for this age group, assess the infant feeding practices, including access to breast milk and support for nursing mothers.*

Use of Milk in Emergencies

In disaster situations, milk has frequently been requested or donated in various forms for distribution to affected populations. Fresh milk and milk products (cow's milk that is powdered, condensed, evaporated, or otherwise) are rich sources of many essential nutrients. They have a high protein quality but relatively low energy and can be consumed by people of all ages. However, uncontrolled distribution of milk can produce many unwanted effects, such as the following:

• Serious health problems due to improper dilution or contamination and indigestion due to lactose intolerance.

• Changing dietary habits among communities that do not traditionally consume milk, and thereby creating new needs and economic pressures.

• Transportation and storage problems — This requires careful supervision of supplies to prevent distributing contaminated or damaged sacks, tins, or expired milk.

The following table summarises some guidelines on the safe use of milk in emergencies.

Table 6-33: Guidelines for Safe Use of Milk in Emergencies

SAFE USE OF MILK IN EMERGENCIES
• Milk is to be distributed only to those populations who traditionally rely on milk and only under strictly controlled and hygienic conditions.
• Milk must neither be used as an item for general distribution nor as a "take-away" supplement.
• Donations of milk for relief actions should only be made following a specific appeal from the implementing relief agency.
• Unsolicited donations of milk will not be used if they do not satisfy bullet point 1. Donors will be advised that they should withdraw their donation or that it will be safely disposed.
• Dried skimmed milk that has not been fortified with vitamin A will not be supplied or distributed.
• Milk in tins or pre-packaged in liquid or semi-liquid form will not be supplied or distributed.

Source: IFRC Handbook for Delegates

Basic Principles for Selective Feeding Programs[16]

Every situation has individual features that lead to different objectives and to different approaches to Selective Feeding Programs. These guidelines describe the basic principles and design elements of the food and nutrition aspects of Selective Feeding Programs. These guidelines cannot cover the wide range of situations. Supplementary feeding programs, therefore, should be designed according to the situation but should nevertheless remain in line with the framework of these guidelines.

Basic Principles:

1. In emergency situations, WFP, UNHCR, and implementing agencies try to ensure the provision of an adequate general food rations. However, additional food may be needed over a certain period of time for specific groups who are already malnourished or are at risk of becoming malnourished.

2. These interventions have to be seen in the context of a general ration being distributed. The impact of Selective Feeding Programs aimed at compensating for inadequate general rations has proven very limited and not cost-effective. Therefore, to be effective, the extra ration must be *in addition to* and not *a substitute for* the general ration.

3. Many factors influence nutritional status. It therefore should be kept in mind that interventions must be multi-sectoral and cover food, health, hygiene, sanitation and care. A properly designed nutrition survey and complementary analysis of the causes of malnutrition can help to guide the need to implement Selective Feeding Programs.

4. National health authorities and NGOs have an important role to play in nutritional interventions. In emergency situations, NGOs usually organise and implement Selective Feeding Programs. They form an integral part of the efforts to prevent and treat malnutrition among young children, women, and other at-risk groups.

5. Selective Feeding Programs should have clear objectives and criteria for opening, admission, discharge, and closure. These objectives should be defined at the beginning. In order to be effective, Selective Feeding Programs need to be integrated into Community Health Programs, which offer health and nutrition services like Safe Motherhood, immunisations, nutrition and health education and growth monitoring. Integration facilitates referrals between services and phasing out of Selective Feeding Programs.

6. In addition to nutritional and medical treatment, care is an essential part of rehabilitation. Care in nutrition refers to the practices of the caregivers in the household, which translates food security and health care into rehabilitation, growth and development. These practices include care for women, breast-feeding, infant feeding, psycho-social care, sanitation and hygiene practices, food processing and preparation, and home health practice. These issues can be addressed through Selective Feeding Programs in the form of education, individual counselling, social activities and involvement of caretakers in the program.

7. The community must be consulted to the extent possible during program design and women must take part in the decision making from the outset.

8. Proximity of feeding centres to the population and availability of trained health staff are a prerequisite when Selective Feeding Programs are being considered.

9. The policy of UNHCER and WFP concerning safe and appropriate infant and child feeding, in particular the protection, promotion, and support of breast feeding must be respected.

10. When planning the food needs of Selective Feeding Programs, the energy density, fat, protein, and micronutrient content of food commodities must be considered. In addition, micronutrient supplements (especially vitamin A, iron, and folic acid) should be given.

11. It must be kept in mind that adolescents, adults, and elderly people may also be malnourished and should be included in Selective Feeding Programs.

12. The effectiveness of Selective Feeding Programs, and their impact on mortality and morbidity of affected populations should be monitored regularly.

13. The need to set up Selective Feeding Programs after the initial stage of an emergency often represents a serious warning that the assistance to the population as a whole is insufficient.

14. For interpretation of nutrition surveys, results are presented both in weight-for-height Z-scores and percentage of the median. However, during admission and discharge to feeding programs, percentage of the median is often being used. At present, no consensus has yet been reached on the use of Z-score in feeding programs.

15. The standards mentioned in these guidelines meet the set of minimum standards in disaster response as mentioned in the Sphere Project.

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CONTROL OF COMMUNICABLE DISEASES

Description
This chapter gives an overview of common and emerging communicable disease threats among displaced populations. General and disease-specific strategies for monitoring, preventing and controlling disease outbreaks are discussed.

Learning Objectives
- To discuss the principles of communicable disease control.
- To characterise the major disease threats in emergencies.
- To plan a communicable disease control program for emergency settings.
- To discuss simple but effective ways of preventing outbreaks of communicable diseases.
- To describe how to manage specific disease outbreaks in emergency settings.
- To review re-emerging and other diseases that may affect displaced populations.
- To discuss how to monitor and evaluate communicable disease control programs.

Key Competencies
- To understand the principles of communicable disease control.
- To recognise the major disease threats in emergencies.
- To define the objectives, strategies, and resources for setting up a disease control program.
- To identify ways of preventing or reducing outbreaks of communicable diseases in emergency settings.
- To initiate measures for managing specific disease outbreaks.
- To be aware of re-emerging and other diseases of public health importance.
- To define indicators for monitoring and evaluating communicable disease control programs.

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Overview

Communicable diseases account for 51-95% of all reported deaths in refugee populations. Because there is a consistent pattern of communicable disease outbreaks in developing countries, health workers in emergency settings can predict and prepare for the following disease outbreaks:

- Communicable diseases that cause major outbreaks in the acute emergency phase as well as in non-emergency settings include: *acute respiratory infections* (ARI), *diarrhoeal diseases* (cholera, dysentery) and *vaccine-preventable diseases* (measles, malaria, and meningitis).

- *Re-emerging diseases* such as tuberculosis, sexually transmitted diseases, and HIV/AIDS are also commonly seen but, for various reasons, control measures are not usually attempted until the post-emergency phase.

- *Other infectious diseases* that cause outbreaks less frequently are yellow fever, relapsing fevers, and parasitic infections, such as worms, scabies, and lice.

Prevention and control of disease outbreaks in emergency settings requires a clear understanding of the characteristics of communicable diseases. This involves doing two things:

1. Assessing the potential incidence, prevalence, case-fatality, and mortality rates associated with frequently-occurring diseases.

2. Being aware of the biology of disease organisms and the risk factors for acquiring and transmitting them, and knowing when, where, and how to institute effective control measures.

When planning a disease control program for displaced people, consider the level of care and resources available to the host population. Because communicable disease outbreaks can affect both the refugees and host population, relief agencies should develop practical and effective disease control measures together with the local health authorities. These measures should be based on the national disease control policies.

PRINCIPLES OF COMMUNICABLE DISEASE CONTROL

A **communicable disease** may be defined as an illness that arises from transmission of an **infectious agent** or its toxic product from an infected person, animal, or reservoir to a **susceptible host**, either directly or indirectly through an intermediate plant or animal host, vector, or environment.

Note: *"Communicable" and "infectious" have the same meaning; both terms are used interchangeably throughout this chapter. However, it may be preferred to report an "outbreak" since it appears to cause less panic than "epidemic."*

The following table defines the terms that are related to the control of communicable diseases.

Table 7-1: Terms and Definitions

| Attack Rate	The proportion of those exposed to an infectious agent who become clinically ill.
Carrier	A person that carries a specific infectious agent—and can transmit it to others—but has no clinical signs of infection.
Case	A person identified as having a specific health problem or disease of interest.
Case Definition	Standard criteria for deciding whether a person has a particular disease or health problem. Criteria can be clinical, laboratory, or epidemiological.
Case Fatality Rate (CFR)	The percentage of persons diagnosed with a specified disease who die as a result of that illness within a given period.

Chemoprophylaxis	The administration of drugs (usually antimicrobials) to prevent the development or progression of an infection to actual disease or to stop transmission and disease in others: • Mass chemoprophylaxis — administering drugs to the entire population • Selective chemoprophylaxis — administering drugs to the highest risk group
Clinical Illness	Signs and symptoms that give evidence of an infection.
Communicable Disease (Infectious Disease)	An illness due to a specific infectious agent or its toxic products that arises through transmission of that agent or its products from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector, or object in the environment.
Contact	A person or animal that has had an opportunity to acquire the infection following association with an infected person or animal or contaminated environment.
Drug Resistance	The ability of an infectious agent to survive despite the administration of an antimicrobial in a dose equal to or higher than the usual recommended dose.
Endemic	The continuous presence of a disease or infectious agent within a geographical area; the usual prevalence of a disease within such an area.
EPI	Expanded Program on Immunisation
Epidemic or Outbreak	The occurrence of cases of an illness with a frequency that is clearly in excess of what is expected in a given region, therefore, demanding emergency control measures.
Epidemic Threshold	The minimum number of cases indicating the beginning of an outbreak.
Epidemiology	The study of the distribution and determinants of disease in time, place, and person.
Exposure	Meeting with an infectious agent in a way that may cause disease.
Host	A person or other living animal that accommodates an infectious agent under normal conditions. The parasite may undergo various developmental stages in the host who may not have symptoms.
Incidence Rate	The number of new cases diagnosed or reported with a certain disease during a defined time period (usually 1 year) divided by the total population in which the cases occurred.
Incubation Period	The interval from the time of infection to the time clinical signs of illness appear.
Infectious Agent	Bacteria, viruses, fungi or parasites or their products that can cause disease.
Innoculum Size	The minimum dose of infectious agent or its products that can cause disease.
Isolation	Keeping infected persons or animals in separate places or under certain conditions for as long as they can transmit disease. This prevents or limits the direct or indirect transmission of the infectious agent to those who are susceptible to infection.
Morbidity	An incidence rate which includes all persons within a given population who become ill during a specific time period.
Mortality	The total number of deaths occurring in the total population during a certain period (usually 1 year) divided by the total number of people at risk.
Notifiable Disease	Disease for which regular, frequent, and timely information on individual cases is considered necessary for the prevention and control of the disease.
Prevalence Rate	The total number of persons having a certain disease or condition in a stated population at a particular time or period divided by the population at risk of the disease or condition at that time.
Primary or Index Case	A person who acquires a disease through exposure and brings it into a population.
Reservoir	Any person, animal, arthropod, plant soil, etc. in which the infectious agent normally lives and reproduces itself in such a manner that it can be transmitted to a susceptible host.
Secondary Case	A person infected by the primary case.

The Johns Hopkins and IFRC Public Health Guide for Emergencies

Surveillance	Systematic collection, collation, and analysis of data and dissemination of resulting information so that action can result.
Susceptible Host	Person or animal not possessing sufficient resistance against a particular infectious agent to prevent contracting infection or disease when exposed to it.
Transmission	Any mechanism by which an infectious agent is spread from a source or reservoir to a person: • Direct transmission — immediate transfer of infectious agents to a suitable portal of entry through which infection of a human or animal may take place (direct contact or projection) • Indirect transmission — transfer of infectious agents through intermediate means: e.g., vehicle-borne (contaminated materials), vector-borne (arthropods)
Universal Precautions	Simple, standard procedures to be used during the care of patients at all times to minimise the risk of transmission of blood-borne viruses, including HIV. They consist of handwashing, use of protective clothing such as gloves; safe handling of sharp instruments; safe disposal of medical waste include sharps; and decontamination of instruments and equipment.
Virulence	The ability of an infectious agent to invade and damage tissues of the host and/or cause death.

Basic Principles

A disease **epidemic** or **outbreak** is the occurrence of cases of a particular disease in excess of the expected, therefore, demanding that emergency control measures be implemented. It is incorrectly assumed that "epidemics and plagues are *inevitable* after every disaster." The threat of communicable disease outbreaks *is* greater after a disaster than in non-emergency situations, particularly when large populations have been displaced. However, an epidemic or outbreak will only occur if the equilibrium between the population's susceptibility (host or reservoir), the virulence of the infectious agent (bacteria, viruses, parasites, or fungi or their products) and the environment that promotes the exposure (refer to the Figure below) is upset.

Figure 7-1: Equilibrium Between the Population, Infectious Agent, and the Environment
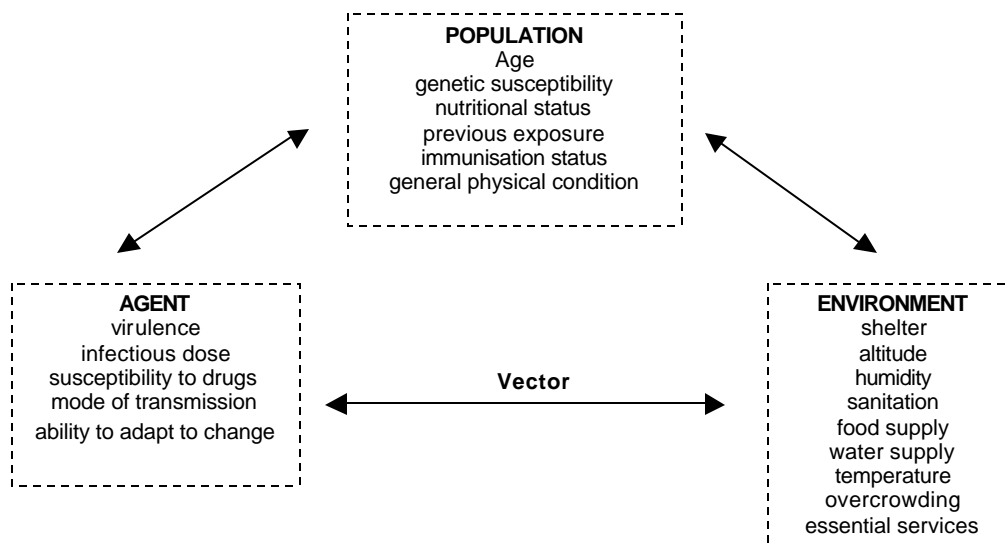
Even though each emergency situation is unique, all emergencies are surrounded by the same factors, which can upset the balance between the **infectious agent**, the **host**, and the **environment**, as follows:

- **Agent:** Infectious disease agents are constantly searching for opportunities to multiply either in susceptible persons, vectors, animals, or in the environment. Because their genes can transform rapidly, they are able to spread to new locations, disappear, and then re-appear to infect more vulnerable populations. Some infectious agents cause higher rates of illness and death because they have become resistant to available treatment (e.g., *M. tuberculosis, P. falciparum*) or are more virulent, leading to major outbreaks (e.g. Shigella, Ebola).

  Note*: A disease outbreak will not occur if an infectious agent for a particular disease is not present in the environment and is not introduced after a disaster, even if environmental conditions are ideal for transmission.[1]*

- **Host:** Displaced persons may change the local environment or bring new or different strains of infectious agents. In addition, they may have low immunity to infections due to poor physical or nutritional status, underlying diseases, or poverty. Some individuals are more vulnerable to infectious diseases or the more severe form of the illness. For example, children less than 5 years of age (usually about 20% of the displaced population) are at greatest risk of morbidity and mortality from infectious diseases, particularly those who are malnourished.

- **Environment:** Opportunities for infection may increase due to overcrowding, unhygienic conditions, lack of safe drinking water, etc. In addition, essential services (public health or medical) may become disrupted or overwhelmed by the emergency situation.

  Note: *Because communicable diseases respect no boundaries, outbreaks occurring within the displaced population may spread to the host population, and vice versa. The above risk factors may apply to either population.*

Whether communicable disease outbreaks occur will, therefore, depend on the type of infectious agents existing within the local environment and the refugee settlement, and the physical condition and health status of the displaced population.

Communicable Disease Cycle

It is important to understand the cycle of communicable diseases (see Figure below). This may help to identify the individuals that are likely to transmit the disease, as well as those at greatest risk of becoming ill or dying within the population.

Figure 7-2: The Communicable Disease Cycle
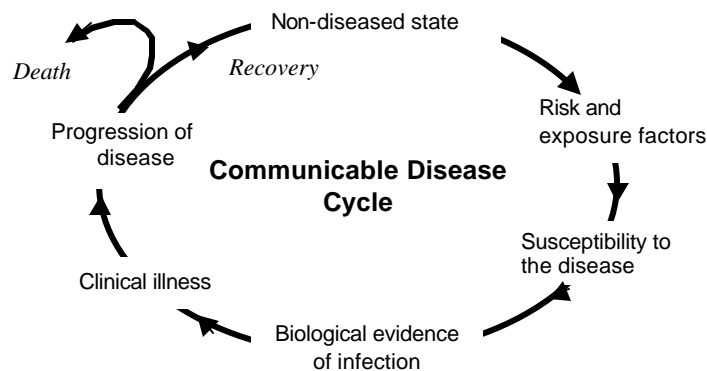
Communicable diseases do not always develop in the same way in susceptible hosts. Some diseases produce more non-clinical cases (e.g., polio, tuberculosis), while other diseases produce more clinical cases (e.g., measles). However, once exposed, even people *without* clinical or biological signs of infection are capable of spreading the disease to other susceptible hosts. Such people are known as **carriers**.

Control of Communicable Disease Outbreaks

To improve the health of displaced populations in developing countries, disease control programs need to focus on the communicable diseases that cause the highest rates of illness and death within a community. The following approach may be appropriate for disease control programs:

1. **Preventing Communicable Disease Outbreaks**
   The goal of prevention is to preserve the health of displaced persons by predicting and — to the extent possible — lessening the impact of any possible outbreak of disease. Preventive measures focus on the initial stages of the communicable disease cycle, namely *risk and exposure factors* and *susceptibility to the disease*, as follows:

   a. *Prevent the development of infectious agents that can attack susceptible individuals* —
      Since this may be difficult, minimise the multiplication of infectious agent, e.g., by chlorinating water, disposing of human faeces properly, and draining wastewater.

   b. *Minimise opportunities for exposure to infections* —
      Interrupt disease transmission by treating or isolating infected persons and improving water sources and shelters.

   c. *Reduce susceptibility to infectious diseases* —
      Improve a population's immunity by promoting better nutrition, immunisation, and others means of self-protection.

2. **Managing Communicable Disease Outbreaks**
   Managing communicable disease outbreaks focuses on controlling the more advanced stages of the communicable disease cycle, namely the *biological evidence of infection, clinical illness*, and *progression of disease* in infected persons. Possible outbreak control measures include the following:

   a. *Primary Prevention* — preventing the development of biological and clinical signs of disease by immunising susceptible people, chlorinating water, practising good sanitation, etc.

   b. *Secondary Prevention* — preventing mild illness from becoming more serious by diagnosing early and treating with antibiotics (where appropriate) and supportive care.

   c. *Tertiary Prevention* — preventing or minimising disease complications by referring or treating individuals with cerebral malaria, tuberculosis, severe malnutrition, etc.

MAJOR DISEASE THREATS IN EMERGENCIES

Displaced populations may be at increased risk of illness and death from many types of communicable diseases—*diseases possible*. Depending on the local environment, some diseases are more likely to occur in an area than others—*diseases likely*.

The following table defines the diseases that are possible and likely to occur in emergency situations. Among all possible and likely diseases, those that commonly occur among the host population have the potential to spread to the displaced population and cause major outbreaks (appearing in bold in the table). Diseases that appear in bold in the table will be the main focus for the remainder of this chapter.

Table 7-2: Overview of Possible and Likely Diseases During Emergency Situations

TRANSMISSION	DISEASES POSSIBLE	DISEASES LIKELY
AIR-BORNE	ARI Measles Meningitis Pertussis Tuberculosis	**ARI** **Measles** **Meningitis** Pertussis **Tuberculosis**
FAECAL OR FAECAL-ORAL	Amoebae Cholera Diarrhoea Dysentery Giardia Hepatitis Parasites: round/hook worm Typhoid	**Cholera** **Diarrhoea** **Dysentery** Parasites: round/hook worm
SEXUALLY TRANSMITTED INFECTIONS (STIs)	Syphilis Chancroid Gonorrhoea Chlamydia Trichomonas Others: HIV	Syphilis Chancroid **Gonorrhoea** Chlamydia Trichomonas Others: **HIV**
VECTOR BORNE	Malaria Relapsing fever Sleeping sickness Schistosomiasis Typhus Yellow fever Dengue Leptospirosis	**Malaria** Relapsing fever Typhus

Outbreaks of communicable diseases may occur among displaced populations at any time. However, the main causes of illness and death during the acute emergency phase are **acute respiratory infections (ARI)**, **measles**, **diarrhoeal diseases**, and **malaria** (in areas where it is endemic malaria), whereas tuberculosis, meningitis, and other diseases may become a bigger problem during the post-emergency phase (see exhibits below). In addition to these diseases, other communicable diseases, such as hepatitis, typhoid fever, and yellow fever may also cause outbreaks among displaced populations.

Figure 7-3: Morbidity reports from Kigoma Refugee Camps   *Source: WHO/UNHCR*

OPD Attendances by Cause in 8 Refugee Camps in Kigoma, Tanzania, Nov 1997 Population 240,000

76% Malaria, 11% LRTI, 11% Watery diarrhoea, 2% Bloody diarrhoea, 0% Malnutrition, Measles/Meningitis

Inpatient Admissions in 8 Refugee Camps Kigoma, Tanzania, Nov 1997 Population 240,000

64% Malaria, 19% LRTI, 8% Watery diarrhoea, 7% Bloody diarrhoea, 2% Malnutrition, Other (Wounds/AIDS/TB)
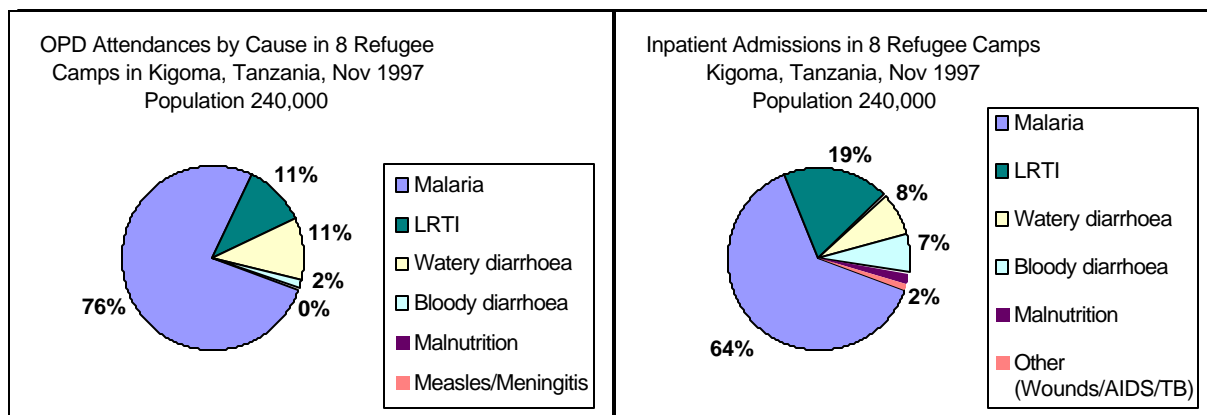
Acute Respiratory Infections

Acute respiratory infections (ARI) are the leading causes of illness in developing countries, particularly among children less than five years. Many children have 4-6 episodes of ARI per year. Death may occur when children develop pneumonia, measles, or whooping cough. About four million children die every year from pneumonia, most of them less than 2 months of age. [2]

Although many disease pathogens can cause ARI, bacteria and viruses together account for 75% of all deaths from pneumonia. Specific disease pathogens for ARI include:

- **Bacteria** — *Streptococcus pneumoniae, Haemophilus influenza*
- **Viruses** — measles, respiratory syncitial virus (RSV), para-influenza, adenovirus, rhinovirus, which invade any part of the respiratory tract. [3] [4]

The following factors may increase the likelihood of transmission and poor outcome from ARIs:

- **Environment** — insufficient shelter, indoor air pollution (smoke from cooking fuel and cigarettes), overcrowding, and reduced access to health care.
- **Host** — age (less than 2 years and above 65 years), low birth weight, lack of breast-feeding, malnutrition, vitamin A deficiency, incomplete immunisation, and lack of maternal education.

Acute respiratory infections can affect one or more parts of the respiratory system as follows:

- **Upper respiratory tract** — nose, pharynx, epiglottis or middle ear
- **Lower respiratory tract** — larynx, trachea, bronchi, lungs

As a result, people with ARI may show a variety of clinical features, such as runny nose, sore throat, cough, difficult breathing, or ear problems. However, a few children with cough may develop acute lower respiratory infections, particularly pneumonia (an acute infection of the lungs). Severe pneumonia can lead to death either from lack of oxygen, or infection of the bloodstream (called sepsis or septicaemia). The following table summarises the classification of ARI based on the main symptoms. [5]

Table 7-3: Clinical Presentation of ARI

Main Symptoms	Classification of ARI
Cough or difficult breathing	- No pneumonia - Pneumonia - Severe pneumonia - Very severe disease (severe complications of measles, whooping cough, diphtheria)
Ear pain or discharge	- No ear infection - Mastoiditis - Acute ear infection - Chronic ear infection
Sore throat	- Streptococcal sore throat - Throat abscess

Source: WHO – IMCI

The remainder of this chapter will focus on ARI that cause high morbidity and death, namely those characterised by cough or difficult breathing.

Measles

Measles remains a major childhood killer, accounting for more deaths than any other vaccine-preventable disease. In 1995, measles caused an estimated 435,000 deaths or about 50% of childhood deaths world-wide, most of them in Africa.[6] Despite efforts of the global Expanded Program of Immunisation (EPI), measles is still endemic in many developing countries, especially where conflict prevents routine immunisation.[7]

Measles is an acute infection of the measles virus, *Morbillivirus* of the family *Paramyxoviridae*. The disease is spread through close respiratory contact with contagious air droplets. Infected persons can transmit the disease to susceptible hosts even before the appearance of the measles rash. Life-long immunity is acquired after measles infection. Normal case fatality rates for measles range between 3-5%. However, among displaced populations, the case fatality rate ranges between 10-30%, but can be as high as 50%.[8] [9]

Outbreaks of measles commonly occur in refugee settings, especially during the acute emergency phase. The following factors may promote the transmission and poor outcome from measles:

- **Environment**: Overcrowding increases the risk of secondary infection, which increases the severity of disease in all age groups.[10] Health workers may fail to recognise measles cases and not give proper care to people with severe infection. [11] [12] General lack of awareness about measles within the community results in failure to seek appropriate health care for the sick and the spread of disease to others.

- **Host**: All unvaccinated persons are at risk of developing measles, but the risk of death is highest among children between the age of 6 months and 5 years. Malnutrition, chronic vitamin A deficiency, and pre-existing diseases increase the risk of death from measles by decreasing the body's immunity.

Measles can affect many body systems and most deaths occur due to secondary infections of the respiratory system and/or gastrointestinal tract (GIT). This is summarised in the table below:

Table 7-4: Clinical Presentation of Measles

Clinical Measles	Complications of Measles
• Prodromal fever • Conjunctivitis • Cough • Koplik spots • Measles rash	• Respiratory — croup, bronchiolitis, pneumonia, **bacterial super-infections** • GIT — diarrhoea, **severe dehydration, malnutrition** • CNS — convulsions, **encephalitis** • Blood — anaemia • Skin — mouth ulcers • Eyes — infections, blindness (Vitamin A deficiency) • ENT — middle ear infections, deafness

Note: *Very sick children are more likely to develop and die from the viral complications and secondary bacterial infections that appear in bold letters in the above table. Severely malnourished children may have a milder rash but more severe disease.*

Malaria

In the last decade, the number of malaria cases has risen at an alarming rate, particularly in Africa. WHO estimates there are 300 million malaria cases annually, resulting in 1.1 million deaths, of which 86% occur in sub-Saharan Africa, about 71% of them among children less than 5 years of age. Between 1994 and 1996, outbreaks of malaria in 14 countries in sub-Saharan Africa caused an unexpectedly high number of deaths, many in areas previously free of the disease.[13]

Epidemics of malaria have been reported among displaced populations, with incidence rates ranging from 70 to 600 per 1000 population.[14] [15] [16] From late 1997 through 1999 malaria epidemics occurred across refugee camps and host towns in north-eastern Kenya, western Kenya, Somalia, DRC and southern Sudan. Death

rates were reported as high as 13 deaths per day per 10,000 people in NE Kenya amongst Somali refugee communities in early 1998 following El- Nino rains.[17]

Malaria is an illness that is caused by malaria blood parasites. There are four species of malaria parasites: *Plasmodium vivax*, *P. ovale,* and *P. malariae* or *P. falciparum.* In sub-Saharan Africa over 90% of infections are due to *P.falciparum*, whereas in emergencies in other parts of the world e.g., East Timor, there may be different infection levels for each species and a few cases may have mixed falciparum and vivax infections. Most deaths due to malaria are caused by *P. falciparum* (a small percentage of the total deaths from malaria are caused by *P. vivax*, predominantly amongst the very young and very old).

The malaria parasite is usually transmitted through the bite of an infected female anopheles mosquito, but transmission through blood transfusions may also occur. Factors favouring the spread of malaria in refugee settings include:

- **Agent**: Parasite breeding may increase due to changes in the environment, inadequate malaria control measures, or increasing resistance to anti-malarial drugs following wide-spread self-treatment.

- **Environment**: There may be increased opportunities for infection due to insufficient shelter, overcrowding, weather changes, or settlements being located too close to surface water sources. The risk of death is high where appropriate treatment for malaria is not available.

- **Host**: Displaced populations may be more susceptible to infections due to malnutrition or low immunity (if they migrated from non-endemic to highly endemic areas).

With the exception of severe malaria, which is caused by *P.falciparum*, it may be difficult to distinguish infections due to the four malaria species based on clinical symptoms alone. Not everyone infected with malaria parasites will develop clinical malaria, as this depends on the level of the host's pre-existing partial immunity. The following table summarises different clinical presentations of malaria:

Table 7-5: Various Clinical Presentations of Malaria

PRESENTATION	UNCOMPLICATED MALARIA	COMPLICATED MALARIA
Parasite species	*P. falciparum, P. malaria, P. ovale, P. vivax*	Only *P. falciparum*
At risk group	Very young and very old, people with concurrent health conditions. Displaced people of all ages and sexes with low or partial immunity if they move from a low to a high transmission area	Infants and young children, malnourished individuals, pregnant women, immuno-compromised adults. Displaced people of all ages and sexes with low or no partial immunity if they move from a low to high transmission area
Clinical Features	• Typical malaria: fever and shaking, chills, alternating with no symptoms. • Other symptoms: muscle/joint pains, nausea, vomiting, anaemia, enlarged spleen.	• Typical malaria may or may not be present. • Other symptoms:* confusion, drowsiness, extreme weakness, cerebral malaria, generalised convulsions, severe anaemia, metabolic acidosis with respiratory distress, jaundice, high fever, acute pulmonary oedema, ARDS, abnormal bleeding, algid malaria*, renal failure, haemaglobinuria, hyperparasitaemia.[18]

* These manifestations can occur singly or, more commonly, in combination in the same patient
** Circulatory collapse, shock, septicaemia

Many infected people do not show typical signs and symptoms of malaria, particularly those who are partially immune or have been taking anti-malarial drugs. Falciparum malaria can be fatal, even in cases without drug resistant malaria.

Note: *Other infections can cause clinical illness that appears to be malaria. However, in endemic areas where laboratory tests are not available, all patients with fevers should be suspected of having malaria.*

For more information about the *vector* that transmits the malaria parasite and control measures, please refer to the *Vector Control* chapter.

Meningococcal Meningitis

Outbreaks of meningococcal meningitis can occur in any part of the world. However, major outbreaks occur mainly within the semiarid areas of sub-Saharan Africa, often known as the "African meningitis belt," which extends from Ethiopia in the east to Senegal in the west. In these areas, sporadic infections occur in seasonal cycles, while large-scale outbreaks have been reported every 8–12 years during the past 50 years. Meningitis epidemics often reach their peak after 12 weeks and last about 6 months on average, with or without intervention.[19]

Due to climatic changes, increased mobility of populations, and adaptation of the bacteria species, shorter intervals have been observed between outbreaks since the 1980s. These outbreaks have also occurred beyond the meningitis belt. Attack rates of meningitis during major outbreaks in Africa range between 100-800 per 100,000 population. Several meningitis outbreaks have been reported among displaced populations in Malawi, Ethiopia, Burundi, and Zaire.[20] These outbreaks have not been confined to the displaced population, but have been widespread through the whole area.[21]

Meningitis is the most important bacterial infection of the central nervous system. Large outbreaks of meningitis are mainly caused by *Neisseria meningitidis*, better known as meningococci, types A, B, and C. 90% of outbreaks are caused by meningococci type A.

Note: *Meningitis due to other micro-organisms (viruses, fungi, TB, etc) does not cause epidemics.*

The disease is transmitted by direct contact with respiratory droplets from the nose and throat of infected people.[22] [23] While mainly a disease of very small children, meningitis also affects older children and young adults (up to 30 years), especially those living in crowded conditions.[24] The case fatality of meningitis depends on the time between the onset of the clinical disease and the start of proper medical care. Untreated meningitis has a case fatality rate of 50%, which can drop to 10% with treatment.[25]

The following risk factors may increase the transmission and risk of death from meningococcal meningitis:

- **Agent**: The meningococci may develop resistance to commonly used antibiotics.

- **Environment***:* Opportunities for infection are increased by overcrowding, the dry season, in endemic zones, insufficient hygiene, poor housing, limited access to health services, and delayed detection of outbreaks.

- **Host***:* The population may be more susceptible to infection due to pre-existing infection or malnutrition. Children less than one year are most susceptible to infections.

Meningococcal disease may either present as *meningococcal meningitis* (more common, especially in epidemics) or *meningococcal septicaemia* (not common in epidemics, but highly fatal). Both forms of the disease may be present in an individual at the same time. A classic case of meningococcal meningitis is easily diagnosed. The following table summarises the clinical presentation of meningococcal meningitis:

Table 7-6: Clinical Presentation of Meningococcal Meningitis

Typical Presentation	Atypical Presentation (Infants under 1 year)
Acute onset of intense headache, high fever, nausea, vomiting, stiff neck, photophobia, impaired consciousness, convulsions, coma.	Irritability, refusal to feed, vomiting, fits, lethargy, bulging fontanel. **Note***: Onset is not always rapid. A stiff neck may be absent.*

Note: *Meningococcal septicaemia is difficult to diagnose outside an epidemic since the stiff neck symptoms are usually absent and the rash or purpura may not be obvious.*

Tuberculosis

Tuberculosis (TB) is a major cause of chronic illness in many parts of the world, accounting for 25% of all avoidable deaths in developing countries. About one-third of the world's population is infected, and each year there are nine million new cases. 95% of TB cases reside in developing countries. Of these cases, 75% are within the economically productive age group.[26]

Over 85% of refugees originate from, and remain in, countries with a high prevalence of TB, for example:

- In 1989, 25% of all adult deaths in one refugee camp in Somalia were due to TB.

- In 1990, 38% and 50% of all adult deaths in two camps in Eastern Sudan were due to TB.[27]

- In Kenya, the incidence of new patients with infectious TB in refugee camps was 4 times the rate of the local population. This placed an extra burden on the Kenyan TB program.

Tuberculosis is caused by *Mycobacterium tuberculosis.* Infected individuals release contagious droplets when they cough, talk, or sneeze. These droplets can be inhaled by susceptible adults and children. As long as viable tubercle bacilli are being discharged in the sputum, the disease is communicable. People with laryngeal TB are highly contagious. The most dangerous period for developing clinical disease is the first 6–12 months after exposure.[28]

The following factors increase the spread of disease or development of disease complications:

- **Agent**: Transmission of tuberculosis depends on both the number and virulence of bacilli released. In addition, there is an increase in multi-drug resistant infections, mainly as a result of incorrect or incomplete treatment.[29]

- **Environment**: Poor living conditions with overcrowding and inadequate ventilation can increase the spread of infectious agents from infected persons to susceptible hosts. Lack of access to clinical and diagnostic services results in delayed diagnosis and, therefore, treatment is delayed also.

- **Host**: The risk of infection is highest in children less than 3 years of age. It is lowest in late childhood and becomes high again among adolescents, young adults, and the very old. Young children may die from military TB or TB meningitis. The risk of death from TB is higher among people with HIV infection and other illnesses as well as among underweight and under-nourished people.[30]

    Note: *A large proportion of clinical disease among African adults arises from reactivation of latent infections.*

The following table summarises the clinical presentation of tuberculosis:

Table 7-7: Clinical Presentation of Tuberculosis

Pulmonary Tuberculosis	Extra-Pulmonary Tuberculosis (15-20% of cases)
May occur with or without cavities. If untreated, 50% of cases will die within 5 years, 25% will be self-cured, and 25% will remain ill with chronic infectious TB.	*Severe forms* — TB meningitis, miliary TB *Other forms* — pleural effusion, lymph nodes, pericarditis, bones and joints, peritoneum (ascites), gastrointestinal tract, kidney, skin, eyes
Signs and symptoms: Persistent cough for 4 weeks or more, loss of appetite and weight, fatigue, chills, chest pain, night sweats, blood in sputum	Signs and symptoms depend on the affected organ: Lymph nodes — pain and swelling Joints — pain and swelling Respiratory tract — pleural fluid CNS — meningitis, etc.

Note: *Children may produce no sputum and have non-specific symptoms.*

The following table summarises the epidemiology of major diseases in emergencies:

Table 7-8: A Summary of the Epidemiology of Communicable Diseases

DISEASE	AGENT	RESERVOIR	SPREAD	RISK FACTORS	INFECTIOUS PERIOD	NATURAL IMMUNITY
ARI	Bacteria, virus	Human	Airborne; Direct or indirect contact with nasal discharges	Crowding, malnutrition		Short term
Cholera	Vibrio cholerae 01 and 0136	Humans, partially salty water	Ingestion of contaminated food, water, raw or undercooked seafood	Low gastric acidity	As long as infectious agent is passed in stool, until a few days after recovery	Short term and not against other biotypes
Malaria	Plasmodium: vivax, malariae, falciparum, ovale	Humans	Mosquito bite, Blood transfusion	Lack of immunity* poor access to care, inadequate vector control	As long as patient harbours gametocyte form of parasite	Short term
Measles	Measles virus	Humans	Close respiratory contact and aerosol droplets	Crowding, Poverty	4 days before until 2 days after rash	Lifelong
Meningitis	Neisseria meningitidis Groups A, B, and C	Humans	Direct contact, respiratory droplets	Very young	Meningococci disappear from nasopharynx within 24 hours of using effective antibiotics	Group specific immunity of unknown duration
Shigellosis	Shigella dysenteriae type I	Humans	Faecal-oral	Very young/old, malnourished, having underlying disease (s)	During acute infection until 4 weeks after illness	Little or none
TB	Mycobacterium tuberculosis	Humans	Airborne droplets from sputum positive person	Malnutrition, poor access to care, low immunity	As long as sputum is positive and not on treatment	Not known, reactivation of old infection common

* Lack of immunity among people displaced from low to high transmission area is a risk factor for development of severe disease

SURVEILLANCE OF COMMUNICABLE DISEASES

Surveillance is the ongoing systematic collection, analysis, and interpretation of health data, which is essential to the planning, implementation, and evaluation of public health practice. It includes timely dissemination of data to those who need to know. The final link in the surveillance chain is the application of these data to disease prevention and control.

Successful control of communicable diseases needs good surveillance. It is not enough to achieve a high coverage of measles immunisation, chlorination of water, and other disease control measures. Without collecting and analysing health data such as disease incidence, health workers would not be able to detect outbreaks and alert people early or identify groups at increased risk of death from communicable diseases. Good surveillance can increase understanding about the changing disease patterns as well as guide disease control measures.

During emergencies, a surveillance system should be set up as soon as possible. It should focus on diseases that cause the most problems, which can be controlled by local measures. Surveillance should be carried out within health facilities as well as in the community (through community health workers). Where possible, the emergency surveillance system should be linked with the host country's surveillance system.

Surveillance Forms

A central registration system for recording *all* deaths occurring at health facilities, and within and outside the settlement should be set up. When recording morbidity information, only *newly diagnosed cases* should be tallied under the specified disease condition. Patients returning to health facilities for the same health problem within a certain period (e.g., 7 days) should be recorded as "repeat cases." Depending on the reporting frequency (daily, weekly, or monthly), this information can be summarised on mortality and morbidity surveillance forms. See the Appendix for examples of surveillance forms.

Surveillance data may be collected from the following sources of information:
- Morbidity and mortality reports from health facilities and community health workers.
- Reported deaths from central death registers, health workers, community leaders, etc.
- Laboratory reports on isolation and identification of infectious agents.
- Reports on water supply, sanitation, vector control, food distribution, etc. from health-related services.
- Rumours or reports of disease outbreaks from community leaders, schoolteachers, field supervisors, etc.

Case Definitions

Case definitions are standard criteria that help health workers decide if a person has a particular disease or health problem. Standard case definitions for common health conditions are also needed for the following:

- **Registration of cases** — Standard case definitions are used to diagnose and record common health problems affecting the population. This helps to accurately monitor the disease trends and make better estimates of required resources, e.g., malaria, pneumonia. If standard case definitions are used at several locations or by different relief agencies, disease trends among different populations can be compared.

- **Notification** — Standard case definitions are used to alert national health authorities about outbreaks of *notifiable diseases* (diseases for which regular, frequent, and timely information on individual cases is considered necessary for the prevention and control of the disease). These include measles, cholera, shigellosis, meningitis, hepatitis, tuberculosis, yellow fever, and haemorrhagic fever.

- **Defining the appropriate treatment** — Patient treatment may be prescribed according to standard case definitions, e.g., ARI, TB.

Case definitions may be classified according to different criteria, including the following:
- *Site of clinical disease* – upper or lower respiratory infections
- *Severity of disease* – uncomplicated or complicated malaria
- *Laboratory results* – suspected or confirmed meningitis
- *History of treatment* – new, relapse, treatment failure or treatment after interruption case for tuberculosis

The following table gives examples of commonly used standard case definitions. Most cases in refugee settings are diagnosed according to clinical and epidemiological information. This is because laboratory confirmation and access to x-ray facilities may not be practical, particularly in the acute emergency phase.

Note: *Use of standard case definitions will depend on the training and skills of the health workers and availability of laboratory facilities.*

Table 7-9: Sample Case Definitions

Diagnosis	Key Signs and Symptoms
Measles	Any person with a generalised maculopapular rash AND history of fever of 38⁰ C (101⁰ F) or more AND *at least one of the following*: cough, runny nose or conjunctivitis (red eyes); *OR* Any person in whom a health professional suspects measles
Acute Respiratory Infections (ARI)	An acute infection of the ear, nose, throat, epiglottis, larynx, trachea, bronchi, bronchioles or lung
• Very severe disease	A child or infant who has any general danger sign*
• Severe pneumonia	Child aged 2 months– 5 years: Cough or difficult breathing with chest indrawing Infant aged less than 2 months: Severe chest indrawing or fastbreathing**
• Pneumonia	Child aged 2 months– 5 years: Cough or difficult breathing with fast breathing** (but no chest indrawing) Infant aged less than 2 months: Since pneumonia in this age group can progress very rapidly to death, all pneumonia is considered severe
• No pneumonia: cough or cold	Child aged 2 months – 5 years: No chest indrawing, and no fast breathing** Infant aged less than 2 months: No danger signs, no chest indrawing and no fast breathing**
• Mastoiditis	A child who has tender swelling behind the ear (in infants, the swelling is above the ear)
• Acute ear infection	A child who has pus draining from the ear for less than 2 weeks, ear pain or a red immobile ear drum
• Chronic ear infection	A child who has pus draining from the ear for 2 weeks or more
• Throat abscess	A child who is not able to drink at all
• Streptococcal sore throat	A child who has tender, enlarged lymph nodes in the front of the neck and a white exudate on the throat
Malaria • Simple	Fever (axillary temperature above 37.5oC) or history of fever in the last 3 days
• Complicated	Simple malaria with altered level of consciousness, coma, convulsion, severe haemolysis, severe anaemia, organ failure
• Lab-confirmed	Simple or complicated malaria confirmed by finding malaria parasites in blood
• Cerebral malaria	Unrousable coma not attributable to any other cause in a patient with falciparum malaria
Diarrhoeal Diseases • Watery diarrhoea	3 or more liquid stools per day
• Dysentery	Diarrhoea with visible blood in stools. In some situations, the presence of blood is verified by a health worker.
Meningitis • Suspected case	Any person under 1 year: Fever WITH a bulging fontanel Any person above 1 year: Sudden onset of fever WITH a stiff neck AND/OR pettechial or purpural rash
• Probable case	Suspected case WITH turbid CSF (with or without Gram stain) OR ongoing epidemic
• Confirmed case	Suspected or probable case AND a positive CSF (culture or antigen)
Tuberculosis • New case	A patient who has never had treatment for TB or who has taken anti-tuberculosis drugs for < 4 weeks
• Relapse case	A patient who had been declared cured of any form of TB in the past by a physician, after one full course of chemotherapy, and has become sputum smear-positive.
• Treatment failure	A patient who: • while on treatment, remained or became smear-positive 5 months or later after starting treatment. • was initially smear-negative before starting treatment and became smear-positive after the second month of treatment
• Treatment after interruption	A patient who interrupts treatment for two months or more and then returns to the health service with smear-positive sputum.

Source: WHO

* Danger signs in infant aged less than 2 months — stopped feeding well, convulsions, abnormally sleepy or difficult to wake, stridor when calm, wheezing, fever or low body temperature

Danger signs in child aged 2 months -5 years — not able to drink, convulsions, abnormally sleepy or difficult to wake, stridor when calm, or severe malnutrition

** *Fast breathing* — 40 breaths per minute or more if the child is aged 12 months up to 5 years; 50 breaths per minute or more if the child is aged 2 months up to 12 months; 60 breaths per minute or more if the child is aged less than 2 months

Epidemic Thresholds

Although many risk factors may indicate a possible disease outbreak, it is difficult to predict when or where the outbreak will actually begin. Keeping track of weekly incidence rates and comparing them to those of the previous month or season may improve prediction. A simpler way of determining whether reported cases are sporadic or suggest an epidemic is to compare the disease incidence rate or **attack rate** (the proportion of those exposed to an infectious agent who become clinically ill) to the **epidemic threshold** (the minimum number of cases indicating the beginning of an outbreak of a particular disease). Standard epidemic thresholds have been defined for some diseases, including the following:

- **Measles** — A *single* case of measles is enough to signal a possible outbreak of measles. Any reported case should be followed by an immediate investigation of the age and vaccination status of the suspected or confirmed case of measles.

- **Cholera**

  In a non-endemic area, an outbreak of cholera should be suspected if:[31]
  - a patient older than 5 years develops severe dehydration or dies from acute watery diarrhoea

    <u>or</u>
  - there is a sudden increase in the daily number of patients with acute watery diarrhoea, especially patients who pass the "rice water" stools typical of cholera.

  In areas that are endemic, a cholera outbreak should be suspected if there is a significant increase in incidence over and above what is normal for the season, particularly if it is multifocal and accompanied by deaths in children less than 10 years old.[32]

- **Shigella** — An outbreak should be suspected whenever there is an unusual increase in the weekly number of patients with bloody diarrhoea or deaths from bloody diarrhoea.[33]

- **Meningitis** — There is no universal epidemic threshold for defining an outbreak. The following table summarises useful indicators of emerging epidemics for different settings:

Table 7-13: Threshold for Predicting Meningitis Epidemics in Different Settings

Setting	Threshold
Area endemic for meningitis (with populations of 30,000-100,000)	**15 cases per 100,000 persons per week in a given area,** averaged over two consecutive weeks
	an increasing proportion of patients five years or older, primarily among school children and young adults
Area where meningitis epidemics are unusual, outside the meningitis belt.	**a three-to four-fold increase in cases** compared with a similar time period in previous years
(Also where population data is not known, refugee or closed communities.)	**doubling of meningitis cases from one week to the next for a period of three weeks**
A settlement next to an area where an epidemic has been declared.	**5 cases per 100,000 persons per week**

Source: WHO

The surveillance team should be aware of the epidemic thresholds for all diseases that can cause outbreaks in the disaster location. Otherwise, an outbreak may become large scale simply because the team failed to recognise and respond to it on time. Once an outbreak of a notifiable disease is detected, it must be reported immediately to all concerned. All suspected cases should be confirmed (by laboratory, where possible) and given appropriate treatment and follow up.

(See the section on Managing Outbreaks of Communicable Diseases for details on Outbreak Investigation.)

PLANNING AND SETTING UP COMMUNICABLE DISEASE CONTROL PROGRAMS

Assessment

Planning of disease control programs should begin with an assessment, which gathers essential background information, as summarised in the following table:

Table 7-14: Summary of Background Information for Communicable Disease Control Programs

- the demographic composition of the displaced population
- the annual disease incidence rates of common diseases in the place of origin
- the annual disease incidence rates of common diseases in the host country
- the disease control policies in the place of origin
- the disease control policies in the host country
- the performance of disease control programs in the place of origin
- the performance of disease control program in the host country
- the displaced population's knowledge, cultural beliefs, and treatment of communicable diseases
- the knowledge and experience of health workers in the control of communicable diseases
- the resources available for implementing a communicable disease control program
- the capacity of local institutions and NGOs to implement a disease control program

After the assessment, the factors that promote the spread or influence the outcome of common diseases should be summarised in order to determine the appropriate control measures.

The following table gives examples of identified risk factors and recommended actions for communicable disease control after a rapid assessment:

Table 7-15: Risk Factors and Recommended Actions for Control of Priority Diseases

PRIORITY DISEASES	IDENTIFIED RISK FACTORS	RECOMMENDED ACTIONS
Diarrhoeal Diseases	Not enough latrines Poor quality water sources Contamination of stored water Poor food preparation practices	Build and keep latrines clean Chlorinate water and supply water vessels Provide soap Promote food hygiene Health education on diarrhoeal disease control
Measles	Overcrowding Low immunisation coverage Poor nutrition	Minimum living space standards (if possible) Mass immunisation campaign with vitamin A distribution to all children under 5 Carry out a nutritional survey
Acute Respiratory Illness (ARIs)	Poor shelter Lack of blankets and clothing	Provide shelter materials Provide sufficient blankets
Malaria	Non-immune refugees in malaria-endemic area Many breeding sites Interruption of vector control program Lack of or inappropriate treatment	Improve access to effective treatment Residual spraying of shelters and provide insecticide treated nets (ITNs) Give anti-malarial prophylaxis & intermittent treatment to pregnant women Manage/destroy potential vector breeding sites
Meningococcal Meningitis	Overcrowding in endemic areas	Improve ventilation Consult experts about mass immunisation
Tuberculosis	Inadequate health care Overcrowding High prevalence of HIV	Train health workers on proper diagnosis, treatment, and follow-up of cases Decrease crowding Health education on HIV/AIDS prevention

*For populations with a low level acquired immunity give prophylaxis treatment for pregnant women using either chloroquine (if not resistant) or mefloquine during 2nd and 3rd trimesters. For populations with a high level of acquired immunity, pregnant women should receive intermittent therapy. Treatment with sulfadoxine-pyrimethamine is recommended (where effective) – single doses given during the second and the third trimesters

Designing a Disease Control Program

After the assessment, representatives from the relief agency, the host authorities, and the affected community should sit together to plan the communicable disease control program. This can be carried out through the following steps:

1. **Select Priorities**

   Since it is not possible to carry out all the actions recommended by the assessment team, planners need to determine which are the priority interventions. Specific criteria can be used to rank different public health measures and determine the top priorities for a relief operation, as shown in the following table.

Table 7-16: Ranking Public Health Measures

Public Health Measure	Seriousness of Problem 1 = minor 3 = major	Ease of Implementing 1 = difficult 3 = easy	Availability of Staff 1 = few 3 = many	Cost of Implementing 1 = high 3 = low	Agency Capacity 1 = low 3 = high	Overall Score
ORT for dehydration	3	3	3	3	3	**15**
Sanitation — build latrines	3	2	3	2	2	**12**
Drill boreholes	3	1	1	2	1	**8**
Supply/treat mosquito nets	3	1	2	3	2	**11**
Measles immunisation	3	3	2	3	3	**14**
Control TB via DOTS	2	1	1	2	2	**8**

The above exercise ranks oral rehydration therapy (ORT), measles immunisation, and building of latrines as the priority measures for the relief operation.

2. Define the Goals, Objectives, and Strategies of a Disease Control Program

The ultimate goal of communicable disease control programs is to *prevent excess mortality* among the displaced population by preventing and managing outbreaks of communicable diseases. Even though preventive measures may prevent most of these deaths by reducing the incidence of disease outbreaks, they may not successfully prevent *all* outbreaks. It is important to be prepared to manage the outbreaks that do occur.

Goals
- To prevent excess morbidity and mortality due to communicable diseases.
- To reduce the morbidity, mortality, and transmission of communicable diseases.

Objectives

The overall objective of an emergency response should be to achieve a crude mortality rate of <1/10,000/day and an under-five mortality rate of < 2/10,000/day as soon as possible. More specific objectives may be set for different disease control programs, for example:

- To immunise more than 90% of all children in the target group for measles.
- To reduce the incidence of acute respiratory infections to pre-disaster levels in 3 months.
- To keep the case-fatality rate of cholera at less than 1%.
- To cure at least 85% of identified cases of TB and to detect at least 70% of existing cases.
- To ensure the concerned population has access to knowledge and the means to protect itself from HIV transmission.

Strategy

Because of limited resources, communicable disease control programs should focus mainly on diseases that cause the highest morbidity and mortality. During the acute emergency phase, the priorities of the disease control program may be limited to providing basic needs, surveillance of the top three or five diseases, and treatment of acute illnesses. Once the emergency phase is over (death rates fall below 1 per 10,000 population per day), another assessment should be carried out. If basic services are adequate for controlling common diseases but there is evidence of increasing problems due to other diseases, additional control measures may be considered. However, carrying out additional control measures should depend on the availability of resources and the future plans for the displaced population.

The following table summarises examples of disease control strategies for the acute and post-emergency phase.

Table 7-17: Examples of Disease Control Strategies for Emergencies

COMMUNICABLE DISEASE CONTROL STRATEGIES		
	Acute Emergency Phase	**Post-Emergency Phase**
Surveillance	Monitor illness and death due to • Most common diseases: ARI, diarrhoea measles, malaria • Early detection of cholera, meningitis	Monitor illness and death due to: • Most common diseases • Skin and eye infections • Urinary tract infections and STDs • Parasitic infections • TB, HIV • Malnutrition and micronutrient deficiencies
Prevention	• Sanitation • Safe and sufficient water supply • Provision of soap • Adequate food and nutrition • Shelter • Basic health care and referral of emergencies • Immunisation for measles	• EPI program (measles, diphtheria, polio, whooping cough, TB) • Vector control • Prevention and care of STDs, HIV/AIDS • TB treatment under special conditions • Meningitis immunisation under certain conditions
Case Management	• Clinical diagnosis • Use referral laboratory * • New Emergency Health Kit	• Diagnostic and treatment algorithms, e.g., IMCI** • On-site laboratory for malaria smear, stool ova/cyst, haemoglobin, gram stain, sputum smear, blood sugar, HIV test. (Blood typing and transfusions also possible) • Essential drugs and supplies (stratified for different levels)

* An on-site laboratory may be set up in the acute phase if there is a major disease outbreak or high drug-resistance (malaria, dysentery)
** Integrated Management of Childhood Illnesses

3. Develop a Plan of Action

A plan of action should be drawn for controlling all the diseases that are likely to cause high morbidity and mortality. An example of a plan of action is shown below:

Table 7-18: Example of a Plan of Action for Control of Common Diseases

DISEASE	TARGET GROUP	CONFIRMATION	PREPAREDNESS	OUTBREAK CONTROL	TREATMENT	COMMON ERRORS
Diarrhoea	Young children	History/ physical assessment	Obtain ORS	Improve sanitation	Rehydration	Emphasis on IV fluids
Measles	Young children	Diagnosis by experienced health worker	Vaccination	Mass immunisation campaign*	Treat cases, supplementary feeding	Waiting for outbreak to occur
Malaria (falciparum, vivax)	Young children, pregnant women & all non-immunes	Blood smear, Rapid diagnostic tests ("dip sticks")	Surveillance, understand disease pattern	Mosquito control	Effective anti-malarial drugs	No surveillance, failure to confirm illness
Cholera	All	Stool culture	Surveillance	Improve sanitation, water supply, hygiene	ORS, antibiotics	Reliance on vaccination as a control measure

* May be carried out too late

Because communicable diseases do not discriminate between the displaced and host populations, national health authorities must be involved in planning the communicable disease control program. The following areas should be agreed upon:

- linking the disease control program for displaced people with the national program
- treatment protocols to be used
- coverage of the local population in the communicable disease control program
- referral of seriously-ill displaced people to local hospitals
- use of host country referral laboratories
- supply of essential drugs and laboratory re-agents for health facilities of the displaced as well as the local population
- follow-up on displaced persons with chronic diseases after repatriation
- disease surveillance and program evaluation

4. Define Key Indicators for Monitoring Activities

Examples of key indicators for monitoring disease control activities are shown in the following table:

Table 7-19: Key Indicators for Monitoring Activities

DEFINING KEY PROCESS INDICATORS				
Goal	**Objective**	**Input Indicator**	**Output Indicator**	**Outcome Indicator**
Prevent excess mortality & morbidity from communicable diseases	**Immunise more than 90% of all children in target group for measles**	% CHWs trained to promote immunisations, Frequency of vaccine shortage	No. of mothers counselled on immunisation, No. of children immunised	% Children fully immunised
	Reduce deaths from diarrhoea to pre-disaster levels in 3 months	% CHWs trained in control of diarrhoea, Frequency of ORS stockouts	No. of mothers counselled on ORT, No. of mothers given ORT	% Diarrhoea cases given ORT
	Reduce prevalence of the 3 most common diseases to host country levels in 6 months	% Health workers trained in disease control, Frequency of shortage of essential drugs	No. of mothers counselled, No. of children given prescribed drugs	% Mothers comply with standard treatment

5. Estimate Resource Needs

A communicable disease control program requires many resources, including special treatment centres, drugs and medical supplies, staff (for surveillance, health care, and disease control), laboratory equipment and supplies, diagnostic and treatment guidelines, stationery, and transport.

Emergency Treatment Centres

Special treatment centres, e.g., ORS units, cholera centres, TB manyattas (huts), and shigella centres may be needed to improve treatment and limit the spread of diseases by infected persons. If the capacity of existing facilities is small, temporary facilities can be established in huts, school buildings, or tents and equipped with adequate staff and supplies. They should have facilities for hand-washing for health workers and caregivers, and also for disposing of excreta or other human waste. See the chapter on *Diarrhoeal Disease Control* for details on setting up an ORS unit.

Drugs and Medical Supplies

The amount of drugs and medical supplies needed may be estimated as follows:

1. Select the treatment regimens to be adopted (from the host or home country or the World Health Organisation), and define the specific drugs, patient categories, and dosages for the priority diseases.
2. Calculate the drug requirement per patient for each disease.
3. Estimate the number of expected cases, based on the assessment data.
4. Estimate the number of expected patients in each category.
5. Calculate the total drug requirements.
6. Add 10% for children (for tablets that can be broken) and for possible waste.
7. Add 50% for reserve stock.

Pre-packaged drug kits have been developed that may be used during the initial phase. If patients see that the drugs are effective, other patients may be encouraged to get treatment. WHO's **New Emergency Health Kit** (1998) is designed for treating 10,000 persons with common illnesses during the first 3 months of an emergency situation. It consists of 10 *basic units* and a *supplementary unit*. (See the *Incident Management System* chapter for more details on the New Emergency Health Kit.)

The following table lists the anti-infective drugs contained in these kits:

Table 7-20: New Emergency Health Kit — Anti-Infective Drugs

ANTI-INFECTIVE DRUGS	QUANTITY	MAIN INDICATION
Ampicillin or Amoxycillin	2,000 tabs (250 mg), 200 vials (500 mg/vial)	Antibacterial (only neonates & pregnant women)
Benzathine benzylpenicillin	50 vials (2.4 MIU/vial)	Antibacterial
Chloramphenicol	2,000 caps (250 mg), 500 vials (1 g/vial)	Antibacterial
Chloroquine *	10 x 2,000 (150 mg)	Antimalarial
Cotrimoxazole*	10 x 2,000 tabs (400 + 80 mg)	Antibacterial***
Mebendazole*	10 x 500 tabs (100 mg)	Intestinal antihelminthic
Metronidazole	2,000 tabs (250 mg)	Antiamoebic, antigiardiasis
Nystatin	2,000 tabs (100,000 IU)	Antifungal (oral thrush)
Phenoxymethylpenicillin	4,000 tabs (250 mg)	Antibacterial
Procaine benzylpenicillin**	1,000 vials (3-4 MU/vial)	Antibacterial
Quinine sulfate,	3,000 tabs (300 mg), 100 amps (300 mg/ml)	Antimalarial (cerebral or resistant malaria)
Sulphadoxine + pyrimethamine	300 tabs (500 + 25 mg)	Antimalarial
Tetracycline (or Doxycycline)	2,000 caps or tabs (250 mg)	Antibacterial, antimalarial (cholera and chlamydia)

Source: WHO, 1998

* Most drugs listed above are in the supplementary unit except these drugs, which are from the basic units.
** Procaine penicillin fortified (PPF) can be used as an alternative to this drug in many countries.
*** Wide-spread drug resistance by shigella

Reviewing the amount of drugs used from the New Emergency Health Kit during the first three months helps in estimating the essential drugs required for the post-emergency phase. However, these kits do not normally provide an adequate supply of effective antimalarial drugs for use in emergencies. A supplementary order of an effective antimalarial drug will be needed to ensure an adequate treatment response.[1] Other kits have been designed for managing specific disease outbreaks e.g., the **Cholera Kit** and **Shigella Kit**. For details about these kits, please refer to the *Diarrhoeal Disease Control* chapter.

Setting Up a Disease Control Program

Control of communicable diseases should be implemented within the Primary Health Care (PHC) framework. In this framework, health care is provided at various levels, including:

- *The family* is responsible for carrying out preventive health measures (e.g., getting immunised, personal hygiene, etc.) and for ensuring sick family members take their medication and oral rehydration therapy.

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[1] This order will vary with location e.g. in most sub-Saharan Africa, sulphadoxine-pyrimethamine (SP) alone may still be effective and can be given in one dose. Chloroquine is not recommended for use in the acute emergency phase as the regimen is too long to ensure good compliance, health workers may only see patients once, and resistance occurs too commonly to take chances in vulnerable populations with no monitoring. In multi-drug resistant areas in SE Asia agencies will need to use combination therapy of an artemisinin derivative with a second drug such as mefloquine or SP.

- *The community level* – Most disease control activities should be carried out at this level. Community health workers can conduct home-visits to identify and report cases, refer those in serious condition, and ensure compliance to treatment. In addition, they can provide health education and promote preventive health measures, e.g., breastfeeding, hand-washing, etc.

- *The health post or dispensary* can be equipped to treat uncomplicated illness and underlying diseases, give vaccinations, and supervise community health workers.

- *Health centres* may be equipped to treat patients with minor complications of communicable diseases.

- *Referral hospitals* are necessary for treating the few people who develop major complications as well as providing referral laboratory services.

- *Special treatment centres* may be set up at the health centre or referral hospital to limit the spread of highly communicable diseases, e.g., cholera, tuberculosis.

See the *Primary Health Care (PHC)* chapter for more details on the Primary Health Care framework.

Promoting Community Participation

Success in disease control depends on the participation of the population at risk. Some preventive and control measures may require long-term change in behaviour. This can only be achieved through the co-operation of the displaced population. The following sequence might be used to set up a community-based disease control program:

1. Identify and prioritise the common health problems with the community.
2. Study a community's behaviour and customs that relate to the identified disease problem (risk/ protective factors).
3. Define the aims for the control of communicable disease program, e.g., hand washing, environmental hygiene, bucket chlorination, outreach program, etc.
4. Determine the most appropriate ways of promoting community-based measures that are acceptable to the community, e.g., by using community health workers and religious leaders.
5. Carry out the community-based disease control measure.
6. Evaluate the impact of a community-based disease control measure.

Training Staff

Training is critical for effective control of communicable diseases. It should be organised locally, using existing materials that are adapted to the local setting. All concerned staff should have a basic knowledge in the following:

- Methods of transmission of common diseases
- Prevention and control of communicable diseases, including community education
- Clinical signs and symptoms of common diseases in children and adults
- Diagnosis of communicable diseases, including the role of the laboratory
- Supportive and specific treatment, including dosages and adverse effects of drugs
- Patient education and follow-up
- Record keeping and medical supplies management
- Indicators for monitoring and evaluating disease control activities

Record Keeping and Reporting

Health workers must be trained to keep accurate records and to report the information as required. Good record keeping is essential for following up patients and monitoring their care. The following records should be kept:

- Individual patient records – books or health cards
- Health facility registers for all consultations, admissions, discharges, and death
- Central register for specific diseases – e.g., TB, cholera
- Laboratory register
- Pharmacy register

Note: *Data in the above records should be regularly analysed and the findings shared with all concerned persons.*

Supervising Staff

Successful disease control requires good supervision of health workers in the following areas:

- All health workers should follow **universal precautions** in order to prevent and limit the spread of infections.
- Records should be reviewed regularly to ensure that patients needing hospitalisation are referred in a timely manner.
- Appropriate treatment should be prescribed for all patients diagnosed with common diseases in order to ensure a successful outcome (cure).

The following table identifies common problems of poor treatment outcome and possible solutions.

Table 7-21: Common Problems of Poor Treatment Outcome and Possible Solutions

IDENTIFIED PROBLEMS	POSSIBLE SOLUTIONS
Patients delay seeking treatment at health facilities.	Identify and address any barriers to seeking or receiving treatment at health facilities.
Delays in making the correct diagnosis.	Train and supervise health workers in following standard diagnostic algorithms. Address identified problems.
Inappropriate prescriptions.	Establish and enforce standard treatment protocols. Monitor patient treatment registers. Promote health worker self-assessment.
Health workers not following up defaulters.	Increase health worker understanding of importance of tracing defaulters and address any other problem.
Patients do not understand their health problem and do not value the prescribed treatment.	Health workers should educate patients on the nature of their disease and value of treatment.
Patients not completing the full treatment.	Follow-up all patients taking medication until they complete the prescribed treatment. Improve health worker communication practices.
Patients trading their drugs and materials.	Investigate thoroughly and improve patient education.
Disease agents showing resistance to drugs.	Carry out appropriate laboratory tests and revise treatment protocols according to the local situation.
Poor quality medications are being used.	Review the drug procurement procedures.
Slow dispensing of medications at health units.	Enhance training and staff morale. Improve patient flow.

PREVENTING OUTBREAKS OF COMMUNICABLE DISEASES

During emergencies, the priority should be to prevent rather than manage outbreaks of communicable disease. More deaths can be averted through preventive measures, such as:

1. **Hygienic Disposal of Human Faeces**
   Hygienic disposal of human faeces is probably the most important preventive measure during the initial stage of emergencies. This requires setting up sanitary systems that are adapted to the local situation and culture. Defecation fields or latrines should be located at a safe distance from the shelters, but not too far from the population. *Everyone* should be encouraged to use the latrines, and prompt disposal of children's faeces should be emphasised. (See the *Environmental Health* chapter for more details.)

2. **Sufficient and Safe Water Supply**
   If one has to choose between water quantity and water quality, it is more important to provide a sufficient quantity of water. For diarrhoeal control, provide at least 15 litres of safe water per person per day as soon as possible. If drinking water is obtained from surface water, these sources should be protected from faecal contamination. If all local water sources are suspected of being heavily contaminated, potable water may be trucked in as a short-term measure until the local water supply is made safe.

   A safe water supply does not guarantee that the water will be safe when it is consumed. Bucket chlorination may be carried out if the risk of water being contaminated after collection is high. It may also be necessary to distribute water containers if most households do not have enough. The incidence of diarrhoeal diseases has been found to be lower among households storing water in narrow-mouthed vessels. These vessels prevent hands from coming in contact with the water. If possible, water for washing should be stored separately from drinking water. (See the chapter on *Environmental Health* for more details.)

3. **Hand-Washing With Soap**
   Displaced people will wash their hands more frequently if they have sufficient water within easy reach. In addition, the spread of diarrhoea and parasitic infections can be reduced more effectively if people wash their hands with soap before preparing meals, before eating, after defecating, and after disposing of children's faecal material. Studies of Mozambican refugees in Malawi have found that households with soap were at lower risk of contracting cholera than those without. Therefore, soap must be part of the general ration to all households, particularly during epidemics.
   Note*: If soap is temporarily not available, ash or earth can be used (as an emergency measure) to scrub the hands.*

4. **Health Promotion**
   Promoting good health is the key to increasing a community's awareness and co-operation in disease prevention. The affected community should be aware about how common diseases spread, the early signs of possible infection, and the danger signs for seeking immediate medical attention (particularly in children). Stressing the importance of taking the full course of treatment, e.g., ORS, antibiotics, etc. will assure full recovery and reduce drug-resistance, particularly for dysentery, malaria, and tuberculosis.

   Educational messages should be linked with preventive measures that are being implemented, e.g., latrine construction, chlorination of water, soap distribution, immunisation campaigns, etc. In addition, these messages should be adapted to the local situation and the cultural beliefs and practices of the target population. Any practices that increase the spread of disease or interfere with the care of infected individuals should be addressed with caution.

5. **Food Safety**
   Health education campaigns should encourage people to only eat raw foods that are safe, to protect their food from contamination, to cook it thoroughly, and eat it while it is hot.

6. **Adequate Living Space**
Where possible, the minimum standards for living space (at least 3 m^2 per person) must be met to reduce exposure to ARIs, measles, tuberculosis, parasitic infections, and diarrhoeal diseases. Where over-crowding is unavoidable, it is important to have adequate ventilation to reduce the risk of developing respiratory diseases due to indoor pollution (smoke from cooking fuel and tobacco).

7. **Adequate Shelter**
Appropriate shelter material, including blankets, suitable clothing, and mosquito nets must be provided when needed.

8. **Nutrition**
Because communicable diseases worsen the nutritional status of infected persons, and malnourished individuals are more susceptible to infections, adequate nutrition is essential for improving the immunity of displaced people against infections. Good nutrition is particularly important for recovery from measles and tuberculosis. Prevention through nutrition includes:

- *Adequate intake of micronutrients* through a varied diet, fortified foods, or micronutrient supplements (e.g., vitamin A, iron, folate) can prevent complications of measles (blindness), malaria (anaemia), and other acute infections, particularly among children and pregnant women.

- *Promotion of breast-feeding* helps to reduce the incidence of communicable diseases, particularly diarrhoea, among children less than 2 years. All healthy mothers should be encouraged to exclusively breast-feed their babies during the first 6 months of life, and continue breast-feeding until the child is 2 years of age. Donation of milk products should be restricted, and baby bottles should never be distributed in the camp. (See the *Food and Nutrition* chapter for more details on nutrition and infant feeding in emergencies.)

9. **Medical Interventions**
Outbreaks of communicable diseases may occur where health services have been disrupted. The following medical measures may prevent these outbreaks:

- *Immunisation* is the most cost-effective way of preventing outbreaks of vaccine-preventable diseases, such as measles or meningitis. Mass immunisation against measles combined with vitamin A distribution should target all children between the ages of 6 months and 15 years. Experts may be consulted about the value of carrying out mass immunisation during meningitis outbreaks, since it takes one week for the vaccine to confer adequate protection. For more information on vaccines, and the immunisation response to measles and meningitis, see the chapter on *Vaccinations*.

- *Drug prophylaxis* is giving drugs (usually antimicrobials) in order to prevent the development or progression of clinical illness in infected persons and to stop the disease from being transmitted to others. Drugs may be given to the entire population (*mass chemoprophylaxis*) or only to those who are at increased risk of developing the disease or death (*selective chemoprophylaxis*). However, a drug prophylaxis program requires the following:
  - reasonably stable population
  - adequate medical support structure
  - capacity to carry out health education
  - proper administration and use of the right drug

  Because distributing drugs is resource-intensive and not all people will take the drugs as required, the decision to carry out mass or selective drug prophylaxis will depend on the local setting, the identified risk factors, and the availability of resources. In malaria control, mass treatment or prophylaxis should always be combined with vector control measures to reduce the spread of any drug resistant parasites.

- *Early diagnosis and treatment of sporadic infections* is only possible where a population has access to health care with a functioning referral system. Health workers should be trained to manage patients with common diseases such as ARIs, measles, and malaria. CHWs should be trained to follow-up patients on long-term treatment, e.g., tuberculosis cases, in order to ensure compliance and to control the spread of disease.

10. **Handling Dead Bodies**
Displaced persons who die from cholera or shigella should be buried quickly and close to the place of death. Ritual washing of the dead should be discouraged during outbreaks as well as funeral feasts and gatherings, unless all contaminated clothing and the environment is disinfected first.

11. **Vector Control**
Vector control measures are necessary in order to reduce the transmission of vector-borne diseases such as malaria. For an overview of specific vector control measures, see the *Vector Control* chapter.

Because most preventive measures reduce the incidence of more than one disease, they should be carried out as early as possible, whether or not there is a threat of a disease outbreak. Priority should be given to community-based measures, since they are usually more effective than health facility-based measures. However, getting the affected community to participate in disease prevention is not simple because the benefits of disease prevention are not always obvious.

MANAGING OUTBREAKS OF MAJOR COMMUNICABLE DISEASES

Many factors can cause failure in disease prevention and lead to disease outbreaks, including:
- lack of political commitment and funding
- poor surveillance systems
- poor organisation of services
- unskilled health workers
- inadequate or incomplete treatment of cases
- over-reliance on preventive measures, e.g., chlorination of water, immunisations, etc.

Responding to a Disease Outbreak
Once the surveillance team suspects a possible disease outbreak, an investigation and basic control measures should be carried out. An outbreak response committee should be formed to co-ordinate all activities. This committee may include representatives from the affected community, health facilities, disease surveillance and control units, reference laboratory, and sometimes the livestock and veterinary sectors.

Outbreak Investigation
Objectives should be set for investigating a possible outbreak, for example:
- To confirm and establish the extent of the disease outbreak.
- To identify the cause(s) and ways of preventing further transmission of the disease.
- To define the best means of dealing with the outbreak.
- To determine ways of preventing future outbreaks.

The investigation should be approached in a systematic way, as follows:[34]

1. **Confirm the Epidemic** — The first report of a communicable disease outbreak should be detailed. This may help determine whether or not the epidemic really exists. "False epidemics" may be the result of changes in data collection and reporting, new treatments being introduced, improved access to health facilities, etc. The existing surveillance system may be revised, if necessary, to detect all new cases. Compare the incidence of the disease with that of previous seasons to check if the number of cases exceeds the expected level.

2. **Verify the Diagnosis** — Standard clinical or laboratory methods should be used to diagnose the cause of outbreak. An interim diagnosis, e.g., "cholera or food poisoning," may initially be used to identify the type of resources needed for the investigation.

3. **Identify the Affected Persons and Their Characteristics** — Establish a standard case definition for identifying all possible cases. Collect and record the clinical history of the index case(s) and describe the outbreak in terms of *time, place,* and *person.*

    Reviewing the age and gender distribution, immunisation status, and other characteristics will help identify those at greatest risk. Mapping the location of each case will help identify clusters of patients and a common source of infection. These maps should be used to plan and co-ordinate control measures.

4. **Define and Investigate the Population at Risk** — Using the information that has been collected, calculate the attack rate and graph the number of reported new cases per day or week. An "epidemic curve" can bring to light the onset and magnitude of the epidemic, the incubation period, and how the disease spreads (single source, multiple sources, etc.).

    Figure 7-4: Example of Epidemic Curve
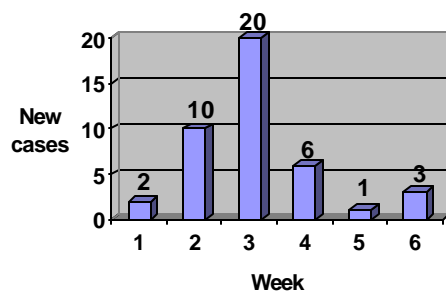
5. **Formulate a Hypothesis About the Source and Spread of the Epidemic** — In order to explain why, when, and how the epidemic occurred, the situation or conditions before the outbreak should be understood. Understanding the epidemiology of communicable diseases may help to identify the cause of the outbreak (refer back to Table 7-8).

6. **Verify the Causative Disease Agent and the Mode of Spread** — The probable cause of the outbreak needs to be identified in order to select more effective control measures. A case-control or other type of study may be carried out to test theories about the disease agent and mode of spread. In addition, laboratory investigations may be conducted for affected cases and contacts, where possible. Environmental sampling with laboratory analysis may be done to confirm a suspected source of infection.

7. **Control the Epidemic** — Throughout the investigation, efforts should focus on limiting further spread of the disease. If resources are limited, then an epidemiological approach can be used to identify appropriate control measures and target them to the groups at highest risk. (See the next section below for further details on the Control of Specific Disease Outbreaks.)

8. **Writing a Report** — Regularly document and report the progress of the outbreak investigation and response to all concerned. The affected community needs to be aware of the nature of the outbreak and how they can protect themselves or assist affected people. Local health authorities need the information to

plan appropriate control measures and ensure they are better prepared for future outbreaks. Reports in the media and medical journals may increase external support and improve responses to future outbreaks.

(See the *Disaster Epidemiology* chapter for more details about "Investigating an Outbreak.")

Control of Specific Disease Outbreaks

Once the investigation team confirms an epidemic, the most effective ways of reducing the spread and case fatality of the disease outbreak should be started, using available resources. All suspected cases should be managed in a standard manner. This will minimise the spread and severity of disease. In addition, disease specific control measures should be started that target those who are at highest risk of dying from the disease, e.g., children less than five years.

Case management does not have to be limited to hospitals, but may be carried out at two levels:

1. *Community-based care* — Community Health Workers (CHWs) can be trained to identify cases and provide simple treatment, e.g., ORT. They can refer serious cases to the health facilities.

2. *Facility-based care* — Health facilities are necessary to provide the following:
    - Basic health care that is easily accessible for prompt treatment of underlying diseases.
    - Special health facilities for managing cases with highly communicable diseases.
    - Laboratory services may be set up during the post-emergency phase and used for diagnosing and following-up severe cases, identifying the causative disease agent and vector species and assessing drug sensitivity.

Acute Respiratory Infections

Most episodes of ARI in children are self-limiting and not serious. However, some children can develop pneumonia, which may become severe and cause death. This is common where caregivers (usually mothers) and primary health care workers fail to recognise the danger signs of pneumonia (which include the inability to drink or breastfeed, convulsions and lethargy, or loss of consciousness). Thus, correctly identifying and treating the few sick children who have pneumonia among many others with milder respiratory infections can greatly reduce deaths in children.

Case Management — Because most refugee settings lack X-rays, laboratories, or doctors, simple clinical criteria are needed to assess the child, classify the illness, and determine appropriate treatment (which includes referral to hospital, antibiotic treatment, and care at home). The following table summarises the management of ARI based on IMCI classification of ARI.[35]

Table 7-22: Treatment of Cough or Difficult Breathing

DISEASE	CARE OF CHILDREN AGED 2 MONTHS TO 5 YEARS
Severe pneumonia or very severe disease	• Give first dose of antibiotic • Refer *urgently* to hospital
Pneumonia	• Give an appropriate antibiotic for 5 days • Soothe the throat and relieve the cough with a safe remedy • Advise mother when to return immediately • Follow-up in 2 days
No pneumonia: cough or cold	• If coughing more than 30 days, refer for assessment • Soothe the throat and relieve the cough with a safe remedy • Advise mother when to return immediately • Follow-up in 5 days if not improving

Source: WHO – IMCI

Note: *Health workers need to assess, classify, and treat young infants (aged less than two months) differently from older children. This is because young infants may have different ARI symptoms and they can die very quickly. All young infants with pneumonia must be referred immediately to a hospital.*

Control of ARI is based on standard case management. This requires staff training, adequate drug supplies and ARI management charts for PHC workers (e.g. IMCI). Access to health care (first-level health facilities and first referral hospitals) should also be assured. In addition to case management, ARI control also involves health education and promotion. This will ensure that caregivers give appropriate home care, recognise danger signs, and know when to seek help. Promoting breast-feeding, immunisation (for measles, whooping cough, and diphtheria), vitamin A supplementation and reducing domestic pollution will lead to fewer episodes of ARI in children.

Measles

Case Management — If possible all children with measles should receive a dose of vitamin A to prevent blindness. Because children with measles do not eat well, ensure that affected children receive supplementary food and fluids. Only very sick children need hospitalisation. The following table summarises the case management for measles:

Table 7-23: Summary of Measles Case Management

Treatment	Indication
Vitamin A • Standard dose (100,000 IU if < 12 months; 200,000 IU if > 12 months) • 2nd dose on day 2 • 3rd dose in 1-4 weeks	• all children with measles to prevent xerophthalmia (unless previously treated) • children with complicated measles • children with eye complications
Care for Complications • ORT and re-feeding • Antibiotics • Topical antibiotics • Genetian violet • Promote breast-feeding • Ensure adequate food and fluids. (supervise feeding if necessary) • Hospital admission	• diarrhoea • bacterial super-infections • eye infections • mouth ulcers/oral thrush • malnutrition • for the very ill

Control of Measles — Since measles is highly contagious, most susceptible persons may already be exposed to the infection by the time a measles outbreak is confirmed. Resources should not be wasted where the disease has already spread. It is more important to vaccinate susceptible individuals (all children age 6 months to 12 years if resources are adequate) in *neighbouring* settlements where measles has not been detected. If the measles vaccine is not available before the outbreak, an emergency stock should still be procured. Thereafter, decisions of whether or not to vaccinate can be made based on the estimated susceptible population. (See the *Immunisation in Emergencies* chapter for more details on measles vaccination.)

Malaria

Case Management — Early diagnosis and treatment of clinical malaria should be the main strategy for malaria control, as prevention of malaria is difficult in many refugee settings. Relief agencies should aim at establishing basic diagnosis of all suspected malaria cases as early into the emergency as possible. This can be achieved immediately with the use of rapid diagnostic dipsticks (RDTs) for malaria. "RDTs are simple to perform and interpret. They do not require electricity or training in microscopy. Peripheral health workers (and other health providers and community volunteers) can be taught the procedure in a matter of hours."[36]

Microscopy should be re-established as soon as practical and possible (with good monitoring to ensure accuracy of blood film-making and reading). Where these equipments are lacking, diagnosis of malaria in an endemic area must be based on clinical symptoms, preferably using the IMCI protocol to ensure effective treatment of all cases. Since malaria does not always present in a typical way, all patients with fever, or a history of fever within the last 3 days, in a highly malaria endemic area should be diagnosed as having malaria until proven differently.

It is not possible to standardise malaria treatment protocols for displaced populations. The appropriate treatment policy should be based on up to date information on drug resistance patterns in the area. This is particularly important for displaced populations who are especially vulnerable due to low immunity (from malnutrition or lack of previous exposure to malaria), or lack access to re-treatment if treatment fails. Local health authorities and relief agencies should collaborate on obtaining or sharing the information. As drug resistance develops rapidly it is also important to evaluate second line or future treatments proactively. Drug efficacy monitoring should follow standard procedures as developed by WHO.[37] Other causes of treatment failure, such as non-compliance, vomiting and poor quality drugs should also be monitored.

Note: *If an emergency situation limits access to patients, then agencies should prioritise a single dose treatment protocol and observe all patients for one hour after taking the drugs to make sure they do not vomit (and retreat anyone who vomits in less than 1 hour).*

The following table summarises the basic approach to malaria case management. Other measures may be required for patients with complicated malaria.

Table 7-24: Malaria Case Management

Treatment	Indications
Specific	
• Chloroquine	Still the first line treatment for malaria in many African countries
• Fansidar (Sulfadoxine-pyrimethamine)	• Second line treatment for malaria. • May be considered first line for areas with chloroquine resistant malaria is widespread
• Mefloquine • Artemisin*	Second line treatment for chloroquine resistant malaria
• Quinine	For treatment of complicated malaria
Supportive	
• Antipyretics (paracetamol) • IV glucose plus glucose infusion • Haematinics, blood transfusion** • Fluid/electrolyte replacement (ORS, IVF) • Broad spectrum antibiotics	• fever • hypoglycaemia • anaemia • dehydration • bacterial infections

* Reserve for multi-drug resistant malaria. Given alone or combined with other anti-malarial drugs.
** Blood transfusion is necessary for anaemic patients with high parasitemia. Due to high risk of HIV transmission, transfusions should only be done to save life. See the *Reproductive Health Care in Emergencies* chapter for details on safe blood transfusion
Note: Treatment of Plasmodium falciparum gametocytes with primaquine is not recommended, as evidence of its effectiveness is inadequate, and it can be dangerous in glucose 6 phosphate dehydrogenase (G6PD) deficient individuals

Note: *WHO maintains a database of national treatment protocols of emergency affected countries where these protocols exist. It may recommend that protocols be adapted if necessary in the event of a complex emergency. The database will eventually also include information on drug sensitivity, simple protocols for sensitivity testing and mapping of malaria and malaria risk (epidemiological, climatic, land use, etc) in complex emergency countries.[38]*

Control of Malaria — In refugee settings, various strategies may be used to control outbreaks of malaria, depending on the available resources and the local health priorities. For example:

- If the outbreak is severe, mass anti-malarial treatment of all patients with fever is justified (if possible with a single dose). Laboratory confirmation may be necessary where drug resistance is a problem or the antimalarial is expensive.

- Where mortality is high or referral systems are not available, CHWs should be trained to actively identify malaria cases.

- Passive case finding for malaria is acceptable in chronic refugee settings when mortality is under control.[39]

Other measures for minimising exposure to malaria vectors/parasites may be carried out at different levels of the refugee settlement. Indoor spraying of residual insecticide ("house spraying") has been the method of control most often used in chronic refugee situations. Residual spraying is fast and effective, but expensive. With safe insecticides it is very appropriate during the first 2-3 months, combined with introduction of insecticide treated materials as soon as possible (ITNs are also expensive initially but cost effective if used over time). The following table summarises commonly used malaria control measures:

Table 7-25: Malaria Control Measures at Various Levels, by Expected Effect

Expected Effect	For Individual & Family Protection	For Community Protection
Reduction of human/ mosquito contact,	ITMs*, repellents, mosquito coils, protective clothing, screening of houses	Site selection
Destruction of adult mosquitoes	Use of domestic space spraying (aerosols)	Residual indoor insecticides, space spraying, ultra-low-volume sprays
Destruction of mosquito larvae	Peridomestic sanitation, intermittent drying of water containers	Larviciding of water surfaces, intermittent irrigation, biological control
Source reduction	Improve sanitation, wastewater drainage	Environmental sanitation, provision of piped water, water management
Social participation	Motivation for personal and family protection	Health education, community participation

* Insecticide treated materials – includes mosquito nets, bedding, curtains, clothes
(Source: Malaria control among refugees and displaced populations, WHO 1996)

For more information about source reduction, protection of susceptible groups, and interruption of transmission, read the *Vector Control* chapter.

Meningococcal Meningitis

Case Management — Because meningococcal meningitis can be treated effectively, efforts should be focused on ensuring drugs and trained staff are available. This will help save lives and reduce disability and deaths during outbreaks. Patients with meningococcal meningitis should be managed according to the following principles:[40]

1. Meningococcal meningitis is potentially fatal and each case should be seen as a *medical emergency*.

2. *Admission to a hospital* or a health centre is necessary for diagnosis and treatment of cases.

3. *Antimicrobial therapy* is essential and should be combined with supportive treatment.

4. As contagiousness of patients is moderate and disappears quickly following antimicrobial treatment, *special facilities for isolation of the patient are not necessary*.

Community health workers training is needed to ensure early detection and prompt treatment of cases. Anyone suspected of having meningitis should be referred to a health facility or hospital. Simple techniques for diagnosing meningitis should be used where specialised techniques are not available (such as, lumbar punctures and culture of fluids). For example, if several suspected cases of meningitis present with a rash, assume that they have meningococcal meningitis and take the following steps:

1. If lumbar punctures can be done, obtain fluid and send it to a laboratory to confirm the diagnosis and to determine the type of meningitis.

2. Care for each case in a separate area until 24 hours of treatment has been given.

3. Even if laboratory facilities are available, treatment should be started before results are known.[41]

4. Keep accurate records of the number of cases and their ages.

The following table summarises the management of meningitis in epidemic situations:

Table 7-26: Meningitis Case Management

INDICATIONS	CARE
Meningococcal meningitis	First choice: Penicillin G Alternative: • Ampicillin or amoxycillin, • Chloramphenicol, • Ceftriaxone, • Cotrimoxazole
Complications	Supportive Treatment: • Ampicillin, • Rehydration • Anticonvulsants • Intensive care for severe disease

Control of Meningitis — The simplest way of controlling the spread of meningitis during an outbreak is to prevent overcrowding. Other control measures include:

1. *Early Treatment:* Actively finding cases and promptly treating them with a single injection of long-acting oily chloramphenicol (tifomycin), long-acting penicillin or ceftriaxone.[42][43][44] The dose of antibiotic can be repeated after 24-48 hours for patients who do not improve immediately.

2. *Mass Immunisation:* An effective meningitis vaccine is available, which can control meningitis outbreaks due to serotypes A and C. A mass immunisation campaign should only be carried out at the onset of an outbreak. It is not useful if the epidemic is on the decline. Routine immunisation of young children against meningitis is not recommended within the EPI program for the following reasons:

   • the currently available vaccines (against meningococcal types A, C, Y, W) do not provide enough protection to children less than 18-24 months of age; or may have to be administered in several doses. (It protects vaccinated people aged more than 2 years for 1-3 years.)

   • the possibility of carrying out such vaccination is questionable since the vaccines have limited effectiveness in young children.[45]

   • the limited availability and relatively high cost of the meningitis vaccine.

   (See the Immunisation in Emergencies section for more details on immunisation for meningitis.)

3. *Mass Chemoprophylaxis:* WHO no longer recommends mass chemoprophylaxis during meningitis outbreaks. Carrying out selective chemoprophylaxis with rifampicin for household contacts may be effective, but expensive. Because mass or selective chemoprophylaxis demand extensive resources, it is recommended that meningitis control be limited to active case-finding and early treatment.[46][47][48]

Tuberculosis

Case Management — Although TB may be a major problem among displaced persons, it does not demand immediate attention during the acute phase of the emergency. However, once diseases such as measles and diarrhoea have been controlled, tuberculosis treatment programs should be started in order to cure infected persons and prevent the disease from spreading.

Managing TB cases begins by confirming the diagnosis. An experienced laboratory technician can do this by examining the sputum under a microscope. However, it is more difficult to diagnose TB in children as their sputum is rarely positive. Since children represent about 10% of all TB cases, other techniques for diagnosing TB in children are needed. The table below shows a score chart for diagnosing childhood TB.

Table 7-27: Score Chart for Diagnosis of Tuberculosis in Children

	Score if the Feature is Present					
FEATURE	**0**	**1**	**2**	**3**	**4**	**SCORE**
GENERAL						
Duration of illness (weeks)	< 2	2 – 4		> 4		
Nutrition (% WFA)	> 80	60 – 80		< 60		
Family history of TB	None	Reported by family		Proved sputum positive		
Tuberculin Test				Positive		
Malnutrition				Not improving after 4 weeks		
Unexplained fever & night sweats			No response to malaria treatment			
LOCAL						
				Lymph nodes		
				Joint or bone swelling		
				Abdominal mass or ascites		
				CNS signs and abnormal CSF findings		
					Angle deformity of spine	
					TOTAL SCORE	

Source: WHO[49]

Newly-diagnosed patients with pulmonary TB or severe extra-pulmonary TB and children with a score greater than 7 are given high priority in treatment. The short course or direct observed therapy (DOTS) by the World Health Organisation's TB control strategy is effective for limiting the spread of TB in crowded refugee settlements. In DOTS, all patients with confirmed TB take anti-TB drugs for six to eight months under the direct observation of health workers or community leaders.

There are various short course treatment regimens for TB. Each is delivered in two phases, as follows:

- *Initial Phase* — During this phase, the tubercle bacilli are rapidly killed to prevent further spread of the disease

- *Continuation Phase* — During this phase, the sterilising effect of the drugs eliminates any remaining bacilli and prevents subsequent relapse.

The following table summarises the treatment regimens for different TB categories.

Table 7-28: Recommended Treatment Regimen for Different Categories of TB

Category	Diagnosis of Patient	Treatment Priority	Initial Phase	Continuation Phase
I	• New smear-positive pulmonary TB • New smear-negative pulmonary TB • New cases of severe forms of extra-pulmonary TB • Children with score of 7 or more	High priority because they pose a high public health risk	$2 E_3 H_3 R_3 Z_3$ $(2 S_3 H_3 R_3 Z_3)$	$4 H_3 R_3$ (6 HE)
II	Treated but sputum smear-positive: • Relapse after treatment • Treatment failure • Treatment after interruption	Medium priority	2 SHRZE / 1 HRZE	$5 H_3 R_3 E_3$
III	• New smear negative pulmonary TB (not in category I) • New cases of less severe forms of extra-pulmonary TB	Low priority and should not get treatment at initiation of TB program or if resources are scarce	$2 H_3 R_3 Z_3$	$4 H_3 R_3$ (6 HE)

Source: WHO[50]

E = Ethambutol; H = Isoniazid; R = Rifampicin; Z = Pyrazinamide; S = Streptomycin
The number before the drug abbreviations is the duration of that phase in months.
The subscript after a drug abbreviation (e.g. $_3$) is the number of doses of that drug per week.

Note: *Some authorities recommend a 7-month continuation phase with daily isoniazid and rifampicin (7HR) for Category I patients with serious forms of disease, e.g. TB meningitis, miliary TB, spinal TB with neurological signs.*

Control of Tuberculosis — Short-course anti-tuberculosis treatment with multiple drugs may limit the spread of TB in a crowded refugee settlement. However, in some situations, establishing a TB control program may cause more harm than good for the following reasons:

1. TB requires prolonged treatment, which may not be completed by migrating populations.
2. Treatment failure may lead to the development of multi-drug resistant bacilli.[51]

TB control programs may be appropriate under certain conditions, as shown in the table below.

Table 7-29: Implementation of a TB Control Program

TB PROGRAM NOT RECOMMENDED	TB PROGRAM RECOMMENDED
During the emergency phase following the population displacement.	Emergency phase is over (death rates <1 per 10,000 population per day.
During warfare of significant insecurity.	Security in the camp envisaged for at least 6 months.
Very unstable population (e.g. nomadic or population moving up and down a border.	Stability of the camp for at least 6 months.
Major health problems not fully addressed.	Basic needs of water, adequate food, shelter and sanitation are available. Laboratory services for sputum smear microscopy will be available. Essential clinical services and basic drugs are available. Data indicate that TB is an important health problem.
Limited financial resources.	Sufficient funding and drug supplies available for at least 12 months.

In addition to funding, the following should be assured when setting up a TB control program:
- one person in charge of managing the TB program
- commitment to TB control by authorities at different levels
- passive case-finding and diagnosis by sputum microscopy
- a regular drug supply system
- health workers trained in the management and control of TB[52]
- monitoring TB patients by the national TB recording and reporting system[53]

Other control measures for TB include:
- BCG vaccination of new-borns should be included in the EPI program.
- Reducing overcrowding and ensuring good ventilation in health facilities.
- Separating patients with TB from others for the first two weeks of treatment
- Separating infectious TB patients from HIV positive individuals

> **Note:** *Isoniazid prophylaxis is not recommended for infants except for those being breast-fed by smear positive mothers. If the infant is well, isoniazid should be given for the first 6 months before the BCG vaccine is administered. If the refugee settlement is suddenly closed, Isoniazid may be stopped and the child vaccinated before departure with BCG (preferably one week later).*

CONTROL OF OTHER COMMUNICABLE DISEASES

Hepatitis
Hepatitis outbreaks have occurred among various displaced populations. Different viruses may cause these outbreaks, e.g., hepatitis A, B, D, and E viruses are common in the tropics whereas the geographic distribution of hepatitis C virus is unknown. The most common route for spreading hepatitis infection is faecal-oral (particularly for hepatitis A), although transmission through food and other routes also occurs. Water has been the main route of transmission during major outbreaks. Hepatitis B, C and D virusesare transmitted sexually as well as through blood or its products. Infection with these viruses may persistent for a long time, with some people becoming **carriers** (they transmit the virus without developing the disease). Even though hepatitis E virus is fairly uncommon, it strikes refugee populations more frequently than populations in normal settings and causes a high death rate among pregnant women. Most individuals who recover from hepatitis infections develop life-long immunity.

The following table summarises the epidemiology of different hepatitis infections.

Table 7-30: Epidemiology of Different Viral Hepatitis Infections

	Hepatitis A	Hepatitis B	Hepatitis C	Hepatitis D	Hepatitis E
Incidence	Childhood	Young adult	Young adult	Young adult	Young adult
Incubation Period	2 – 6 weeks	4 – 30 weeks	2 – 25 weeks	Co-infection B-D: consequence of hepatitis B Super-infection of carrier chronic B: about 5 weeks	2 – 8 weeks
Infectious Period	Begins before signs appear. Brief: <10 days after onset of jaundice. Maximal at the end of the incubation period	Begins before signs appear, Lasts the whole active period, Can persist in chronic carriers	Begins before signs appear, Duration poorly understood, may resemble HBV infection or persist for longer periods	Begins before signs appear Duration poorly understood. May resemble HBV infection.	Begins before signs appear, Duration poorly understood (10-15 days after onset of jaundice)
Transmission	Faeco-oral, Contaminated water and food, Rarely transfusion	Blood and its derivatives, Sexual, Contaminated blood products, Vertical (mother to neonates)	Blood and its derivatives, Sexual: weak, Contaminated blood products: weak, Probably vertical	Blood and its derivatives, Sexual (especially homosexual), Contaminated blood products, Vertical possible	Faeco-oral, Contaminated water and food
Long-term Prognosis	No chronic forms	0.2–10% become chronic, of which 5 – 15% develop cirrhosis Hepatoma possible	Up to 50% become chronic of which 10–25% develop cirrhosis Hepatoma possible	2-5% of B-D co-infections and >90% super-infections in HBV carriers become chronic (rapidly develop cirrhosis)	No chronic forms
Personal Prevention	Non-specific immunoglobulin injections	Specific immunoglobulins anti HBS Safe sex (condoms)	Anti HBS immunoglobulins can be effective	Same as for HBV (HDV infection can only develop with HBV)	Specific imunoglobulins for pregnant women
Vaccination	Anti-hepatitis A	Anti-hepatitis B	Non existent	Anti-hepatitis B	Non-existent

Source: MSF – Clinical Guidelines

Clinical Features and Management of Hepatitis

All hepatitis viruses can cause acute hepatitis, as summarised in the following table:

Table 7-31: Clinical Symptoms of Hepatitis

Diagnosis	Clinical Signs and Symptoms
Acute Hepatitis	Nausea, fever, fatigue, abdominal discomfort, followed by jaundice, dark urine and stools, more or less pale
Sub-clinical Infection	Mild or anicteric (non-jaundice) infection
Fulminant Hepatitis	Severe acute infection that leads to necrosis and liver failure. Associated with high mortality.
Chronic Active Hepatitis	May lead to cirrhosis and eventually primary liver cell cancer.

Case Management — There is no specific treatment for viral hepatitis and some individuals recover naturally. The following measures may relieve symptoms of hepatitis:

- Symptomatic: rest, diet, rehydration, tranquillisers, caution in use of analgesics (e.g., acetyl salicyclic acid, paracetamol), etc.

- Avoid corticosteroid therapy and other medications that are metabolised by the liver.

Control of Hepatitis — The following measures may be used to control outbreaks of hepatitis:

- Chlorinating water for the entire population.

- Promoting personal and food hygiene (particularly among pregnant women to protect them against Hepatitis E infections).

- Proper screening of blood prior to transfusion, which should be restricted to life-threatening emergencies. Transfusion materials should be disposed of properly.

Typhoid Fever

Typhoid fever is a disease caused by the bacteria *Salmonella typhi*. Most large outbreaks are waterborne, while smaller outbreaks are foodborne. The disease primarily affects the lymph nodes of the small intestine. Common symptoms of typhoid include fever, headache, abdominal cramping and constipation. Not everyone with typhoid will develop diarrhoea. Intestinal perforation is a much feared complication of typhoid. While most infected people stop passing the bacteria in their stool shortly after regaining their health, about 10% of them will continue shedding for three months after the onset of symptoms. Infected food handlers present the primary hazard in the spread of disease.

Case Management – patients with acute typhoid illness should be carefully observed in a hospital to detect possible abdominal complications such as bleeding or perforation. They often require two weeks of antimicrobial treatment and supportive care, as summarized in the table below:

Table 7-32: Typhoid Fever Case Management

Typhoid Fever Case Management	
Specific Treatment	*First choice*: Chloramphenicol *Second choice*: • Ampicillin or Amoxycillin • Sulphamethoxazole/Trimethoprim
Supportive Treatment	• Rehydration • Treat fever • Corticosteroids for critically ill patients

Control of Typhoid — the following measures may control outbreaks of typhoid:

- Chlorinating the water supply is the best assurance against a massive typhoid outbreak.

- Promoting food hygiene should focus on handwashing among food handlers and checking that anyone who has ever been sick does not prepare food for others. However, identifying food vendors with typhoid fever and restricting them from work until they are not contagious may be impossible in emergency situations.

Note*: WHO does not recommend vaccination as it offers only low, short- term individual protection and little or no protection against the spread of the disease.*[54]

Parasitic Infections

Parasites are organisms that grow, feed, and are sheltered on or in a different organism while contributing nothing to the survival of its host. This chapter focuses on parasites that live within the body of the host. For details about parasites that live outside the body, such as lice, fleas, scabies, etc., please refer to the *Vector Control in Emergencies* chapter.

In addition to the malaria parasite, other parasites that live within organisms and cause significant clinical illness may be classified as follows:

- **Intestinal Protozoa**: *Entamoeba histolytica, giardia lamblia*
- **Worms** (helminths): roundworm, hookworm, strongyloides, trichuris trichura, pinworm, tapeworms, blood flukes (schistosoma)

Depending on their geographical and socio-economic background, many displaced populations harbour parasites within their bodies for many years. However, since most infections cause less serious problems than infections of measles, diarrhoeal diseases, malaria, etc., aggressive measures to treat all cases with parasites in the emergency phase are a lower priority, when resources are limited.

Risk factors for the spread of parasitic infections in emergencies include the following:
- Poor personal hygiene
- Contamination of the environment by human faeces
- Overcrowding
- Disruption of public health measures

Control of Parasitic Infections — Control of parasite infections among displaced populations should be approached as follows:

1. *Individual approach* — Control the rate of the disease progression in infected individuals by:
   - Treating serious forms of intestinal parasitic infection, such as giardiasis, amoebiasis, or infections by hymenolepsis nana, where they are present.
   - Treating complications due to heavy parasitic infections, e.g., anaemia (hookworm), intestinal obstruction (ascariasis), rectal prolapse (strongyloides).

2. *Community approach* — Reduce the risk of exposure and susceptibility to parasitic infection and diseases through the following measures:
   - Environmental sanitation
   - Adequate and safe water supply
   - Promotion of personal hygiene
   - Health education

The following table summarises the transmission, clinical features, prevention, and treatment of parasites that commonly affect displaced populations in Africa.

Table 7-33: Overview of Common Parasitic Infections

Parasite	Transmission	Clinical Features	Prevention	Treatment
Amoebiasis • ***Entamoeba hystolitica***	<u>Direct</u>: person to person contact (dirty hands) <u>Indirect</u>: contaminated water or food	Amoebic dysentery Amoebic liver abscess (fever, large tender liver)*	<u>Personal</u>: hand washing, cut fingernails, boil water <u>Community</u>: hygiene, sanitation, safe water supply, h/ education	Metronidazole + rehydration
Giardia lamblia	<u>Direct</u>: person to person contact (dirty hands) <u>Indirect</u>: contaminated water or food	Diarrhoea, cramps malabsorption Motile forms seen in stools	<u>Personal</u>: hand washing, cut fingernails, boil water <u>Community</u>: hygiene, sanitation, clean water supply, h/ education	Metronidazole
Trichomonas vaginalis	Sexual	Vaginitis Males: usually no symptoms, or urethritis	Treat all sexual contacts (even if asymptomatic)	Metronidazole
Roundworms (***Ascaris lumbricoides***)	<u>Faeco-oral</u>: eggs (dirty hands)	Few, if any, GIT symptoms, eggs in stool	<u>Personal</u>: hand washing, cut fingernails <u>Community</u>: health education, hygiene, sanitation, enough clean water	Albendazole, Mebendazole, (or Piperazine, Pyrantel palmoate)
Hookworm • ***N. americanus*** • ***A. duodenale***	<u>Transcutaneous</u>: bare feet in contact with moist soil contaminated with larva	Epigastric pain, anaemia, eggs in stool	<u>Personal</u>: wear shoes <u>Community</u>: sanitation, hygiene, safe water supply, h/ education, mass chemotherapy	Albendazole, Mebendazole (or Pyrantel Palmoate, Levamisole)
Schistosomiasis • ***S. hematobium*** Tropical/N Africa	<u>Transcutaneous</u> during contact with water contaminated with Bulinus cercariae	Dysuria, haematuria, Late: hydronephrosis Eggs in urine	Avoid swimming, vector control, h/ education, mass chemotherapy	Praziquatel (or Metrifonate)
• ***S. mansomi -*** Tropical Africa • ***S. intercalatum*** Central & W Africa	<u>Transcutaneous</u> contact with water contaminated with cercariae Bilomphalaria SPP	Diarrhoea, cramps Late: portal hypertension Eggs in stools	As above	Praziquantel (or Oxamniquine)
Adult tapeworm • ***T. saginata*** • ***T. solium***	Undercooked beef Undercooked pork (eggs)	Non-specific GIT symptoms, irritability. Segments may be passed with stools. Eggs in stools	<u>Personal</u>: cook meat adequately <u>Community</u>: veterinary inspection of abattoirs	Mebendazole, Niclosamide, (or Praziquantel)
Cysticercosis Larva of ***T. Solium***	Food contaminated by eggs of T. Solium Autoreinfestation	Nodules in muscle, subcutaneous tissue, headache, fits, coma Eosinophilia	<u>Personal</u>: treat infected persons, hygiene, cook meat well, h/ education	Difficult Praziquantal, Albendazole, Thiabendazole
Hymenolepsis nana	Direct (dirty hands) Feco-oral Autoreinfestation (eggs)	Often asymptomatic Non-specific GIT symptoms Eggs in stools	<u>Personal</u>: hand washing, cut fingernails <u>Community</u>: hygiene, sanitation, safe water supply, h/ education	Niclosamide (or Praziquantel)
Hydatid cyst ***Echinococcus granulosus*** North Africa	<u>Direct</u>: contact with dog (faeces) <u>Indirect</u>: via food contaminated by dog	Hydatid cyst of liver and lung	<u>Personal</u>: avoid contact with dogs <u>Community</u>: control dogs, do not feed offal to dogs, inspect abattoirs	Surgery

Source: MSF – *Clinical Guidelines*

* *Motile forms* (not cysts) must be present in fresh stools to diagnose amoebic dysentery.

Re-Emerging Diseases

The control of communicable diseases over the last decade has met with many successes. For example, smallpox eradication and the control of polio and neonatal tetanus have been achieved mainly through high vaccination coverage. Successful control of dracunculiasis, onchocerciasis, and Chagas disease has been the result of effective vector control, improved case management, mass treatment, and health education on preventing infection.

However, serious setbacks have also arisen in communicable disease control programs. The eradication of smallpox led to the belief that infectious diseases were no longer a threat. This belief and other factors have led to the emergence of several diseases, for example:

- Successes in global polio eradication programs led to several cases with human monkey-pox (a variant of small pox) among susceptible populations in the Democratic Republic of Congo.[55]

- Lack of needles and syringes and failed barrier nursing caused small outbreaks to turn into major epidemics, such as Ebola in the Democratic Republic of Congo.

- Global warming led to the spread of vector-borne diseases, such as malaria and dengue.

- Deforestation led to ecological changes that increased contact between man and animals. Micro-organisms spread from animals to humans, e.g., Lassa fever in West Africa.

Specific Re-Emerging Diseases

Diseases that have re-emerged and become a major threat because of failure in disease control programs include the following:

- **Viral diseases** — dengue and dengue haemorrhagic fever, yellow fever, HIV/AIDS

- **Bacterial diseases** — cholera, dysentery, meningitis, diphtheria, plague, tuberculosis

- **Parasitic diseases** — malaria, African trypanosomiasis (sleeping sickness)

Although cholera, dysentery, malaria, meningitis, and tuberculosis are likely to cause outbreaks during emergency situations, other diseases that may spread among displaced populations include:

1. **African Trypanosomiasis**, also known as sleeping sickness, remains a persistent problem in East, Central, and West Africa where the tsetse fly is distributed. Refugee populations have been significantly affected. Humans are the main reservoirs for *gambiense* sleeping sickness. Large populations of domestic and wild animal reservoirs make the control of *rhodesiense,* sleeping sickness in humans difficult. (See the *Vector Control* chapter for more information about the vector of sleeping sickness.)

2. **Dengue** is among the most rapidly increasing arbovirus infections around the world. Outbreaks have been reported in Africa, Southeast Asia, and Latin America. The virus is transmitted by *Aedes aegypti* mosquito, which multiplied and spread as mosquito eradication campaigns of the 1970s and 1980s deteriorated. As a result, countries in Latin America that had not reported dengue for several decades are now reporting a high transmission of the disease. More alarmingly than the spread of dengue has been an increase in reported cases with the severe form of the disease, dengue haemorrhagic fever/dengue shock syndrome.

3. **Yellow fever** exists in two forms: the *sylvatic yellow fever* and *urban yellow fever*. Sylvatic yellow fever is restricted to tropical regions of Africa and Latin America where 1000-1500 cases occur annually, with reported case fatality rates of 25-34%. Risk factors for yellow fever outbreaks include neglect of yellow fever vaccination, overpopulation, rural to urban migration and poor water supply or sewage disposal. Young adult males who work in forested or transitional areas are most affected.

   No cases of urban yellow fever have been reported in the Americas since 1942, except for a few cases in Trinidad in 1954. The threat of outbreaks of urban yellow fever has increased in Africa, as the *Aedes aegypti* re-infests the cities. Outbreaks have been reported in Nigeria, Kenya, Cameroon, Gabon, and Ghana. In 1995, an outbreak in Liberia spread to Sierra Leone.

4. **Diphtheria** was a leading cause of childhood deaths until vaccination was introduced in the 1950s. Thereafter, it became extremely rare in industrialised countries after mass immunisations. However, the incidence of diphtheria began to rise in the early 1980s because of disruption of routine immunisation programs. Since the early 1990s epidemics have occurred in the Russian Federation, with more than 39,000 cases and 1,100 deaths in 1994.

5. **Plague** continues to pose a public health threat globally. *Primary pneumonic plague* (urban plague) may occur where domestic rodent populations are not controlled. *Human plague* is endemic in Asia but it is increasingly being reported in Africa. It is more difficult to control because of persisting wild rodents or fleas.

6. **HIV** (**Human Immunodeficiency Virus**) infection is cutting the life expectancy of many African countries. By the end of 1999, there were an estimated 32.4 million adults and 1.2 million children infected with HIV, with about 70% of all HIV-infected persons living in Africa. As the virus spreads, it is changing the demographic profile of Africa, and the future of millions of people within the next 10-15 years. Since the beginning of the epidemic, the cumulative total for **AIDS orphans** (defined as those who have lost their mother before reaching the age of 15) has risen to 11.2 million.[56]

Two types of retrovirus have been identified as causative agents: type 1 (HIV-1) and type 2 (HIV-2).[57] Acquired Immune Deficiency Syndrome (AIDS) is a fatal clinical condition that develops in the late clinical stage of the HIV infection. HIV may be transmitted as follows:

- It is directly linked to unsafe sexual practices.

- Between 5-10% of HIV transmission occurs through blood transfusion and contaminated surgical instruments, syringes, and needles.

- Mother-to-child transmission is the most common mode of HIV transmission in children. More than 90% of children with mothers who are HIV positive become infected during pregnancy, delivery, or breastfeeding.

  * Even though HIV transmission through breastfeeding is possible, WHO continues to recommend this form of feeding for developing countries where the benefits of breastfeeding outweigh the risk of HIV transmission.

Although the prevalence among many displaced populations is not known, HIV/AIDS has become a serious problem in emergencies. The risk of transmission among displaced populations is greater for various reasons, including increased sexual violence, poverty, social disruption, unsafe blood transfusions, and widespread lack of information on HIV/AIDS.

Diagnosing HIV/AIDS

HIV infection may be diagnosed clinically according to the following case definition:

- *Adults* — by the presence of at least 2 major signs and at least one minor sign, or by the presence of a generalised Kaposi sarcoma, or by the presence of cryptococcal meningitis

- *Children* — by the presence of at least 2 major signs associated with at least 2 minor signs

It is not possible to confirm HIV infection without an antibody test. However, voluntary HIV testing and counselling has been a low priority in refugee settings, except where strict confidentiality can be maintained and the needs of HIV/AIDS patients can be met. Large-scale testing for HIV among refugees requires extreme caution. In some cultures, revealing one's HIV-positive status can lead to outright rejection and even physical harm to infected individuals from all levels: the partner, family, and community. In addition, if testing shows high HIV rates in a refugee population, the entire population may be stigmatised in the eyes of the host population. In addition, resettlement may be more complex as countries do not wish to absorb the burden of caring for refugees who are HIV positive or have AIDS. For a summary of the UNAIDS/WHO position on mandatory HIV testing in refugee situations, please see the Appendix at the end of this chapter.

Prevention and Care of HIV/AIDS

HIV prevention should begin from the acute emergency phase to limit the risk of infection. The nature of the disaster and the HIV problem among the affected population will dictate what HIV/AIDS interventions are appropriate. Basic measures should include health education, access to condoms, and safe blood transfusions. The **universal precautions against HIV/AIDS** should be enforced in order to minimise the transmission of HIV and other blood-borne diseases through health facilities.[58] (See the Appendix for a description of these precautions). Concerned staff should be trained and equipped to care for patients with HIV/AIDS-related illness (such as tuberculosis) and support AIDS orphans.

Note: *An essential minimum package for HIV prevention has been designed to address the above priorities for a population of 10,000 persons per month. For more details about MISP and HIV/AIDS, refer to the* Reproductive Health in Emergencies *chapter. For more details about caring for AIDS orphans, refer to the* Needs of Children and Adolescents *chapter.*

The following table summarises the transmission, clinical features, prevention and treatment of the re-emerging diseases discussed above:

Table 7-34: Summary of Re-Emerging Diseases

Infectious Agent	Transmission	Clinical Features	Prevention	Treatment
African trypanosomiasis **West Africa** **Southeast Africa**	• Tsetse fly vector • Man, domestic and wild animal reservoir	• Primary stage: chancre • Blood stage: fever, adenopathy, hepato-splenomegaly, facial edema • Cerebral stage: disturbed sleeping pattern, sleeping sickness	• Active case finding and treatment • Vector control • Surveillance	• Suramin • Pentamidine • Melarsoprol • Ornidyl
Dengue, Yellow fever *Arboviruses*	• Mosquito vectors	• Flu-like viral illness, • Encephalitis, • Hepatorenal syndrome, • Hemorrhagic fever	• Immunisation, Personal protection, • Vector control, Epidemic management	• Treatment is supportive. No causal therapy.
Diphtheria *Corynebacterium diphteriae*	• Human to human contact	• Fever, • False membrane in throat, • Infection/inflammation of pharynx and tonsils	• Treat contacts systematically with penicillin or erythromycin	• Diphtheria anti-toxin • Penicillin G or PPF IM
Plague *Yersinia pestis*	• Direct bite of infected rodent, • Vectorborne (flea) from rodent host, • Airborne (pneumonic plague)	• Bubonic form: High fever, painful buboes • Septicemic form: fatal complications from bubonic form • Pneumonic form: severe pneumonia with hemoptysis	• Isolate cases, • Disinfect bedding & clothes, • Drug prophylaxis for contacts & health personnel, • Flea & rat control, • Sanitation & hygiene	• Sulphonamide • Streptomycin • Tetracycline • Chloramphenicol
HIV/AIDS	• Sexual • Blood transfusion, contaminated sharps • Mother-to-child (pregnancy, delivery, breastfeeding)	Major signs: • Loss of weight >= 10% • Chronic diarrhoea • Persistent fever >= 1 month Minor signs include: • Chronic cough • Generalised dermatitis • Oropharyngeal candidiasis • General lymphadenopathy	• Ensure safe blood transfusion • Access to condoms • Promote universal precautions • Health education on prevention	Supportive since no effective treatment: • Treat HIV-related illnesses, e.g. TB • Educate family and community on care of PWA* (safe sex, hygiene, nutrition,)

*People with AIDS

MONITORING AND EVALUATING COMMUNICABLE DISEASE CONTROL PROGRAMS

Emergencies are unstable and dynamic situations. Simply carrying out disease control measures after an initial assessment does not mean that communicable diseases will not cause problems among a displaced population. Disease surveillance is useful for monitoring the incidence of communicable diseases as well as the effectiveness of disease control measures. This will determine whether selected control measures are appropriate and resources are adequate for preventing disease and preserving the health of the affected population.

Evaluation of the disease control program is vital because it measures effectiveness, identifies lessons for future programs, and promotes accountability. Communicable disease control programs can be evaluated in two ways:

a) **Internal Program Evaluation** — This is normally carried out by program staff who regularly analyse and review monitoring information. They must also evaluate the effectiveness of all control measures or compare these measures across different situations.

b) **External Program Evaluation** — This may be part of a wider evaluation exercise by agencies and donors. It may be planned, for example, after the acute phase of the emergency.

The following minimum standards and key indicators of the Sphere Project may be used to evaluate a communicable diseases control program in emergencies:[59]

1. Measles Control

The following indicators are used to evaluate if a systematic response is mounted for each outbreak of measles within the disaster-affected population and the host population, and whether all children who contract measles receive adequate care:

- A single case (suspected or confirmed) warrants immediate on-site investigation which includes looking at the age and vaccination status of the suspected or confirmed case.

- Control measures include the vaccination of all children 6 months to 12 years of age (or higher if older ages are affected) and the provision of an appropriate dose of vitamin A.

- A community-wide system for active case detection using the standard case definition and referral of suspected or confirmed measles case is operational.

- Each measles case receives vitamin A and appropriate treatment for complications such as pneumonia, diarrhoea, and severe malnutrition, which cause the most mortality.

- The nutritional status of children with measles is monitored, and if necessary, children are enrolled in a *supplementary feeding program.*

For details about specific indicators for measles vaccination, see the *Vaccination in Emergencies* chapter.

2. Monitoring Communicable Diseases

The following indicators are used to evaluate the monitoring of communicable diseases:

- The responsible surveillance and disease control unit or agency is clearly identified and all participants in the emergency know where to send reports of suspected or confirmed communicable diseases.

- Staff experienced in epidemiology and disease control are part of the surveillance and disease control unit or agency.

- Surveillance is maintained at all times to rapidly detect communicable diseases and to trigger outbreak response.

3. Investigation and Control of Communicable Diseases

The following indicators are used to evaluate whether diseases of epidemic potential are investigated and controlled according to internationally accepted norms and standards:

- Diseases of epidemic potential are identified by the initial assessment; standard protocols for prevention, diagnosis, and treatment are in place and appropriately shared with health facilities and community health workers/home visitors.

- Case reports and rumours of disease occurrence are investigated by qualified staff.

- There is confirmation of the diagnosis.

- Outbreak control measures are instituted, which include attacking the source, protecting susceptible groups, and interrupting transmission of the disease.

- Qualified outreach personnel participate in the control measures at the community level by providing both prevention messages and proper case management according to agreed guidelines.

- Public information and health promotion messages on disease prevention are part of control activities.

- Community leaders and outreach personnel facilitate access to population groups and disseminate key prevention messages.

- Only drugs from WHO's Essential Drugs List (1998) are used.

4. Human Resource Capacity and Training

The following indicators can help evaluate whether the staff are suitably experienced and trained and that they are adequately managed and supported by their agency:

- Staff and volunteers involved in surveillance (as part of assessment, monitoring, or review process) are thoroughly briefed and regularly supervised.

- Staff responsible for communicable disease control have previous experience or training and are regularly supervised in the use of recommended treatment protocols, guidelines, and procedures.

- Carers are informed about priority prevention activities such as the need for vaccination, use of soap, bednets, latrines and good health seeking behaviours.

The techniques and resources used for monitoring or evaluating must be consistent with the scale and nature of the disease control program. At the end of the evaluation, a report must be written which describes the methodology used and how conclusions were reached. This report should be shared with all concerned, e.g., the affected population, host authorities, donors, and other humanitarian agencies.

APPENDIX

The following table summarises the UNAIDS/WHO position on mandatory HIV testing in refugee situations:

UNAIDS/WHO Position on Mandatory HIV Testing in Refugee Situations
Mandatory testing, except in testing blood for transfusion, is not justified and should not be pursued as a matter of policy for the following reasons:
1. Identifying people with HIV/AIDS does not stop the spread of the virus.
2. It is a violation of human rights, leaving those identified as HIV-positive open to discrimination and persecution.
3. A negative HIV test does not exclude the possibility of HIV infection.
4. A negative test offers no assurance that the person tested will not be exposed or become infected soon thereafter.
5. A negative test is no reason to relax the practice of universal precautions in health settings.
6. Mandatory HIV screening for resettlement purposes is forbidden.
7. Resettlement conditions for refugees living with HIV are difficult and need special attention to prevent discrimination, refoulement and institutionalisation.

The following table describes the universal precaution against HIV/AIDS:

Universal Precautions Against HIV/AIDS
1. Frequent hand-washing with soap and water, especially after contact with body fluids or wounds.
2. Availability of gloves for all procedures involving contact with blood or other body fluids.
3. Protective clothing (masks, eye shields, aprons or gowns) when there is exposure to large amounts of blood.
4. Safe handling of sharp objects (used needles) in puncture-proof containers.
5. Disposal of medical waste materials by burning or burial in a deep pit, at least 10 meters from a water source.
6. Cleaning, disinfecting, and sterilising medical instruments between use on different patients.
7. Proper handling of corpses by using gloves, cover wounds, and later wash thoroughly with soap and water.
8. Treating accidental needle-stick or other injuries by washing thoroughly with soap and water, with or without prophylactic treatment with anti-viral drugs (depending on local policy).

Examples of mortality and morbidity surveillance forms are shown below:

Example of a Mortality Surveillance Form for the Acute and Post-Emergency Phase

ID No.	Date of Death	Age	Sex	Possible Underlying Cause	Place of Death	Remarks

(Source: Spiegel and Sheik, publication pending)

Example of a Morbidity Surveillance Form for the Acute Emergency Phase

DIAGNOSIS	Less than 5 years		More than 5 years		TOTAL
	Males	Females	Males	Females	
Suspected malaria					
URTI					
LRTI					
Watery diarrhoea					
Bloody diarrhoea					
Suspected cholera					
Acute malnutrition					
Suspected measles					
Suspected meningitis*					
Trauma/injuries					
Others					
TOTAL					

Example of a Morbidity Surveillance Form for the Post-Emergency Phase

DIAGNOSIS	DISPLACED POPULATION				HOST POPULATION			
	Less than 5 years		More than 5 years		Less than 5 years		More than 5 years	
	M	F	M	F	M	F	M	F
Suspected malaria								
Lab-confirmed malaria								
Anaemia								
URTI								
LRTI								
Watery diarrhoea								
Bloody diarrhoea								
Suspected cholera								
Worms								
Skin diseases								
Eye infections								
Suspected measles								
UTIs								
STDs								
Tuberculosis								
Acute malnutrition								
Suspected meningitis*								
Schistosomiasis*								
Injuries/trauma								
Others								
Repeat cases (return within 7 days)								
TOTAL CONSULTATIONS								

(Source: Spiegel and Sheik, publication pending)

*In areas where this disease is endemic

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DIARRHOEAL DISEASE CONTROL

Description
This chapter focuses on the prevention, preparedness and control of diarrhoeal diseases that cause high morbidity and mortality among displaced populations.

Learning Objectives
- Identify the diarrhoeal diseases which contribute most to excess morbidity and mortality among large, displaced populations.
- Discuss preparedness, management and control strategies for epidemic diarrhoeal diseases.

Key Competencies
- To recognise the common outbreaks of diarrhoeal diseases among displaced populations.
- To plan effective cholera preparedness and control measures.

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OVERVIEW OF DIARRHOEAL DISEASES IN EMERGENCIES

Introduction

Diarrhoeal diseases cause major health problems among disaster-affected populations. In 1995, they caused more than 3 million deaths world-wide, more than 80% of these were children under 5 years. Among displaced populations, diarrhoeal diseases account for over 50% of the deaths during the acute emergency phase. In 1994, diarrhoeal illnesses were responsible for 90% of all deaths among Rwandese refugees in Goma.[i] The following table summarises the common causes of diarrhoeal diseases:

Table 7a-1: Common Causes of Diarrhoeal Diseases

Main Complaint	Etiology	Causative Agent
Watery Diarrhoea	Bacteria	*Vibrio cholerae*, Enterotoxic *E. coli*, *Clostridium perfringens, Staphylococcus, Campylobacter jejuni*, Salmonella (non-typhoid)
	Viruses	*Rotavirus, Enterovirus, Adenovirus*
	Fungi	*Candida albicans**
	Parasites	*Giardia lamblia*
Bloody Diarrhoea	Bacteria	*Shigella dysenteriae, Salmonella typhi*, Enteroinvasive E*. coli, Yersinia enterolitica*
	Parasites	*Entamoeba histolytica*

* Usually affect people with lowered immunity

The following factors are associated with increased spread and death from diarrhoeal diseases:

1. **Agent***:* disease agents may become more virulent or increasingly resistant to available antibiotics

2. **Environment***:* overcrowding, inadequate sanitation facilities and contamination of water sources make it easier for diarrhoea pathogens to be transmitted

3. **Host***:* poor hygiene practices (personal, domestic, and environmental), poor nutritional status, low immunity prior to the infection

The natural history of diarrhoea is that most episodes will stop without treatment. As a result, the risk of death from diarrhoeal diseases is frequently underestimated. However, diarrhoea can lead to serious complications, such as:

- **Dehydration and Death** — The biggest threat from diarrhoea is not loose stool, but dehydration that results from excessive loss of body fluids and salts. It is not unusual for patients to lose 5-10% of their body weight. Dehydration may develop suddenly and death can occur soon thereafter if body fluids are not replaced immediately, particularly among young children.

- **Malnutrition** — While the risk of diarrhoeal diseases is higher in a malnourished child, diarrhoea may lead to under-nutrition through loss of appetite, decreased absorption of nutrients, or withholding of normal feeding (due to cultural beliefs). Children suffering frequent episodes of diarrhoea may become stunted.

- **Fever** — Children with dehydration or diarrhoeal disease may develop fever. However, very high fever persisting after a patient has been rehydrated indicates the presence of another infection (e.g. otitis media, pneumonia, measles, malaria, meningitis, typhoid fever).

- **Seizures** — may result from fever, dehydration, low blood glucose levels, or sodium overload.

- **Persistent Diarrhoea** — Children who have many episodes of diarrhoea are likely to develop persistent diarrhoea. It may be due to multiple infections of the same pathogens that cause acute diarrhoea. Many children in developing countries die from persistent diarrhoea, particularly those who are malnourished.[ii]

Epidemic Diarrhoeal Diseases

Although several organisms cause diarrhoeal diseases, only *Vibrio cholera* and *Shigella dysenteriae* have the potential for causing major outbreaks in emergency situations.

Note: *Cholera and dysentery are not the most common causes of diarrhoea except during epidemics.*

Cholera

Cholera is an acute bacterial infection caused by *Vibrio cholerae*. It accounts for more than 150,000 deaths each year in developing countries, and causes high morbidity and mortality among refugees. Several outbreaks of cholera have occurred among displaced populations since 1990 in Malawi, Sudan, Nepal, Somalia, Burundi, and Democratic Republic of Congo.[iii]

There are more than 60 serogroups of *V. cholerae*. For many years, most outbreaks world-wide were caused by *V. cholerae* serogroup O1, El Tor biotype. Since 1992, *V. cholerae* O139 has been identified as another causative agent for cholera outbreaks in South Asia.

Note: *The El Tor biotype causes a higher number of asymptomatic carriers and risk of transmission is higher because it can survive in fresh water for long periods of time.*

Cholera has a short incubation period, ranging from less than 1 day to 5 days. Although infected persons excrete the bacteria in their faeces for 7-14 days, most of them do not become ill. However, a few cases develop painless, watery diarrhoea (due to a bacteria enterotoxin) that can quickly lead to severe dehydration. Cholera attack rates in refugee settings may reach 5% (1 in every 20 persons). Case-fatality rates for cholera may be as high as 50% if a community or health system is not prepared to deal with the outbreak.

Bacillary Dysentery (Shigellosis)

Dysentery is commonly defined as acute bloody diarrhoea. Although several organisms can cause dysentery, shigella is the *only* cause of large-scale epidemics of dysentery throughout the world. Shigellosis, or bacillary dysentery, has caused high rates of illness and death in east and central Africa since 1992. In recent years, these outbreaks have become quite frequent during periods of civil unrest. Case-fatality rates for this illness can exceed 10%.

Note: *Bloody diarrhoea due to amoebiasis (infection with Entamoeba histolytica) is not common or severe and does not cause epidemics.*

S. dysenteriae type 1 (Sd 1) is an unusually virulent organism. A very low dose of Sd 1 (less than 100 organisms) can cause severe clinical illness. The organism can also survive in the environment for a fairly long time. Individuals infected with Sd 1 excrete large numbers of bacteria in stool. The risk of Sd 1 outbreaks among displaced populations is high, and up to one-third of the population may be infected. (Attack rates in non-emergency situations are usually about 5%). The case-fatality rate may reach 10% in areas without proper treatment.[iv] The highest case fatality is observed among children, the elderly, and the malnourished. Unfortunately, most strains of Sd 1 in Africa have developed resistance to commonly used antibiotics during the last few years. In some areas, only ciprofloxacine, a very costly antibiotic, is effective against Sd 1.

The following table summarises the epidemiology of cholera and bacillary dysentery.

Table 7a-2: Summary of Epidemiology of Cholera and Bacillary Dysentery

	Cholera	**Bacillary Dysentery**
Causative Agent	Vibrio cholerae O1 or V. cholerae O139	Shigella dysenteriae type 1
Geographical Distribution	Asia, Africa, Latin America	World wide
Transmission	• Ingesting faecally-contaminated water (main route) • Consuming contaminated food, seafood, fruits, and vegetables • Person-to-person contact (rare)	• Person-to-person contact • Direct contact with infected faecal material • Ingestion of contaminated food and water
Risk Factors	• Inadequate and unsafe water supply and food • Inadequate heating/reheating of food (even grain-based foods) • Spreads at funeral ceremonies and feasts • Low acid levels in stomach	• Overcrowding • Poor sanitation and sub-standard hygiene • Unsafe water supplies
Clinical Features	• Incubation less than 1 day to 5 days • Asymptomatic: most infected persons do not become ill • Mild or moderate diarrhoea in 90% of cases • Profuse watery diarrhoea (rice water stools) with dehydration may develop in less than 10%. • Vomiting (common)	• Acute non-bloody diarrhoea • Bloody diarrhoea may develop in 50% of cases with cramps, rectal pain, fever, mild-moderate dehydration • Complications: 10% of cases may develop sepsis, seizures, renal failure, and haemolytic uraemic syndrome, toxic megacolon

PREPAREDNESS, MANAGEMENT, AND CONTROL OF DIARRHOEAL DISEASES

Despite efforts to provide safe water, proper sanitation systems, basic health services and to train health workers on Oral Rehydration Therapy (ORT), outbreaks of diarrhoeal diseases continue to kill people in large numbers. Therefore, it is important to deliver these services more efficiently, especially at the community level. In addition, ensuring adequate preparedness measures, case management, and control strategies can greatly reduce the incidence and case fatality of diarrhoeal diseases.

Preparedness Measures for Diarrhoeal Epidemics

Relief agencies operating in areas that are endemic for diarrhoeal diseases should prepare for possible outbreaks. The following preparedness measures can ensure a timely and effective response:

1. **Co-ordination** — A co-ordinating committee should be formed to oversee outbreak preparedness measures and to manage the response. The committee should be led by the local health authorities and should include health workers, the sanitation team, and the affected community.

2. **Preventive Measures** — Health education is the key to successful control of diarrhoeal diseases. Improve the water supply and sanitation systems and provide soap. (For more details on prevention of outbreaks, see the *Control of Communicable Diseases* chapter.)

3. **Surveillance and Reporting** — Surveillance for diarrhoeal diseases should be initiated or improved at health facilities and extended through community health workers. Any suspicion of a diarrhoeal disease outbreak should be reported immediately to the concerned health authorities. Simple case definitions can be used to improve the diagnostic skills of health workers. The following table summarises commonly used case definitions for diarrhoeal diseases.

Table 7a-3: Case Definitions for Diarrhoeal Diseases

DIAGNOSIS	CASE DEFINITION
Watery diarrhoea	3 or more liquid stools per day
Persistent diarrhoea	A diarrhoea episode which starts acutely but which lasts at least 14 days
Suspected cholera	In areas where cholera is not known to be present: ***A patient over the age of 5 years develops severe dehydration or dies secondary to acute watery diarrhoea.*** In an area where cholera is endemic: ***A patient over 5 years develops acute watery diarrhoea.***
Confirmed cholera	Isolation of V. cholera O1 or O139 from stool or vomit of suspected case
Suspected shigella (Sd 1)	When there is an unusual increase in the weekly number of cases or number of deaths from bloody diarrhoea
Bacillary dysentery	Confirmed by evidence of acute onset of bloody diarrhoea with visible blood in stool. In some situations, the presence of blood is verified by a health worker.

Source: WHO

Note: *The causative agent of cholera illness should be reported as either V. cholerae O1 or O139. Illnesses caused by other strains of V. cholerae should not be reported as cases of cholera.*

4. **Laboratory** — Even though performing laboratory tests may be difficult in refugee settings, they are essential for confirming the cause of the outbreak (e.g., cholera or bacillary dysentery) and for identifying the most effective antimicrobial. A suitable laboratory with trained staff should be equipped to carry out the necessary laboratory investigations.

   Note: *Health workers and epidemiologists in emergency settings should be given guidelines on safe handling of all laboratory specimens.*

5. **Treatment Policy** — Treatment for identified cases with the epidemic disease should be standardised. Only the most affordable, available, and effective rehydration supplies and antimicrobials should be selected. It is important to define how antimicrobials will be used when the supply is limited.

6. **Emergency Stocks of Essential Supplies** — Adequate drugs and other supplies that may be needed during an outbreak should be stockpiled. The following pre-packaged kits have been designed for specific outbreaks:

   a. *The Cholera Kit* — can be used to treat 100 persons with cholera, assuming only 20% will have severe illness.

   b. *The Shigella Kit* — contains enough supplies to treat 100 persons with dysentery, based on the following assumptions:
   - 20% are children ≤ 5 years and 80% are > 5 years old. All are treated with antibiotics.
   - 20% will have dehydration requiring ORS.
   - 10% will have severe dehydration requiring IVF.
   - Each person will receive 200g of handsoap per month.
   - Each family will receive soap for washing clothes and bed linen of patients

Table 7a-4: Description of Cholera Kit and Shigella Kit

	CHOLERA KIT	**SHIGELLA KIT**
REHYDRATION SUPPLIES	• 650 ORS packets • 120 bags Ringer's lactate solution with giving sets • 10 scalp-vein sets • 3 nasogastric tubes for adults and 3 for children	• 100 packets ORS (1 litre each) • 20 bags Ringers lactate solution (1 litre) • 5 scalp vein sets • 10 adult IV giving sets
ANTIBIOTICS	*For 20 severely dehydrated patients:* • Adults: 60 caps doxycyline OR 480 caps tetracycline • Children: 300 tablets TMP/SMX *For 80 contacts of severely dehydrated patients:* • Adults: 240 capsules doxycycline OR 1920 capsules tetracycline	• For adults: 400 1g tablets nalidixic acid • For children: 400 1g tablets nalidixic acid *Note: Nalidixic acid may be substituted with other antibiotics, depending on drug susceptibility patterns*
PUBLIC HEALTH SUPPLIES	• Disinfectant (e.g. cresol) • Muriatic acid • PH testing kits • Chlorine chemicals for water treatment • DPD water testing kits for measuring residual chlorine	• 200 g hand soap per person per month • 30 boxes of laundry soap • 2 one-litre bottles of cleaning solution (2% chlorine or 1-2% phenol)
OTHER SUPPLIES	• Large water dispensers with tap • 1-liter bottles • ½ litre bottles • tumblers • teaspoons • cotton wool • adhesive tape • soap	• Large water dispenser • 1-liter • ¼ liter bottles • tumblers • teaspoons

Source: WHO

7. **Treatment Facilities** — Diarrhoeal disease outbreaks occur most often in the weeks or months that follow the opening of a camp or settlement for refugees or displaced persons. It is not necessary to refer all cases with diarrhoea to health facilities for treatment. Community health workers can be trained to treat people with milder forms of diarrhoea in ORT (oral rehydration therapy) units. This will reduce the burden of care in hospitals, freeing them to care for those with severe diarrhoea and dehydration.

ORT units or a "Diarrhoea Corner" should be set up from the outset of a relief operation. There should be at least one ORT unit for every health facility (health post, health centre, and hospital). Each ORT unit should be equipped to treat about 50 patients per day. An adequate supply of oral rehydration solution (ORS) and potable water should be maintained. However, ORT units should not be limited to ORS distribution. Trained health auxiliaries can be trained to do the following:

• counsel caregivers about the benefits and preparation of ORS

• recognise different levels of dehydration

• follow the algorithm for treatment of diarrhoea

• detect and refer cases with serious conditions (severe dehydration, cholera, or dysentery)

• encourage caregivers to give patients with mild diarrhoea enough fluids for rehydration

• record health data on the patients undergoing treatment

Any obstacles to using ORT should be addressed, such as:

- Cultural practices that may harm patients with diarrhoea: fasting, inappropriate treatment
- Poor patient compliance due to little faith in the effectiveness of ORS

8. **Training in Case Management** — Health workers should be trained to recognise and manage people with complications of diarrhoea.

Case Management for Diarrhoeal Diseases

The goal of case management for diarrhoeal diseases should be preventing death from dehydration and circulatory collapse. Health care professionals as well as community health workers should be trained to classify the level of dehydration among diarrhoea patients, as described in the table below.

Table 7a-5: Clinical Features of Dehydration

Diagnosis	Diarrhoea +/- Mild Dehydration	Moderate Dehydration	Severe Dehydration
Clinical Features	• less than 4 fluid stools/day • alert • not thirsty and drinks normally • little or no vomiting • general condition normal • no signs of dehydration • skin pinch goes back quickly	• 4-10 liquid stools/day • restless, irritable • thirsty and drinks eagerly • dry conjunctiva, lips, and inside of mouth • urine flow reduced or concentrated • skin loses its elasticity and pinch reacts slowly (within 2 seconds) • pulse rapid • respiration deep	• more than 10 liquid stools/day • frequently lethargic • drinks poorly or unable to drink • fluid loss > 8% loss of body weight • no urine flow in previous 8-12 hours • eyes deeply sunken • skin pinch reacts very slowly (after more than 2 seconds) • pulse may be rapid, barely detectable • respiration deep and rapid

All persons with diarrhoea should be encouraged to visit an ORT unit or health facility as soon as possible for assessment and advice on feeding and fluid intake. Patients with severe dehydration should be referred to hospital without delay.

Treatment for Acute Diarrhoeal Illness

Early diagnosis of patients with diarrhoeal illness should be followed by prompt treatment to prevent death from dehydration. The mainstay of treatment for acute diarrhoea is rehydration. Stool losses should be replaced with appropriate fluids, feeding should be continued, and unnecessary medicines avoided. The same principles can be applied to treatment of persistent diarrhoea.

1. **Rehydration Therapy**

    a. **Oral Rehydration Therapy (ORT)**
    Oral rehydration therapy (ORT) is a safe and effective way of treating mild cases of diarrhoea. Even though ORT does not reduce the *duration* of the diarrhoea episode nor the *volume* of stool produced, it can prevent death from dehydration if administered early. People with diarrhoea can absorb ORT even while passing watery stools. The community can be taught how to mix and administer ORS at home. (See the Appendix for the composition of ORS).

b. Intravenous Rehydation

Intravenous rehydration should be used to treat the following patients:

- Patients with evidence of severe dehydration: hypotension, shock, coma
- Patients with severe and protracted vomiting
- Patients with excess stool output, e.g., severe cholera

Note: *To speed up the recovery rate, ORT must be carried out aggressively even during intravenous rehydration. Patients should be constantly encouraged to drink enough ORS in a given period of time.*

Only the most effective intravenous fluids (IVF) should be given:

- Ringer's lactate solution (also known as Hartmanns solution) is very effective.
- Normal saline solutions should only be used if Ringer's lactate is not available.
- Dextrose/water solutions should not be used.

The following table summarises rehydration therapy for different levels of dehydration:

Table 7a-6: Dehydration and Rehydration Therapy

Diagnosis	Recommended Rehydration Therapy
Diarrhoea +/- mild dehydration	**Increase Fluid Intake at Home** • Teach caregivers, especially mothers of children with diarrhoea, to administer ORT 50 ml/kg body weight after each diarrhoea episode. • Advise caregivers to return if watery stools increase, if child is eating or drinking poorly, has marked thirst, is vomiting, or develops other signs.*
Moderate dehydration	**Oral Rehydration Therapy at an ORT Unit or Diarrhoea Corner** • 100ml/kg body weight in 4 hours • Reassess patient every 4 hours to ensure sufficient ORS intake.
Severe dehydration	**Rapid Intravenous Rehydration at Health Facility** • Ringer's lactate (Hartmann's solution) 150ml/kg body weight in 4-6 hours • Oral rehydration therapy to be instituted as soon as a person can take ORS

* Fever or bloody stools

2. Antimicrobials

Although not required for uncomplicated, watery diarrhoea, antimicrobials are essential for treating the following conditions:

- Severe cholera
- *Shigella dysentriae*
- Amoebic dysentery
- Acute giardiasis
- Other infections that may exist with diarrhoea, e.g., malaria, otitis media, pneumonia, etc.

Note: *There is no advantage in using injectable antibiotics, which are more expensive than oral antibiotics. For details about specific antibiotic treatment, refer to "Cholera" and "Dysentery."*

3. Normal Feeding

Patients with mild diarrhoea and those who are have been discharged from treatment centres, should be advised to increase their normal fluid intake until the diarrhoea is resolved. They may drink ORS or other fluids that are available in their home (e.g., cereal-based gruels, tea, soup, and rice water).

Note: *Soft drinks are not encouraged for rehydration of patients with diarrhoea.*

There is evidence that increased feeding after discharge from treatment may reduce the susceptibility to further episodes of diarrhoea by 50%.[v] Therefore, fasting should be discouraged. Even though normal appetite may not return for several weeks after an extended bout of diarrhoea, all patients with diarrhoea should be advised to increase their normal intake of food. Young children with diarrhoea should be given high-energy foods for catch-up growth.

Breastfeeding should be encouraged as it shortens the duration of diarrhoeal episodes in infants. Nutrient-dense weaning foods should be given to those who have already been weaned.

4. Other Medical Interventions
- Other drugs — Anti-diarrhoeal or constipating agents are not appropriate for treatment of diarrhoeal diseases.

- Other procedures — Occasionally, under unusually harsh field conditions, intra-peritoneal drips can be tried for severely dehydrated children whose veins are collapsed. Only experienced people should carry out these procedures.

5. Health Education
Effective case management also includes educating the patient or caregiver about the optimal treatment of acute diarrhoea (which includes rehydration, continued normal feeding, avoiding anti-diarrhoeal drugs and using antimicrobials correctly if prescribed). Caregivers should also be made aware of the danger signs for seeking hospital care and how future diarrhoeal episodes can be prevented (by breastfeeding, measles immunization, improved hygiene practices, etc.)

Treatment for Cholera and Bacillary Dysentery

Treatment for cholera and dysentery is similar to treatment of acute diarrhoea. However, more expertise is needed to keep the case fatality of cholera and bacillary dysentery to a minimum. The initial rehydration of individuals with severe cholera should be aggressive because cholera causes rapid fluid loss. Antibiotics may reduce the volume of diarrhoea among patients with severe cholera and the period *V. cholerae* is excreted in stools. In experienced hands, the case-fatality rate for cholera, even in the midst of large epidemics, need not exceed 1%.

Note: *It is important to understand, however, that it is **rehydration**, not antibiotics, which can save the life of patients with severe cholera. Antibiotics are helpful, but not absolutely necessary.*

All cases of dysentery should be identified as early as possible so that treatment can be initiated without delay. Oral rehydration salts should be used to treat dehydration, or if severe, intravenous fluids. Antibiotics are the main treatment for bacillary dysentery. During an epidemic, it is important to confirm the antibiotic to which the Sd1 organism is sensitive. Urgent efforts should be made to obtain enough antibiotics to treat all affected persons. If there is a shortage, or a problem of drug resistance, the antibiotics should be reserved for those at highest risk of secondary complications and death, namely:
- children under 5 years of age
- adults older than 50 years
- patients presenting with dehydration
- and those with serious underlying conditions such as malnutrition

The following table summarises the treatment approaches for different diarrhoeal diseases:

Table 7a-7: Summary of Treatment for Diarrhoeal Diseases

	Other Diarrhoeal Diseases	Cholera	Dysentery
ORS	Effective for diarrhoea due to rotavirus, E. Coli (enterotoxigenic)	Mainstay of treatment for 80-90% of cases	Can be useful
IVF	Required for cases with severe dehydration	Required for 1% cases who develop severe dehydration	Not often required
Antibiotics	Not useful at all	• Appropriate for moderate or severe dehydration • Selective drug prophylaxis for close contacts	Mainstay of treatment: 5-day course
Specific drugs	Metronidazole (flagyl) for amoebiasis & giardiasis	Tetracycline, cotrimoxazole, erythromycin, doxycycline, chloramphenicol, furazolidone	• Ampicillin & cotrimoxazole not effective in recent outbreaks of Sd 1 [vi] • Increasing resistance to nalidixic acid • Ciprofloxacin effective but costly
Dietary therapy	Increase fluids and food intake	Increase fluids and food intake	Increase fluids and food intake

Note: *To ensure compliance and slow down the development of resistant strains, it is best to administer antibiotics under observation of health workers.*

Control Strategies for Epidemic Diarrhoeal Diseases

Control of diarrhoeal disease outbreaks is similar to prevention. Different environmental control measures may be combined to control outbreaks of faecal-oral diseases. Knowing this becomes important when trying to choose one or two key messages to be included in a campaign or when resources limit the environmental control strategies that can be undertaken.

1. Cholera

    Cholera is perhaps the most *waterborne* of all diarrhoeal diseases. Although food-borne outbreaks are typically less widespread and occur less rapidly than waterborne outbreaks, food has been observed to be the main route of transmission for several recent outbreaks. Measures that may effectively control cholera outbreaks include:

    • **Water treatment**: The first task is to make sure that the water being consumed by the displaced population is chlorinated, either through the water system or bucket chlorination. For emergency settings, water is considered chlorinated when it has a chlorine residual of at least 0.2 mg/l at the time it is consumed.

    Where chlorination is not possible, squeezing a lemon (where available) per litre of water has been proven to be effective at killing the bacteria that cause cholera (*Vibrio cholerae*). Although boiling water can also inactivate bacteria that cause water-borne diseases (V. *cholera*, *E. coli*, salmonella, shigella), it is not practical for most populations, especially if they lack fuel. It should only be considered if chlorination and other measures are not possible. In such situations, the displaced population may be encouraged to drink their water in the form of hot tea.

- **Food safety**: Because bacteria grow well in foods exposed to warm conditions, people should have the fuel to adequately heat their food. Adding acidic sauces to foods (e.g., some brands of tomato sauce) may have some effect against food-borne cholera.

- **Health education**: Educational efforts should focus on getting people to only consume chlorinated or boiled fluids and eat hot, cooked foods or peeled vegetables and fruits. Good handwashing practices among food handlers should be strongly encouraged.

Note: *The following measures are not effective in controlling cholera outbreaks:*
- *Mass chemoprophylaxis and cordon sanitaire (the prevention of potentially infective persons and goods from entering an area) have repeatedly been shown not to work in cholera control.*
- *Cholera vaccination: Currently, an orally administered killed cholera vaccine is available. However, this vaccine is not recommended for emergency and post-emergency settings because:*
  - *Cholera vaccination does not replace other control measures, such as providing adequate clean water, proper sanitation, and re-hydration therapy.*
  - *It is difficult to vaccinate populations in time to protect them from infection. The vaccine must be given in two doses, at least one week apart. Protection is conferred 2-3 weeks after the first dose.*
  - *The vaccine has limited effectiveness in controlling cholera outbreaks. To maintain adequate levels of protection, the entire population must be vaccinated periodically, before an outbreak.[vii]*

2. Shigella

Because the infective dose of shigella species is low, hand-to-mouth or person-to-person transmission is more likely than with many other water-borne diseases. Several epidemiological studies have also linked shigella transmission to flies. Other forms of dysentery generally follow the same transmission patterns. The following control measures may be combined to reduce transmission of bacillary dysentery:

- **Personal hygiene**: An effective personal hygiene program should be initiated, which encourages handwashing with soap and plentiful water after using the toilet and before meals.

- **Safe water and food**: Promote water chlorination and food hygiene.

- **Health education**: Organise outreach programs to focus educational efforts on households with shigellosis patients, since *secondary infections* (infected individuals transmit the disease to other members of the household) are common.

- **Disinfection**: Adequate disinfection of all materials contaminated by infected cases in hospitals and quick burial of those who die from the disease.

The following table summarises the strategies for controlling epidemic diarrhoeal diseases. They all need to be carried out at the community and health facility level.

Table 7a-8: Summary of Control Strategies for Epidemic Diarrhoeal Diseases

SUMMARY OF CONTROL STRATEGIES FOR EPIDEMIC DIARRHOEAL DISEASES
1. Water • Provide adequate quantities of water • Safe drinking water – chlorination, lemon, boiling • Safe water storage – narrow-necked vessels **2. Sanitation** • Safe disposal of excreta • Promote hand-washing • Immediate burial of people who die from these diseases **3. Food** • Promote safe food handling/preparation • Encourage adequate re-heating of leftover food • Promote breastfeeding **4. Clinical Management** • Rapid and effective detection • Proper treatment of clinical cases **5. Hygiene at Health Facilities** • Enforce hygienic practices and disinfection in health facilities

Appendix

Adequate supplies of oral rehydration salts should be available when needed, during all phases of the emergency. The composition of ORS solution approximates the water and salts lost in diarrhoeal stools. The following table defines the composition of pre-packaged ORS formula.

Composition of ORS Formula

ORS FORMULA (WHO/UNICEF)	
Glucose	20 g
Sodium chloride	3.5 g
Sodium bicarbonate	2.9 g
OR	
Trisodium citrate dihydrate	2.5 g
Potassium chloride	1.5 g
Water	1 litre

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EMERGENCY IMMUNISATION PROGRAMS

Description

This chapter describes the role of immunisation in preventing outbreaks of vaccine-preventable diseases in emergencies. It can serve as an aid for planning, organising, and evaluating emergency immunisation programs.

Learning Objectives

- To discuss the role of EPI and the important vaccines in emergencies.
- To outline the key steps for an immunisation response to disease outbreaks.
- To define indicators for monitoring and evaluating immunisation programs.

Key Competencies

- To understand the outcome of EPI and the basic properties of measles and meningitis vaccines.
- To define the target group and the resources needed for a measles immunisation campaign.
- To monitor and evaluate an emergency immunisation program.

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OVERVIEW OF IMMUNISATION AND VACCINES

Introduction

Immunisation is defined as the introduction of a *vaccine* into a person's body to protect him or her against a particular disease. Vaccines contain either small parts of the viruses or bacteria, or very small amounts of chemicals (micro-organisms or toxoids) that are treated so they do not cause disease. When a vaccine is introduced into one's body, the immune system is stimulated to produce *antibodies* that protect against future infections or severe disease. Generally, vaccines are given to the youngest age group at risk of a particular disease. This ensures that they provide adequate protection.

Note: *The terms* vaccination *and* immunisation *are used interchangeably throughout this chapter*.

Table 7b-1: Terms and Definitions

Antibodies	Cells of the immune system that are generated upon exposure to specific pathogens and capable of bringing forth a protective response against them.
Booster	Additional immunisations given to enhance immunity gained through routine EPI vaccination.
Cold Chain	Process by which a vaccine is kept cold from the point of manufacture to the point of use.
Emergency Immunisation Kit	Kits equipped with cold chain and disposable material, designed for mass immunisation in emergency situations.
EPI	Expanded Programme on Immunisation
Immunity	Being resistant or not being affected by a specific pathogen.
Immunisation or Vaccination	The introduction of a vaccine to a person's body in order to protect him or her against a particular disease.
Immunisation Coverage	The proportion of people at risk for a particular disease who are vaccinated.
Herd Immunity	Level of immunity in a population, which prevents epidemics. The level of vaccine coverage necessary to achieve herd immunity depends on the disease.
Mass Immunisation	Immunisation of large groups "at the same time" as follows: • Selective immunisation – the immunisation status of each individual in the target group is first verified and all those without an official document are vaccinated. • Mass immunisation – all individuals in the target group are vaccinated regardless of their immunisation status.
Missed Opportunity for Immunisation	Occurs when a child or a woman of childbearing age comes to a health facility or outreach site and does not receive any or all of the vaccine doses for which he or she is eligible.
Vaccine	A suspension of chemicals (toxoids or micro-organisms) that are treated so that they do not cause severe infection but are capable of stimulating the body's immune system to produce antibodies.
Vaccine Effectiveness	Measures whether the vaccine protects against disease in "real life" situations.
Vaccine Efficacy	Percent reduction of disease incidence among vaccinated persons compared to the unvaccinated.

Expanded Programme on Immunisation (EPI)

About 2 million deaths occur every year due to vaccine-preventable diseases—namely poliomyelitis, diphtheria, pertussis, tetanus, measles, and tuberculosis (in countries with a high incidence of tuberculosis infection). Most of these deaths occur in developing countries. In an effort to control diseases, the World Health Organisation (WHO) introduced the **Expanded Programme on Immunisation (EPI)** in 1974. The priority for EPI is to immunise over 90% of infants (i.e., achieve high **immunisation coverage**) in order to reduce the incidence of the six vaccine-preventable diseases. The following table summarises the recommended EPI schedule for all infants in developing countries:

Table 7b-2: Recommended Immunisation Schedule by the WHO Expanded Programme on Immunisation

Vaccine	Birth	6 weeks	10 weeks	14 weeks	9 months
Bacillus of Calmette and Guerin vaccine (for tuberculosis)	BCG				
Oral polio vaccine	OPV 0	OPV 1	OPV 2	OPV 3	
Diphtheria, Pertussis and Tetanus vaccine		DPT 1	DPT 2	DPT 3	
Measles vaccine*					Measles
Yellow fever vaccine**					Yellow fever
Hepatitis B vaccine** *Scheme A*	HB 1	HB 2		HB 3	
Scheme B		HB 1	HB 2	HB 3	

* In situations with a higher risk of death among children under 9 months (e.g. refugee camps, HIV-infected infants), two doses of measles vaccine are recommended at 6 months and 9 months.

** In countries where yellow fever poses a risk

*** HB vaccine is recommended for countries with high prevalence of hepatitis B virus (HBV): Scheme A – for countries with frequent perinatal transmission; Scheme B – for countries with a lower HBV prevalence or perinatal transmission.

Outcome of EPI

The EPI can affect the epidemiology of disease in the following ways:

1. High immunisation coverage can reduce the overall incidence of a disease in a population.

2. Outbreaks of vaccine-preventable diseases may occur in areas with low immunisation coverage, e.g., urban slums, remote rural areas, nomadic people, ethnic minorities or communities that refuse to be immunised.

3. Immunisation given during infancy may cause the proportion of cases in older children to increase, although the absolute number of cases with disease falls.

4. As the spread of diseases decreases, the immune system is less likely to be boosted by exposure to infectious agents, and immunity may be lost.

5. Outbreaks of vaccine-preventable diseases are likely to occur after several years of low incidence. These outbreaks may affect older age groups, unimmunised people, immunised people who did not respond to the vaccine, and individuals with lowered immunity.

6. Immunising a large enough proportion of the population against a particular disease can reduce the likelihood that unvaccinated people in that community will be exposed to an infectious agent. This concept is known as "*herd immunity*."

Important Vaccines in Emergencies

Although organising vaccination programs is difficult, two vaccines are essential in emergency settings:

1. **Measles vaccine —** mass vaccination of all children between 6 months and 12 or 15 years is considered an absolute priority during the first week of an emergency, regardless of their immunisation status or the threat of a measles outbreak.[i]

2. **Meningitis vaccine** — when used in mass campaigns, this vaccine can effectively control outbreaks of meningococcal meningitis due to serogroups A and C, within two to three weeks.[ii]

The following table summarises the main properties of measles and meningitis vaccines.

Table 7b-3: Properties of Measles and Meningitis Vaccines

PROPERTIES	MEASLES	MENINGITIS
Vaccine Type	Live virus	Bacterial polysaccharide (combined vaccine for serogroups A-C)
Vaccine Stability	Very sensitive to heat. Dry vaccine potent for at least one year if kept cold (2° - 8° C). Reconstituted vaccine loses potency very quickly even if kept cold.	Very sensitive to heat. Not destroyed by freezing.
Dose and Administration	• Single dose by SC injection usually for children aged 9 months. • Children with known or suspected HIV infection should be immunised for measles earlier, i.e., at 6 months followed by a second dose at 9 months.	During meningitis Group A outbreaks: • Adults – single dose by IM injection • Children less than 2 years – two doses given 3 months apart During meningitis Group C outbreaks: • Adults – single dose by IM injection • Children less than 2 years – does not stimulate effective antibody levels
Immunity	Life-long protection with booster; shorter protection if no booster.	Protects anyone over 2 years for 1-3 years.

* Vaccine efficacy is lower if maternal antibody present.

Once an epidemic of measles or meningitis is detected, relief agencies need to vaccinate all the people at risk as soon as possible in order to prevent excess mortality. However, problems commonly arise during the following activities:
• deciding whether sporadic cases of a disease (particularly meningitis) indicate an epidemic
• procuring vaccines
• delivering vaccines to remote field sites
• organising a mass campaign
• vaccinating the population at risk in time to interrupt disease transmission

See the chapter on *Control of Communicable Diseases* for more details about the epidemiology, surveillance, and control of measles and meningitis infections.

ESTABLISHING AND EVALUATING IMMUNISATION ACTIVITIES

Planning the Immunisation Program

Relief agencies should make measles immunisation one of the priority interventions during the acute emergency phase. Immunisation campaigns or programs for other diseases should not be set up unless the following criteria are met:[iii]

- the population is expected to remain stable for at least 3 months
- the agency has adequate operational capacity to administer vaccines
- the program can be integrated into the national EPI within a reasonable time period.

A committee must be formed at the beginning of the relief program to co-ordinate the preparedness measures and response to disease outbreaks. It should include members from the national EPI, health facilities, logistics and drug supply, the affected community, and non-governmental organisations concerned with health care.

The following steps may be followed when organising immunisation activities:

1. Define the Target Population

In emergencies, it is important to begin with a mass immunisation campaign for measles and follow up with routine immunisation activities. Both the epidemiological and resource availability data are critical for identifying which age group should be targeted.

Table 7b-4: Defining the Target Population and Timing of Mass Campaigns

	MEASLES	MENINGITIS
Timing of mass immunisation	Initial phase of the emergency situation	As soon as the epidemic is confirmed (for desired impact, implement within the first 4-8 weeks of outbreak)
Target population, if adequate resources (e.g., vaccines, staff)	• All displaced children from 6 months to 12 years of age • All children from the host population, especially if the local population is hosting the displaced population • Malnourished children (top priority)	• Entire population or all persons aged 6 months to 30 years • Neighbouring host populations
Target group when resources are scarce	• Undernourished or sick children 6 months – 12 years of age, who are enrolled in a feeding program (supplementary or therapeutic feeding program) • All children 6 – 23 months of age • Children 24 – 59 months of age	• Focus on age groups most at risk * • Limited to active case detection and early treatment
Contraindications for mass campaign	• None	• If the epidemic is decreasing • Proximity of rainy season might lead to decision not to immunise[iv]

* Need to identify those with the highest attack rates or making up the largest proportion of cases.

The total displaced population is usually estimated during the first phase of the initial assessment. Target groups may be estimated from a typical population as follows:

- children 0-11 months = 4%
- children 0-4 years = 17%
- children 5-14 months = 28%
- women 15-44 years = 25.5%
- pregnant women = 4%.

2. **Obtain a Map of the Site**

Obtain or create a spot map to help identify where most cases are located. Identify the access roads, reception area for the new arrivals, health facilities, and other important points. Vaccinations should be concentrated where the outbreak is occurring most heavily, and should then progress to surrounding areas. Refer to the *Disaster Epidemiology* chapter for details about mapping.

3. Define the Vaccination Objectives and Strategies

It is important to set objectives for immunisation. These can be used to measure the success of the intervention. The following objective may be appropriate for measles immunisation:

> *To immunise at least 9 out of every 10 displaced children under 5 years against measles within 2 weeks*

In emergencies, there are two main strategies for immunising displaced populations. Time and resource availability will help determine which strategy should be selected:

a. Mass Immunisation — Mass campaigns are recommended for eliminating vaccine-preventable diseases among displaced population as follows:

- When the influx of displaced populations is steady and a screening centre has been established, displaced people may be immunised agaisnt measles as they arrive at the settlement.

- A mass immunisation campaign may be carried out as soon as an outbreak of measles, meningitis, or other EPI disease is detected. The campaign should begin where the epidemic is most severe. Outreach teams may be organised to administer the vaccines to displaced populations that have settled in camps.

b. Fixed Immunisation — Ongoing immunisation against EPI diseases should be an integral part of health care for displaced people. During the acute emergency phase, health facilities should be equipped to routinely immunise the following people against measles:

- children who may have been missed during the initial vaccination campaigns

- new arrivals

- children vaccinated at the age of 6-9 months who need to receive a second dose at 9 months, if this is the policy

- new groups of children reaching the age of 9 months

National immunisation days may be used to vaccinate all children between 9 and 14 months against measles, whether or not they already have been immunised.

4. Identify Constraints

It is important to identify and address major constraints to immunisation, for example:

a. Insufficient Supply of Syringes — this may lead to unsafe injections with transmission of blood-borne diseases. Good quality vaccines, disposable syringes, safety boxes, and sterilisation equipment are essential for ensuring the safe administration of vaccines during mass immunisation campaigns[v].

b. Existing Taboos or Objections to Immunisation — these should be investigated and addressed. Adverse effects of immunisation can influence a community's acceptance of immunisation. In developing countries, most adverse effects are due to faulty administration rather than properties of a particular vaccine.[vi]

c. Poor Access to Health Services — the health team should ensure continuous availability of vaccines, at times when it is convenient for mothers to bring their children, and extend their services into the community.

5. **Estimate the Quantity of Vaccines and Other Supplies Needed**
   Consult the national EPI officials, UNICEF, and other NGOs about the procurement of vaccines. The following steps may help define the amount of vaccines and other needs:

   a. Estimate the total population and the target groups based on estimates described earlier.

   b. Estimate the desired immunisation coverage e.g., 100%.

   c. Calculate the number of doses required per target individual based on the national immunisation schedule (measles – 1 dose, BCG – 1 dose, meningitis – 1 dose, tetanus – 3 doses, etc.).

   d. Estimate the vaccine loss factor, which depends on the strategy used, e.g., during measles vaccination campaigns, the vaccine loss factor is 15% (i.e., 15 doses of measles vaccine are lost out of every 100 doses).

   e. Add the reserve stock, usually 25%.

   f. Calculate the volume of stock needed per month. This will depend on the loss factor, the reserve stock, and volume of the vaccine per vial as shown in the following table:

   Note: *Vaccine orders always should be calculated by the number of doses, since vials may contain 10, 20, or even 50 doses.*

Target Population	Estimated Doses (x 1)	Loss Factor (15%)	Reserve Stock (+ 25%)	Volume of Stock/month (x 10- dose vials)
1000	1000 x 1 = 1000	1000 x 1.15 = 1150	1150 x 125% ~ 1440	1440 / 10 ~ 144 vials

   g. Estimate the frequency of restocking. It may be monthly or quarterly depending on the distance from the central store, available transportation, and the amount of available stock.

   h. Estimate other equipment and materials needed to carry out a mass campaign.

   Standard **Emergency Immunisation Kits** have been developed by WHO and OXFAM. They can be used to set up and run an emergency immunisation operation where there are no existing vaccination supplies and cold chain. Each kit contains enough materials and equipment to immunise 5,000 individuals. The following table summarises the contents of each kit:

Contents of Emergency Immunisation Kits	
Equipment for storage	refrigerator, deep freezers for ice packs
Equipment for transport	cold box, ice packs, vaccine carriers
Injection equipment	syringes, disposable needles, sterile swabs, safety boxes
Equipment for preparing vaccines	5 ml syringes, 19 gauge needles
Energy source	generator, electricity/gas/kerosene
Registration material	individual vaccination cards, tally sheets, instruction manual

6. **Vaccine Transport and Storage**[vii][viii]
    While vaccines are among the most important advances in medicine, some can only work if stored at the right temperature (0-8° C). The process by which vaccines are kept cold from the point of manufacture to the point of use is called the "**cold chain**." Maintaining the cold chain involves the use of cold storage boxes, portable vaccine carriers, refrigerators, as well as monitoring the temperature closely. Major advances have been made toward monitoring the cold chain, e.g., *vaccine vial monitors* (VVM) that change colour when vaccines are exposed to an elevated temperature. Guidelines on refrigeration of vaccines in health facilities are summarised in the following table:

    Table 7b-5: Guidelines for Vaccine Storage in Refugee Health Centre Refrigerator

    - Arrange and retrieve vaccines using the "first in, first out (FIFO)" system
    - Check expiration dates
    - Do not store vaccines here for more than one month
    - Store vaccines between 0 and 8 degrees Celsius
    - Check and record the temperature twice a day
    - Defrost if ice is more than 1/5 cm thick

7. **Recruit and Train the Vaccination Team**
    The following table summarises the minimum staff requirements for a vaccination team:

    Table 7b-6: Staff Requirements for Vaccination Team

Staff	Job Description
1 supervisor	to supervise and teach
1 logistics officer	to organise sites, transport team and equipment
4 assistants	to prepare the vaccines
2 health workers	to administer the vaccines
6 registration clerks	to register and complete report forms
6 community monitors	to maintain crowd control

    For successful vaccination, each team needs to be trained in the following:
    a. How to inject a child or adult with the appropriate needle and syringe.
    b. How to maintain vehicles and refrigerators and how to pack vaccines safely.
    c. The true and false contraindications to immunisations.
    d. How to avoid a *missed opportunity for immunisation*. This occurs when a child or a woman of childbearing age visits a health facility or outreach site and does not receive any or all of the vaccine doses for which he or she is eligible

8. **Organise an Immunisation Campaign**
    To be successful, the campaign requires good organisation. This can be achieved as follows:
    a. Involve national EPI staff and appoint a single agency/person to co-ordinate the campaign.
    b. Assign specific tasks for different agencies and people involved.
    c. Inform the target population in advance about the campaign via megaphones, community leaders, health workers, or district chiefs.
    d. Organise the site for the vaccination campaign. Ropes may be used to establish waiting lines and boundaries for different areas. Waiting lines should be narrow.
    e. Mobilise the resources for the mass immunisation program. The target group, vaccines, personnel, and equipment must be brought together in the right place at the right time.
    f. Maintain a daily record of the number of children vaccinated. Individual immunisation cards should be issued for each person that is immunised.

Evaluating a Routine Immunisation Program[ix]

Immunisation programs should be monitored and evaluated regularly to detect problems and determine whether the objectives were achieved. This requires a system for recording the number of persons vaccinated per day and the number of vaccine doses used. Daily records make it possible to calculate the following indicators:

Key Indicators for Immunisation

1. **Immunisation Coverage** — the proportion of the people at risk who are vaccinated.

$$\text{Immunisation coverage (\%)} = \frac{\text{number of doses administered}}{\text{target population to be vaccinated}} \times 100$$

Note: *Alternative methods for estimating the immunisation coverage include the following:*
1. *Check immunisation records of a random or systematic sample of children (do not use a haphazard or convenience sample).*
2. *Survey a supplementary feeding program which covers a high fraction of the under 5 population.*
3. *Survey children's records during general food distribution.*
4. *Survey children upon entry into camps or during transfer from one camp to the other.*

2. **Vaccine Utilisation** — the percentage of vaccines utilised.

$$\text{Vaccine utilisation} = \frac{\text{number of doses administered}}{\text{No. of opened vials} \times \text{no. of doses/vial}} \times 100$$

3. **Vaccine Efficacy** — the percentage reduction in disease incidence among vaccinated people compared to unvaccinated people.

$$\text{Vaccine Efficacy (\%)} = \frac{\text{Attack rate unvaccinated} - \text{Attack rate vaccinated}}{\text{Attack rate unvaccinated}} \times 100$$

Vaccine efficacy needs to be calculated when an outbreak of a vaccine-preventable disease occurs despite a high immunisation coverage. This will help confirm if the vaccine provided adequate protection. If the field vaccine efficacy is well below the expected vaccine efficacy, investigate and correct the cause (e.g., a poor maintenance of the cold chain).

Note: *The validity of vaccine efficacy depends on the following:*
1. *Case definition of the target disease and disease verification*
2. *Active detection of cases among the immunised and non-immunised*
3. *Accurate recording and checking of vaccination status on cards*
4. *Risk of exposure among immunised and non-immunised*

4. **Weekly Monitoring Indicators**
- Immunisation sessions planned and held
- Availability of vaccines, syringes, sterilisation equipment and other cold chain supplies
- Daily record of refrigerator temperature (twice daily)
- Immunisation status of patients at the clinic
- Functioning emergency generator/spare gas cylinder/reserve supplies of kerosene
- Weekly vaccination coverage – estimate by using the following chart:

No. vaccinated	Mass Campaign A		Routine vaccination B		Cumulative measles vaccination coverage*
< 5 years old	No. this week	Cumulative No.	No. this week	Cumulative No.	
> 5 years old					
TOTAL					

* Calculation of the cumulative coverage: A + B/ target population.

- **Adverse effects** — Adverse effects of immunisation should be closely monitored and investigated, in order to determine the cause. Reported cases should be given adequate information, reassurance, and care. Adverse effects due to program errors may be corrected through supervision, logistical support and training.

5. **Monthly Monitoring Indicators**
   - Percentage of target children who received vaccine
   - Drop out rate
   - Number of children with target disease coming to the clinic
   - Changes in the crude death rate (CMR) and under 5 year mortality rate

Evaluating an Outbreak Response[x]

A crisis committee should monitor and evaluate the immunisation response to an outbreak as follows:

1. **Monitoring During the Outbreak**
   The following indicators should be reviewed regularly:
   - Supply of antimicrobials and administration materials
   - Vaccine supplies
   - Transport needs
   - Daily or weekly incidence of the disease by area and age
   - Case fatality by area

     Note: *High case fatality rates (depending on the disease) indicate a need to review treatment routines.*

2. **Post-Epidemic Evaluation**
   Disease surveillance should continue after an outbreak, since the epidemic may re-emerge in areas that were previously not affected. In addition, the following actions should be taken:
   - Carry out a sample survey for vaccine coverage (in different places and age group).
   - Assess the case management, vaccination and logistic problems.
   - Measure the impact of the epidemic on health care activities and on the community.
   - If new confirmed cases occur in vaccinated areas, study the vaccine effectiveness.
   - Evaluate the cost of treatment and vaccination campaign.

A report on the outbreak should be distributed to the displaced community, local authorities, and international organisations (e.g., WHO and UNICEF). If the response was not satisfactory, problems should be investigated to improve future immunisation strategies.

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PRIMARY HEALTH CARE (PHC)

Description
This chapter gives an overview of the role of Primary Health Care (PHC) in humanitarian emergencies. It can also serve as an aid for implementing emergency PHC at the district level.

Learning Objectives

- To review the primary health care concepts and their relevance to humanitarian emergencies.
- To characterise a functioning district-level health system in developing countries.
- To compare the emergency health care and primary health care strategies.
- To define the steps for implementing primary health care in relief programs.

Key Competencies

- To describe the importance of the PHC approach to humanitarian emergencies.
- To define the components of a district-level health system.
- To understand the similarities and differences between emergency health care and PHC strategies.
- To design an emergency PHC program.

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Introduction

The primary responsibility for the care of a large displaced population falls on the government authorities in the host country where a displaced population has "settled." If the host country is unable to meet the health needs of the affected people, the host government authorities should invite humanitarian organisations to strengthen the local emergency response. The health needs of large displaced populations are not any different from the everyday health needs of many urban or rural communities in developing countries. Once the crisis is over, the displaced population is likely to return to an environment with limited resources for health care. It would be inappropriate to get them used to a standard of health care that cannot be achieved with their local resources. Therefore, humanitarian assistance should be delivered within the Primary Health Care (PHC) framework so that whatever skills the displaced population gains through community participation, health education, nutrition, and preventive health measures, can enable them to take responsibility for their health and rebuild their future.

OVERVIEW OF PRIMARY HEALTH CARE

Primary Health Care (PHC) is defined as:

> *Essential health care based on practical, scientifically sound, and socially acceptable methods and technology made accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain in the spirit of self-reliance and self-determination.* (Health for All by the Year 2000, WHO 1978, Alma Ata)

Table 8-1: Terms and Definitions

Basic Health Facility	The first level of health care in the health system. Offers mainly ambulatory care, outreach and referral services. It is usually staffed by medical assistants, nurses, and auxiliary staff.
Community Participation	Involving families and communities who, rather than being mere beneficiaries of health care, share the responsibility of caring for their health. This promotes individual involvement and self-reliance.
Decentralisation	Transferring authority or responsibility in planning, managing resources and/or decision-making from the central level of government to the district and local levels.
District	The smallest, well-defined, administrative and operational unit of a central government. Represents the level where qualified personnel from different sectors can work directly with the community and other agencies.
District Health System (DHS)	A health care system set up for delivering primary health care to a population within a well-defined geographical area. It includes all concerned health care agencies, which are organised and co-ordinated by district health authorities. Managing a DHS requires involvement of multiple sectors as well as the community.
Equity	Providing equal health care to all groups of people according to their needs. Concerned with ethical aspects of service being delivered: giving highest priority to those with greatest health needs.
Health Workers	Physicians, medical assistants, nurses, auxiliaries, community health workers (CHWs) and traditional healers functioning within the health care system.

## Principles of Primary Health Care

Primary health care is based on five main principles:

1. **Equity** — Services should be physically, socially, and financially accessible to everyone. People with similar needs should have equal access to similar health services. To ensure equal access, the distribution of resources and coverage of primary health care services should be greatest in those areas with the greatest need.

2. **Community Participation** — In addition to the health sector, families and communities need to get actively involved in taking care of their own health. Communities should participate in the following:

- creating and preserving a healthy environment
- maintaining preventive and promotive health activities
- sharing information about their needs and wants with higher authorities
- implementing health care priorities and managing clinics and hospitals

3. **Inter-Sectoral Approach** — PHC requires a co-ordinated effort with other *health-related sectors* whose activities impact on health e.g., agriculture, water and sanitation, transportation, education, etc. This is necessary to achieve social and economic development of a population. The health sector should lead this effort. The commitment of all sectors may increase if the purpose for joint action and the role of each sector is made clear to all concerned.

4. **Appropriate Methods** — An increasing complexity in health care methods should be observed upward in the PHC pyramid, (see Figure 8-1 below). Care-givers should be trained to deliver services using the most appropriate and cost-effective methods and equipment for their level of care.

Note: *Appropriate technology does not necessarily mean low technology.*

Figure 8-1: Pyramid of Primary Health Care
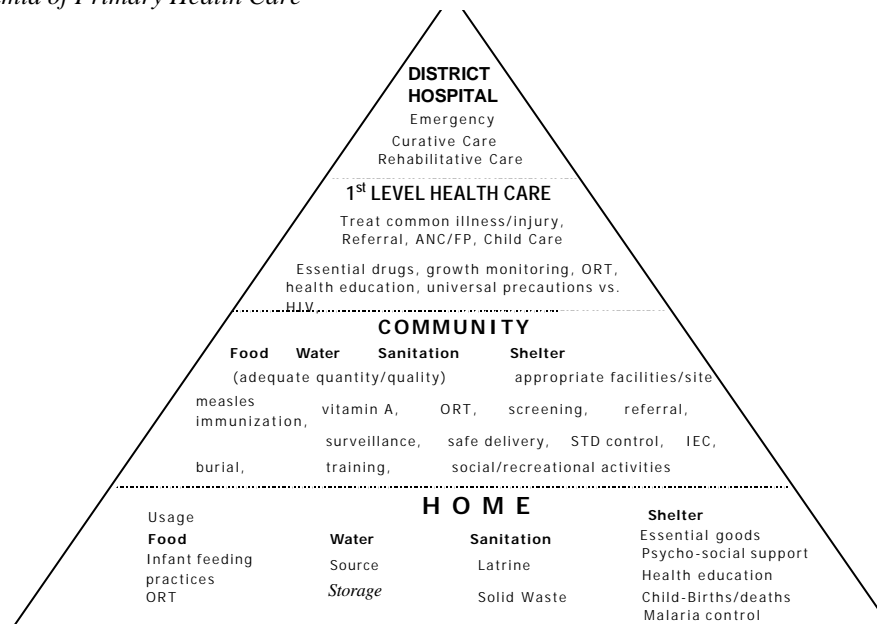
5. **Health Promotion and Prevention —** PHC requires a comprehensive approach that is based on the following interventions:

- **Promotive** — addresses *basic* causes of ill-health at the level of society.
- **Preventive** — reduces the *incidence* of disease by addressing the immediate and underlying causes at the individual level.
- **Curative** — reduces the *prevalence* of disease by stopping the progression of disease among the sick.
- **Rehabilitative** — reduces the long-term *effects* or complications of a health problem.

Comprehensive PHC combines facility-based health services (curative and rehabilitative) with multi-sectoral public health interventions (promotive and preventive). Because this approach is more effective in sustaining the overall well-being of a population, it should be supported by the community. The following table shows how the comprehensive framework of PHC services can be used to address common health problems.

Table 8-2: Comprehensive Framework of Primary Health Care

DISEASE/ INTERVENTION	PROMOTIVE	PREVENTIVE	CURATIVE	REHABILITATIVE
Diarrhoea	Safe water, basic sanitation, food security, health education, child care	Education (on personal hygiene), breast feeding, measles immunisation	Oral rehydration, nutrition support, (drug therapy)	Nutrition rehabilitation, special ORS
Pneumonia	Good nutrition, adequate shelter, clean air, health education	Immunisation, breast feeding, vitamin A supplement	Drug therapy	Nutrition rehabilitation
Measles	Good nutrition, ventilated housing, health education	Immunisation	Drug therapy, nutrition support	Nutrition rehabilitation
Malaria	Good nutrition, vector control, health education	Mosquito nets, drug prophylactics	Drug therapy	Nutrition rehabilitation
Anaemia	Vector/parasite control, Good nutrition, health education	Screening, Iron/folate prophylactics, de-worming	Dietary supplement, blood transfusion, nutrition support	Nutrition rehabilitation (iron-rich food)
Tuberculosis	Good nutrition, ventilated housing, health education	Immunisation, contact tracing	Drug therapy, family counselling, nutrition support	Social integration

Comprehensive PHC requires health workers to identify solutions that involve the community, as follows:

1. It is not enough to provide oral rehydration solution and medical treatment to a sick child with diarrhoea. Maintaining the health of the child also requires providing family education on child care and environmental hygiene, as well as improving access to food.

2. In addition to counselling on breast-feeding, growth monitoring, nutrition rehabilitation, and child care, a nutrition program should promote weaning foods that are available locally.

3. PHC services for healthy people (e.g., pre-natal care, immunisation, health education) should be established as soon as possible through community-based health interventions.

Challenges to Primary Health Care

Large gaps may be observed when planning and implementing comprehensive Primary Health Care (PHC). Some of the current challenges to PHC include the following:

- Improper translation of PHC as *primary level of care* (first level health care in the pyramid), which ignores the overall integrated nature of PHC.
- The community may not be willing to take responsibility for the health care system.
- Drugs may not be available at lower levels of the PHC system. Therefore, patients will go directly to hospitals.
- Prolonged delays in health worker salaries may result in hostile attitudes towards patients.
- Referral system may not be functioning well.
- Lack of supervision and training may result in poor quality of services.
- Different sectors may not be used to working together.

Translating Primary Health Care

PHC is based on the fact that most health problems can easily be handled outside the hospitals. Therefore, to provide the best possible care for the greatest number of people, certain health care functions should be transferred to lower levels in the PHC pyramid as illustrated in Figure 8-2 below:

Figure 8-2: Functional Levels of Primary Health Care
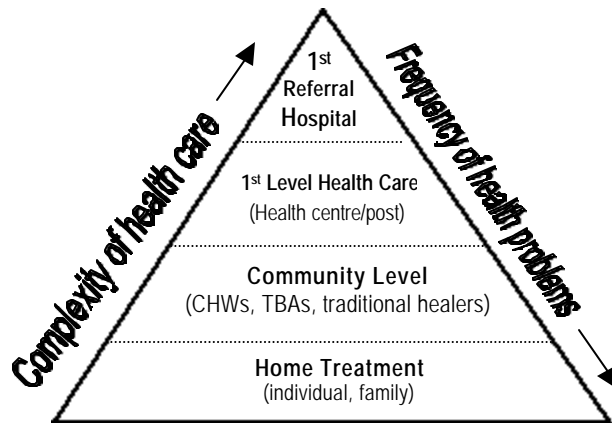
Note: *The second referral (provincial or regional hospital) and third referral levels (national hospital) do not fall under PHC.*

Because resources for health care are always limited, health planners should first focus on strengthening health centres and medical posts rather than referral hospitals. Providing basic level health care at health centres and health posts or dispensaries is more cost-effective, whereas services at referral hospitals are more costly since they are delivered by personnel with more advanced training (refer to the inverted pyramid in Figure 8-3 below).

Figure 8-3: Resource Needs for Different Levels of Health Care
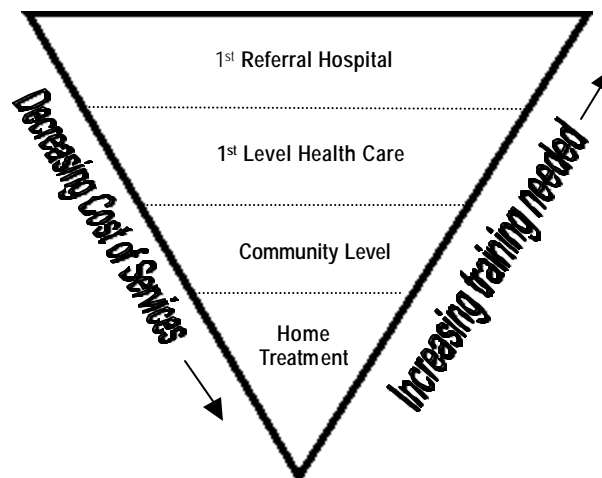
Even though first referral hospitals are expensive to run, they should be supported within the PHC framework because they provide care for serious medical conditions and injuries that cannot be adequately treated at the lower levels of the PHC system.

THE DISTRICT-LEVEL HEALTH SYSTEM

A health system where the central authorities within the Ministry of Health (MOH) are responsible for running the health services for the entire nation is known as a *centralised health system.* Primary health care is best implemented in a *decentralised* system, which transfers the authority and responsibility for planning, managing resources and/or decision-making from the central MOH to the district and local levels. Transferring management functions closer to the local health authorities gives the local communities a louder voice in determining how clinics and hospitals can improve the quality of health care being provided.

Defining the District-Level Health System

The following table defines the characteristics of a well-functioning district health system:

Table 8-3: Characteristics of a Well-Functioning District Health System

> A district health system is based on primary health care. It serves a well-defined population living within a clearly delineated administrative and geographical area. It includes all relevant health care agencies in an area (government, private, professional or traditional) which co-operate to create a district system and work together within it.
>
> The district health system contains a variety of inter-related elements that contribute to health in homes, schools, work and communities, and is multi-sectoral in orientation. It includes self-care and care provided through health care workers and facilities, including the hospital, with supportive services (laboratory, logistical, etc.)
>
> It needs to be managed by an individual with public health and curative responsibilities in order to combine the elements and institutions into providing a fully comprehensive range of promotive, preventive, curative and rehabilitative health activities, and to monitor progress.

Expected benefits of a well-functioning district health system include:
- a rational and unified health system that meets the basic health needs
- flexible management of health services, with minimum logistical and administrative delays
- more equitable health services to the entire population
- improved management of resources
- co-ordination and integration of health care with activities of other sectors
- a means for facilitating community participation and accountability to the community
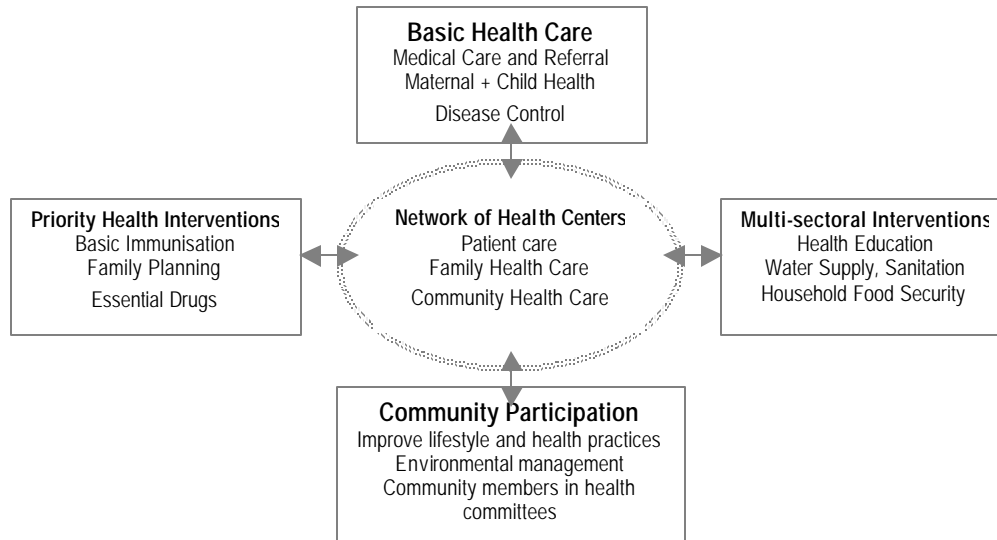- better performance through an efficient and motivated workforce

Because **health centres** are often the first contact the community has with the formal health system and most of the district level health workers are based there, health centres should be equipped to function as the focal point for comprehensive PHC. Resources should be readily available at this level to maintain adequate and stable levels of staffing and supplies.

Health centres should function in the following ways to reflect their important role:
- the centre for community participation
- the base for preparing community health programs (e.g., health education, immunisations, sanitation).
- the focal point of inter-sectoral teamwork within the district-level health system.

The figure below illustrates the central role of health centres:

Figure 8-4: The District-Level Health System

Basic Health Care
Medical Care and Referral
Maternal + Child Health
Disease Control

Network of Health Centers
Patient care
Family Health Care
Community Health Care

Priority Health Interventions
Basic Immunisation
Family Planning
Essential Drugs

Multi-sectoral Interventions
Health Education
Water Supply, Sanitation
Household Food Security

Community Participation
Improve lifestyle and health practices
Environmental management
Community members in health committees

Key Issues of a District-Level Health System

The following key issues should be addressed to ensure a well-functioning district health system:

1. Co-ordination

The highest authority in the district-level health system should be made responsible for organising and co-ordinating comprehensive PHC services for the entire population. However, coordination depends on adequate logistical financial support and training from the central authorities.

2. Health Management Teams

In a district-level health system, decision-making is shared among the central MOH, the district health offices, the health facilities, and the community. This can only be achieved through formation of health management teams at every level of health care, for example:

- District health management teams should include the medical superintendent, the senior nursing officer (matron), the hospital secretary, and elected community leaders.
- At the health centre level, the management team may include the clinical officer or the nurse in charge, other staff, and members of the community.
- At the community level, a health committee may include the health auxiliary, the community health worker, and the village elders.

Local authorities from other health-related sectors, representatives from NGOs and other interested groups may be included in these health management teams. Each team should be given advisory roles and regulatory powers for managing the PHC services (immunisation, maternal health/pre-natal care, water and sanitation, treatment of tuberculosis/leprosy, clinical services).

3. Community Participation

Community participation may be interpreted in various ways. It may range from district authorities informing community leaders about what the health sector has planned to community leaders being actively involved in making decisions (e.g., determining health priorities or strategies). The level of participation may greatly depend on the community leaders in local health committees: how they were selected, their capacity to mobilise community action and to demand accountability, and the amount of social and political support they can rally. The community should be encouraged to join forces with other sectors, organisations and groups when planning comprehensive PHC programs.

4. Resources for PHC

Implementing PHC requires resources to be readily available, particularly at the health centre level. Adequate and stable levels of staffing and essential supplies need to be maintained. In addition, district health authorities should encourage all levels to make maximum use of resources available locally. Sometimes these resources are not available because of logistical, financial, or managerial problems. In such situations, appeals for funding may be sent to donors that are interested in strengthening the district health system infrastructure. Otherwise, local NGOs and existing community groups may be supported to extend services to outlying areas.

5. Health Information

Indicators for monitoring the PHC program should be defined for all essential PHC services. Information from monitoring these indicators can be used for making decisions and setting policy. The following table gives examples of PHC indicators:

Table 8-4: PHC Indicators, Target Group, and Optimal Coverage

PHC SERVICES INDICATOR	TARGET GROUP	OPTIMAL COVERAGE
No. of under-five children weighed per month	All children aged 0-59 months	100% of under-5/month
No. of women provided ante-natal care per month	All pregnant women	50% of pregnant women/month
Number of assisted deliveries per month	All deliveries	1/12 of total group/month
No. of children immunised against measles per month	All children aged 9-12 months	1/12 of total group/month
No. of OPD consultations per month	4 per person/year	0.33 per person/month

RELATING PRIMARY HEALTH CARE TO EMERGENCY HEALTH CARE

Many acute emergencies are characterised by a large displaced population living under crowded, unhygienic and often unsafe conditions. A significant proportion of the displaced population may lack access to basic needs, including health care. Under these conditions, setting up curative services alone is unlikely to improve the health of the majority of the displaced population. Long-term recovery of the sick and injured may be hampered by constant exposure to communicable diseases, poor health practices, and malnutrition. Transmission of chronic diseases such as tuberculosis and HIV/AIDS, may increase because the normal life-style and customs have been disrupted. It is only through a *combination* of curative care, preventive and public health interventions that significant reductions in the disease burden of a displaced population can be maintained. This is clearly shown in the following graph.

Figure 8-5: Impact of Health Measures on a Community

LIKELY RELATIVE IMPACT OF HEALTH MEASURES ON A COMMUNITY
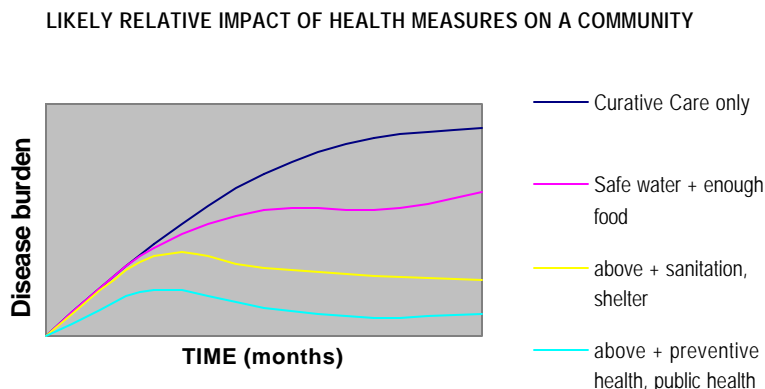
Humanitarian assistance for large, displaced populations is usually characterised by the following emergency health measures: providing food, water, sanitation, shelter and curative health care for the injured and the sick. After the acute phase, the emergency health care should typically shift toward Primary Health Care (PHC). This shift to PHC occurs more rapidly in sudden-impact disasters than in famine or refugee situations. How effective the emergency health care will be in alleviating the suffering of displaced people and promoting their recovery may depend on how closely the emergency health care strategy reflects the PHC strategy.

The table below shows how the components of emergency health care programs are similar to those of Primary Health Care:

Table 8-5: Similarities Between Primary Health Care and Emergency Health Care

Components of Primary Health Care	Emergency Health Care Priorities
• Promoting good nutrition	• Provision of food rations and selective feeding programs
• Access to safe water and basic sanitation	• Access to potable water and waste disposal systems
	• Protection against cold (shelter, blanket, clothes)
• Improving maternal and child health care, including family planning	• Maternal and child clinics; later reproductive health programs with family planning
• Immunising against major infectious diseases	• Immunisation against measles, sometimes meningitis
• Preventing and controlling locally endemic diseases	• Control of communicable disease outbreaks including control of vectors and surveillance
• Fostering education on common health problems, their prevention, and control measures	• Health education based on a community health workers program
• Treating common diseases and injuries	• First level health services and a referral system
• Access to essential drugs	• Provision of essential drugs

Emergency health care is built on the principles of PHC. Because resources for health care are always limited, both strategies reflect the basic needs approach toward addressing the priority health problems of a population. As a result, benefits of both strategies become clear when a large fraction of the total population has access to *comprehensive* health services on a regular basis (curative, preventive and promotive), and when those most in need are cared for.

There are notable differences between primary health care and emergency health care strategies. For example, emergency health care has not greatly focused on social and economic development. This is because displaced populations are expected to return to their pre-disaster origins relatively soon after a disaster. Unfortunately, many complex humanitarian emergencies have extended beyond ten years (Mozambique, Sudan, Palestine, etc.). It is now clear that disaster-affected communities should be more involved in planning the relief response and identifying activities that can promote their future development. Table 8-3 below summarises the main differences between primary health care and emergency health care strategies:

Table 8-6: Differences Between the Two Methods of Health Care

	Primary Health Care Strategy	**Emergency Health Care Strategy**
Goal	To achieve a level of health for all people that will permit them to lead a socially and economically productive life.	To alleviate suffering related to the disaster and support durable recovery of the affected population.
Future Prospects	Long-term operation.	Short term operation. No continuity after relief operation is complete.
Funding/Support	From government, agencies, community (labour, finances).	Mainly external funding and local institution support.
Community Participation	Significant, leading to eventual self-management.	Minimal, affected population lacks resources for full involvement in program management.
Health Improvement	Gradual, focus on comprehensive approach.	Fast (in weeks!), focus on high priority activities.
Need for Security	Insecurity not a major problem.	High priority to ensure access to services.

In conclusion, emergency health care should be implemented within the PHC framework, and based on the district-level health system. At this level, implementing PHC is most efficient.

PRIMARY HEALTH CARE IN RELIEF PROGRAMS

Goal of PHC in Emergencies

Primary health care in emergency relief programs aims to do the following:

- Reduce morbidity and mortality rates of the displaced population to regional norms.
- Build on existing knowledge and skills of the displaced community to improve overall health.
- Link emergency relief to rehabilitation, reconstruction, and development by building the capacity of the affected population. This will make it possible to sustain resources.

Lessons in PHC Planning

Planning and implementing PHC into reality in relief programs can be a slow and challenging process. Reasons for this include centralised decision-making, administrative delays, lack of supervision, and insecure professional health workers. The following lessons have been learned over the years about how a PHC program should be planned:

1. PHC can be adapted to all types of situations, including complex emergencies, provided the long-term goals are clear.

2. Factors that may influence planning PHC in emergencies include the political support of the host country, the historical experience of the health care system, the capability of the affected community, and the presence of NGOs and donors.

3. Decentralised planning helps to make relief programs more relevant to the needs of the displaced population rather than responding to the wants of the leadership.

4. When setting priorities, encourage active support and communication with the displaced community. This will lead to a consensus. The methods used will depend on the existing political structure.

Establishing an Emergency PHC Program

The type of emergency health services set up depends on several factors, including:

- the health system of the host country
- the available resources
- the context of the disaster
- the health needs of the affected population

Providing hospital-based care alone is appropriate only where a displaced population is concentrated within a limited space and the facility is accessible to all (located near a road or at the centre of the camp). Setting up a field hospital is only justified when access to a referral hospital for surgical and obstetric emergencies is difficult or delayed.

To ensure a more cost-effective and sustainable program, relief agencies should establish an emergency PHC program within the framework of a district-level health system. This program should be:

- Based on the policies, standards and treatment protocols of the host country and integrated within the national health system.
- Functioning in a decentralised manner that reflects the community's identified health needs and priorities.
- Comprehensive, involving all components of the health and other health-related sectors).
- Having clearly defined decision-making authority and responsibility for each level.
- Balanced in terms of the distribution of resources between curative, preventive, and promotive health programs.
- Sharing health information and promoting co-operation between all levels of the health system, and with other sectors and the community.

Relief agencies should aim at strengthening the existing public health infra-structure (basic health facilities, community health network, the local referral system and water supply, disease control, etc.) and at limiting dependence on external resources.

To establish emergency PHC services, first set up the health centre to function as the focal point for all PHC services in the area and establish a network of CHWs to extend services into the community. Community participation and inter-sectoral teamwork should be promoted from the beginning. Peripheral health units or dispensaries may be set up later, if necessary. All levels of the PHC system, from the home and community level to the district hospital, should be provided with essential resources (for example, staff, equipment, drugs) and logistical support. This will ensure PHC services are equitable and increase access to care. The map on the next page shows the health centre functioning as a focal point of the district-level health system.

Figure 8-6: Health Facility Level Map
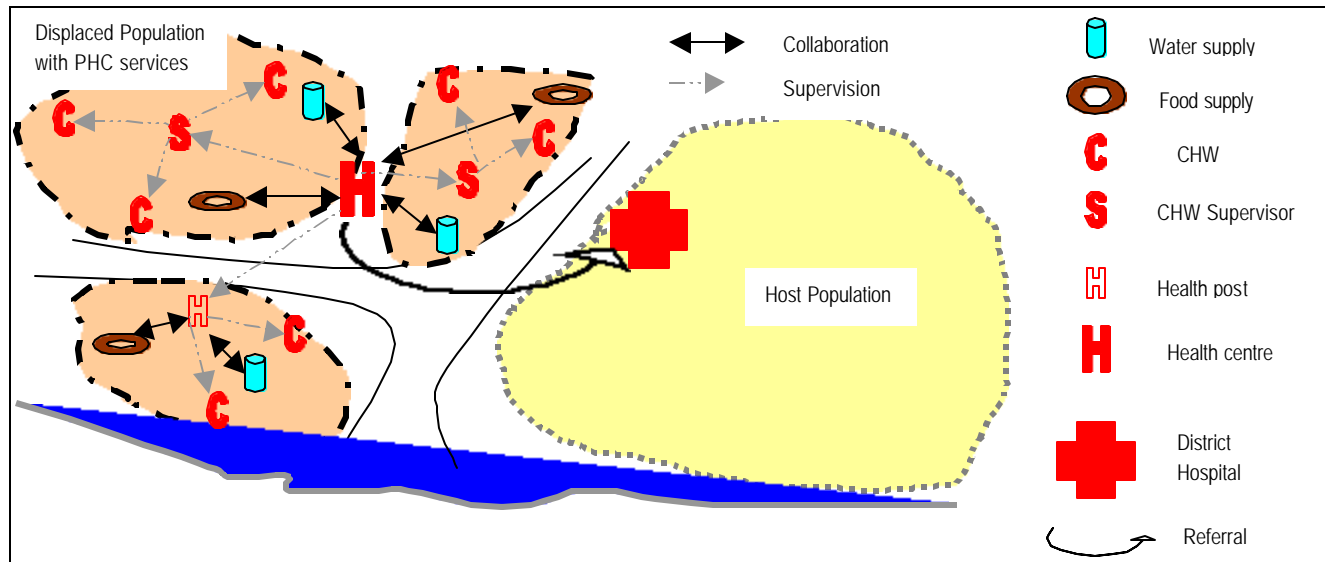
Emergency PHC services should be co-ordinated within a functioning referral system so that the lowest skilled workers with minimum training provide the appropriate care at lower levels of the PHC system. At the same time, these workers must screen for conditions that require referral to higher levels of the system for care by more skilled PHC workers. Supervision should be arranged for all levels, carried by supervisors from the next higher level of the health system. For example:

- One auxiliary nurse-midwife based at a peripheral maternity unit may supervise ten traditional birth attendants within the community.

- A nurse-midwife at the health centre can supervise the auxiliaries at peripheral health units.

- Senior health workers based at the first referral hospital may supervise health centre staff.

This approach to supervision will ensure that a larger number of people receive quality health care more efficiently than when all patients are required to see only the most highly trained health workers.

Each level of health care should also form a health committee in order to be accountable to the communities they serve. In addition, training community health worker teams to report their findings to different levels of referral system can greatly promote the effectiveness of PHC services at the peripheral health units.

Division of Responsibilities

Implementing PHC for emergency situations requires the community and other sectors to be involved in decision-making, and on-the-job training and supportive supervision to be organised for all levels of the emergency PHC system. A unified approach for making referrals to other sectors or levels within the PHC system can be developed in the following way:

- all field workers understand the PHC system: their responsibilities, functions of neighbouring levels, and the procedures for co-operation.

- each sector sets its own targets for services in terms of quality and coverage to make the system more effective.

- collaboration within the referral system is promoted to maximise the use of resources and labour, and to provide the appropriate level of care.

Specific responsibilities that may be defined for each of the following are described below:
- *Central level*
- *District level*
- *Relief program level*
- *Relief worker level*
- *Community level*

Central Level

For PHC to be effective, the central Ministry of Health must be committed to its role of coordinating the emergency health system, mobilising resources and encouraging district-level decision-making. The main functions at this level should include the following:

- Making policies on emergency PHC operations and drawing formal agreements or memoranda with relief organisations and other providers.
- Regulatory authority for monitoring the level and quality of emergency PHC services and supplies.
- Promote inter-sectoral co-operation and inter-agency collaboration within the defined geographical area.
- Restrict relief organisations from setting up emergency PHC programs without considering the overall health needs of the affected community, in order to avoid duplication of services.
- Give formal support in the training of emergency PHC service providers.

District Level

The function of the district level should include:

- Co-ordinating health services in all PHC facilities in the district (including the referral hospital), based on the local budget and available resources.
- Encouraging all sectors to work well together.
- Initiating dialogue in the community and promoting active community participation in planning the district-level health system.
- Ensuring that community health workers have enough support and supervision.
- Collecting, compiling, and regularly forwarding health information to the central government.

If the administrative capacity of the district level health authorities is weak, relief organisations may strengthen it by providing on-the-job training in PHC principles, district-level management, information systems, supervision, and health-related support. Training should target all senior managers from the district health office, the implementing agency and other health-related sectors who need to broaden their skills.

Relief Program Level

Every relief sector (e.g., food and nutrition, water and sanitation, basic health care, etc.) should organise on-the-job training for its staff in the following:

- Comprehensive PHC using problem-solving techniques that emphasise integrating preventive and promotive health interventions with the hospital-based curative and rehabilitative care.
- Developing and reinforcing standard ways of delivering services in order to improve the quality of the service. Standard methods should be adapted to the local situation and regularly reviewed.
- The planning process so all staff members will understand the program goals and objectives, their roles and duties, and the available resources.

Relief Worker Level

In any emergency operation, field workers are recruited in order to implement the PHC program. However, they must change from being the major "providers" of PHC services to becoming "enablers." Many field workers may be unwilling to take over new responsibilities since they, like many health workers, are only trained to *deliver* services to the beneficiaries rather than to make decisions about the program. Therefore, field workers need training in the following:

- How to increase the community's awareness of the association between poor health and poor living conditions or unhealthy behaviour. This will help strengthen active community support for multi-sectoral actions.
- How to meet regularly with the community to build support for the PHC program and to strengthen community participation.
- How to involve community representatives in determining priorities and in planning, implementing, and monitoring relief programs.

   Note: *It is very important to recruit staff from among the displaced community. Recruiting an adequate number of female CHWs will increase access to individuals and households with the greatest need.*

Community Level

A partnership should be forged involving everyone who can improve the well-being of the community. This includes social groups, community groups, and traditional practitioners.

Getting communities to actively participate in decision-making on the emergency PHC program takes time and effort. They need to learn how to identify health priorities and the importance of co-operating and participating in PHC activities to improve their overall health. The most important role of the community is to give regular feedback to the relief agency about the delivery of PHC services in terms of the following:

- equity in how services are provided
- access to care
- relevance between the services offered and the needs of the affected population

In some situations, the local power structure may have to be readjusted to ensure satisfactory community participation. This can be achieved by including members from different social groups, such as women, youth, traditional healers, and school teachers in the health committees. This will ensure that the interests of the displaced population will be represented.

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HEALTH SERVICES

Description

This chapter reviews the essentials of an emergency health care system, including triage, the district health system, and a drug supply system.

Learning Objectives

- To characterise the consequences of disasters on health services, and the role of health services in disasters.
- To discuss the key steps to managing a mass casualty incident.
- To describe different strategies for setting up health services in emergency situations.
- To characterise the crucial role of community health workers and traditional healers in emergencies.
- To design a health centre with a logical patient flow.
- To discuss the key issues in managing essential drug supplies and the importance of standard protocols.
- To define indicators that may be used to monitor and evaluate health services in emergencies.

Key Competencies

- To understand the consequences of disasters and the role of health services in disasters.
- To recognise the staffing required to manage large numbers of casualties.
- To design appropriate facility-based and community-based health services.
- To understand the importance of supporting community health services.
- To design a drug supply system.
- To organise an information system to monitor and evaluate health services.

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Overview

Health services play a critical role in humanitarian emergencies. Immediately following a disaster, health workers and other emergency services (fire, police, etc.) are needed for search and rescue and triage operations. A large number of casualties may overwhelm existing health facilities. If the basic needs of disaster victims are addressed, the situation will stabilise within a short period. Continued emphasis on clinics or hospitals may create long queues of patients with relatively minor complaints while the real health problems of the affected community grow unnoticed. Because a certain level of curative care must be provided, the goals and limits of these services must be defined from the beginning. The priorities for health services should focus on treating common health conditions and involving all available health providers, including traditional healers. Curative health care must be linked with preventive health measures (vaccinations, water supply, sanitation, health education, etc.) and disease surveillance. Community health workers can be trained to gather health information and to involve the community in hygiene, nutrition, and environmental health activities.

The best way of setting up an emergency health program is to strengthen the local system. However, a parallel health system may be set up where local health facilities are not functioning or have a limited capacity. In these situations, emergency health care needs to be extended to the host population. The emergency health program must respect the host government's health policies, such as essential drugs, treatment protocols and referral system. An ongoing health information system for monitoring the health status of the affected population can be integrated, if possible, with the existing national health information system. In the post-emergency phase health services can be expanded to include treatment of chronic diseases (e.g. tuberculosis), comprehensive reproductive health and mental health care.

HEALTH SERVICES AND DISASTERS

Table 9-1: Terms and Definitions

Assistants or Auxiliaries	Medical assistants, nurse assistants, and technician assistants are health personnel who do not have the full training of the respective professional staff (doctors, nurse-midwife or technician), but dispense similar medical services under supervision. In some countries, medical assistants maybe called clinical officers or assistant medical officers and they may also be trained to perform minor surgery.
Community Health Workers /Volunteers (CHWs, CHVs)	Members of the community who are integrated into PHC programs after short training on health-related issues to act as direct intermediaries between the community participation and the health care administration. CHWs may be recruited as paid staff or volunteers. *Health Information Team* (HIT) are members of the community who are recruited and trained to quickly make contact with the community and establish information flow.
Dispensaries (Health posts)	Health facilities where community trained health workers offer a limited range of ambulatory care (treatment of minor injuries/ailments, immunisation, referral of serious cases). Usually run by medical auxiliaries and community health workers.
District Hospitals	Health facilities with the capacity to manage first-referral cases but for limited medical disciplines, namely emergency obstetrical/surgical care and follow-up, inpatient and rehabilitative care. Facilities include laboratory, blood bank, and X-ray services.
Essential Drugs	Drugs required for the treatment of common illnesses affecting a population.
Health Care System	The organisation of health care services within a designated geographical area (country, province, district, etc.).
Health Centres	First contact of the community with the formal health care system. Not usually staffed by medical officers, often run by medical assistants and other professional staff. Offer ambulatory care, limited inpatient care and reproductive health care, community outreach services, referral of emergencies and other serious conditions.
Hospitals	Health facilities that are permanently staffed by at least one physician. Offer medical consultation and 24-hour nursing care, basic emergency surgery and blood banking.
MCH	Maternal and child health clinic

Medical Officers (doctors)	Graduates of a medical school or faculty working in any medical field.
MOH	Ministry of Health
Nurses	Graduates of a nursing school working in any nursing field.
Nurse-Midwives	Graduates of a midwifery school working in any field of midwifery.
Primary Health Care Clinic	A health facility offering services to prevent or treat common diseases and injuries. Equipped with a regular supply of essential drugs and materials that are available, affordable, and culturally acceptable to a population.
Technicians	Graduates of a health technical school who perform duties in a laboratory, pharmacy, X-ray unit, public health field, etc.
Traditional Birth Attendants (TBAs)	Community-based midwives provide basic antenatal care and assist in child-birth according to local practice. Most TBAs are female and they are often illiterate.
Traditional Healers	Traditional practitioners (spiritual or religious healers, herbalists, bonesetters) with indigenous concepts about causes and treatment of illness. They rely on empirical training passed down generations and use religious or spiritual remedies, and some modern medicines, to treat ill health (common diseases, broken bones, depression, etc.) They are highly respected by their communities, particularly in rural areas.

Consequences of Disasters on Health Services

Disasters, whether they are due to natural or manmade, can create particular problems for health services.

1. The sudden occurrence of disasters can an disrupt health services either directly or indirectly, making it difficult for the existing health system to cope, as follows:

    - Damage to health facilities and equipment can result due to a rapid onset disaster such as flood or earthquake.

    - Cut backs in public health programs may occur due to the misuse of essential resources and inappropriate prioritisation and management of the injured.

    - Floods, conflicts, or earthquakes can make access to disaster victims difficult.

    - Loss of staff temporarily or permanently to incoming relief agencies offering higher salaries without long-term security.

    - Health facilities are poorly prepared for disaster situations or for a managing large number of victims.

2. Major disasters often cause large populations to move to areas where health services are ill prepared to cope with additional demands. This may increase their risk of illness and death. Supplies may be insufficient because of the following reasons:

    - Stocks of essential medical supplies are destroyed locally or centrally.

    - Health care supplies are difficult to obtain and distribute due to logistical problems.

    - Local production of goods is disrupted (due to floods, conflicts, or earthquakes).

    - Demand for health care is excessive (due to the size of the affected population and/or specific disease outbreaks).

    - Financial resources and foreign exchange are inadequate.

3. Different health problems tend to arise at different times following a disaster. Severe injuries requiring immediate care are frequently limited to the time and onset of the disaster. Thereafter, major outbreaks of communicable diseases may occur, particularly where there is overcrowding and poor sanitation. Death rates among displaced populations of 18-45 times greater than non-displaced populations have been reported in Sudan and Ethiopia. There are three major sources of disease among the displaced:

- Diseases that are imported by the displaced from their previous environment or travels (e.g. TB, body lice, parasites), or that are unique to their population (e.g., sickle cell disease).

- Diseases that are present in the new environment for which the displaced persons may lack immunity (e.g., malaria or meningitis).

- Diseases arising in the camp because of unhealthy living conditions (e.g., acute respiratory infections, diarrhoea, measles). The risk of acquiring these diseases is increased by malnutrition.

The Role of Emergency Health Services in Disasters

During the first few days following a disaster, the priority is usually to treat casualties and the sick or injured. Except in earthquakes, which may produce special demands, the number of disaster victims requiring medical care is usually low. Only 0.2 to 2% of flood victims have been reported to require medical care. Usually within 30 minutes of a disaster, up to 75% of the healthy survivors are actually engaged in urgent rescue activities. Teams of foreign rescue workers typically arrive much later (by at least 24-48 hours), often with inappropriate skills. They often bring large donations of drugs, clothing, mobile hospitals, etc. Some donations may be unnecessary, may strain existing storage facilities and transportation systems, and slow down the rescue operation.

The demand for curative care is highest during the acute emergency stage, when the affected population is most vulnerable to their new environment and before basic public health measures (e.g., water, sanitation and shelter) have been implemented. Thereafter, the priority should shift toward preventive measures, which can dramatically improve the overall health of the displaced population. Otherwise, any prolonged interruption in routine immunisations and other disease-control measures may result in serious outbreaks of measles, cholera etc. Figure 9-1 below illustrates that focussing mainly on curative services may not greatly improve their overall health.

Figure 9-1: Vicious Cycle of Curative Medicine
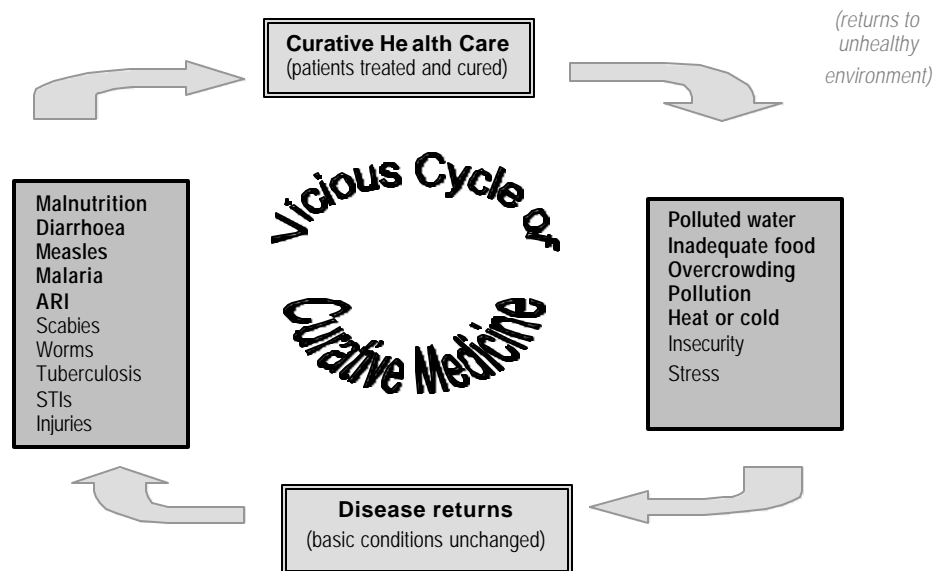
Disasters call for a co-ordinated response between curative and preventive health services, including food supply, water and sanitation, etc. In order to minimise mortality and morbidity it is also necessary to organise the relief response according to three levels of preventive health measures:

a. **Primary Prevention** is the ultimate goal of preventive health care. It aims to prevent the *transmission* of disease to populations that are generally healthy through the following actions:

- Promotion of healthy practices

- Public health measures to reduce a population's exposure to risk factors (e.g., supplying safe drinking water to prevent diarrhoea, supplying adequate food to lessen malnutrition, and distributing mosquito nets to prevent malaria).

- Medical actions (e.g., chemo-prophylactics against malaria, immunisation against measles)

b. **Secondary Prevention** is the early identification and treatment of a diseased person to prevent the infection from progressing to a more serious complication or death. This can be done through the following actions:

- Alleviating symptoms from diseases (e.g., giving oral rehydration solution (ORS) early to a child who has diarrhoea to prevent dehydration and possibly death).

- Cure patients with disease by early detection and treatment of tuberculosis, dysentery, etc.

c. **Tertiary Prevention** aims to reduce permanent damage from disease (e.g., a patient is given rehabilitation to lessen the effects of paralysis due to polio or land mine injuries).

MANAGING A MASS CASUALTY INCIDENT (MCI)

A **mass casualty incident** (MCI) is any event producing a large number of victims such that the normal capacity of local health services is disrupted. Common causes of an MCI include floods, fires, explosions, industrial accidents, or conflict situations.

Typically after an MCI, the response may be delayed due to poor communication. Valuable resources at the disaster site are used up in attempts to save the most gravely injured victims who cannot survive, while those who are more likely to survive receive little attention. Inadequate transportation may decrease the survival of victims in critical condition. The following patients will frequently reach the health facility first:

- those nearest to the arriving ambulances
- those who are first to be rescued
- those who are the most gravely injured

If there is only one first referral health facility, it may quickly become overwhelmed. Limited resources are used to care for victims arriving first, even though most of them may have minor injuries. As a result, they tie up the personnel, examining rooms, supplies, etc. increasing the risk of death for critically ill victims whose survival depends on receiving prompt medical attention.

Understanding Triage

Triage is defined simply as sorting and prioritising patients for medical attention according to the degree of injury or illness and expectations for survival. Triage is carried out to reduce the burden on health facilities. By providing care to victims with minor or localised injuries, health facilities are freed to attend to more critical tasks. It is necessary where health facilities cannot meet the needs of all victims immediately, particularly following an MCI.

The goal of managing a mass casualty incident is to minimise the loss of life or disability of disaster victims by first meeting the needs of those most likely to benefit from services. This goal can be achieved by setting the following priorities for triage:

- *Priorities for transportation to the hospital* — patients to be referred according to the priority of their medical condition.
- *Priorities for care in the field* — based on visible colour-coded tags used to categorise patient needs.

Basic triage is done against "absolute" rather than "relative" considerations. This means that each patient's need for medical care is judged as being urgent or not urgent, based on his or her condition rather than relative to other patients. International colour codes for categorising patients have been developed that use the following criteria:

- The *nature and life-threatening urgency* of the patients' present condition rather than the order in which they arrived, as normally done in emergency care facilities.
- The *potential for survival* (i.e., prognosis) which identifies those patients with the most urgent need of care. This concept is critical and can greatly influence the overall survival rate of disaster victims.

  Note: *Most health workers new to MCI have no experience with this concept.*

- *Stabilising all* patients first before giving further care to any individual. *Definitive care* (e.g., cleaning and/or stitching wounds, antibiotic treatments, applying plaster for fractures, etc.) can be started once no more casualties arrive and all the injured are in stable condition.

Figure 9-2: Field Triage Flow Chart Using International Convention Colour Codes
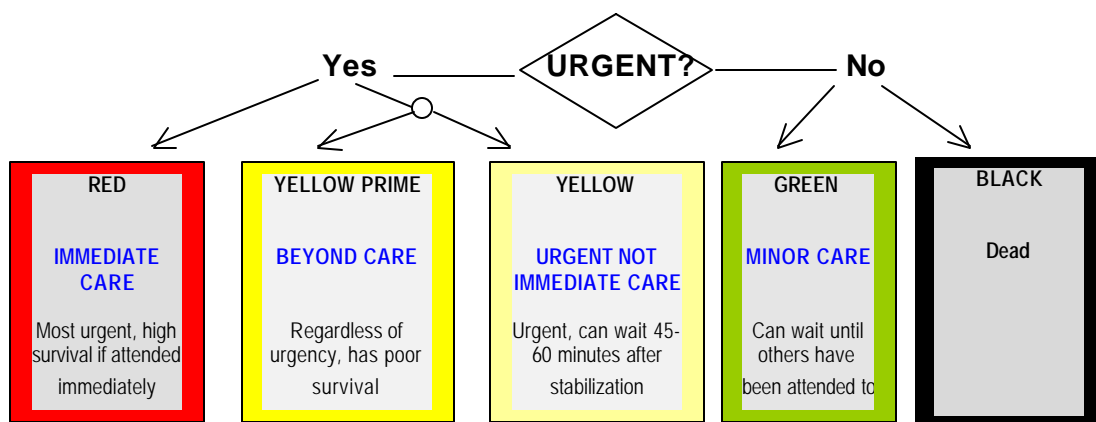
Table 9-2: Detailed Guidelines for Performing Triage

GUIDELINES FOR TRIAGE					
	RED	**YELLOW PRIME**	**YELLOW**	**GREEN**	**BLACK**
Priority	Transfer immediately to a referral hospital with a medical escort in an equipped ambulance	Transfer, only after evacuating all Red victims, with a medical escort in an equipped ambulance	Transfer to a referral hospital in ambulance with first aid escort	Transfer to an appropriate health care facilities by available vehicles without escort	Transfer to morgue
Urgency	Most urgent (fluids, intubation, fasciotomy)	Urgent (constant, intensive care)	Urgent (IV line, drugs, immobilise fractures)	Not urgent (splint or dressing)	Non-Urgent
Condition	shock/hypoxia present/imminent	Deep shock, needs exceed available resources	Stable for 1 hour, can wait at field	Stable till end of response	No pulse or respiration, no blood pressure or heart beat
Injuries	Life-threatening	Catastrophic	Systemic effects, not yet life-threatening	Localised	Fatal
Potential for Survival	High after immediate care & transportation	Very poor	High after support treatment	Good	None
Examples	Intra-abdominal injury, shock status from any cause	Massive skull or chest injuries, extensive and severe burns	Heart attack, compound fractures, severe burns	Minor fractures, burns or wounds	Dead

The most experienced health worker performs triage, assisted by competent staff. Triage is an ongoing process that begins when patients arrive at the medical post and continues as their condition evolves until they are evacuated to the hospital. The triage officer later does more careful examinations within each group of patients and makes decisions based on other factors (e.g., age, general health, or change in physical condition).

Following are some general rules for triage:

- In triage of borderline cases, select the more urgent category.
- When children are involved, give them priority to adults *in the same triage class.*
- Give injured triage personnel or their family members high priority to minimise anxiety and to facilitate efficient response.
- Victims with hysteria or hysterical relatives should be considered as higher priority than the medical condition warrants. These victims are given priority for transfer to a health facility because it is important to maintain calm at the scene.

Preparing to Manage an MCI

Management of MCI begins with being prepared to mobilise resources and follow standard procedures in the field and at the hospital. Hospitals with a limited number of emergency workers may find it difficult to hold regular training sessions on MCI management. Countries with limited resources should focus on the following:

- improving routine emergency services for sudden-impact, small-scale incidents (e.g., car accidents or accidents in the home). To avoid confusion, the same procedures that are necessary to save lives during an MCI should be performed as routine emergency services.

- co-ordinating activities that involve more than an emergency medical unit (police, fire fighters, ambulances, hospitals, etc.).
- ensuring a quick transition from routine emergency services to mass casualty management
- establishing standard procedures for managing all incidents (small or large scale) — search and rescue, first aid, triage, transfer to hospital and hospital care.

MCI procedures should be adapted to the local situation in terms of staff skills, transport and communication, supplies and equipment. Standardisation of routine emergency activities will make the teams more efficient and improve the overall survival of MCI victims. Each emergency unit (police, fire, health) should be prepared to respond to an MCI. Standard kits for field triage should be maintained and drills should be conducted regularly to develop well-co-ordinated teams of trained personnel.

Table 9-3: Minimum Requirements for a Standard Triage Kit

List of Basic Needs	
- Maps, stationery - Means for communication and transportation - Area lighting, flashlights - Identification devices for area, staff and victims: flags, arm bands, triage tags - Stretchers, boards, blankets - Protective devices: gloves, masks, etc.	- Medical disaster kit: oxygen, airway, intubation set, ventilation bag, suction device, chest tube set, tracheostomy set, etc - IV fluids, drugs for shock , tourniquet - Dressing/Splint kit: compresses, antiseptics, suture set, splints, gloves - Blood pressure cuff, stethoscope - Scissors, adhesive tape

In addition to the basic supplies provided through such kits, an MCI situation requires the immediate arrival of appropriate staff.

*Table 9-4: The Key Staff Needed to Effectively Manage an MCI*

Staff Needed for MCI Management	
Category	**Description**
Command Post Team	High ranking personnel from police, fire, health sector or defence service.
Evacuation Team	Transport officer, ambulance driver, escorts, and stretcher bearers.
Hospital Team	All the key hospital staff (Administrator, Matron, Stores Manager, Pharmacist, etc.) must be mobilised and the acute care departments should be strengthened with staff from less acute areas.
Incident Commander	Most senior police (or other disaster-specialised person) experienced in MCI management.
Search and Rescue Teams	Skilled staff from fire service, police, and special units. May be assisted by trained Red Cross or other volunteers.
Security Team	Personnel from police or defence service.
Triage Officer	Most senior health worker (e.g., anaesthetist, surgeon, district health officer).
Triage Team	Minimum of one doctor and nursing staff to rotate around the medical post, assisted by a registration clerk. Specific staffing of the Triage, Stabilisation, and Evacuation zones will depend on availability of backup emergency health workers and the magnitude of the disaster.

Ethical issues may challenge the implementation of triage, particularly for health workers. All teams need training in the community ethics of MCI management. This will help them to save the greatest number of lives as possible by focusing the limited resources on those who can be saved rather than the most gravely injured.

Basic MCI Management

Basic MCI management is composed of a series of steps that collectively meet the immediate health needs of disaster victims. It begins with search and rescue from the disaster site and ends with referral to the health facility or release for home care. The general organisation of an MCI management centre is illustrated in Figure 9-3 below.

Figure 9-3: General Organisation of a Mass Casualty Management Field
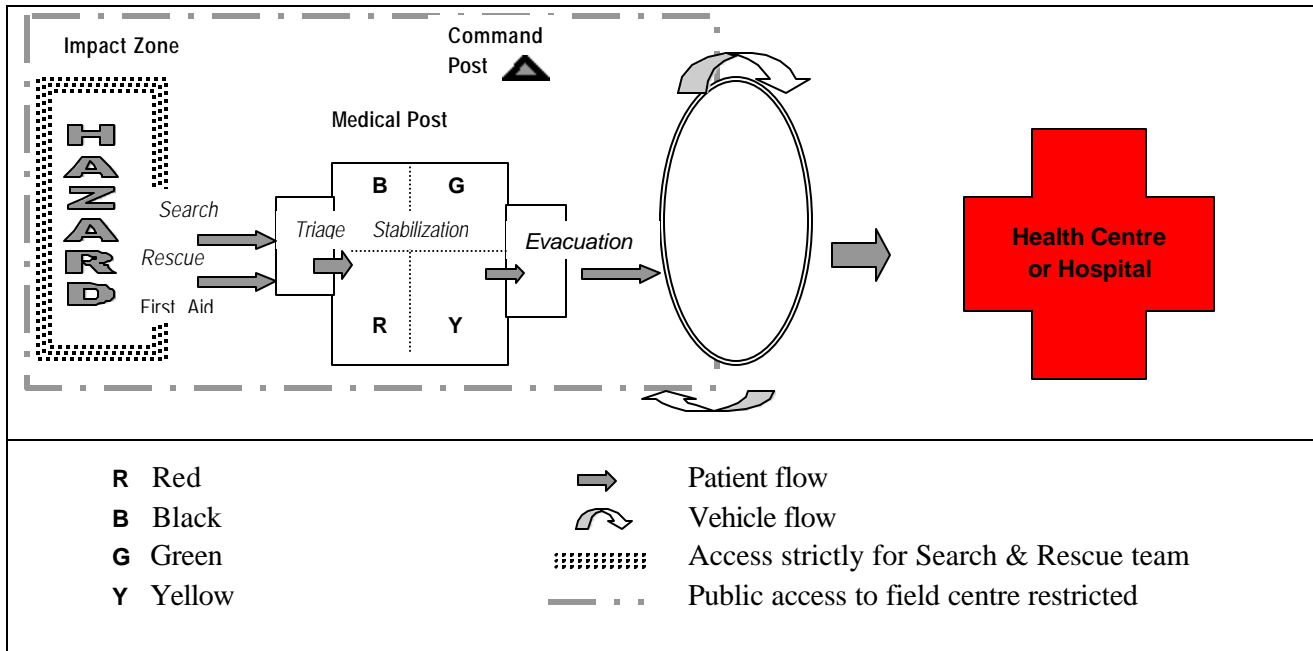
Each team operates within a specific area, aiming to remove all victims away from the disaster site, and to transport the critical cases to health facilities. Each team's responsibilities are listed below.

1. The **Initial Assessment Team**, led by the Incident Commander, establishes the following information:
   - the time and extent of the damage
   - the potential continuing danger from the disaster
   - the estimated number of casualties and those exposed
   - the resources needed for response

   A single map is created indicating the main topographical features, the victims, potential risk areas, access roads, etc.

2. The **Incident Commander** based at the Command Post has overall authority for co-ordinating the multi-sectoral operation. It is the responsibility of the Command Post Team to set up the field posts and continuously assess and report on the general situation.

3. A **Security Team** is needed to protect restricted areas, to limit further danger from the disaster, and to provide crowd control in order to ensure the safety of responders and victims.

4. The priority of the **Search and Rescue Team** is to locate and evacuate victims from the impact zone and transfer them to the medical post after assessing their status. They may provide essential first aid measures to victims in the impact zone (e.g. control bleeding, maintain clear airways), but this is not the place for cardiopulmonary resuscitation (CPR).

5. A **Medical Post** should be established as close as possible to the impact zone while maintaining a safe distance. The medical post should be located in a building or shelter, where possible.

6. The **Triage Team**, under the leadership of the Triage Officer, tags, treats, and releases patients from the medical post according to their health conditions. Each stage must be completed before the next step can be taken. The type of care given is limited to first-aid and emergency medical care. Under limited resource conditions (e.g. staff shortages), the small emergency health team may be required to rotate within the medical post in order to attend to all patients.

7. The **Evacuation Team** is responsible for the safe transfer of stabilised victims to a health care facility using the most appropriate transport and escorts available. Victims with minor injuries may be transferred by non-medical transport after all acute victims have been evacuated.

8. On arrival at the hospital, every injured person should be reassessed, stabilised, and given definitive care. The colour-coded tags are strictly for field triage and field use. They should not be used for documenting health care in the hospital.

Many factors can affect the quality of triage, e.g., the patient's condition, access to health facilities, and the availability of resources (information, hospitals, personnel, and supplies). Monitoring of patients in the triage area may be prolonged if the stabilisation area is overloaded, if resources for evacuation are inadequate or the receiving facility requests a delay. If there is only one health care facility within a disaster region and the victims are stabilised in the field, transport can be staggered. This way, the health facility will not become overwhelmed.

Hospitals should discharge all inpatients that can safely be discharged, while ensuring the care for the remaining patients is not compromised. Hospitals should also regularly advise the Incident Commander about their health care capability and capacity so that the transfer of MCI victims is well organised. If the hospital's capacity or capability is low, patients and victims may have to wait a long time for treatment in surgical or intensive care units.

PLANNING EMERGENCY HEALTH SERVICES

The Planning Cycle

Assessment and Priority Setting

Because resources are limited, planning of emergency health services should be based on the best available information. A needs assessment can gather information that is critical for prioritising health care needs. Emergency health planners must involve all concerned groups (the central government, local authorities and agencies, health professionals and leaders from the affected and local communities) in carrying out the assessment and drawing conclusions. The assessment report should indicate whether there is a need for external assistance, and appropriate strategies which target health problems that cause the greatest mortality and morbidity. The report should be shared with national and local authorities and the affected population. Thereafter, assessment findings should be incorporated into the local health information system or be used to set up a new information system.

Table 9-5: Sample Checklist for Initial Health Assessment

Preparation
- Obtain available information on the disaster affected population and resources from host country ministries and organisations.
- Obtain available maps or aerial photographs.
- Obtain demographic and health data from international organisations.

Field Assessment
- Determine the total disaster affected population and proportion of children less than 5 years old.
- Determine the age and sex breakdown of the population.
- Identify groups at increased risk.
- Determine the average household size and estimates of female heads of households

Health Information
- Identify primary health problems in country of origin if refugees are involved.
- Identify primary health problems in the disaster-affected area if no refugees are involved.
- Identify previous sources of health care.
- Ascertain important health beliefs and traditions.
- Determine the existing social structure and the psycho-social dimensions of the situation.
- Determine the strengths and coverage of local public health programmes in people's country of origin.

Nutritional Status
- Determine the prevalence of protein-energy malnutrition (PEM) in population less than 5 years of age.
- Ascertain prior nutritional status.
- Determine the hierarchical food allocation practices as the affect the nutritional status of vulnerable groups.
- Determine the prevalence of micronutrient deficiencies in the population less than 5 years of age.

Mortality Rates
- Calculate the overall mortality rate (crude mortality rate — CMR).
- Calculate the under-5 mortality rate (age specific mortality rate for children under five years old).
- Calculate cause specific mortality rates.

Morbidity
- Determine age and sex specific incidence rates of major health problems and diseases that have public health importance, including sexual violence and rape.

Environmental Conditions
- Determine climatic conditions; identify geographic features; ascertain local disease epidemiology; assess access to affected population; assess the level of insecurity and violence.
- Assess local, regional, and national food supplies (quantity, quality, types), distribution systems, co-ordination and services of existing organisations, logistics of food transport and storage, feeding programmes, and access to local supplies.
- Assess existing shelters and availability of local materials for shelter, access, amount of land and building sites, topography and drainage, blankets, clothing, domestic utensils, fuel, livestock, money.
- Identify and assess water sources, quantity, quality, transport and storage.
- Assess sanitation including excreta practices, soap, vectors and rats, burial sites.

Resources Available
- Identify and assess local health services including: access to facilities, health personnel, interpreters, types of facilities/structures, water, refrigeration, generators at facilities, drug and vaccine supplies.

Logistics
Assess transport, fuel, storage of food, vaccines and other supplies, communication.

Source: Sphere Project, 2000

Emergency health care needs to be focused on the most urgent health problems. These problems may vary, depending on the nature and magnitude of the disaster, and whether there is long-term population displacement. Any interventions that are recommended following the assessment should aim at preventing excess mortality and morbidity as well as anticipate future health problems from the evolving emergency situation.

A simple technique can be used to rank problems and identify priority health interventions within the selected health services, as shown in Table 9-6 below.

Table 9-6: Ranking Health Problems

		Frequency of Disease Diagnosis	
		High	**Low**
Risk of Excess Mortality or Morbidity	**High**	Malaria Diarrhoea	Tuberculosis Epilepsy
	Low	Intestinal worms URTI	Ringworm Arthritis

Diseases that occur very frequently and are associated with a high risk of death (e.g., malaria and diarrhoea in children under age five) should be addressed before other diseases that also have a high frequency but low risk of serious illness or death (e.g., intestinal worms).

Considering Alternatives

After setting the priorities of an emergency health program, it is important to consider the consequences of other health problems that were not addressed, for example:

- Ignoring harmful traditional practices, such as female genital mutilation (FGM), or harmful remedies for a person with epilepsy, may cause permanent injury to the victim.

- A higher number of tuberculosis cases among displaced populations may increase the risk of infection to the host countries' population.

- A large population of adolescents in a displaced population with a high prevalence of sexually transmitted diseases (STDs) may increase the spread of HIV/AIDS.

- Neglecting the local population in disease control activities may render the control measures among the displaced population ineffective.

Setting Goals and Objectives

The **goals** for establishing emergency health care for large displaced populations may be defined as follows:

- *to reduce excess mortality and morbidity*
- *to target the health problems that cause excess mortality*

The above goals may be expanded to include the following:
1. To reduce excess mortality and morbidity by providing appropriate medical care to the following:
    - the injured in the aftermath of a disaster
    - those with clinical illness due to communicable diseases

2. To target the health problems that cause excess mortality through a preventive approach as follows:
    - **Preventive health measures** — a combination of primary, secondary, and tertiary preventive measures can be effective in preventing excess mortality.

    - **Targeting vulnerable groups** for preventive health services (e.g., children under age 5, women, the elderly, unaccompanied minors).

    - **Monitoring** population and health services data in order to detect emerging health problems.

    For further details on preventive health measures, refer to the *Control of Communicable Diseases* chapter.

Both immediate and long-term **objectives** may be defined, which target groups with an increased risk of death and illness (e.g., children under age 5, women, unaccompanied minors, the elderly, etc.). Targets for each objective can later be used to evaluate the program in achieving stated objectives. For example:

- whether 85% of the patients with tuberculosis completed treatment within the stated time period.
- whether the death rate of children under 5 years is declining or has returned to pre-disaster levels.

Detailed Planning

A plan of action needs to be developed which defines how program goals and objectives will be reached. The following steps may be used to develop a plan of action:

1. Identify the priority health services needed.
2. Define the level of health care that will be provided.
3. Define the strategy for providing health services.
4. Set standards for health services.

Each step is described in detail below.

1. Identify the priority health services needed and when they should be established.

The type of emergency health care established will depend on the emergency situation. It is important to plan the program in phases, based on the priority health needs. Relief agencies frequently encounter a high death rate during the acute emergency phase. As a result, the priority services during this phase should be those that have a direct impact on the morbidity and mortality of the displaced population.

Not all problems can be addressed at the same time. Some services must be introduced during the acute emergency phase, while others may be planned but not implemented until the post-emergency phase. Table 9-7 below defines which health services should be implemented during the acute phase and which may be introduced later.

Table 9-7: Phases of Emergency Health Services

DIFFERENT PHASES OF EMERGENCY HEALTH SERVICES		
Health Service	**Acute Emergency Phase**	**Post-Emergency Phase**
Child Health	• Curative: manage common diseases (ARI, diarrhoea measles, malaria, skin infections, anaemia) • Immunisation: measles • Nutrition: assessment, rehabilitation, vitamin A	• IMCI protocols (ARI, malaria, diarrhoea, etc.) • EPI program (measles, diphtheria, polio, whooping cough, TB)
Curative Care	• Manage common diseases (triage, outpatient, referral, inpatient, dressing/injection) • Standard procedures for patient management including admissions and referrals	• Manage tuberculosis under special conditions • Consider other chronic diseases (diabetes mellitus, hypertension, arthritis) in mid-level developing countries, heart disease
Surgery	• Manage minor injuries • Refer emergency conditions and major injuries to hospital • Temporary field unit if poor access to referral hospital	• Surgery for chronic conditions such as hernia or uterine prolapse
Reproductive Health	Minimum Initial Service Package (MISP): • Manage sexual/gender violence including emergency contraception • Conduct safe deliveries • Refer obstetric complications to Emergency Obstetric Care (EOC) facilities • Provide free condoms • Promote universal precautions against HIV/AIDS	Comprehensive care: • Provide ANC: risk screening, supplements, immunisation, monitor signs, prophylactics • EOC including treating complications of abortions • Post-natal care (PNC): nutrition, health education on breast feeding and infant care • Family planning information and services • Prevention and treatment of STI/AIDS
Pharmacy	New Emergency Health Kit	Essential drugs and supply (stratified for different levels) Diagnostic flow charts and standard treatment protocols

continued

Health Service	Acute Emergency Phase	Post-Emergency Phase
Laboratory	• Initially none: clinical diagnosis or referral of specimens • Consider during a major disease outbreak or high drug-resistance (malaria, dysentery)	Basic laboratory investigations to improve diagnosis and quality of care (malaria smear, stool ova/cyst, haemoglobin, gram stain, sputum smear, blood sugar, HIV test). Possibly blood transfusions
Mental Health	Prepare plans	Community-based programme for the emotionally traumatised
Health information System (HIS)	Needs Assessment: • Rapid surveys (best possible samples) Establish surveillance system using simple indicators • Daily death rates: #/10,000 people/day • Daily morbidity rates • Demographics: census, rate of influx	Ongoing surveillance using comprehensive indicators • Weekly or monthly morbidity/mortality rates (depends on event): #/1,000 people/month • Regular population-based surveys (generalisable) • Periodically modify the HIS to monitor less urgent diseases, or differences in disease patterns
Preventive Health	Community Health Worker activities include: • 1^0 prevention: IEC on child care, assist immunisation • 2^0 prevention: ORT, identify/treat cholera, malaria • 3^0 prevention: recognise/refer cases of malnutrition for treatment • Data collection: disease surveillance, population estimates	• Community mobilisation for disease control activities • Tertiary care: reduction of physical disability

2. Define the level of services to be provided.

Emergency health care should be implemented at the most appropriate level of the PHC system available. The PHC system should include the following levels of care:

- Home or family level
- Community level including CHWs and other home visitors
- Peripheral health facilities (dispensary or health post)
- First level health facilities (health centre)
- Referral hospital

Note: *Not every emergency will require all levels of care.*

Because resources are limited, only those levels that will effectively prevent excess illness and deaths should be introduced. For example, the community and first level of health care, which are most cost-effective, may be introduced at the beginning of the emergency. Additional levels of health care may later be introduced according to their potential for preventing excess illness and deaths. Table 9-8 shows the range of activities and potential capacity for different levels of care.

Table 9-8: Levels of Emergency Health Care for Displaced Populations

	Community- Level	**Peripheral Level**	**1ˢᵗ Level Facility**	**1ˢᵗ Referral Hospital**
	spanning: **Levels of Emergency Health Care for Displaced Populations (emergency phase)**			
Facility	Depends on type of activities (home-visits can be supervised from health post)	Dispensary or health post (ambulatory care)	Health centre	District hospital, Field hospital
Capacity (Ratio to Population)	1 CHW per 500-1000 persons	1 facility per 5,000-10,000 persons	1facility per 30,000-50,000 persons or 1 per every 10 km	1 facility per 150,000-300,000 persons
Health Activities	Case-finding, referral, health education, data collection (curative for common ailments, e.g. fever, diarrhoea)	Curative for minor ailments, referral, ORT, dressing, immunisation, data collection	Child care, health education, outpatient/ inpatient care, referral, essential drugs, reproductive health, (possibly basic laboratory, transfusion, surveillance)	Emergency obstetric care, emergency surgery, outpatient/ inpatient care, referrals, follow-up, rehabilitative care, laboratory, blood bank, X-ray, logistics

3. Define the strategy for establishing health services.

There are two basic strategies for providing emergency health care to a large displaced population: facility-based health care and community-based health care. Each strategy is described below.

A. Facility-Based Health Care

There are three ways of establishing facility-based health care:

I. Augment the Local Health Care System (This is the preferred approach.)

As much as possible, avoid building a "special emergency hospital." Some local health systems do have the capacity to absorb the additional demand of displaced populations, for example:

- If the total displaced population does not overwhelm the local services.

- If there is little political tension between the local population and the newcomers.

- If there is no excess demand for health services (no disease outbreak or mass casualty incident).

Even though the host country is primarily responsible for the care of displaced populations, relief agencies should try to strengthen the capacity of the local health care system. Existing health facilities should be assessed and repaired. Tents may be donated in order to increase the size of the facility. The overall quality of local health services may be improved through the regular supply of essential drugs and training of staff. Advantages of augmenting local services include the following:

- Both the host and displaced populations benefit, thereby reducing resentment from the local population.

- Resources are not wasted on duplication of existing services.

- Local health authorities get directly involved with the problems of the displaced population.

Certain issues must be agreed upon:

- Compensate local services for extending health care to the displaced population, e.g., pay the user fees for displaced people where cost-recovery programs exist. UNHCR covered the fees for refugees in Guinea at the same rate as the locals. In Kenya, outpatient consultations for refugees were free, but UNHCR was charged double rates for inpatient care and diagnostic procedures.

- Provide means for communication and patient transfer between different levels of health care sites to improve access to health care and referral services.

- Provide incentives for existing health workers handling an increased workload. Additional staff, e.g., a surgeon or other staff from less affected areas may "seconded" to the emergency health program, or various in-service training courses may be organised.

- Identify measures that can promote the return of health demands to normal or pre-disaster levels.

- Agree on changes to national health policies — e.g., tuberculosis treatment and measles vaccination programs for large displaced populations may differ from those in place for host populations.

II. Set Up a Separate Health Care System

Sometimes there is no access to local services, or they may be overloaded, have a severe shortage of staff, etc. If setting up new facilities is the only option, then it is important to seek approval from the national health authorities from the beginning. Where possible, policies of the host country health system should be adopted for the following:

- clinical diagnosis and therapeutic protocols
- essential drugs and drug supply
- patient flow and referral system
- health information system
- training curriculum for health workers (including health workers from the displaced population)
- minimum staffing levels per facility (including expatriates)
- co-ordination of health care and relations with the national health care system

Many issues need to be considered when setting up a separate health care system, for example:

- There may be marked differences between the level of health services for displaced populations and locals. This is more likely to occur if the local health care is sub-standard. In addition, the host government may be concerned that health services for the displaced population (which are free and of better quality) may create competition with local and private health services (which are based on cost-recovery).

- Most of the health workers should be recruited from the displaced population in order to overcome cultural and language barriers. However, their foreign medical documents may not be recognised by the host government.

- Higher salaries from externally funded relief programs may drain local staff from local facilities.

- Since both the displaced and local populations are at risk during a disease outbreak, relief agencies should support local health authorities to implement effective disease control measures.

- Host populations should have access to health care services set up for displaced populations where local health facilities are lacking or cannot be strengthened.

III.   Mobile or Satellite Clinics
Outreach services are appropriate for delivering preventive care such as immunisations or antenatal care. They also allow supervisors to visit health workers based in the community (CHWs, TBAs, auxiliaries). However, mere contact with medical care at regular intervals does not ensure that the community has *access* to health care. Access implies a continuous relationship between those who need services and the health care provider. Outreach clinics are not the appropriate facility for the treatment of serious medical conditions that require more frequent follow-up.

Facility-Based Health Care — Key Points
The aim of establishing an emergency health system should be to strengthen the local health system. Whichever strategy is adopted, all services should function effectively and be well co-ordinated to achieve the following:

- *Comprehensive Care* — looking for other conditions that a patient may not report, e.g., depression in a patient with persistent headaches or abdominal pain (somatisation).

- *Continuity of Care* — following-up referrals, defaulters of anti-tuberculosis treatment or immunisation.

- *Integrated Care* — linking curative with preventive care at every opportunity, e.g., combine child immunisation with ante-natal clinic days.

B.   Community-Based Health Care
Strengthening local health facilities does not guarantee that everyone will use them. Many patients, some seriously ill, may still not pursue medical treatment, even if the facilities are nearby or provide free services. Possible barriers to seeking health care include:

- Lack of awareness of available services

- Lack of access due to various reasons (too far, inconvenient hours of operation, health workers' poor attitude, no money for drugs, ethnic-based or politically-based discrimination, inadequate security)

- Lack of health care resources (drugs, materials, staff, services)

I.   Setting up a Community Health Worker Program
Community Health Workers (CHWs)—also known as Health Information Teams (HITs), home visitors (HVs), Village Health Volunteers—are members of the community who are trained to act as direct intermediaries between the beneficiary population and the health care system.

The purpose of setting up a network of CHWs is to extend the coverage of emergency health care through preventive health activities such as disease control and surveillance, as well as mobilising the community for public health initiatives. CHWs can reduce the patient burden at health facilities by increasing the population's awareness of how to improve their own health and take preventive health measures, e.g., taking ORS early to prevent dehydration. This allows staff at health facilities to concentrate on more severe conditions.

The appropriate level of CHW training depends on both the available resources (including CHW trainers and supervisors) and their expected role in providing primary health care (PHC). During the acute emergency phase, initial training should focus on simple priority tasks that address immediate health needs such as:

- Identifying cases of disease as early as possible

- Referring the seriously ill as early as possible

- Identifying vulnerable groups

- IEC (information, education, and communication) about disease prevention and control (e.g., water and sanitation, re-hydration, good nutrition, immunisation, safe motherhood care, condom distribution, and protection from sexual violence)

- Data collection on all the above activities

The following points should be considered when setting up a CHW program:

- Ensure that CHWs are selected from all ethnic groups and that at least half are female.

- Realise that some CHWs may be illiterate and will need support in keeping records of their activities.

- PHC programs work better when the role of the CHW is well-defined, and when they receive visible support from both the community and the entire health care team.

II.   Integrate Alternate Health Providers (Traditional Healers and Private Practitioners)

Some members of the displaced populations may prefer taking their health problems to other health care providers. Health workers in the facilities should try to understand their reasons for seeking health care from the following health providers:

a. Traditional Healers
Many displaced people are from rural areas with traditional concepts of illness and disease. They may believe that some health problems (e.g. mental illness or a STDs) result from a curse or wrong-doing. They may believe that only traditional healers can cure these diseases by applying healing rituals based on indigenous ideas about the causes of illness. Traditional practitioners treat health problems in various ways e.g., appeal to ancestors or higher spirits, use herbal remedies or change one's diet by increasing food or fluid intake. Some methods of healing may even appear harmful because they produce bruises. However, giving respect to traditional healing and religious practices of the displaced community can reduce their resistance to Western treatment.

Many rural populations also consult traditional healers for their health problems because these healers seem responsive to their overall health care *demands* instead of addressing only their "medical needs." (They differ from health professionals who are trained to manage medical problems according to technical criteria.) Traditional practitioners include the following:

- *Spiritual healers* are especially skilled in helping "sick souls" cope with "evil spells" and acute psychological and social stress.

- *Traditional healers* may specialise in bone-setting, as well as the treatment of common ailments. In emergencies, healers may not have access to the herbs and plants they normally use. If these remedies are not harmful, field staff should help healers to obtain them or give alternatives. Some traditional healers may be willing to use modern treatment (e.g., ORT).

- *Traditional birth attendants (TBAs)*
Whether *trained* formally or informally, TBAs provide a wide range of services to pregnant women and new mothers including washing a woman's soiled clothes after clinical birth or cooking and caring for her other children. Because not all deliveries can be conducted in the health facilities, TBAs may take charge of about 50-80% of all births among the displaced population. Therefore, most expectant mothers and children who are at "special risk" will fall within the TBAs areas of influence.

There is a critical need for skilled TBAs in order to reduce maternal mortality in emergency situations. The TBAs' knowledge and skills in monitoring pregnancies and conducting safe deliveries at home should be assessed. Further training should be provided on detecting and managing high-risk pregnancies and complicated deliveries, in counselling on child spacing and childcare, and in keeping records of their activities. TBAs require regular supplies and supervision.

- *Elders* are older men and women responsible for puberty rites, (e.g., circumcision) and for educating adolescents on sexuality, reproduction, and family life.

b.   "Modern" Health Practitioners
Within the displaced population, there may be doctors and nurses who have been formally trained in their country of origin but lack certification to work in the local health sector. For this reason, it may not be possible to incorporate them directly into the emergency health program. However, the emergency health system should encourage their co-operation in order to streamline patient management practices (especially drug treatments) and reporting of communicable diseases. They should be encouraged to use the referral system (upper and lower levels).

c.   Non-Government Organisation (NGO) Hospitals
These hospitals may have been set up by religious institutions long before the emergency. They often provide quality health care for a small fee. The critical role these hospitals play at the onset of a disaster may be overlooked after the emergency health system is set up. Close links should be maintained for mutual support within the health care system.

d.   Other Service Providers
Members of the community may informally provide services such as religious education and rites (e.g., marriage and burial), and family counselling, etc. The overall health needs of the community can be more strongly represented within the emergency health system by integrating community elders, religious leaders, teachers, and social service organisations. They should have access to basic training, such as first aid.

Community-Based Health Care – Key Points
Integrating modern with traditional medicine can increase the effectiveness of emergency health services. The health teams can try to collaborate with traditional healers and the private health services since each provider has something to contribute to the health of the displaced people. Both qualified and traditional health practitioners can manage broken bones. However, the qualified health provider may be better able to treat meningitis, while traditional healers may be more skilled in managing grief and depression. Where possible, training workshops, regular meetings, and supervision visits should be established for the alternate health providers. This will improve patient care and referral and will discourage harmful practices. Traditional healers can also participate in preventive health measures such as immunisations and HIV/AIDS prevention.

4.   Set standards for emergency health care.
Because emergency health programs involve health workers and organisations with different training backgrounds, it is necessary to standardise the delivery of services. Relief agencies should make it known from the beginning which standards or protocols are to be followed (MOH, WHO, etc.) These standards can be used later to evaluate the program. Advantages of standardising emergency health care include the following:
- Makes it easier to integrate new staff members.
- Regulates patient referrals to higher levels of care.
- Improves management of drugs and equipment.
- Prevents competition between facilities providing the same level of care.

a. **Standardising the Care-Giving Process**
   Care-giving procedures may vary for health providers at various levels of care. For example, the highly-trained health workers in hospitals can apply a wide range of diagnostic and care giving procedures, whereas CHWs based in the community should only use those procedures which reflect their level of training and competence. Figure 9-4 below illustrates the stages of care giving.

Figure 9-4: Stages of Care Giving

Stages of Care Giving
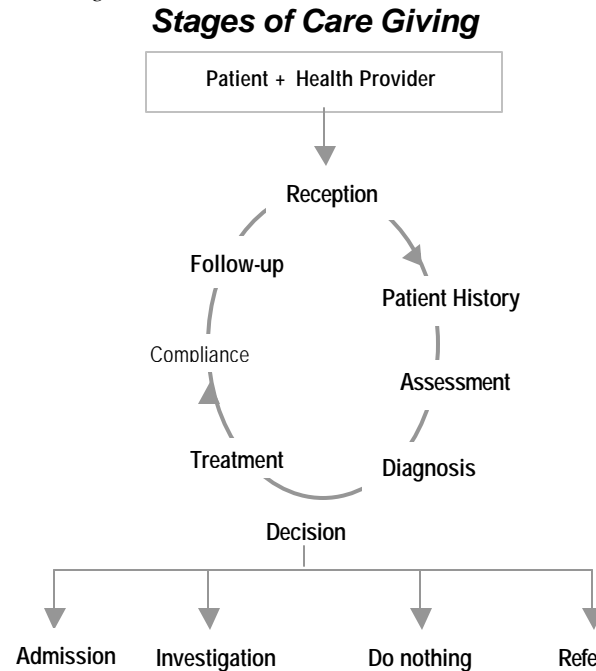
Health care providers should be trained to approach each patient's health problem in a systematic way. After receiving a patient, one should take a clinical history, do a physical assessment, and make an interim diagnosis. A decision can then be made whether to treat the patient with medical drugs or procedure, give advice on home care, make a referral or follow-up. If the health care provider decides to do nothing, he or she must explain to the patient why this decision has been made. Otherwise, patients may lose confidence in the health system and become less keen to follow advice on preventive measures.

For health care to be effective, the clients should accept the decision and follow the instructions of the health care providers (e.g., taking medications as advised). Whether or not a patient is willing to "follow doctor's orders" may be influenced by the following:

- cultural beliefs about the cause and outcome of the illness
- how much advice a patient receives about their illness and the treatment needed
- use of standard health cards (patient medical records which document the patient's clinical history, diagnosis, decisions made, and future appointments)
- type of treatment prescribed (drugs, injections)
- possible follow-up visit from a community health worker

b. **Use Standard Health Cards**
   Health workers should document each patient's diagnosis and specific treatment in a standard way. Health cards or exercise books for each patient can be introduced and kept either at the registration office or by each family. These will help in follow-up of patients as well as in monitoring the quality of health care.

c. Standard Case Management

Standard case management procedures need to be established to prevent unnecessary treatment or investigations and wastage of limited resources (drugs, staff time, etc.). These procedures include:

- *Standard diagnostic protocols and case definitions*— Standard procedures for diagnosing common illnesses have been developed. Many of them represent simple flow charts that use standard case definitions to identify key signs from the patient's history and physical assessment, and where necessary, laboratory investigations. (Refer to Appendix A for IMCI protocols.)

- *Standard investigation procedures* — a laboratory may be set up before or during the post-emergency phase at the health centre. Standard laboratory procedures (specimen collection, storage, and analysis) should be used to confirm a diagnosis and define the drug sensitivity patterns of disease pathogens during major outbreaks (e.g., malaria, cholera).

- *Standard treatment protocols* — Most countries have established national treatment protocols for common ailments, based on the essential drugs supply.
  Note: *for some diseases, e.g., tuberculosis, the treatment of displaced people may differ from that of the host population.*

- *Standard admission criteria* — standardising admission procedures will prevent the admission of non-serious cases that may overload inpatient facilities. Standard clinical procedures and guidelines for managing serious health problems will ensure that critically ill patients are promptly admitted and given the appropriate care, including close monitoring. In addition, standard procedures should in place for referring inpatients to health care units after treatment of an emergency condition (e.g., severely malnourished patient referred to therapeutic feeding centre after treatment for pneumonia).

- *Standard referral criteria* — Standardising the criteria for patient referral will help define the limit of each level of care and the health conditions that require higher level attention and skills. This prevents emergency cases being delayed at lower levels of the health system and non-emergency cases being forwarded to higher levels.

Estimating Resources

Depending on the nature and magnitude of the disaster, the demand for resources in the acute phase may be excessive due to injuries or disease outbreaks. For example, as much as 2-3% of the population may initially use the health services. However, following an effective relief response, the daily outpatient clinic attendance can quickly drop to about 1% of the population, of which 1% may need to be hospitalised. Table 9-9 estimates resources needed for health services.

Table 9-9: Estimating Resources Needed for Health Services

ESTIMATING NEEDS FOR HEALTH SERVICES (in post emergency situations)	
Basis	**Estimated Needs**
4 consultations/person/year (at peripheral level)	1% of population attend health facility daily
Hospitalisation rate of 40 /1,000 population/ year	1% of those attending will be hospitalised
Average period of hospitalisation = 7 days	1 hospital bed required for every 1,000 people
Average length of consultation = 7 minutes	

The Johns Hopkins and IFRC Public Health Guide for Emergencies

Example: For a total of 50,000 displaced people expect the following:

- 40-50/1,000 to be hospitalised => 2,500 inpatients per year

- 4Total days of hospitalisation to average 7 days per inpatient => 17,500 days

- Minimum capacity for daily hospitalisation ~ 50 beds
  (Note: Should add another 10 beds to cover fluctuations in number of admissions. More than 50% of the clients are usually under 15 years old, 50-60% of whom may be under the age of 5 years.)

1. Estimating Staff Requirements

Staffing at every level of the PHC system should match the health needs of the population. The number of outreach workers recruited (e.g., CHWs, TBAs, etc.) should reflect the gender and cultural profile of the displaced population. In emergencies, some CHWs with prior training may already exist within the displaced population. If more CHWs are required, people who are respected and knowledgeable about the health needs of their community should be selected. Various incentives may be used to pay outreach workers, such as self-help, food-for-work, or wages. Table 9-10 shows the Sphere Project's suggestions for staffing at each PHC level.

Table 9-10: Minimum Standards for Staffing at Each PHC Level

Minimum Standards for Staffing Requirements
Community Level: at least 50% of outreach workers should be female
• Community Health Worker: 1 per 500-1000 population (30 home visits/day)
• Community Health Worker Supervisor: 1 per 10 community health workers
• Traditional Birth Attendant: 1 per 3000-4000 population
• Traditional Birth Attendant Supervisor: 1 per 10 traditional birth attendants
Peripheral Level: total of 2-5 workers, at least one qualified
• Nurse midwife: 1 per 50 consultations/day
• Auxiliary staff for ORT, dressing, registration, etc.
Central Level: minimum 5 medical staff, 1 doctor
• Physician or senior clinical officer: 2 per 20,000 (40-50 consults/day)
• Health workers: 1 nurse per 20-30 beds, 1-2 pharmacy, 1-2 dressing/sterilisation
• Auxiliary staff + clerks, guards, cleaners
Referral Hospital Level: (up to 150,000 population)
• Physician   2-4
• Clinical officer (medical assistant)   1 per 40-50 consultations/day
• Nurse   1 per 20-30 beds (8 hour shifts), 8-10 per 20,000 population
• Ancillary staff   (anaesthesia, laboratory): 4 for 3 shifts (8-hour)
• Administration   2 (including health information)
• Auxiliary staff and others   15 staff including 2 clerks, ambulance driver

On recruitment, all staff should be and informed about the purpose of their activities and trained in what they are expected to carry out.

Table 9-11: An Example of a Detailed Job Description for a Community Health Worker

DUTIES OF A COMMUNITY HEALTH WORK (CHW)
Screen new arrivals • assess new arrivals individually for early detection of priority medical problems
Conduct home visits • measure MUAC, refer cases of malnutrition and kwashiorkor to feeding centres, follow-up • recognise and refer cases of fever, dehydration, cholera, acute respiratory distress • IEC on family health issues: child care and development, immunisation, environmental sanitation, personal hygiene, reproductive health and available services
Support MCH and nutrition activities IEC, registration, or give direct assistance during: • surveys on EPI coverage or nutrition, selective feeding, micro-nutrient supplementation, deworming • selecting feeding programs, micronutrient supplementation • mass immunisation campaign • deworming campaign
Monitor community health • deaths: graveyard counts and verbal autopsies • births, sickness: home visits • demography: may do household registration, census, mapping
Mobilise the community • participate regularly in PHC activities, e.g., cleanliness campaign, mass immunisations, surveys • meet regularly with local health committee (elders, women groups, schools) in the zone to identify priority health needs
Treat minor ailments • scabies, conjunctivitis • diarrhoea – distribute ORS and counsel on preparation and administration

2. Estimating Essential Drug Requirements

Essential drugs are defined as those drugs that are needed to treat common diseases affecting a population. Most countries have developed essential drug lists that are appropriate for treating local disease problems in normal situations. Standard lists of drugs may be used to standardise emergency health care as follows:

Essential Drugs for the Acute Phase

Up to 90% of illnesses among displaced populations in developing countries are caused by five communicable diseases (e.g., ARI, diarrhoea, measles, malaria, and skin conditions). One way of preventing the spread of diseases and long-term complications is to detect and treat affected persons with the appropriate drugs as soon as possible. Whenever possible, the emergency health system should adopt the national drug policy or the WHO list of essential drugs (which can serve as a guideline where there is no national policy).

These essential drug lists may be adapted to different levels of care as follows:

1. a *basic list* of drugs for the CHWs who treat symptoms at the community and home level

2. a *supplementary list* for medical assistants and nurses who prescribe drugs at health posts and health centres

3. a *special list* of drugs for doctors and nursing personnel working in specialised units at the hospital, such as an operating theatre for emergency obstetrics or major injuries

The World Health Organisation (WHO) has designed the 1998 **New Emergency Health Kit (NEHK)**, which contains the medical supplies and drugs for treating the most common illnesses among displaced populations. Using these standard health kits during the acute emergency phase allows a swift and effective response to the priority health needs of a displaced population. The consequences of drug shortages due to delayed drug orders (*the pull system*) are more severe than the waste of unused supplies from the standard health kits (*the push system*). NEHK. provide drugs and medical supplies for 10.000 people for approximately 3 months. They are shipped in 2 *pallets* (components) as described below:

a. The first pallet contains **10 Basic Units**, each packed as a separate unitsto allow easy distribution to smaller health facilities. *Each single basic unit*:

- Contains 12 essential drugs (no injectables), medical supplies, and essential equipment for 1,000 consultations (see table below).

- Can be used by PHC workers with limited training stationed at health posts or health centres.

- Includes treatment guidelines (based on symptoms) for PHC workers to ensure proper use.

Table 9-12: Drug Contents of Each New Emergency Health Kit

Drug Contents One Basic Unit in the New Emergency Health Kit *(for 1,000 people for approximately 3 months)* source: New Emergency Health Kit – WHO, 1998	
Drugs/Medicaments	*Quantity*
Acetylsalicylic acid 300 mg	3 X 1000 TAB
Aluminium hydroxide 500 mg	1 X 1000 TAB
Benzylbenzoate 25% application	1 X 1 L
Cetrimide 15%/ Chlorhexidine gluc 5% (savlon)	1 X 1 L
Chloroquine 150 mg base (uncoated)	2 X 1000 TAB
Cotrimoxazole 400 mg + 80 mg scored	2 X 1000 TAB
Ferrous sulphate 200 mg + folic acid 0.25 mg	2 X 1000 TAB
Gentian violet, powder	4 X 25 g
Mebendazole 100 mg	1 X 500 TAB
ORS (oral rehydration salts) for 1000 ml water	2 X 100 SAC
Paracetamol 100 mg	1 X 1000 TAB
Tetracyline hcl 1% eye ointment	1 X 50 TUB

b. The second pallet contains the **Supplementary Unit** in 14 boxes which hold additional drugs and supplies. The supplementary unit is only useful when the basic unit is also available.

- It contains infusions and other drugs, equipment and supplies not included in the basic unit.

- It should be used at the first referral level by physicians and medical professionals.

- It includes treatment guidelines for common diseases (from the humanitarian organisation Medecins Sans Frontiers).

Note: *The total gross weight of the NEHK is 892 kg per kit with a volume of 4.3 m³. Approximate cost USD 5.700 (with anti-malaria drugs). The NEHK may be ordered from WHO Department of Humanitarian Action.[i]*

Health workers should understand the assumptions upon which the New Emergency Health Kit is based (see Table 9-13). This is because the quantities of the basic and supplementary units will be adequate only if they treat patients according to the recommended guidelines.

Table 9-13: Assumptions for Using the New Emergency Health Kit (1998)

Assumptions for Using the New Emergency Health Kit

(10 Basic Units + 1 Supplementary Unit):

1. Half of the population is between 0-14 years of age.

2. The average number of patients presenting themselves with common symptoms or types of diseases is predictable.

3. The basic level of the health care system will be staffed by health workers with limited medical training, who will treat symptoms rather than diagnose diseases, and who will refer to the next level those patients who need more specialised attention.

4. The first referral level of health care is staffed by experienced medical assistants or doctors, with no or very limited facilities for inpatient care.

5. Both the basic and first referral health care facilities are within reasonable reach of a target population of 10,000.

6. Up to 10% of patients may need to be referred from the basic health care to the next higher level.

7. The *entire* kit will cater for a population of 10,000 in 3 months (assuming every individual in the population will, on average, consult health facilities 4 times per year)

8. Standardised treatment schedules will be used to manage the common symptoms or types of diseases.

Note: *The drugs and supplies in the NEHK are appropriate only for the acute emergency phase and have not been intended for managing patients with chronic medical needs or major surgical conditions.*

Essential Drugs for the Post-Emergency Phase

After the acute emergency phase, additional drug requirements for the displaced population should be assessed and further supplies ordered as necessary. Certain factors may influence the medical supply needs, for example:

- the demographic profile of the target population and the frequency of ill-health among high risk groups

- the physical condition of the displaced population and common disease patterns

- local or regional differences in seasonal climate, topography, drug sensitivity and resistance to micro-organisms

- the level of training and medical practices of the health care providers in the emergency health system

- the level of services available locally and the effectiveness of the referral system

- the role of the host country Ministry of Health (MOH) in developing drug policies and essential drugs lists, in distributing information on drug safety and use, and in carrying out quality control on drug manufacturers

- the existing resources and local availability of drugs and supplies

The potential consequences of introducing new drugs or equipment should be weighed against the advantages of existing treatment. For example, a new drug may create a "false epidemic" through increased consultations for a specific disease.

Note: *Treatment of chronic diseases (TB, hypertension, diabetes, etc.) for displaced populations requires a cautious approach. If narcotic drugs (e.g. morphine, pethidine) and psychotropic substances (e.g., diazepam, chlorpromazine) are essential for emergency medical care, then the WHO guidelines for the supply of controlled substances for emergencies should be followed.*

IMPLEMENTING EMERGENCY HEALTH SERVICES

Setting Up a Health Centre

If a new facility has to be established, then the first priority is to obtain permission from the local authorities. Since there is no standard model for designing a health facility for emergency health care, the design will depend on the existing MOH models, the health needs of the displaced population, and the available resources, including local building material. Sometimes non-medical premises, (e.g., churches or schools), may be made available on a short-term basis for emergency health care. However, these buildings may be unsatisfactory in terms of isolating patients or achieving good hygiene. A health centre site should be organised so that health services are provided safely and efficiently. Additionally, the facility should be flexible enough to meet changes in function due to new technology or future growth.

Once constructed, the health centre should meet the following criteria:

- within reasonable walking distance for the affected population
- near an all-weather road
- controlled access to the site
- sufficient space for a waiting area adjacent to the clinic (with protection from rain or sun)
- adequate water supply (40-60 litres per inpatient per day, 5 litres per outpatient per day, extra supplies, laundry, etc.)
- adequate latrines and waste disposal
- sufficient drainage for the site
- adequate security around the site
- functioning communication system
- a generator for supply of electricity

The health facility should be functional and economical to maintain. The initial high demand for medical services will soon return to pre-disaster levels following effective preventive health measures. Planners should estimate the size of the facility based on the expected long-term use as well as the number of staff, furniture, and equipment required to deliver the health services. Four or five rooms of 15 m^2 and a covered waiting area are usually adequate. The design of the facility should ensure that all rooms, including toilets and internal corridors, have direct, natural daylight and ventilation. Corridors should allow for smooth patient flow from one area to the next and provide adequate waiting room. Since more than 80% of outpatients usually require drugs or medical supplies, the pharmacy should be close to the outpatient services.

Note: *Contingency plans should be made for handling unexpected population influxes or major disease outbreaks.*

Figure 9-5 below shows a simple layout of a health centre, which can cater for a population of 20-30,000 with 10 beds for inpatient or day care.

Figure 9-5: Suggested Layout of a Clinic
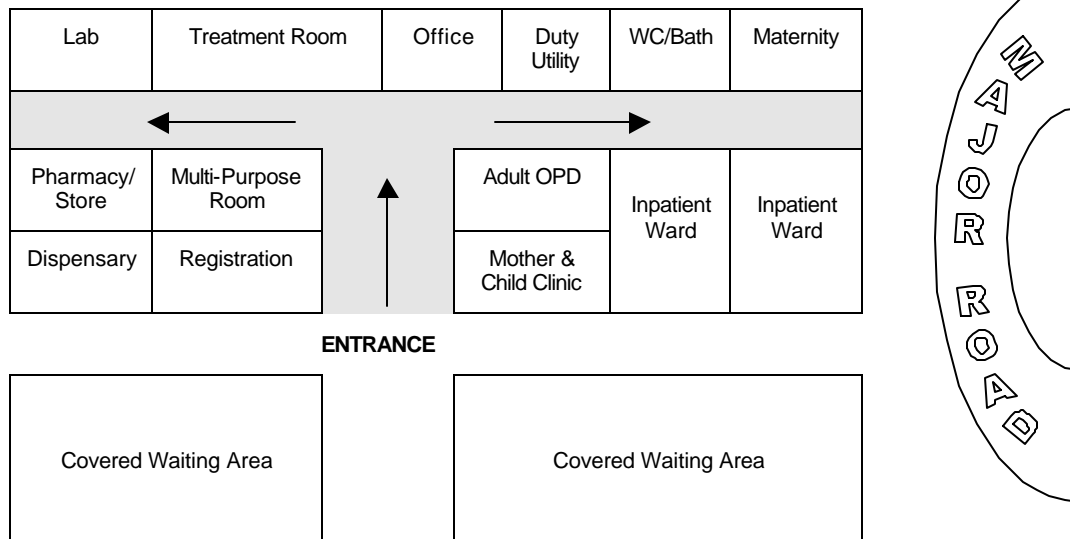
Organising Health Services

The following key issues must be addressed when organising services in a health facility.

Mother and Child Health Care

- Initially, health care for mothers and children should target all children under 2 years, as well as pregnant and lactating women. Once resources are adequate, coverage may be extended to children under 5 years.

- Ensure that the needs of both mother and child are met during the same visit.

- Female CHWs and TBAs should be trained to provide culturally appropriate health education on immunisation, breast feeding, and infant care and to refer pregnant women for ante-natal care. They should function both at the health facility and within the community.

General Curative Care (adult and paediatric)

- In some cultural settings, women over 15 years may have to receive general curative care at the mother and child clinic, separate from the male outpatient facilities.

- Treatment programs for tuberculosis and other chronic diseases may be introduced under the right conditions.

- Care for emergencies at night and on weekends can only be scheduled after certain conditions are met (e.g., staff security, modest kitchens, laundry, etc).

- Outpatient consultations may be scheduled for morning sessions, while afternoons are for emergency services, community health visiting, specialist clinics, and training activities.

Reproductive Health Care

Reproductive health care involves much more than the maternal and child health (MCH) services commonly provided in relief programs. An effective reproductive health care program should be sensitive to the needs of different sexes and different age-groups, i.e., it should also serve the needs of single women, widows, older women, adolescents, and men. In some cases, clients may require services from health care providers of the same gender, based in separate clinics for men and women, though not necessarily in a separate facility. Reproductive health care should be fully integrated within the existing health, social, and community services. The following services may be initiated during the acute emergency phase:

- *Safe Motherhood* — screen for high-risk pregnancy, and provide iron/folate supplements, tetanus-toxoid immunisation, and health education. Trained TBAs should have clean delivery kits and regular supervision.

- *Emergency Obstetrical Care* — establish referral procedures easily understood by all staff members. These procedures should link detection of obstetric emergency with the immediate desired action.

- *Family Planning*— provide emergency contraception on request.

- Treatment of sexually transmitted infections and prevention of HIV/AIDS. Ensure that all health workers are aware of the risks of getting HIV/AIDS from direct exposure to HIV-infected body fluids. The facility should be equipped to enable them to take universal precautions against HIV/AIDS.

- *Addressing sexual and gender-based violence* (e.g., rape victims, domestic violence, etc.)

- *Other reproductive health issues* — abortion, adolescent health, female genital mutilation, etc.

Note: *For more information, please refer to the* Reproductive Health *chapter.*

Managing Essential Drug Supplies

Health care providers as well as patients see drug supplies as a vital part of health care:

- For health care providers — the regular supply of medicines is a key indicator of a well-functioning health system and is essential for patient satisfaction. Frequent shortages frustrate health care providers, especially when their patients need drug treatment in order to recover from their illness.

- For patients — from the patient perspective, the most visible symbol of quality care is the availability of medicines. If medicines are available, patients are likely to be satisfied with the services and will be encouraged to visit the health facilities again.

Sometimes, a shortage of drugs may occur due to financial, logistical or managerial weaknesses. Patient visits to health facilities may subsequently drop by 50-75%. Below is a list of common problems that may arise when managing drug supplies:

- Procuring drugs inappropriately —purchased drugs may be unregistered, nearing the expiration date, or contain drug information in an unfamiliar language. This can be harmful to patients

- Handling drugs poorly — drugs can spoil during transportation and storage, or may be stolen due to poor security.

- Distributing drugs inefficiently — the supply of essential drugs is irregular.

- Prescribing drugs inappropriately — health care providers prescribe too many drugs (polypharmacy) or prescribe injections or antibiotics when they are not needed.

- Failing to follow "doctor's orders" — patients fail to complete the full course of treatment due to bad side effects or misunderstanding instructions about drug intake. Some patients may sell their drugs.

Most problems of managing drug supplies can be overcome by standardising procedures — from drug procurement to prescription and dispensing.

Table 9-14: Standardising Drug Supply Procedures

Procuring a Drug Supply

- Improve efficiency by ordering or purchasing in bulk. This will prevent surpluses and interruptions in the drug stocks.

- Only order what is necessary

- Obtain drugs locally through existing supply systems where possible

- Obtain from reliable sources using the WHO certification scheme and WHO guidelines for international procedures for controlled medicines

- Follow standards for quality, packaging, and labelling drugs

- Donations of drugs should follow donor guidelines:
   - to provide maximum benefit to the recipient
   - to be given with respect for wishes and authority of the recipient
   - no double standards in quality
   - based on thorough and effective communication between donor and recipient

Handling the Drug Supply

- Transport and store essential drugs and supplies under the best possible conditions. This will promote safe and effective use by minimising delays, theft, and spoiling from moisture, heat, direct sunlight, physical damage, and rodents.

- Limit access to warehouse to authorised employees. Secure access to drug storage areas through an inner door.

- Set aside a more secure area for controlled substances (antibiotics, narcotic painkillers).

- Develop a drug classification system (oral, infusion, injectable, external). Then, arrange all supplies alphabetically.

- Maintain an essential drug supply line for each level of health care and a simple control system.

- Conduct regular inspections of stocks and records. Ensure drugs are issued first in, first out (FIFO). Drugs that have been on the shelf the longest should be the first drugs to leave the shelf.

Distributing the Drug Supply to Health Facilities and Disbursing to Individual Patients

- Locate the pharmacy in a suitable area of the health facilities, and ensure pharmacy staff are trained.

- Limit access to large quantities of high-cost drugs.

- Establish disciplinary procedures for theft.

- Establish regular routines for drug requests using standard forms (adapt from local or regional medical supply system).

- Establish standard treatment protocols (from national or WHO model).

- Encourage all health care providers to follow effective prescribing practices: use cheap but effective drugs in standard doses, and avoid wasting injections, antibiotics, or other drugs.

- Establish safe dispensing practices (first in, first out) while educating patients on the appropriate use of drugs.

Training and Supervision
The performance of all health workers should be evaluated periodically. Training should be organised whenever their skills are found to be inadequate for delivering services. Training should be tailored to the participants needs and existing resources. When training community health workers (CHWs), avoid using abstract facts (e.g., the pathology of diarrhoea). Instead, equip them with enough information to perform their tasks effectively. For example, discuss the symptoms of a child with diarrhoea and the consequences of not administering oral rehydration therapy (ORT).

Adequate supervision is required for each level of care. Supervisors need to check that standard procedures are being followed. They should promptly address problems as they arise and provide enough support to enable health workers to function effectively. They can also interview patients as they leave the health facility and determine how the health providers served them, and whether they were satisfied with the health services. Regular meetings should also be scheduled for the health team to develop solutions to problems and promote team spirit between different health services. Representatives from the community and other sectors can also participate in these meetings. Major problems that are identified need to be addressed by all concerned.

MONITORING AND EVALUATING EMERGENCY HEALTH SERVICES

MONITORING
The key to successful implementation of emergency health care is monitoring the use and quality of health services. Most countries have a national health information system that monitors facility-based health care. The strength and capacity of this health information system should be assessed and, if necessary, adapted to suit the priority needs. Because the inpatient and outpatient mortality and morbidity rates cannot be assumed to reflect the mortality and morbidity patterns for the whole population, data should be collected at health facilities as well as from the community. Analysing this information can help detect important trends in the population's health status, PHC services used, and disease patterns. The following guidelines can be used to establish a health information system where the national information system is non-existent or very weak:

1. The reporting lines should be well-defined. Every level of health care in the PHC program should hold someone accountable for compiling and transmitting the data at appropriate intervals and giving feedback to the health staff. The health centres can be made responsible for co-ordinating information from other PHC services within its catchment area (e.g., water and sanitation, food and nutrition, etc.).

2. Train the health workers who will collect the data. Ensure they understand the purpose and importance of uniform collection and reporting of data. Data collectors should be adequately supervised.

3. Provide the tools and equipment necessary for recording the information. Data collection forms may be adapted from those used by the host country MOH for monitoring health services.

4. Define the information required and the methods and sources for data collection (see the following table)

Table 9-15: A Summary of the Health Information and Tools for Monitoring Different PHC Activities

PHC Activity		Information	Tools
Curative Care	**Outpatient (adult, paediatric)**	Morbidity (incidence, prevalence), mortality (age, sex, cause, date), total attendance	registers, patient cards, daily tally, monthly summary, annual summary and disease notification forms
	Inpatient (adult, paediatric)	Mean length of stay, bed occupancy, case fatality rate	registers, patient cards, admission/discharge forms
	Maternity	Birth weight, stillbirth rate, maternal mortality rate, use of maternity services	
Preventive Care	**Immunisations**	Immunisations given	Daily tally, monthly summaries, annual summaries, health cards
	Ante-natal Clinics	Attendance, percent at risk, tetanus toxoid given	Registers, monthly summaries, annual summaries
	Family Planning	Numbers of new acceptors and those continuing	Client forms, registers
	Growth Monitoring	Attendance, underweight rate, percent at risk	Master chart, registers, health cards
Supply/Stock	**Essential Drugs**	Consumption, stock	Daily tally, monthly summaries, annual summaries
	Non-Drug Supplies	Inventory	
	Vaccines	Inventory	
Other	**Cold Chain Temperature Chart**	Function	Forms, temperature charts
	CHW	Coverage, supervision, training given	
	Laboratory	TB smears, malaria, parasites found	
	Water Supply	Quantity provided, coliform counts	

5. Analyse the information to identify priority health problems and the groups at increased risk of excess mortality and morbidity. The analysis should consider the underlying political, economic, and environmental issues surrounding the emergency situation.

6. Transmit the analysis to decision-makers using targets and critical indicators that are easily interpreted. All decisions should be communicated to the providers of the raw data (e.g., via newsletters). Any data collection that is not visibly linked to an action is a waste of resources.

7. Field supervisors and health co-ordinators should review the process of data collection and streamline areas of weakness. The information system should evolve as the need for information changes, providing any additional resources needed to maintain this system.

Note: *Refer to the* Management *chapter for more details about a setting up an information system.*

Key Issues in Monitoring

- Central birth and death registers should be introduced at each health facility, and health workers trained to properly use and maintain them.

- Mortality registers should include information on age and sex of the deceased and the cause, date and location of death.

- Periodic retraining of health workers should be organised to ensure uniform collection and reporting of data.

- The local health officials should be contracted to provide guidelines on repeat and new case definitions.

- Health workers should be trained to seek and provide assistance to extremely vulnerable individuals (unaccompanied minors, the malnourished, the physically- and mentally-disabled, the elderly, etc.)

EVALUATING

Emergency health services should be evaluated in order to determine the following:

- the appropriateness of the program and how effectively it is implemented
- the achievements of the program (intended and unintended)
- the factors affecting access and coverage of services

The process and frequency of evaluation will depend on the available resources. Evaluating health care programs is not simple because it is difficult to separate the outcome of individual services. In addition, health outcomes are extremely difficult to link to cause and effect.

Table 9-16 on the following page lists indicators from the Sphere Project that may be useful for evaluating health services.

Table 9-16: Minimum Standards for Health Services

MINIMUM STANDARD	KEY INDICATORS
HEALTH CARE SERVICES: Appropriate Medical Care	• Are interventions designed to be responsive to the identified major causes of excess deaths, disease and injuries? • Do local health authorities lead the health care effort and are local health facilities used, where possible? • Are participating humanitarian agencies co-ordinating with the designated lead health authority? • Is the health care system able to cope with the high level of demand? • Is the health care system flexible enough to adapt to changes identified by the health information system?
HEALTH CARE SERVICES: Reduction of Morbidity and Mortality	• Are emergency health services implemented through an existing PHC system, where available? • Are health care interventions implemented at the appropriate level of the PHC system? • Is emergency health care, including treatment of injuries and disease, provided to the population largely at the community level? • Is the staffing at each level of the PHC system appropriate to meet the needs of the population? Are only those levels required to reduce excess mortality and morbidity introduced and used? • Are health professionals from the disaster-affected population integrated into the health services as much as possible? • Were the outreach workers recruited from the community and do they reflect the gender and cultural profile of the population they serve? • Do all health care providers agree on the common use of standard procedures for diagnostic techniques and the treatment of the major diseases causing excess mortality and morbidity? • Was the New Emergency Health Kit used to start the intervention? Were additional drugs ordered according to the national or WHO recommended essential drug list? • Are drug donations that do not follow guidelines used? Are they disposed of safely? • Are universal precautions to prevent and limit the spread of infections taught and practised? • Has transportation been organised to enable patients to reach referral facilities?
HUMAN RESOURCE CAPACITY & TRAINING: Competence of Health Workers	• Are all staff working on a health intervention informed of the purpose and method of activities they are asked to carry out? • Do the staff with technical and management responsibilities have access to support for informing and verifying key decisions? • Are new medical supplies and equipment introduced with thorough explanations and supervision? • Do targeted health care procedures have clearly written guidelines and protocols? • Is the treatment of severe disease or injury supervised by a medically qualified and experienced practitioner with specific training in this area? • Do staff responsible for health care interventions have the appropriate training or experience, and are they supervised in the use of recommended treatment protocols, guidelines, and procedures?
HUMAN RESOURCE CAPACITY & TRAINING: Support	• Are all members of the affected population informed about the availability of community health workers, home visitors, and the location of health facilities and services?
HUMAN RESOURCE CAPACITY & TRAINING: Local Capacity	• Are local health professionals, health workers, leaders and women and men from the disaster-affected population included in the implementation of health interventions? • Do the staff understand the importance of strengthening the capacities of local health systems for long-term benefit? • Does the emergency health program tap into and strengthen the existing local partners and institutions? • Is training provided to community outreach workers?

Source: Sphere Project, 2000

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INCIDENT MANAGEMENT SYSTEM (IMS)

Description
This chapter introduces the Incident Management System (IMS) — an effective tool for co-ordinating the response of many agencies to a disaster. It describes the structure and function of the IMS and how it can bring together humanitarian agencies and the military.

Learning Objectives
- To discuss the history and development of the Incident Management System.
- To describe the basic structure of the Incident Management System and the concept of an Overhead Team.
- To characterise the importance of logistics, communications, and operational safety in a humanitarian emergency.
- To discuss unified management (command) and how IMS can improve co-ordination between civilians and the military.
- To define the essentials of IMS training.

Key Competencies
- To understand the history and development of the Incident Management System.
- To define the Incident Management System structure and the role of an Overhead Team.
- To recognise the importance of logistics, communications, and operational safety in a humanitarian emergency.
- To understand how unified management (command) and IMS can improve co-ordination between civilians and the military.
- To design a simple IMS training program.

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HISTORY AND DEVELOPMENT OF THE INCIDENT MANAGEMENT SYSTEM (IMS)

From Incident Command System (ICS) to Incident Management System (IMS)

> *The Incident Management System (IMS) is an all-risk, all agencies,*
> *co-ordinated system for managing humanitarian emergencies.*

In the 1970s, after a severe wildfire season, fire managers in California (on the west coast of the United States) realised they needed a new approach to emergency response. In incident after incident, they ran into the same overall problem — poor inter-agency co-ordination. Most agencies are experienced in responding to routine or small-scale incidents. This usually involves only a few agencies and the demand for resources is limited. As disasters intensify, more agencies arrive on the scene. This brings further communication, logistical, and co-ordination problems, as listed below:

1. Having uncommon radio frequencies, signals, and codes — this leads to poor inter-agency communication.

2. Lack of common terms — when agencies did talk, they often misunderstood each other.

3. No effective or functional command system — each agency operated on the luck and personality of its leaders. In some situations, the operational effectiveness depended on which leader or chief was working that day.

4. Insufficient methods for giving out resources effectively.

5. Poorly defined ways of responding to disasters — there were no standard guidelines. How each response related to other functions depended upon individual interpretation.

Fortunately, a group of aircraft engineers agreed to help the fire managers develop a disaster management strategy for co-ordinating all agencies responding to large-scale emergencies such as wild-land fires. As a result, the modern **Incident Command System (ICS)** was developed. It was based on the "*systems approach*" common to the defence and aerospace industries.

Over the next two decades, ICS teams were only organised for wild-land fire fighting. Later, people in other emergency response sectors began to think that if ICS teams could handle a major wild-land fire, they should also be able to apply ICS to any type of emergency or disaster, ranging from natural disasters, technological disasters, terrorism, or complex humanitarian emergencies.

As a result, ICS terminology and management aspects were revised and the ICS concept was broadened to an "all-hazards" approach. The Incident Command System (ICS) became the **Incident Management System (IMS)** — an all-risk, all agencies, co-ordinated system for managing humanitarian emergencies. Wherever it is applied, IMS has proved to be a valuable disaster management tool. It allows for a more co-ordinated and effective response and better accounting of personnel and resources. More and more agencies are using IMS, for example:

- Organisations such as the U.S. Coast Guard currently apply IMS in hazardous material spillage operations.
- Law enforcement organisations apply IMS in tactical operations.
- Emergency Medical Service systems apply IMS when managing mass casualty incidents (MCIs).

Note: *The terms Incident Management System (IMS) and Incident Manager are used throughout this chapter. These terms can be used interchangeably with the terms Incident Command System (ICS) and Incident Commander (IC), depending on local protocols.*

Table 10-1: Terms and Definitions

All-Hazards Approach	Can be applied to any type of emergency or disaster, e.g., natural disasters, technological disasters, or complex humanitarian emergencies.
Branch	A component that responds to the operational needs of an incident. It can be mobilised or demobilised according to the needs of the event.
Chain of Command	A clear flow of information, up or down.
Flexibility	The system applies to any incident (or management problem). It is not a system of checklists.
Incident Action Plan (IAP)	Plan for responding to disaster incidents which may be pre-defined or developed during the operation.
Incident Management System (Incident Command System)	IMS is an all-risk, all agencies, co-ordinated system for managing humanitarian emergencies.
Incident Manager (Incident Commander)	The individual in charge of the Incident Management System.
Logistics	The procurement, distribution, maintenance, and replacement of material and personnel. • Push logistics — standard quantities of equipment and supplies are estimated, and stored, ready to be quickly "pushed" to the scene. • Pull logistics —ordering equipment and supplies after the need is determined.
Overhead Team	The total management group for a given event and includes the management staff, section chiefs, and branch directors. The Overhead Team also includes unit leaders in the operations support sections (logistics, administration, and planning).
Span of Control	No individual manages more than three to five sections or units.
Unified Management (Unified Command)	There is a single person (or management team) in charge.

BASIC STRUCTURE AND FUNCTION OF THE IMS AND THE RAIT TEAM

The **Incident Manager** (Commander) is in charge of the entire IMS. This person is assisted by a group of specialists known as the **Management Staff**. There are four major sections under the Management Staff: **Administration**, **Planning**, **Logistics**, and **Operations**. The management staff and the chiefs of these four sections form the backbone of the IMS structure. Each section is discussed in detail in later sections. Figure 10-1 shows the basic structure of the Incident Management System:

Figure 10-1: Basic Structure of the IMS

```
              ┌──────────────────────┐
              │  INCIDENT MANAGER    │
              │   (COMMANDER)        │
              └──────────┬───────────┘
                         │
                 ┌───────┴──────────┐
                 │ MANAGEMENT STAFF │
                 └──────────────────┘
       ┌─────────┬─────────┬─────────┐
┌──────┴─────┐ ┌─┴──────┐ ┌┴────────┐ ┌┴──────────┐
│ADMINISTRA- │ │PLANNING│ │LOGISTICS│ │OPERATIONS │
│   TION     │ │        │ │         │ │           │
└────────────┘ └────────┘ └─────────┘ └───────────┘
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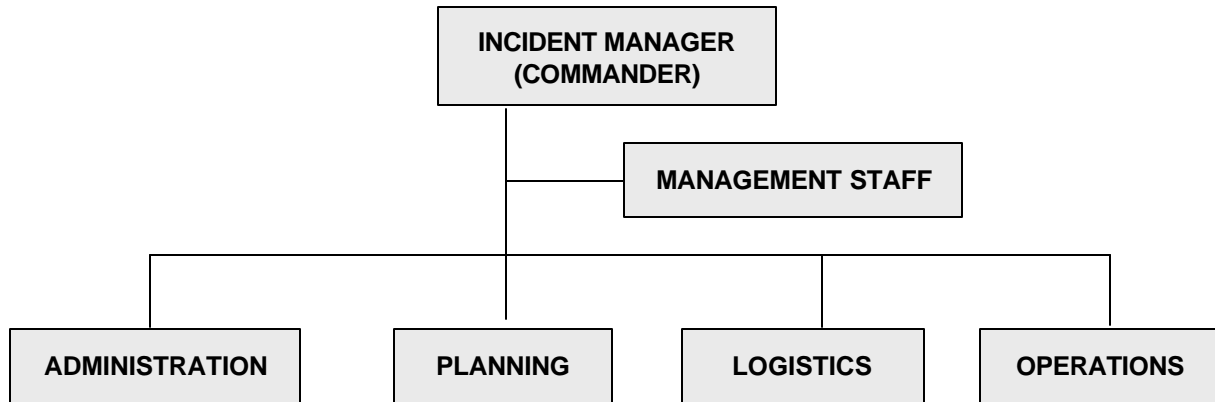
Key Points

1. IMS identifies key functions; it is not based on rank or hierarchy.

2. IMS defines a relationship between four key functions: operations, logistics, planning, and administration.

3. IMS specifies a chain of command and a reasonable span of control (a leader does not supervise more than three to five subordinate units.)

4. The IMS emphasises support (Logistics) and decision making (Planning) as essential elements to Operations.

5. IMS can be applied to any agency, incident, event, or humanitarian emergency. (It works for every response.)

6. IMS provides a system of common terminology. Responders can talk and understand each other.

7. IMS is flexible. It can be expanded or contracted, depending on the demands of the incident.

The Incident Management Team

To ensure an effective response to large and complex humanitarian emergencies, an **Incident Manager** (Incident Commander) should be appointed to lead the IMS team. The Incident Manager directly supervises the following:

- the management staff — consists of a *safety officer*, a *liaison officer*, and a *public information officer*.

- the Administration, Planning, Logistics, and Operations sections.

Note: *The Incident Manager is responsible for all functions not delegated.*

The following table summarises the personnel in each section:

Table 10-2: The Incident Management Team

Section	Staff
Management Staff	- Incident manager - Liaison officer - Safety officer - Public information officer
Administration and Finance	- Administration section chief - Time unit leader

	• Workmen's compensation unit leader • Procurement/purchasing unit leader
Planning	• Planning section chief • Situation status unit leader • Resource status unit leader • Documents unit leader • Weather specialist
Logistics	• Logistics section chief • Communications unit leader • Food/water unit leader • Facilities unit leader • Security unit leader • Ground support unit leader • Supply unit leader
Operations	• Operations section chief • Medical branch director • Public health branch director • Public works branch director • Fire branch director

Overhead Teams

Major humanitarian emergencies require an Overhead Team for incident management.

During major humanitarian emergencies, relief managers cannot address all the problems alone, particularly when all problems appear urgent. Field officers are often unable to assist a relief manager because they may be overwhelmed with the ongoing problems of delivering relief.

To ensure a smooth and co-ordinated response, the IMS has a well-trained and experienced **Overhead Team** to support the Incident Manager. An Overhead Team is basically the IMS team that is responsible for managing the overall response to a disaster. Each Overhead Team consists of the following:
- management staff
- section chiefs
- branch directors
- unit leaders in the operation's support sections (logistics, administration, and planning)

Having an Overhead Team does not mean that the Incident Manager is giving up authority. It means that with support from such a team, the Incident Manager can co-ordinate the emergency response more effectively and stabilise or restore essential services much faster. Members of the Overhead Team are usually experienced in responding to large-scale disasters as well as in giving commands. See the last section for details on Training an Overhead Team.

FULL STRUCTURE AND ORGANISATION OF THE IMS

A model of the full organisation of the IMS structure is shown in the Figure below. This model is the actual IMS structure for managing wild fires. It can easily be adapted to any humanitarian emergency.

Figure 10-2: Full Structure of the IMS Sections and Their Units
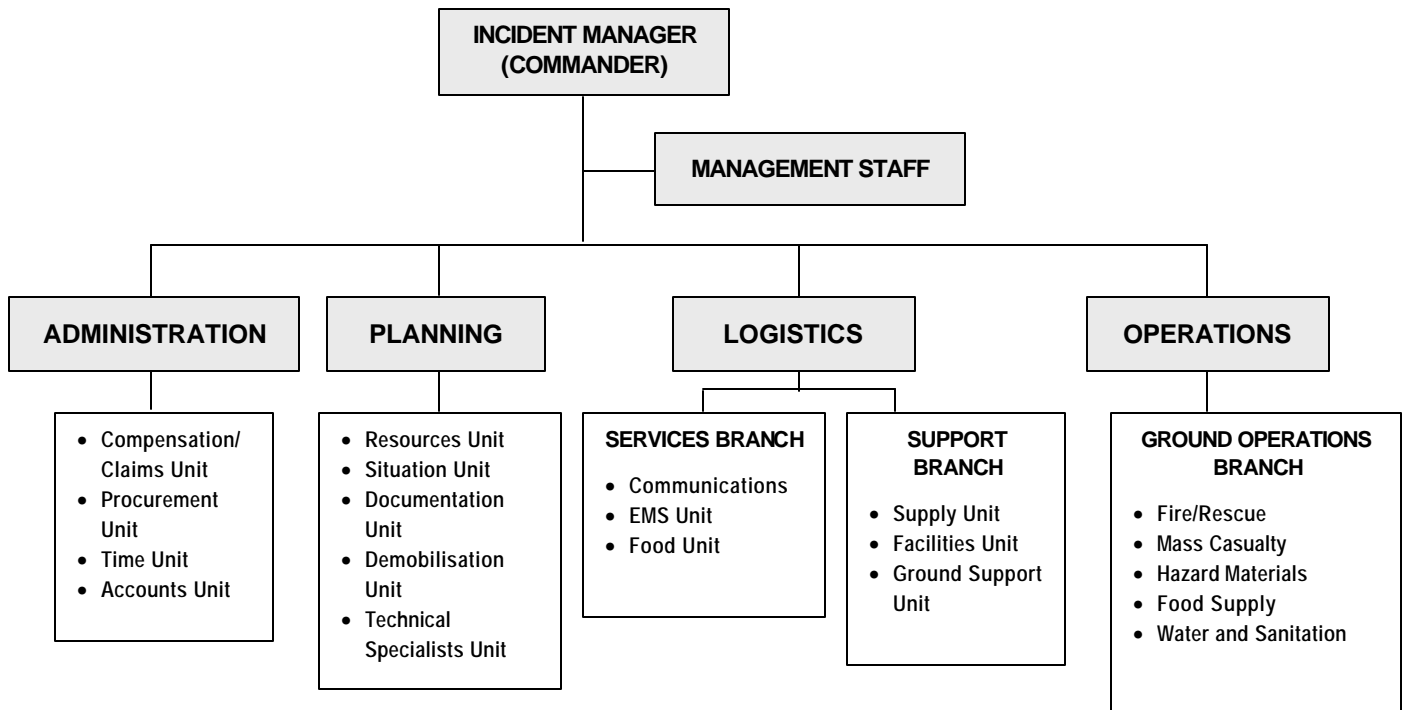
The Four Sections of IMS

Successful response to any emergency depends on the proper and efficient functioning of *all* sections of the IMS: **administration**, **planning**, **logistics**, and **operations**.

Note: *These sections are also essential for non-emergency activities. Managing a business, running a power generating station or raising a family all require the principles of IMS.*

Administration Section

The Administration section addresses the problems of prolonged deployments. It does this through its four units: finance or accounts, time keeping, worker's compensation, and procurements. Many humanitarian projects have these units in place. The following table summarises the function of each unit.

Table 10-3: Structure of the Administration Section

UNIT	FUNCTION
Time	• Record personnel time for pay purposes.
Compensation/ Claims	• Administer to worker injuries and process other claims relating to the incident.
Accounts	• Analyse cost data and provide cost estimates and cost saving information. • Disburse payments for locally purchased equipment and supplies, pay for casual labour.
Procurement	• Attend to all matters relating to vendor contracts.

Planning Section

During major humanitarian emergencies, relief managers are responsible for planning and directing the emergency response. They often begin with a needs assessment to identify the main threats and priorities, based on the nature and magnitude of the emergency. However, as the extent, duration, or complexity of the emergency increases, there is an increased need for a Planning section. This will ensure a more effective proactive, rather than reactive, response.

In IMS, Incident Managers usually have a pre-defined plan for responding to disaster incidents, including humanitarian emergencies. The Planning section is responsible for producing an **Incident Action Plan (IAP)**, through the Incident Manager and other section chiefs. This IAP is flexible because it is literally developed "on the move," in response to the rapidly changing dynamics of the emergency situation.

To ensure adequate support of the Operations section, the Planning section is organised into five units, which carry out different activities, such as collecting, analysing, and storing information, estimating available resources, etc.

The following table summarises the five units of the Planning section.

Table 10-4: Structure of the Planning Section

UNIT	FUNCTION
Situation	• Collect and display incident status and situation information. • Evaluate, analyse, and display information for IMS decision makers.
Documentation	• Collect and file all documents relating to the incident.
Resources	• Prepare and maintain display charts of the status of vehicles, equipment, and resources. • Maintain a master check-in list of all resources.
Technical	• Possess technical expertise in disciplines needed for the effective management of the incident.
Demobilisation	• Prepare the demobilisation plan. • Assist the general staff in the effective and orderly movement of units and personnel from the incident.

Logistics Section

Humanitarian emergencies are in constant need of resources. In complex and chronic emergencies, resources are always inadequate. As a result, the demands for logistics are endless. Radio networks fail or require expansion and vehicles run out of fuel. The demand for medical supplies, security, food, water, etc. increases as the population size grows.

The importance of logistics in IMS cannot be over-emphasised. When logistics fail, operations fail. Unfortunately, no IMS system can deliver resources, equipment, and supplies that are not immediately available or that pre-disaster planning has not identified for access and deployment. If the Operations staff are considered the stars of the show (and rightfully so), then the logistics staff are the "operational anchors" that enable successful delivery of services. Logistics functions are not appreciated until resources become scarce. Thereafter, because of lack of equipment, supplies, fuel, or communications, operations units become unproductive or function at a reduced capacity.

The Logistics section is divided into a *support branch* and a *service branch*, each consisting of different units for specific tasks of the logistics mission. The service branch consists of a communications unit, a medical unit and a food unit, which address the personal needs of relief workers. The support branch consists of a supply unit, a facilities unit, and a ground support unit.

The following table summarises the structure and function of the Logistics section:

Table 10-5: Structure of the Logistics Section

BRANCH	UNIT	FUNCTION
SERVICE	Communications	• Develop a communications plan. • Distribute communications equipment. • Manage the communications centre.
	Medical	• Develop a medical plan for the IMS team. • Provide medical care for IMS personnel.
	Food	• Develop a food plan for the IMS personnel. • Prepare and serve food, and provide potable water to IMS personnel.
SUPPORT	Supply	• Order personnel, supplies, and equipment. • Receive and store supplies, and maintain a supply inventory.
	Facilities	• Layout and maintain tents, buildings, and structures.
	Ground Support	• Fuel, maintain, and service all vehicles and equipment. • Establish an incident transportation plan.

Operations Section

Operations is the most visible section of a humanitarian emergency response because it is involved with the dynamic, hands-on functions. Most disaster response activities will be carried out by the Operations section.

In the IMS structure, the Operations section is divided into two branches:

- **Air Operations Branch** — these branches may be set up for emergencies that require the use of fixed-wing or rotary-wing aircraft. For such emergencies, an air support branch would be needed for fuelling and maintaining the aircraft.

- **Ground Operations Branch** — various ground operations branches may be set up during a humanitarian emergency to service the needs of the disaster-affected population. Examples of Ground Operations Branches are listed below:

  1. *Relief* — food, water, and shelter.

  2. *Disease Control* — sanitation, immunisation, vector control.

  3. *Basic Health Care* — treatment of injuries and common diseases.

  4. *Public Works* — building and maintaining facilities and road infrastructure.

  5. *Security* — proper site planning, camp security, internal law enforcement.

  6. *Fire Protection* — fire prevention and suppression/rescue.

Rapid Assessment and Intervention Team (RAIT)

Information about a potential humanitarian disaster is usually received in a fragmented manner during the early stages of the event. This is especially true when an incident occurs in a developing country with a poor communications system, or during the initial stages of a complex humanitarian emergency.

A Rapid Assessment and Intervention Team (the RAIT Team) can respond quickly to the incident. The objective of a RAIT Team is to perform an initial assessment and establish a basic command centre. A RAIT Team consists of six to eight members. All members are trained and have experience with the Incident Management System (IMS). In addition, each team member has special training to perform their duties, as listed below:

1. **Incident Manager** — manages all team operations and serves as a liaison to the host government; establishes the initial command centre.

2. **Logistics Specialist** — conducts logistics evaluation to determine the need for food, water, medical supplies, facilities, security, supplies, ground support, and where necessary, air support.

3. **Communications Specialist** — establishes an emergency communications system; surveys in-country communications resources; determines long-term communications infrastructure requirements.

4. **Planning Specialist** — assists the manager in preparing a daily incident action plan; develops a situation status system; establishes resource tracking.

5. **Medical Specialist** — conducts a medical and epidemiologic assessment; determines medical treatment requirements; surveys public health procedures.

The information gathered by the RAIT Team is necessary for understanding the nature and scope of the disaster and the type of assistance required, including the composition of the Overhead Team. The RAIT Team also has to set up an effective command system, using personnel from various organisations.

Note: *The RAIT Team is not part of the Incident Management Team.*

IMS LOGISTICS, COMMUNICATIONS, AND OPERATIONAL SAFETY

Logistics

> *A push logistics system is needed to support a major disaster response in the early stages; pull logistics are required to sustain the mission.*

Humanitarian response may use either push logistics or pull logistics. In a **push logistics system**, standard quantities of equipment and supplies are estimated, and stored, ready to be quickly "pushed" to the scene. In a **pull logistics system**, equipment and supplies are ordered after the need is determined. Response to humanitarian emergencies often begins with push logistics. Pull logistics are essential in long duration events, but totally ineffective in the early minutes/hours of a sudden-onset humanitarian emergency.

The following steps can be used to establish a functioning logistics system with adequate resources:

1. Store standard pre-packaged kits in strategic international locations. For example, the New Emergency Health Kits (described in the *Health Services* chapter), communications equipment, administrative supplies, power generators, tents, food, and water purification equipment. These kits are critical for an effective initial response to humanitarian emergencies.

2. A pull logistics system must be planned to support the initial push effort. This system has to function for the duration of the humanitarian emergency event. It should have the capacity for restocking the warehouse, as well as requirements in the field.

3. Supplies should be procured as locally as possible, either from the host government, or private resources within the host country. However, logistical planning should assume that developing countries are seldom able to support all logistics requirements for a humanitarian response. Therefore, an appropriate logistics system for meeting these requirements should be constructed and sustained within a developing region.

4. Pull logistics are transportation intensive, especially in remote areas. Developing countries rarely have the vehicles and road infrastructure to easily support extended humanitarian missions. Therefore, long-term financial support is necessary to sustain logistics.

Communications

> *Effective communications, global in scope, are an essential element in a humanitarian emergency IMS.*

Good communications is critical when responding to humanitarian emergencies. Only food, water, and security out rank communications in terms of importance. However, regular provision of food, water, and security is not possible without good communications.

This section focuses on the management of communication systems. For technical details on communications systems, please refer to the *New Technologies in Humanitarian Emergencies* chapter.

Key Points

1. A pull logistics system cannot function without communications.

2. Communications is essential for inter-government and NGO co-ordination.

3. Communications is a critical element in internal security and perimeter security.

4. At a minimum, Overhead Teams should have internal communications with logistics sources at the disaster site. These communications resources may be scarce or unavailable in many developing countries.

5. Plans for communication systems in developing countries must assume that there will be limited communications infrastructure in the affected region.

Operational Safety

> *Safety is an incident manager's responsibility; a safety officer should be assigned early.*

Safety is an under-appreciated concern of humanitarian response. Many humanitarian operations involve sending relief workers into dangerous and unstable situations. The death, injury, or hostage-taking of relief workers can work against a successful relief operation. Therefore, one of the Incident Manager's most important duties in humanitarian emergencies is to ensure safety. As soon as the Incident Manager cannot directly supervise all the safety issues of a humanitarian emergency, a Safety Officer should be recruited to oversee the safety function.

In major humanitarian emergencies, the Safety Officer works closely with the Incident Manager, the Planning section and the existing Operations branches. Together, they evaluate each **Incident Action Plan (IAP)** for safety as it develops or evolves. The best place to stop unsafe ideas is in the planning stage before aggressive operation plans turn into dangerous activities. The Safety Officer has authority to temporarily suspend any plan, procedure, or strategy that he or she considers to be unsafe. Therefore, every IAP needs a Safety Officer's approval, and every Incident Manager's briefing must include a safety briefing.

Complex emergencies create increased demands for safety, particularly when they are surrounded by violence, war, or civil unrest. Response to complex emergencies requires a *team* of safety personnel, led by the Safety Officer. Each member of the safety team has team-specific skills. For example, medical teams must have an outbreak control officer; security teams require a weapons safety officer. These team-specific safety officers share the workload and responsibility of ensuring safety in the emergency response.

> For details on Staff Security, see the *Human Resource Management* chapter.

UNIFIED MANAGEMENT AND CIVILIAN-MILITARY CO-ORDINATION

Unified Management (Command)

Humanitarian emergencies are complex incidents. A disaster may occur on the border between two cities, between a city and a province, or between civilian and government land. Some events may actually occur in one nation, yet its effects spill over into a neighbouring nation (e.g., a country may have to deal with an influx of refugees). As a result, they may demand responses from multiple governments and organisations.

The best way of responding to these dilemmas is a concept called **unified management**. Unified management is the teaming up of agencies and individuals that have either geographic or functional responsibility in a unified management structure and a common set of objectives. For example, a local health official and an Incident Manager may jointly manage a refugee operation. In another case, the district authorities and an Incident Manager may manage an event that crosses a geo-political boundary through a unified management approach.

An effective plan must establish the concepts of incident management and unified management. When there are political issues, establishing who will take charge is vitally important. If all parties agree to the plan, destructive, political "turf wars" are avoided.

Civilian-Military Co-ordination

> *IMS is an effective management tool for integrating civilian/military operations.*

IMS provides an appropriate means for collaborating with military units. This is because IMS is based on the same principles as the military command and control systems of NATO countries. Military organisations and special units have staff officers that are identified by their command functions as follows:

S-1	administration
S-2	intelligence
S-3	plans/operations
S-4	supplies/logistics

At each section level, the military system is almost identical to the civilian IMS. The difference is in terminology. For example, a military commander refers a logistics problem to his or her S-4. A civilian commander refers a logistics problem to the Logistics section chief. If military officers fully understand the civilian terminology, adapting to the civilian IMS system is possible. Likewise, by understanding military command/control terminology, civilians can fit military units into the IMS. Emergency response plans or protocols can be developed jointly by government organisations, non-government organisations, and the military units.

Unified management can also be effective for joint civilian-military operations in humanitarian disasters. Many military officers have asked, "How can we work with civilians? We are not used to going somewhere and not being in charge." The answer is IMS unified management (command), and branching. In unified management, the military commander is part of the management team along with the civilians. This ensures that the military commander has access to information on all issues, communications, plans, etc. This system keeps civilian leaders in contact with the military effort.

The following steps can be taken to integrate IMS with the military command/control system:

1. The military commander works closely with the unified management team.

2. Military units are assigned to security, mass casualty, or other appropriate branches.

3. The military team provides its own administration and planning (S-1 and S-2).

4. The military logistics officer (S-4) co-ordinates with the local logistics section chief.

At the operations level, military units may either be asked to work with an existing civilian branch or as a separate branch. Military staff may carry out support functions separately or integrate them into the corresponding civilian section. For example, military units have special communications and logistics plans that are only for internal uses. On the other hand, the civilian logistics section provides supplies, equipment, and facilities to build the capacity of the local level.

The civilian IMS has already been tested during joint responses by the military and civilians to wildfire incidents in the United States. Marines and soldiers were given basic fire fighting and IMS training and divided into crews with a civilian liaison. This system worked well and can be applied in a similar way to humanitarian emergencies. However, most military officers are not aware that the IMS or ICS exists in the humanitarian community. A basic IMS awareness course for military officers involved in civilian missions is highly recommended.

TRAINING IN IMS

This chapter has emphasised the fact that the Planning and Logistics sections are complimentary to the Operations section. After gaining experiences from several humanitarian emergencies, most relief organisations have standardised their Operations section. Many provide basic training to their relief workers and certification in various disaster response measures (e.g., rapid assessment, nutritional surveys, cholera preparedness, etc.)

However, the Logistics and Planning sections of most agencies can only support normal operations. During major humanitarian emergencies, new problems may arise because of insufficient expertise in logistics and planning. As a result, the functioning of the Operations section may be disrupted or arrested. Organising basic pre-disaster IMS training for Overhead Team members can ensure an effective and co-ordinated relief

response. Overhead Team members may require additional training in the following: incident management system, mass casualty operations, security, media relations, etc.

Training an Overhead Team

There are many reasons why it is necessary to train an Overhead Team:

- An Overhead Team can comprise of members from different agencies or cities. Because each Overhead Team member is nationally certified (also known as being "red carded") to occupy a particular management position with the IMS, a logistics leader from one town can be assigned to an Overhead Team in another town.

- A most difficult step in forming the Overhead Team is overcoming inter-government and inter-agency politics. Most governments insist on handling matters internally until they get hopelessly overwhelmed. It requires great diplomacy to convince a local government official that a logistics section chief from the WHO is the most appropriate person to support a major refugee operation.

- Other agency directors need to realise that establishing Overhead Teams does not take away their authority. The appropriate agency or individual assumes command for the emergency response, and maintains it.

- Having an Overhead Team increases the chances that the emergency response will be co-ordinated and, therefore, more effective.

Thus, adopting the IMS management strategy before a disaster allows for better co-ordination between potential partners in disaster response, and better use of resources. The following steps can be used to develop an inter-agency Overhead Team:

1. The IMS provides a standard, organisational framework for emergency operations.
2. All responders to an emergency are trained and certified to take on their IMS positions.
3. Joint training and practical exercises are conducted so players can develop a sense of trust.

Practical IMS Exercises

Carrying out exercises on humanitarian emergency response can greatly enhance training in IMS. Practical exercises may also help test one or two functions of the inter-agency response system, e.g.: communications, logistics, unified management, mass casualty operations, sanitation, operational readiness, air operations, security, medical transport, and media relations. Practical cases should include realistic scenarios, e.g., by reproducing experiences of one or more humanitarian emergencies that occurred during the year.

Emergency managers who are certified in training should design and implement the exercises. The key steps in planning practical IMS exercises are as follows:

1. Determine critical components of the IMS to be tested, e.g., push logistics.
2. Create a realistic scenario.
3. Co-ordinate the players on the Overhead Team.
4. Use the IMS model to organise the exercises. The actual exercise will require operations, logistics, planning, and administration.
5. Appoint an exercise controller and evaluators who are non-participants and unbiased.
6. Ensure adequate funding for the exercise. Be realistic about overtime and supply costs.
7. Insist that safety is the key factor in the exercise. (People have been killed in exercises.)
8. Document the exercise — record it on videotape, take pictures, and write about it.
9. Summarise the exercise results in the form of lessons learned.

10. Hold an after exercise briefing — a Post Incident Analysis (PIA). Candidly, but tactfully, point out shortcomings, and stress all the positive results. Incorporate the findings within the existing response protocol.

11. Most importantly, establish realistic and measurable goals for implementing changes.

The above exercises allow relief agencies to test capabilities not frequently tested in day-to-day operations, as well as the opportunity to test response protocols for effectiveness. At least twice per year (quarterly is even better), all humanitarian and emergency response agencies should conduct joint exercises.

Note: *New training technologies, such as distance learning and virtual universities, can be used to advance Overhead Team training.*

SUMMARY OF THE INCIDENT MANAGEMENT SYSTEM (IMS)

The Incident Management System is an effective tool for co-ordinating one or more humanitarian agencies responding to a major humanitarian emergency. The IMS is based on the following key points:

1. The Incident Management System (management, operations, logistics, planning, and administration) is the ideal structure for any disaster response.

2. The management system is expanded from the bottom to the top ("bottom-up"). As needs change, the systems expands (or contracts) as required.

3. The system is designed for effective liaison between government and non-government agencies (NGO), as well as military units.

An Incident Manager, supported by management staff, supervises the IMS operations, logistics, planning, and administration sections. The Planning section develops an Incident Action Plan (IAP) that co-ordinates the activities of all section chiefs. The Operations section is divided into branches that deliver emergency services to disaster affected populations, such as food distribution, water supply, shelter, health care, and security. The Logistics section is divided into the service branch and support branch. Logistics functions are not appreciated until resources become scarce. An Administration section is necessary for prolonged humanitarian emergencies to address issues such as worker's compensation, time keeping, and finance.

Because the IMS structure is very similar to the NATO military command/control systems, military and humanitarian agencies can use the IMS model for a more co-ordinated response to a humanitarian emergency. This can be achieved through basic IMS training for both civilians and the military personnel.

APPENDIX

Disaster Medical Operations

Following disaster events, a heavy influx of those affected by disasters into hospitals commonly results in increased morbidity and mortality as well as prolonged stays. A pre-hospital component can lessen the overall impact of a disaster. By providing care to victims suffering minor injuries or illnesses, the pre-hospital component frees-up medical assets for more critical tasks. It also helps to restore the normal function of hospitals by reducing the workload and fatigue of hospital workers, enabling them to attend to or follow-up other emergency cases. Fewer people will die or suffer permanent disability if the pre-hospital component is included in a global disaster response.

A **Medical Emergency Rapid Intervention and Triage Team (MERIT Team)** could manage a pre-hospital component. It may be comprised of emergency medical technicians (EMTs), paramedics, and an EMS management team. Trained MERIT teams would alleviate a hospital crisis by systematically identifying, treating, and releasing those individuals not requiring hospital or physician services.

Emergency Medical Aid Centres (EMACs) can be established to filter victims having non-critical cases away from hospitals. When properly constituted, an EMAC can process an average of 864 casualties every 12 hours. Through triage, victims are assured proper care for everything from minor injuries to life-threatening illness
or injury.

MERIT TEAM (Medical Emergency Rapid Intervention and Triage Team)

Total number of care teams: 20
Medical Strike Team: 4 care teams + 1 supervisor (total of 13 personnel)
Total number of strike teams: 5 per MERIT Team

Table 10-6: Composition of a MERIT Team

PERSONNEL	NUMBER	FUNCTION
Managers	10	5 functions + 1 Medical Director, 1 MIS Officer + 3 ancillary
Supervisors	5	Duties to include situation/status reports + data collection
Paramedics	20	Care team leaders*
EMTs	40	Care team members*

Care Team = 1EMT/P + 2 EMTs

Each care team can process 6 victims per hour (72 in a 12-hour day).

Each strike team can process 24 victims per hour (288 in a 12-hour day).

Each MERIT TEAM can process 72 victims per hour (864 in a 12-hour day).

Each Strike Team works a 9-hour day through a rotational system.

Note*: For more details about managing a mass casualty incident, please refer to the Health Services chapter.*

REFERENCES AND SUGGESTED READINGS

1. *EMS Incident Management System, The: Operations for Mass Casualty and High Impact Incidents*. Hank T. Christen, Paul M. Maniscalco.

2. *Sitting in the Hot Seat: Leaders and Teams for Critical Incident Management.* Rhona H. Flin, Rhonda Fliln. Paperback. November 1996.

3. Model Procedures Guide for Structural Firefighting/35669

4. National Fire Service Incident Management System Consortium; Paperback.

5. Model Procedures Guide for Emergency Medical Incidents (The Incident Management System Series)

6. Training videos on Incident Management System -- URL: http://www.efilmgroup.com:80/iim.html

   Industrial Incident Management is a three-tape video series produced by Emergency Film Group. Copyright 1993, Detrick Lawrence.

   The series is designed to provide training to personnel in the industrial sector who may be called upon to set up a workable Incident Management System. The following are descriptions of the three tapes:
   - "Taking Control," – discusses setting up the system.
   - "Incident Command in the Field," – covers organising the Command Post and designing strategy to deal with the incident.
   - "The Emergency Operations Center," – discusses managing the crisis and dealing with the media.

   Also included are two publications:
   - *Incident Management: a Petrochemical Perspective*, a reference on incident command and incident management by Greg Noll and Michael Hildebrand.
   - *Model Procedures Guide for Industry Emergency Response Teams*, (based upon the NFS Model Procedures Guide for structural Firefighting), which will help set up an incident command system for industry.

REPRODUCTIVE HEALTH CARE

Description
This chapter reviews the contribution of reproductive health care to the overall quality of life. It focuses on the priority reproductive health needs of displaced populations and describes a logical approach to establishing reproductive health services.

Learning Objectives
- To characterise the leading causes of reproductive health morbidity and mortality in humanitarian emergencies.
- To design reproductive health projects that address the needs of displaced women and adolescents.
- To describe how to introduce the Minimum Initial Services Package (MISP) and more long-term reproductive health care for displaced populations.
- To describe how to monitor and evaluate a reproductive health program in emergency situations.

Key Competencies
- To understand the leading causes of reproductive health morbidity and mortality among displaced populations.
- To assess reproductive health needs and plan the most appropriate reproductive health services.
- To recognise the challenges of implementing reproductive health programs for displaced populations.
- To define the most useful indicators for monitoring and evaluating reproductive health programs.

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OVERVIEW OF REPRODUCTIVE HEALTH ISSUES IN EMERGENCIES

> *"Reproductive health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and to its functions and processes. Reproductive health therefore implies that people are able to have a satisfying and safe sex life and that they have the capability to reproduce and the freedom to decide if, when, and how often to do so."*
>
> — Program of Action
> International Conference on Population and Development
> Cairo, September 1994

Reproductive health care in emergencies is not a luxury, but a necessity that saves lives and reduces illness. Until very recently, it has been a neglected area of relief work, despite the fact that poor reproductive health becomes a significant cause of death and disease in camp settings once emergency health needs have been met. The United Nations High Commissioner for Refugees (UNHCR) recognises the importance of reproductive health by stating, "While food, water, and shelter remain a priority, reproductive health care is among the crucial elements that give refugees basic human welfare and dignity that is their right."

Reproductive health care for displaced populations involves four technical areas:

- Safe Motherhood (antenatal care, delivery care, and postpartum care)
- Prevention and Care of Sexually Transmitted Diseases (STDs) and HIV/AIDS
- Family Planning
- Protection from and response to sexual and gender violence — This covers how to manage the consequences of sexual and gender-based violence including provision for emergency post-coital contraception.

Below is a list of terms and definitions that are commonly used in the area of reproductive health care:

Table 11-1: Terms and Definitions

AIDS (Acquired Immunodeficiency Syndrome)	A disease defined by a set of signs and symptoms characterised by the body's compromised immune response; caused by HIV and transmitted through body fluids (e.g., semen, blood).
Anaemia	A reduction in the quantity of red blood cells per unit volume blood to below normal units.
Birth Spacing	Deliberate use of fertility control to extend the period between births. May be achieved through natural, barrier, hormonal, or intrauterine methods.
Contraceptive Prevalence Rate (CPR)	CPR = A x D, where A = acceptor rate/year and D = average "life expectancy" or duration of contraceptive use.
Crude Birth Rate (CBR)	Number of births in a population during a year (or other limited time frame) divided by the total midyear population (or midpoint of the time frame selected).
Ectopic Pregnancy	A pregnancy whereby the embryo implants outside the uterus, usually in the fallopian tube.
Emergency Contraception	Post-coital mechanisms to inhibit ovulation and implantation.
Female Genital Mutilation (FGM) (aka female circumcision)	The removal of all or part of the female external genitalia for cultural or any other non-medical purposes.
Gender-based Violence	Violence that is directed specifically against a woman because she is a woman, or which affects women disproportionately.[1]
Haemorrhage	Severe (often difficult to control) bleeding from within the body.
Human Immunodeficiency Virus (HIV)	The virus that causes AIDS; it causes a defect in the body's immune system by invading and then multiplying within white blood cells.

Hypertension	Abnormally high blood pressure.
Maternal Mortality	The death of a woman while pregnant or within 42 days of termination of pregnancy (be it birth, abortion, or miscarriage) due to complications from the pregnancy, delivery, or management of either, or due to existing medical conditions that were aggravated by the pregnancy or delivery. [2]
Maternal Mortality Rate	The number of maternal deaths per 100,000 women of reproductive age.
Maternal Mortality Ratio	The number of maternal deaths per 100,000 births.
Midwife	A skilled birth attendant who has received sufficient training to diagnose and manage complications during childbirth, as well as assist normal deliveries. Generally midwives are able to handle basic obstetric problems but will refer more serious complications to a physician.
Minimum Initial Services Package (MISP)	A package of materials and services which should be immediately put in place during the acute phase of an emergency, as recommended in the Inter-Agency Field Manual on Reproductive Health in Refugee Situations by UNHCR and UNFPA. It includes: 1) Prevention of and response to sexual and gender-based violence (including provision for emergency post-coital contraception) 2) Enforcement of respect for universal sterile precautions against HIV/AIDS 3) Guaranteeing the availability of free condoms 4) Provision for safe delivery kits 5) Planning for comprehensive reproductive health services that are integrated into primary health care (PHC) as soon as possible 6) Human and material resources needed for implementing the MISP
Oral Contraception	Various hormonally-based medications (using estrogen and/or progestin) which a woman can take orally, on a daily basis, to prevent pregnancy. The hormone doses impact on the reproductive hormonal system to inhibit ovulation and other reproductive functions temporarily (effective only for as long as the medication is taken).
Perinatal Death	A foetal death of 28 weeks or more, and infant deaths under seven days of age.
Rape	Sexual intercourse with another person (male or female) without his/her consent. Statutory rape is the rape of a minor who is below the legal age for engaging in sexual intercourse.
Sexual Violence	Covers all forms of sexual threat, assault, interference, and exploitation including statutory rape and molestation without physical harm or penetration.
Safe Motherhood	Programs that are designed to minimise the health risks of pregnancy and childbirth to the mother (and infant). These programs include antenatal care, delivery care, and postnatal care.
Septic Abortion	Abortion performed under unsanitary conditions leading to infection (common in countries where abortion is not legal and a leading cause of maternal death).
Sexually Transmitted Diseases (STDs)	Any disease that is communicated primarily or exclusively through intimate sexual contact; can cause infertility through miscarriage, prenatal deaths, and damage to male and female reproductive systems.
Syndromic Management of Disease	Diagnosis and treatment of illness based on a health care provider's thorough analysis of signs and symptoms presented by the patient.
Total Fertility Rate	Number of live births born to 1,000 women of reproductive age (per year).
Traditional Birth Attendant (TBA)	A community-based birth attendant who, with limited formal training, provides basic prenatal, delivery, and postnatal care. Although not trained to manage complications of pregnancy and childbirth, (s)he provides important referral services for problem cases.
Unmet Need for Contraception	A measure based on the number of women of reproductive age and in a sexual union who report that they want to postpone or avoid childbearing and also report that they and their partner are not using contraception.
Women of Reproductive Age	Women between the ages of 15-44 or 15-49 (depending on the childbearing trends of the population in question), for the purposes of demographic statistics; often used as the denominator in reproductive health demographic measures.

In 1997 the number of refugees and internally displaced persons (IDPs)[3] world-wide approached 50 million — the majority being women and children.[4] Women bear the greatest burden of reproductive ill health, as well as a disproportionate amount of the hardship that affects families in emergency settings. It is critical that a lack of comprehensive reproductive health services does not add to the suffering of women in emergencies. Lack of quality reproductive health services can lead to the following:

- high mortality rates among women and children

- an increase in the spread of sexually transmitted diseases (STDs) and HIV/AIDS

- an increase in unsafe abortions

- an increase in morbidity related to high fertility rates and poor birth spacing.

Key Facts
There are some key facts to recognise when considering the importance of women's reproductive health and the magnitude of challenges that currently face public health professionals all over the world:

- An average of 80% of refugees are women and children.[5]

- Approximately 25% of refugees are women of reproductive age.[6]

- Reproductive ill-health accounts for one-third of the total burden of disease suffered by women in developing countries.[7]

- 120-150 million women who want to limit or space their pregnancies still do not have the means to do so effectively.[8]

Health Risks of Pregnancy and Childbirth

> *"Whatever a woman's choice in terms of the number and timing of her children, childbirth must no longer carry with it the risk of death or disability for her and her new-born which it has held for far too long."*
> — World Health Organisation, Safe Motherhood Progress Report 1993-1995

Pregnancy and childbirth are recognised health risks for women in developing countries. In general, it is estimated that 15 million women a year suffer long-term, chronic illness and disability because they do not receive the care they need during their pregnancy. These risks are magnified for women living in emergency settings, where the majority give birth in temporary shelters under conditions that are hazardous for themselves and their children. Their physical health is often seriously depleted as a result of the trauma and deprivation associated with their flight. The poor nutrition and stressful living conditions in camp settings only compound this problem. As a result, the region with the largest numbers of displaced populations has the highest maternal mortality rate.

Key Facts
- Over 585,000 women die every year (an average of 1,600 per day) as a result of causes related to pregnancy or childbirth—almost all in developing countries.[9]

- Between 25-33% of all deaths of women of reproductive age in the developing world are the result of pregnancy or childbirth.[10] It is the leading cause of death and disability for women between the ages of 15 and 49 in the developing world.

- Unsafe abortion is a leading cause of maternal mortality world-wide, accounting for 70,000 deaths every year. Millions more suffer long-term health problems such as chronic infection, pain, and infertility.

- Another 15 million women in developing countries suffer acute complications that can lead to lifelong pain, illness, and infertility.[11] For the refugee population within the post-emergency phase, pregnancy and child-delivery complications are the leading cause of mortality and morbidity among women.[12]
- 50% of all perinatal deaths are due primarily to inadequate maternal care during pregnancy and delivery.[13]

Risk Factors for Maternal Morbidity and Mortality

Underlying risk factors for maternal deaths and illness are particularly severe in emergency situations. These include:

- Inadequate pre-natal care which is necessary for the early detection of complications
- Under-nourishment
- Undesired pregnancies and induced septic abortion due to sexual violence and interruption of family planning services
- Insufficient staff and resources for hygienic non-emergency deliveries
- Inadequate referral systems and/or transportation for obstetric emergencies

Obstetric Emergencies

Women exposed to one or more of the above risk factors often find themselves in an obstetric emergency situation. If no provision is made for emergency obstetric care they may suffer great pain, bleeding, and infection often leading to infertility and sometimes death. Long-term consequences include premature delivery, chronic pelvic pain, and increased likelihood of ectopic pregnancy and spontaneous abortion.

The table below defines the leading obstetric emergencies that can kill a woman within a short time.

Table 11-2: Leading Causes of Maternal Mortality and Morbidity

Five Leading Causes of Maternal Mortality and Morbidity
- **Haemorrhage** – may occur during pregnancy or delivery due to prolonged labour; trauma and/or rupture of the uterus or other parts of the reproductive tract; ectopic pregnancy; abnormal development and/or rupture of the placenta; abnormal bleeding associated with anaemia or coagulation disorders.
- **Sepsis** – infection can arise after delivery, miscarriage or unsafe abortion when tissues remain in the uterus or if non-sterile procedures or instruments are used (e.g., frequent vaginal exams without gloves). Pre-existing STDs and prolonged rupture of the amniotic membrane before delivery increase the risk of sepsis.
- **Eclampsia** – can occur in the latter stage of pregnancy or after delivery. It is characterised by uncontrolled fits, oedema, and/or elevated blood pressure during delivery and can lead to rupture of the liver, kidney failure, or heart failure and cerebral haemorrhage.
- **Unsafe Abortion** – can lead to haemorrhage due to puncture of organs or an abnormal placenta, infection from unsanitary instruments and inappropriate procedures, or complications from an incomplete abortion.
- **Obstructed Labour** – can be due to small pelvis (because of physical immaturity or stunted growth), distorted pelvis, cervix or vagina (latter from FGM); irregular position of foetus prior to and during delivery.

The following table describes a common problem in developing countries — a lack of essential health services to prevent, detect, and manage high-risk pregnancies and births.

Figure 11-1: Example of Lack of Health Services for High-Risk Obstetric Care

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Need for Emergency Obstetric Care

In 1997, when members of the Reproductive Health for Refugees Consortium visited Somali refugee camps in eastern Ethiopia, the need for emergency obstetric care was clear. 90 percent of births took place in traditional tukuls, in poor conditions. Most refugee women were unaware of risk signs during their pregnancies and were therefore not referred in good time to the hospital in Jijiga.

The hospital is at least one hour's drive away from the camps. In addition, ambulance services are controlled not by medical staff but by camp administrators and are not available 24 hours a day. Because of this lack of ambulances or alternative transport, it is often impossible to hospitalise cases of obstetric emergency.

Initiatives to improve the general health of refugee populations must seek to do the following:
- reduce the numbers of high risk and unwanted pregnancies
- reduce the number of obstetric complications
- reduce the number of women dying from obstetric complications

Without the above interventions, many refugee women and their new-borns will die needlessly. In refugee settings, a woman is often the main provider for her family. If she dies, her family is left without her care, support and protection, and the risk of mortality among her children increases. Therefore, the consequences of inaction affect the entire refugee community and exacerbate the difficulties and instabilities of refugee life.

Sexually Transmitted Diseases and HIV/AIDS

"Reproductive health eludes many of the world's people because of such factors as: inadequate levels of knowledge about human sexuality and inappropriate or poor-quality reproductive health information and services; the prevalence of high-risk sexual behaviour; discriminatory social practices; negative attitudes towards women and girls; and the limited power many women and girls have over their sexual and reproductive lives."

— Program of Action
International Conference on Population and Development
Cairo, September 1994

Sexually transmitted diseases (STDs) including HIV/AIDS spread fastest where there is poverty, powerlessness, and social instability. These conditions are characteristic of life in refugee settings. As a consequence, there is an increasing incidence of STDs and HIV among displaced populations.[14]

Key Facts
- STDs cause the second highest burden of disease for women aged 15-44 in developing countries, after maternal mortality and morbidity.

- Biological and social factors make women and girls more vulnerable to AIDS than men, especially in adolescence and youth, when in many places HIV infection in young women has been found to be 3-5 times higher than among boys.[15]

- In Africa, women's peak infection rates occur at earlier ages than men's. This helps explain why there are an estimated 12 women living with HIV for every 10 men in this region.[16]

- In Africa, AIDS now kills ten times more people a year than war.[17]

Risk Factors for STDs and HIV

There are a number of other factors associated with populations in emergency situations that may contribute to this serious health problem[18]:

- At every stage of flight, displaced women and girls are vulnerable to rape and sexual abuse. This reality often continues within the camp setting as well.

- Sexual violence against displaced men and boys, particularly prisoners and captives, is also known to occur.

- As traditional sources of support and families structures are interrupted and/or destroyed by conflict and displacement, cultural or familial controls of behaviour may become loose.

- Displaced people deprived of their normal sources of income may be forced to exchange sex for money or basic survival needs. Their risk of getting STDs/HIV may increase if the disease prevalence is higher in host populations. On the other hand, host populations with low STDs/HIV prevalence may be at increased risk of these infections if the disease prevalence in displaced populations is high.

- Unaccompanied minors are usually more likely to become sexually active at an earlier age than they would under normal circumstances.

- Greater social acceptance of high-risk male sexual behaviour can expose both men and their partners to infection while social norms limit women's access to information about sexual matters.

- The risk of HIV transmission through contaminated blood can be higher in emergency settings, especially in situations of war and civil strife, as more transfusions may be required and the infrastructure for screening is often lacking.

- Rural dwellers typically have lower rates of STDs/HIV and a lower risk of acquiring infections. They are also less aware about means of prevention. Forced migration to areas of high population density increases their exposure to people from different backgrounds and hence an increased risk of infection.

The impact of STDs and HIV/AIDS is not just physical: it can also affect the emotional and economic well being of the refugee community. People living with HIV/AIDS and their families may experience social rejection and isolation, increasing the psychological traumas that often accompany refugee life. STDs and HIV/AIDS also leave families vulnerable to poverty and economic dependence, since young adults in their productive working years are most at risk of infection.

Sexually Transmitted Diseases (STDs)

STDs are infections caused by various micro-organisms that are transmitted mainly by intimate sexual contact through fluids produced in the human reproductive tract. The signs and symptoms of common STDs are summarised in the next table.

Table 11-3: Symptoms of STDs

Disease	Signs and Symptoms
Gonorrhoea	Common STD caused by a bacteria, characterised by a pus-like discharge from urethra or cervix, and painful urination in both men and women. Can lead to infertility in both sexes.
Chlamydia	Caused by a micro-organism which can produce inflammation of the vagina/cervix or urethra; can also lead to pelvic inflammatory disease (PID) in the female. Characterised by a thin mucous discharge in men, and cervical discharge in women (can be yellow or green in colour).
Syphilis	Caused by a spirochete which produces a genital ulcer in the early stages (usually painless), and a more general non-itchy skin rash in a secondary stage. If not treated, can also affect the heart and brain in late stages.
Chancroid	This is the most common cause of genital ulcer disease in many parts of the developing world; involves painful, soft sores on the genitals which discharge pus; sometimes causes enlarged lymph nodes in the groin.
Tricomomiasis	Caused by a parasite that produces effects ranging from no symptoms to irritation, itching, odour, vaginal discharge, and/or frequent urination in women. While males rarely display symptoms, they may develop inflammation of the urethra and/or skin lesions on the penis.
Genital Herpes	Caused by a virus producing multiple, shallow ulcers anywhere on the genitalia; lesions usually heal and recur in cycles. Viral shedding can occur during latent periods. There is no known cure.
Human Papilloma Virus (HPV)	A common virus causing small, painless primary lesions in the area of infection, usually referred to as genital warts. Research indicates a probable link between HPV exposure and later development of cervical cancer.

Although much attention has been given to HIV/AIDS, it should be emphasised that STDs pose a serious public health threat. Their presence greatly increases the risk of HIV transmission, which in turn increases the risk of active tuberculosis. Women with STDs may suffer chronic pain, infertility, reproductive tract cancer, and complications during pregnancy and childbirth. Their children too may be adversely affected with increased risk of morbidity and mortality.

HIV/AIDS

As stated earlier, displaced persons may be at a higher risk of HIV infection than at any other time in their lives. There are four main routes of acquiring HIV infection.

- Sexual intercourse
- Mother-to-child
- Blood transfusion
- Contaminated instruments, needles and gloves

Many people are not aware that they have contracted HIV until the illness has progressed to full-blown AIDS. The actual signs and symptoms of AIDS vary considerably among patients. However, the common theme is that as the virus destroys the body's immune system, a number of infections and cancers may develop. These infections and cancers ultimately lead to the death of an HIV-infected person. Some of the illnesses associated with HIV/AIDS include tuberculosis, certain skin cancers (e.g., kaposi sarcoma on the skin), certain forms of meningitis (e.g., crypto-coccal meningitis), and pneumonia (pneumocystis carinii pneumonia).

Although there is no fully effective cure for HIV/AIDS at this time, there are many ways in which relief workers can work with local populations to prevent the spread of both STDs and HIV/AIDS in the emergency setting, as described later in this chapter.

Unplanned and Untimely Pregnancies

"All couples and individuals have the basic right to decide freely and responsibly the number and spacing of their children and to have the information, education and means to do so."

— Program of Action
International Conference on Population and Development
Cairo, September 1994

Key Facts
- World-wide, some 350 million couples lack access to safe, effective, and affordable family planning services.[19]
- Family planning can prevent 25-30 percent of all maternal deaths.[20]
- Spacing births at least three years apart can decrease infant mortality by around 20 percent.[21]

More than 120 million women say they want to space or limit their families, but currently do not have accessible, affordable, or appropriate means to do so. This problem is most evident in emergency settings where a high number of women are struggling with unwanted, unplanned, and poorly spaced pregnancies, which can be hazardous to them and their children. Given the choice, many displaced women would prefer not to become pregnant and face the difficulties of childbearing in a camp setting. However, many do not have this choice since contraceptive services are often unavailable. Even where services do exist, many women are often unaware of the benefits of contraception. Some may be constrained from using contraception due to cultural mores or political pressure to rebuild the population. Unwanted pregnancies, and the attendant increase in unsafe abortions are also by-products of a breakdown in social order which allows rape and prostitution to flourish.

Family planning plays a crucial role in helping women remain healthy by preventing unwanted or untimely pregnancies. Increasing access to safe, effective contraception saves the lives of women and children. Many contraceptives have added health benefits. For example, the pill can protect against certain cancers, while the condom provides protection against HIV/AIDS and other sexually transmitted diseases. The best guarantee of infant survival is to ensure the survival of the mother. Hence, family planning and birth spacing increase the chance that children will grow up healthy. Family planning also has positive long-term benefits for the entire refugee community. Smaller families allow women and couples to care for their children more effectively, manage scarce resources for health, education, food and housing, and undertake a greater range of income-generating activities.

Sexual and Gender-Based Violence

"Migrants and displaced persons in many parts of the world have limited access to reproductive health care and may face specific serious threats to their reproductive health and rights. Services must be sensitive particularly to the needs of individual women and adolescents and responsive to their often powerless situation, with particular attention to those who are victims of sexual violence."

— Program of Action
International Conference on Population and Development
Cairo, September 1994

Sexual violence covers all forms of sexual threat, assault, interference and exploitation, including statutory rape and molestation without physical harm or penetration. Gender violence is violence that is directed specifically against a woman because she is a woman or which affects women disproportionately. Sexual and

gender-based violence includes a wide range of abuses, with rape being perhaps the most obvious form. Other abuses include attempted rape, assaults, domestic violence, incest, involuntary prostitution, torture, insertion of objects into genital openings, and female genital mutilation.[22]

Note: *Although those most at risk are typically women and girls (especially if unaccompanied), sexual violence against men and boys also occurs.*

Key Facts

- The World Bank estimates that trauma resulting from sexual and gender-based violence accounts for 5% of the total burden of disease, among women of reproductive age in developing countries.
- Between 16-52% of all women have been assaulted by an intimate male partner.[23]
- In more than 60 percent of all rape cases, the victim knows the perpetrator.[24]
- Over 130 million women in the world today are estimated to have undergone female genital mutilation (FGM). An additional 2 million young women undergo FGM every year.[25]
- Studies have shown that between 36-62% of all sexual assault victims are aged 15 and under.[26]

Sexual and gender-based violence (abbreviated as "sgbv") is a tragically common problem for refugee populations, producing serious physical and psychological consequences for its victims. It is endemic in conflict situations, where rape and other forms of violent sexual assault are increasingly used as weapons of war. Mass rape of populations is used to dominate, control, and inflict psychological impairment. It may also be used as a method of torture during interrogation. In the former Yugoslavia, rape was deliberately employed to demoralise men and women held in captivity. In Rwanda, and other countries where the ethnicity of the child is determined by the father's ethnicity, rape has been used to alter the ethnic composition of the population. All human beings want to escape such degradation. Sadly for women and girls (and even men) in emergency situations, the environment is full of sexual violence inflicted by guards, soldiers, and others in a position of military/political/economic authority, as well as by fellow displaced persons.

The consequences of sexual and gender-based violence are often long lasting and severe, and include the following:

- **Physical consequences** which may include HIV and STD infection, unintended pregnancy, unsafe abortion, menstrual disorders, trauma to the reproductive tract, and miscarriage if already pregnant.
- **Psychological effects** may be considerable, such as post-traumatic stress disorder and depression.
- **Social consequences**: Women who have suffered such violence are sometimes stigmatised and/or rejected by the community.

FGM (Female Genital Mutilation)

An additional area of concern is the harmful traditional practice of female genital mutilation (FGM), which is a cross-cultural and cross-religious ritual performed by communities in Africa and Asia, including the Middle East. Over 130 million women world-wide have undergone this ritual. Displaced communities may revive this practice by embracing traditions more fervently in an attempt to reassert their cultural identity in their new environment. From a public health perspective, it is important to assess how FGM is performed and the extent to which it is practised within a displaced population in order to define the magnitude and nature of the problem.

There are three forms of FGM practised around the world, namely:

- "Sunna" — excision of the prepuce and/or tip of the clitoris
- Clitoridectomy – excision of the entire clitoris (prepuce and glands) and the labia minora
- Infibulation — joining of the remaining sides of the vulva after excision of the clitoris and all the labia

Reasons for FGM include family honour, cleanliness, insurance of virginity and faithfulness to the husband, protection against spells, etc. Local midwives usually perform the operation without anaesthesia and under unsanitary conditions. Depending on the extent of the operation, consequences of FGM may range from infections, serious damage, heavy bleeding, and urinary retention to psychosexual and obstetrical complications and even death.

PLANNING EMERGENCY REPRODUCTIVE HEALTH PROGRAMS

Emergency reproductive health care is necessary for the physical, mental, and social well-being of displaced populations. It should be delivered in a timely manner, integrated into primary health care (PHC), and co-ordinated with other sectors and institutions. Because reproductive health care is concerned about highly personal aspects of life, program planning must involve the affected community in order to be sensitive to their religious and cultural values.

Assessment

A reproductive health needs assessment should first be carried out in order to identify the type and extent of reproductive health services needed by displaced populations. This assessment should be led by staff with reproductive health care experience and should involve members of the displaced community. However, this approach may be challenging due to the sensitivity of reproductive health issues.

A basic assessment exercise should provide the following baseline information:

Table 11-4: *Reproductive Health Assessment Checklist*

HEALTH FACTORS	SOCIAL FACTORS
Demographic Profile and Health Status	Community Knowledge, Attitudes, and Practices

• Total population
• Number of women of reproductive age
• Number of children 0-15 years
• Number of children 0-5 years
• Number of female headed households
• Crude birth rate
• Maternal mortality rate
• Maternal mortality ratio
• Total fertility rate
• Estimated number of pregnant women**
	Understanding cultural norms and the effect of dislocation on relevant practices including:
	• Rites of passage
	  - Marriage
	  - Age of first sexual activity
	  - Circumcision
	• Status of women and children
	• Family planning, including child spacing
	• Extent of unwanted pregnancies
	• Antenatal health care practices
	• Child delivery practices and postnatal care
	• Knowledge of AIDS and STDs
	• Opinions about camp security
	• Extent of sexual violence

Available Service and Resources	
• Extent and condition of existing health facilities • Staffing and coverage (i.e., availability of staff) *(Note: includes both formal staff and informal, such as TBAs)* • Service statistics (i.e., which services are used; the extent to which facilities function at full capacity, etc.) • Inventories of equipment, drugs, and commodities	Note: 1) Special attention should be paid to differences across ethnic groups residing at the camp, should there be more than one group present. 2) It is very important to learn and use the local words for key reproductive health terms and concepts.

**See appendix for details on making this estimate.

Note: *Survey instruments for collecting the above data are available through the Reproductive Health for Refugees Consortium in its document, "Refugee Reproductive Health Needs Assessment Field Tools."* [27]

Once staff have collected and analysed the information, results should be summarised in a formal report. This report should be distributed to all concerned parties (e.g., relevant host country ministries, international agencies, and donors). Summary findings should highlight the following information:

- Affected Population — a reproductive health profile, including the leading causes of reproductive health related mortality and morbidity, and the population's knowledge, attitudes, and practices

- Hierarchy of needs

- Local Capacities — the capacity of existing health facilities, services, and human resources within the camp to deliver reproductive health services to the affected population

- External resources necessary to address current and potential reproductive health problems

- Recommendations — the details for any further investigation and/or program implementation

Setting Priorities

Based on the assessment and feedback received from concerned parties, including representatives of the displaced population, the reproductive health program planners must prioritise the identified problems through a systematic approach. Using the guidelines discussed in the Management chapter, the team should organise the discussion around the following principles:

- List the problems observed through the assessment exercise.

- Ask planners to consider each problem in terms of its prevalence, seriousness, feasibility of control, and community acceptance. Each criteria should be scored from 1-4 (1 being the lowest and 4 being the highest) as shown below.

- Use additive and/or multiplicative scores to identify the problem areas that planners have ranked highest. See the following example of an additive scoring system:

Table 11-5: Worksheet for Preference Ranking of Problems in Reproductive Health

Health Problems	Prevalence	Seriousness	Feasibility of Control	Community Acceptance	Additive Scores	Multiplicative Score
1. Poor lighting at night	4	3	2	4	13	96
2. Few skilled staff	2	4	2	2	10	32
3. No medicines for STDs	1	1	4	3	9	12
4. Malnutrition in pregnant women	4	1	3	3	11	36
5. High rate of unsafe abortion	3	4	2	1	10	24
6. Unmet need for contraception	3	4	1	3	11	36

Note: *Although both additive and multiplicative scoring systems indicate that "poor lighting at night" is ranked as the highest priority, and "no medicines for STDs" as the lowest, the multiplicative scores show a greater relative difference among the other categories. For example, health problems #2 and #5 both score 10 on the additive score, but are different (32, and 24 respectively) on the multiplicative score. In this way, the multiplicative scoring system can be more sensitive to differences in ranking.*

Setting Goals and Objectives

Goals and objectives for a reproductive health program should be defined according to the assessment findings. They will be useful for directing relief managers during the implementation process as well as for evaluating the effectiveness and impact of a program. It is important to define goals and objectives for both the acute emergency and post-emergency phases. Even though the reproductive health program is established during the post-emergency phase, some minimal reproductive health services should be initiated to address emergency reproductive health problems that arise during the acute emergency phase. Goals are general statements about the desired end-point of the program. Objectives are more specific statements about how to reach the set goals. The following table defines goals and objectives for implementing reproductive health measures during the emergency and post-emergency phase:

Table 11-6: Sample Goals and Objectives for Reproductive Health Programs in Emergency Settings

Emergency	Post-Emergency
Goals: • Co-ordinate and implement the MISP • Prevent and manage the consequences of sexual violence • Reduce HIV transmission • Prevent excess neo-natal and maternal morbidity and mortality • Plan for provision of comprehensive reproductive health services **Objectives:** • Design and locate camp sites that enhance physical security • Provide a medical response to survivors of sexual violence, including contraception, as appropriate • Enforce respect for universal precautions against HIV/AIDS • Guarantee the availability of free condoms by procuring sufficient quantities of condoms and developing an effective free distribution system • Promote clean home deliveries by providing clean delivery kits for use by mothers or birth attendants • Facilitate clean deliveries at health facilities by providing midwife delivery kits • Organise a 24-hour referral system for obstetric emergencies • Identify suitable sites for future delivery of comprehensive reproductive health services • Identify qualified and experienced staff to co-ordinate reproductive health activities	**Goals:** • Reduce levels of maternal mortality and morbidity in the population • Reduce the levels of unmet need for contraception • Improve adolescent knowledge, attitudes, and practices concerning the transmission of sexually transmitted illnesses • Increase women's security within the camp and surrounding areas **Objectives:** • Improve medical staff skills at the referral clinic level within six months • Ensure local clinic is well equipped with materials and equipment to handle obstetric emergencies by the end of the third month • Provide training for TBAs in safe motherhood topics every three months • Develop comprehensive ante- and postnatal care programs by the end of the sixth month • Procure sufficient and appropriate contraceptives for post emergency needs within three months • Implement public awareness campaign on the benefits and availability of family planning services by the end of four months • Conduct STD/HIV/AIDS adolescent peer counselling training sessions by the end of six months • Organise community security patrols to improve the safety of women at night within three months • Conduct sexual and gender-based violence awareness training for vulnerable groups once a month • Organise camp-wide public awareness campaigns on the rights of women and children and the prevention of sexual violence beginning by the end of the fourth month • Conduct regular assessments on the equity of relief material distributions, beginning by the end of the third month

Note: *The goals listed under the emergency section of this table are based on the* **Minimum Initial Services Package (MISP)** *in the* Inter-agency Field Manual on Reproductive Health in Refugee Situations *by UNHCR and UNFPA. The post-emergency goals and objectives are examples by the authors.*

Objectives should be based on realistic targets (refer to management section). Examples of **objectives** in a reproductive health program that focuses on reducing maternal mortality are defined below. Please note that these are examples only and should not be considered as standard guidelines:

- To distribute 40 safe delivery kits to TBAs by the end of the first month. (Output Indicator)

- To train, within the first three months, 15 refugee health workers in physical assessment and follow-up of pregnant women within their respective camp centres to ensure timely and appropriate referral to outside clinic services as necessary. (Process Indicator)

- To reduce by 50% the number of maternal deaths occurring within the first year of operation. (Impact Indicator)

Detailed Plan of Action

A detailed plan of action helps managers define exactly how the goals and objectives will be achieved by specifying *what* are the activities, *how* they will be done, *when* and *by whom.* It can be used to co-ordinate reproductive health activities with other existing health services and ensure that staff, especially physicians, can be involved when necessary. An example of a detailed action plan for a safe motherhood project is shown below.

Table 11-7: Sample Plan of Action for a Safe Motherhood Project

Goal	Services	Strategy	Activities	Who Will Deliver	How and When
Decrease Maternal Mortality	1. Antenatal care	Improve recognition and response to high risk mothers at community level	a. Train outreach workers (TBAs and CHWs)	Nurse/midwives	One week training for 15 outreach workers within 3 months
			b. Conduct IEC campaigns on necessity of ANC visits	TBAs and CHWs, Nurse/midwives Community organisers	Weekly public broadcast, Monthly women's groups Daily home visits
	2. Emergency obstetric services	Increase skills and resources at the referral hospital	a. Train midwives and doctors	Local obstetrician & Senior nurse/midwives	National level EOC training within 3 months
			b. Regular supply of EOC drugs and materials	Logistics staff	Order & procure locally every month

Project activities should be based on specific indicators. For each service, define the principal **inputs**, **processes**, and **outcomes** (mainly output and effect since impact is difficult to measure). When evaluating the program activities, these indicators should be used as measures of progress towards the overall goal(s) of the intervention. A sample worksheet showing different indicators for the safe motherhood activities is shown below:

Table 11-8: Sample Worksheet of Indicators for a Safe Motherhood Project

GOAL	OBJECTIVE	INPUT	PROCESS	OUTPUT	EFFECT	IMPACT
Decrease maternal mortality	Provide Safe Motherhood training for TBAs every 3 months	TBAs, Training material, Trainers	Training, Skills testing	Percent of TBAs trained	Early detection & referral of high risk mothers Competence in carrying out normal deliveries	Safer home deliveries Reduced maternal mortality
	Improve EOC skills in medical staff at the referral hospital within six months	Medical staff, Training materials, Trainers	Training, Skills testing	Percent of medical staff trained	Compliance to standard EOC procedures	Efficient management of obstetric emergencies Reduced maternal mortality
	Equip referral hospital to provide EOC within 3 months	Medical & surgical drugs/supplies, Transport	Procurement and delivery	Stock of EOC supplies & equipment	Better care for mothers with obstetric complications	Provider and patient satisfaction in EOC Reduced maternal mortality

Considering Constraints and Changes

Most reproductive health programs face constraints that are difficult to overcome, particularly in emergency settings. Unfortunately, some constraints can be critical and can cause well-planned programs to fail. The following factors may prevent the success of reproductive health programs:

- Cultural taboos about discussing human sexuality.

- Inappropriate or poor quality reproductive health information and services.

- The prevalence of high-risk sexual behaviour.

- Discriminatory social practices.

- Negative attitudes towards girls and women.

- Limited power women and girls have over their sexual reproductive lives.

- Reproductive health care is not considered a priority as people are focussing only on their immediate survival needs.

While designing the program, it is important to consult the community representatives in order to identify possible constraints and determine how to overcome them. Programs should also prepare for possible future changes, such as major population movements, sudden changes in political and/or economic conditions, declining community participation, etc. This will make the program flexible to respond to necessary changes in the relief environment. None of these assumptions should be so crucial as to jeopardise the project activities altogether, should they prove to be incorrect.

Identifying Resources

Identifying resources for reproductive health projects in the acute emergency phase may be difficult. Humanitarian ethics dictate that relief assistance should first address the immediate survival needs of a displaced population, which includes provision of water, food, shelter, and medical care to control disease outbreaks. Once the emergency situation is stable, it is inevitable that concern of displaced populations will shift to reproductive health care. Relief agencies must be prepared for this shift and should convince donors during the emergency phase so that resources are available when needed. Generally, resources for reproductive health programs fall into two broad categories: *human resources* and *material resources.*

Human Resources

A successful reproductive health program requires adequate and well-trained staff. Most of the human resources should be members of the displaced population because they understand the cultural norms for reproductive health care. The community representatives can help identify individuals who can be trained to carry out the required activities. Integrating reproductive health projects within the existing primary health care programs will build support from all health care providers.

Table 11-9: Human Resource Needs of Various Health Care Programs

Project	Human Resource Needs
Safe Motherhood	Refugee health workers; traditional birth attendants; nurse/midwives; physicians (for emergency obstetric care)
Family Planning	Refugee health workers; clinical officer; possibly physicians
STD/HIV/AIDS Prevention and Treatment	Refugee health workers; nurses; clinical officer; pharmacist; physician
Prevention and Response to Sexual and Gender-based Violence	Organisation and leadership trainers; refugee community representatives; counsellors; security patrols

Once the program planners have defined the level of skills and competence required by staff members who will carry out the reproductive health activities, they should develop job descriptions. Even though not everyone in the team may be new, a job description and proper job orientation can help all concerned parties understand the new responsibilities and duties of each member of the reproductive health team. Reproductive health training should be provided at the beginning to ensure all team members carry out their duties efficiently and effectively. Staff supervision and ongoing support is important to increase motivation for delivering quality services, particularly for members who are not formally paid for their work. (For more details on supervision and motivation, refer to the *Human Resource Management* chapter.)

Material Resources

The material resources needed to implement a reproductive health program will depend not only on the type of project, but also the population size and the prevalence of reproductive health problems. Ideally, reproductive health projects should rely mainly on local resources, in order to deal with the possibility of declining donor support. Initially, however, external support may be required to procure the start up material resources. The following table lists the key material resources to be considered for different projects.

Note: S*tandard reproductive health reference rates may be used for estimating resources. See attached references in the Appendix.*

Table 11-10: Materials Needs for Various Health Care Programs

Project	Key Material Resources
Safe Motherhood	• For maternity ward in clinic: drugs, dressings, fluids, surgical instruments, sterilisation equipment, extra beds, blankets, etc. • For home deliveries: TBA kits; UNICEF midwife kits; transportation for referral of complicated cases • For pregnant and breast-feeding women: additional food rations and nutritional supplements
Family Planning	• For potential clients: medical examination material; contraceptive prophylactics; storage containers and/or facilities, instructional charts, calendars, scales, etc.
STD/HIV/AIDS Prevention and Treatment	• For curative care: medicines for STD treatment and HIV-related illness, examination gloves and protective clothing, containers for the disposal of needles and other hazardous waste, disinfectants; etc. • For preventive care: condoms, IEC materials (posters, charts) • For blood transfusion: sphygmomanometer, ball, artery forceps, blood bags, transfusion sets, IV catheters, blood lancets, testing kits/reagents, multi-well plates, test-tubes, pipettes, syringes, needles, gloves, weighing scales
Prevention and Response to Sexual Violence	• For security: lighting equipment, shelter material, basic supplies • For economic empowerment: income-generation activities • For crisis response: emergency contraception, medication

Note: *In addition to the above, staff should be equipped with standard guidelines for case management and basic stationary for record keeping, inventory, and training purposes.*

The following guidelines (based on the Inter-agency field manual on Reproductive Health in Refugee Settings) may help in estimating quantities of supplies needed.

Table 11-11: Guidelines on Estimating Resource Quantity Requirements

Resource	Quantity
Referral facility for EOC	• One for every 150,000 to 200,000 people, having a functioning operating theatre, with enough trained staff to perform emergency caesarean sections • Blood bank with guidelines for safe blood transfusions
Safe delivery kits/ UNICEF midwife kits	• Quantity based on a calculation of the crude birth rate (CBR) of the population. Example: If a population has a CBR of 3%, and there are 2,000-3,000 people, 5-8 births per month can be expected. • Note also that one TBA can care for 2,000-3,000 women, with a CBR of 3% (about 60-90 deliveries per year).
Condoms	• From the total population, the percentage of sexually active male population can be estimated at roughly 20%; multiply this by the percentage of males actually using condoms (based on assessment information); multiply that total by 12 (estimating use of 12 condoms per month per male); add to this figure 20% for wastage

The Minimum Initial Service Package (MISP)

A Minimum Initial Service Package has been developed by various international agencies to address the immediate reproductive health needs of displaced populations during the acute emergency phase.

While the MISP outlines priority strategies and activities, the UNFPA Reproductive Health Kit for Emergency Situations provides the actual material resources needed for implementing MISP. The UNFPA has organised 13 self-contained Reproductive Health Kits that are standardised with WHO's New Emergency Health Kits. The following table summarises the contents of each kit:

Table 11-12: Contents of UNFPA Reproductive Health Kit for Emergency Situations

Health Facility/Capacity	Material Resources
Primary health care/health centre level: 10,000 population for 3 months	Subkit 0 Training and Administration Subkit 1 Condoms Subkit 2 Clean delivery sets Subkit 3 Post-rape management Subkit 4 Oral and injectable contraceptives Subkit 5 STD drugs
Health centre or referral level: 30,000 population for 3 months	Subkit 6 Professional midwifery delivery kits Subkit 7 IUD insertion Subkit 8 Management of the complications of unsafe abortion Subkit 9 Suture of cervical and vaginal tears Subkit 10 Vacuum extraction
Referral level: 150,000 population for 3 months	Subkit 11 A - Referral-Level Surgical (reusable equipment); B - Referral-Level Surgical (consumable items and drugs) Subkit 12 Transfusion (HIV testing for blood transfusion)

Note: *The New Emergency Health Kit contains emergency contraceptives, materials for universal precautions and midwifery kits.*

These kits can also be ordered from UNFPA (New York, Geneva, or country office) or through any other UN agency to meet the reproductive health needs of different emergency phases:

- Acute phase — order Subkits 0-3 for MISP
- Post-emergency — order Subkits 4-12 for comprehensive reproductive health care

IMPLEMENTING EMERGENCY REPRODUCTIVE HEALTH PROGRAMS

Implementing emergency reproductive health care entails much more than the skeleton maternal and child health (MCH) services currently provided to most displaced populations. An emergency reproductive health program is culturally appropriate and sensitive to the different needs of men and women, and of different age groups. It must be accessible and available to single women, widows, older women, men, and adolescents. The following sections provide guidance on specific program implementation options that field workers should consider within each of the reproductive health technical areas.

Safe Motherhood

Safe Motherhood is a comprehensive program that can effectively save lives of women and children in emergency situations. It seeks to ensure that women receive appropriate attention throughout their pregnancy and childbirth. It includes pre- and post-natal care including care of the baby and breast-feeding support, as well as delivery care and referral of women with obstetric complications, including unsafe abortion. It also provides access to family planning services and reproductive health education.

Antenatal Care

Regular antenatal care is a crucial factor in ensuring the health of both the mother and child throughout pregnancy. It is during antenatal care that health care workers can check important health indicators and look for any possible complications and/or risk factors. It is a fundamental component of safe motherhood. Appropriate antenatal care includes the following[28]:

- risk screening

- detecting and managing complications

- observing and recording clinical signs such as height, blood pressure, oedema, detecting anaemia, uterine growth, foetal heart rate, and presentation

- maintaining maternal nutrition

- promoting health

- using preventive medications such as iron folate, tetanus toxoid immunisations, anti-malarials, and antihelminthics

Delivery Care

If facilities for delivery care are not available on site, referral systems need to be established and strengthened to ensure 24-hour access to emergency facilities. Delivery care interventions include[29]:

- Providing skilled assistance

- Clean and safe delivery

- Recognising, managing, and detecting complications early

- 24-hour referral and transportation to emergency obstetric facilities

Emergency Obstetric Care

Emergency obstetric care requires many resources:

- adequate supplies of drugs and equipment

- safe blood for transfusion

- trained staff (for identifying emergency obstetrical conditions, counselling high risk mothers and making appropriate referrals)

- means of transportation for referral of obstetric emergencies

In settings where women's access to medical advice and services is restricted, strong information, education and communication (IEC) and health education campaigns are needed that target all women of reproductive age and the wider community. The following table outlines activities for improving the outcome of women facing obstetric emergencies.

Table 11-13: EOC Activities for Improving Outcome of Obstetric Emergencies

Obstetric Problem	EOC Activities	
	Acute Emergency Phase	**Post-Emergency Phase**
Infection	• Provide TBA Safe Delivery Kits and training for TBAs in prevention, identification and referral of mothers with infection. • Provide UNICEF Midwife Kits to ensure clean and safe deliveries at health facilities. .	• Facilitate and promote the sterilisation of medical equipment, obstetric care hygiene, and use of antibiotics at the clinic level. • Ante-natal health education for women of reproductive age including the concept of safe delivery.
Haemorrhage	• Ensure pregnant women receive adequate nutrition (and preventive medication if necessary) to prevent anaemia. • Establish a referral system for obstetric emergencies (see "Obstetric Emergency" below).	• Train TBAs to encourage immediate breast-feeding after delivery to prevent haemorrhage. • Train TBAs to identify haemorrhage and properly determine when advanced assistance is necessary. • Train midwives and/or other available medical staff in the following procedures: handling basic complications, stabilising a patient, and correctly determining when referral is necessary.
Eclampsia	• Establish obstetric emergency referral system (see "Obstetric Emergency" below).	• Train TBAs to identify the signs of pre-eclampsia and eclampsia during delivery and properly determine when advanced assistance is necessary. • Train midwives and/or other available medical staff to handle basic symptoms, stabilise the patient, and properly determine when advanced assistance is necessary.
Obstructed Labour/ **Obstetric Emergency**	• Establish adequate facilities within the camp and/or establish links with outside facilities for emergencies (support facilities through staff training; equipment; and transportation as necessary).	• Train TBAs to identify at-risk mothers and the signs of obstructed labour and other obstetric emergencies and determine when advanced assistance is necessary. • Train midwives and/or other available medical staff to handle common obstetric emergencies and stabilise patients before referral.
Unsafe Abortion	• Ensure the availability of emergency post-coital contraception (i.e., combined oral contraceptive and/or copper IUD which must be inserted by a trained professional). • Establish adequate facilities within the camp and/or establish links with outside facilities for emergencies (support facilities through staff training; equipment; and transportation as necessary).	• Train refugee health workers, TBAs, etc. to recognise the symptoms of unsafe abortion. • Train midwives and/or other available medical staff in the treatment of basic physical consequences of unsafe abortion and techniques of stabilisation before referral. • Provide adequate family planning services, including information and education programs. • Undertake related program activities to minimise sexual and gender-based violence.

Postnatal Care

Sometimes, women develop complications of pregnancy and childbirth that are not immediately evident after the birth of the child. Postnatal care ensures that the health status of the mother and child are monitored long enough to detect such problems. This is particularly important in emergency situations where women may be alone and/or the head of household. Postnatal care includes the following:

- Recognition, early detection, and management of complications in new mothers
- Promotion and support for breast-feeding within the first hour of birth
- Attention to the health of the new-born
- Information and services for family planning

Health Education

Maternal mortality can be reduced by early recognition of high-risk pregnancies and timely interventions in cases of risk. Most women are not aware of the causes of maternal death or the danger signs indicating an obstetric complication. A program of maternal health IEC (Information, Education, and Communication) activities should be developed to help the community identify complications early and take appropriate action when required.

Preventing and Caring for Sexually Transmitted Diseases (STDs) and HIV/AIDS

Services related to STD/HIV prevention should not be considered a luxury. It is crucial from both a public health and human rights perspective that activities to promote the prevention, treatment, and management of STDs should be incorporated into relief and development work. Although there currently exists no known fully effective cure for HIV/AIDS, there are many ways in which relief workers can work with displaced people to create programs that can limit the spread of HIV in an emergency setting.

Field workers should be aware of the highly sensitive nature of this area of reproductive health. Confidentiality must be maintained in all cases and interventions should consider the local culture and situation. The active involvement of refugee representatives during the planning of interventions is particularly important. The following case study shows how an international organisation was able to successfully work around the complicated issues of HIV prevention in an emergency.

Figure 11-2: Case Study Illustrating HIV Prevention

Case Study

The civil war in Rwanda created a refugee crisis of unprecedented proportions; the Great Lakes region is now home to over 2 million refugees [30].

The Reproductive Health Minimum Initial Service Package (MISP) was the centrepiece of an interagency initiative in the Great Lakes region to ensure reproductive health care — including prevention of sexually transmitted diseases — is incorporated as a central component of relief operations. The two key objectives of the package are as follows:
- to guarantee the availability of free condoms
- to promote universal precautions against HIV/AIDS

In the Ngara camps in Tanzania, CARE found Rwandan refugees unmotivated to use condoms for STD prevention because of a desire to have more children to replace those lost in the genocide. In response, the staff developed a more effective strategy by highlighting the importance of protecting fertility through STD treatment to reduce the risk of HIV transmission.

Although prevention and management of STDs and HIV/AIDS in emergencies have generally proven very difficult, the following approach can be considered:

Immediate Emergency Phase[31]:

- Providing basic STD/HIV information to remind the displaced people about the risk of disease transmission in the emergency situation and where to get condoms and medical treatment.

- Obtaining condoms and establishing ways to distribute them for free.

- Establishing universal precautions and ensuring adequate supplies and equipment to prevent the spread of HIV infection between health workers and the displaced populations.

- Performing safe blood transfusion, if necessary.

- Identifying a responsible party to plan and co-ordinate the STD/HIV/AIDS program in the post-emergency phase.

    Note: *Emergency health care should include the basic treatment of STDs and common infectious illnesses arising from AIDS, as cases are presented during this phase.[32]*

Post-Emergency Phase:

- Collect data on STD/HIV/AIDS incidence where possible based on standard clinical definitions However, mass HIV screening should not be done.

- Establish the program for care of patients with STD and HIV/AIDS, through the following:
    - training of staff in the syndromic approach to STD diagnosis and management
    - voluntary and strictly confidentia1 HIV screening
    - comprehensive care for persons with AIDS
    - IEC (information, education, and communication) campaigns for preventing the spread of STD/HIV/AIDS

- Establish procedures to screen blood donations for HIV and build compliance to the universal precautions against HIV/AIDS.

- Continue distributing free condoms through effective mechanisms.

Management of STDs

Health workers must be trained to carry out STD prevention and care, as follows:

- Promote and provide condoms, which are effective in preventing STD transmission when properly used.

- Educate and counsel specific target groups in the community about safe sex practices, early recognition of STDs symptoms, and the importance of early treatment.

- Diagnose and provide effective treatment for STDs, based on observed syndromes.

- Promote patient compliance for completing the course of STD treatment.

- Trace partners of patients with STDs and encourage them to get treated.

- Monitor the incidence of STDs in the community.

Because laboratory testing is not always possible in emergency settings, a syndromic approach to STD treatment and prevention should be adopted. Technical details about the treatment of specific STDs can be obtained in standard medical textbooks. The success of STD care in a population depends on consistent availability of drugs.

Special arrangements may be made to ensure women and young people have access to STD treatment. If left untreated, STDs can lead to serious consequences including sterility (gonorrhoea), serious debilitation and complications in foetal development (syphilis). Scientific evidence shows that frequent STD infections also facilitate the transmission of HIV, more specifically through the presence of open sores in the genital area. Effective prevention and management of STDs can therefore serve the dual purpose of reducing and preventing the transmission of HIV infection, although it is by no means a sufficient HIV prevention measure in and of itself.

Safe Blood Transfusions

Blood transfusion may be necessary for women with major complications of delivery, e.g., antepartum haemorrhage, uterine rupture, postpartum haemorrhage, etc. Because the risk of getting HIV through blood transfusions is almost 100%, clear guidelines should be developed for emergency situations where regular services may have broken down. Guidelines for reducing the risk of HIV infection from blood transfusion may include the following:

- Strict criteria for blood transfusion — Give blood only to save life and when there is no other option (e.g., blood substitutes are not available or adequate).

- Recruitment of donors — Collect blood from donors who are identified as the least likely to be HIV-infected. These are more likely to be found among voluntary than paid donors.

- To ensure blood is safe for transfusion, first test it with reliable HIV as well as hepatitis B assays, and then store it under suitable conditions.

- When it is absolutely necessary, staff should follow standard procedures for transfusing blood.

- Safe disposal of potentially dangerous waste products, e.g., unsafe blood, used blood bags, needles and syringes.

Note: *Technical details on blood testing, transfusion procedures and use of blood substitutes can be obtained from references suggested at the end of this chapter.*

HIV-Positive Mothers and Infant Feeding

Breastfeeding should be promoted and supported, even in a population known to have a high prevalence of HIV. However, HIV-positive mothers and pregnant women should be informed about the high risk (7-22%) of HIV transmission to their children both during pregnancy and through breastfeeding. To date, the only known method of reducing this risk is anti-retroviral treatment, which is very expensive. While HIV research is expanding quickly, it is currently not practical to provide these treatments within the context of most emergencies. Therefore, displaced women who are HIV-positive should be given other options, such as infant formula, home-prepared formula, or expressing and heat treating their own breast milk. If infant formulas are introduced, program managers must be able to guarantee the access and use of clean water (plus equipment and fuel for heating). Sufficient supplies should be procured to last each mother/child six months, and products should meet with international quality and marketing standards.[33] For more details about infant feeding, see the *Food and Nutrition* chapter.

(For more details about HIV/AIDS, see the *Control of Communicable Diseases* chapter.)

Family Planning

Effective family planning programs can assure couples of the internationally accepted right to reproductive health. This includes the material and educational means to achieve physical well-being and to limit or space children as desired. Access to family planning services can therefore help reduce maternal mortality and morbidity in camp settings by allowing women to limit and space their children effectively and prevent undesired pregnancy (which may lead to septic abortions).

The reproductive health team in charge of implementing a family planning project should take into account the family planning environment that existed within the host country prior to flight (i.e., coverage and common types of family planning methods and outreach approaches used) as well as the cultural norms concerning family planning[34]. The team should be trained to carry out family planning counselling and administer materials in a culturally appropriate manner. During the acute emergency phase, promoting and freely distributing condoms is necessary to prevent STDs and HIV transmission and unwanted pregnancies. In the post-emergency phase, family planning programs should be established to provide individuals and couples with effective counselling, a choice of contraceptive mechanisms, adequate follow-up, and general information, education, and communication campaigns.

The success of a family planning project depends on the availability of family planning materials. Standard guidelines for obtaining and distributing contraceptives should be consulted (refer to the Resource List at the end of this chapter). Family planning programs may only be considered as effective when the **contraceptive prevalence rates** (calculated as: acceptor rate/year x average duration of contraceptive use) are high. Because continuation is so important, field workers must ensure quality information and education services, organising distribution mechanisms, for various methods (such that if one method proves inappropriate for a woman or couple, another method is available), and proper follow-up by well-trained staff.

Important Family Planning Issues

Family planning within the emergency setting provides field workers with some special challenges. It is essential to ensure that all women treated for unsafe abortion are informed and educated and have access to family planning prior to discharge. The following important issues need to be considered:

Integration

Family planning services are best placed within the regular health system available in the camp. Such integration can reduce the potential stigmatisation of individuals, particularly unaccompanied women and adolescents, who may need the services most. Family planning education, which is a critical part of any successful intervention within this area, can be integrated into a number of other indirectly related interventions with excellent results. Field workers should look outside their own program areas for information, education, and communication opportunities. As always, cultural norms and traditions within this context must be respected.[35]

Health Education

Health education is a critical component of any successful family planning program, as described in the following:

Figure 11-3: Case Study Illustrating the Necessity of Health Education

Case Study
In the early 1990s the International Rescue Committee (IRC) established a reproductive health project to serve refugees in the Côte d'Ivoire. Crucially, this initiative was launched in response to requests from the refugee community itself. The IRC field staff have worked closely with the refugees at all stages to ensure that services were accessible and culturally appropriate. As a result, the project has been highly successful in promoting alternatives to traditional methods of preventing pregnancy or spacing births.   Pictorial aids, simple counting methods, and other techniques are used to make family planning and HIV prevention classes interesting and understandable for both men and women. Contraceptives are readily available through IRC health workers, while condoms are also on sale through local grocery stores and other retail outlets.

Contraceptive Methods

While it is the needs assessment exercise that should guide field workers in selecting the type of contraceptive methods to be introduced to the emergency situation, special considerations may be important as described in the table below.

Table 11-14: Special Considerations for Family Planning

Family Planning Method	Special Considerations in the Emergency Situation
Condoms	Distribution of condoms is the most straightforward method of family planning for displaced populations. It is appropriate for all phases of the emergency. Failure rates, however, can be high due to inadequate and/or improper use. Displaced women may find themselves in a particularly low status position and at great pains to negotiate condom use with their partners. Education and information are crucial for effective use of condoms and should be started as soon as possible during the post-emergency phase.
Injectable Progestogen	Injections are usually administered every 3 months. While this method has very low failure rates (1-6%), it is problematic in the emergency setting and should be avoided. Injectables require stable populations, whereby women can regularly access health services and can continue with the same method when they return home or to another country of asylum. Good record keeping and follow-up are crucial.
IUD	Using IUDs in emergency situations depends on the availability of supplies, health technicians who are skilled in insertion, and access to follow-up services. IUDs are suitable where a displaced population is familiar with the method and is likely to have access to similar services upon return to country of origin and/or asylum. Follow-up is particularly critical for IUDs, which may require refitting and/or removal should complications arise.
Oral Contraceptives	This method, which also affords low failure rates, may be considered for relatively stable populations in the post-emergency phase. The critical factor is continuity. Regular supply must be organised for continued availability of pills; good follow-up service is necessary to prevent program drop-out; and the population itself must be sufficiently stable to allow women regular access to family planning care while at the camp and later.
Implants (Norplant)	The implant method is usually effective for about 5 years, but can only be used if proper follow-up and its removal on demand is assured in the countries of origin or final destination. Generally, emergency situations do not allow for these requirements.
Breastfeeding	Breastfeeding is an effective contraceptive method if a woman is exclusively breast feeding her infant on demand (no other food is being given to the baby), she is not menstruating, and her infant is less than six months old. If any one of these three criteria is not met, then an additional method of contraception is advised[36].
Sterilisation	Although it is the most effective means of contraception, this permanent method requires minor surgical operation. It is inappropriate during the emergency phase, and for many refugee settings, as it requires skilled medical staff and other surgical necessities. However, a local referral hospital may be available to provide these services.

Emergency Contraception

Emergency post-coital contraception may be particularly appropriate for displaced populations with high levels of sexual violence. There are two methods of post-coital contraception that are effective: the combined oral contraceptive (also known as the morning-after-pill), and the copper IUD. It should be understood from the outset that neither method causes abortion. Instead both inhibit ovulation and the development of the uterus lining, which is necessary for implantation and growth of a fertilised egg. In this way, the reproductive system is made temporarily unsuitable for conception.

Note: *Emergency contraception should not be used as a long-term family planning method*.

Emergency contraception must be made available from the initial phase of the emergency program, as an intervention for the physical consequences of rape. Field staff should be trained to recognise victims of sexual violence and encourage them to pursue medical attention in order to offer them the option of emergency contraception. (For further details see the section on sexual and gender-based violence).

Special Needs of Adolescents

Adolescence is a challenging time for young people in non-emergency situations. In emergencies, where adolescents may be lacking one or both parents and traditional societal structures have been damaged, the transition to adulthood can be even more stressful. It is especially important that field workers consider the special needs of adolescents for family planning when designing reproductive health programs. While the specific details will vary somewhat across cultures, the following points can guide concerned staff:[37]

- Proper design of education programs, which incorporate the views and feedback from the adolescents themselves; peer education programs have often been found to be useful.

- Many young people are easily reached through schools. Therefore, reproductive health education and counselling for adolescents should be integrated with other education and health promotion programs in order to reach as many adolescents as possible and avoid stigmatisation of those seeking specific assistance.

- There is need to supplement the traditional sources of information about reproduction, sexuality, and family education.

- Reproductive health information, education, and communication (IEC) efforts should focus not only on reproduction, but also on prevention of STD/HIV disease transmission and building life skills to enable youth to manage situations of risks to STD/HIV infections, unwanted pregnancies, and abortion.

- Adolescents should be made aware of the dangers of sexual violence and know how to seek help in an emergency.

- It is important to understand and be sensitive to the refugee population's concerns about adolescents having access to reproductive health services. Confidentiality is crucial and certain emergency situations may demand for it even more.

Preventing and Responding to Sexual and Gender-Based Violence

Addressing sexual and gender-based violence is essential to ensure the health and well being of displaced women (and even younger females and males). It requires a change of attitudes among relief workers and the community at all levels. Although it is very difficult to obtain accurate statistics on the number and frequency of sexual and gender-based violence incidents, even within an enclosed camp setting, field staff should assume that it occurs regularly. To ensure successful implementation, field staff should also be prepared to deal with the issue on a number of fronts and consult with various people, including:

- Staff from the United Nations and other concerned NGOs

- Host authorities in the health sector and legal system (police, military)

- Representatives of the affected communities (community leaders, teachers, religious leaders, and other members)

- Women at risk who should be encouraged to participate

The UNHCR has established guidelines for the prevention of, and response to sexual violence against refugee women,[38] which are discussed below. The Women's Commission for Refugee Women and Children has produced a synopsis of these guidelines, which are available upon request.[39] The following areas are addressed:

Camp Security
- General security should be improved within the camp and surrounding area, including security patrols (which may be community-based) and maintaining sufficient lighting at night.

- Safe access to water sources, latrines, washing facilities, fire wood collection points and other areas frequented by women and adolescents should be available at all times. It is important to elicit feedback from particularly vulnerable groups when designing the camp layout and evaluating at regular intervals.

- Provision of additional materials and advice about the security of dwellings may be necessary. For example, refugee dwellings may be better protected against outside raiders if surrounded by thorny branches or other materials. Field staff may also consider the need to provide special accommodation with locked facilities for unaccompanied woman and girls, and lone female heads of household.

Distribution of Food and Other Survival Materials
- Displaced persons who are most vulnerable to abuse and violence (such as female heads of household, unaccompanied women and adolescents) can be placed in even more vulnerable positions if relief assistance is not distributed fairly. All attempts must be made to prevent such situations. Needs of vulnerable groups should be addressed following an assessment and, if necessary, revisions made in the existing distribution mechanisms.

Monitoring
- Because of the very personal nature of sexual and gender-based violence, field staff may find it difficult to monitor the prevalence and incidence of events. However, one of the most effective ways to support this process is through the facilitation of women's groups and associations which may serve as a channel for women to report attacks. Women's health clinics may be able to offer a "safe" environment for reporting attacks, though field staff should ensure both that actual services are provided at such facilities and that the confidentiality of any victim can be maintained.

- Field staff should also learn to recognise possible "signs and symptoms" of violence, for example:
  - physical signs of STD infections, injuries
  - social isolation of women or young girls who have been attacked
  - psychological signs of trauma (e.g. reports of pains, nightmares, loss of appetite, headaches, sadness, fear, confusion, loss of memory, attention problems, isolation and talk of suicide)

- Field staff who suspect that an incident of sexual violence has occurred should approach the situation very carefully, offering the victim the chance to report the attack to a social worker, health worker, community services officer or protection officer, of the same gender, in complete confidentiality. The victim should never be pressured to report or discuss the incident to anyone, including field staff.

- Field staff should regularly document each incident and monitor the prevalence and incidence of events (to be kept secure and confidential). Then should also consider the points below in crisis response.

Crisis Response

Relief workers should be trained to recognise victims of sexual violence and to respond to victims in the following manner:

- Documenting and reporting of rape and/or other sexual abuse through a confidential system
- Clinically managing the physical consequences of sexual and/or domestic violence, including counselling on and offering emergency post-coital contraception
- Recognising the psychosocial needs of victims of sexual violence and referring them to *community-based* counselling and support services
- Establish post-crisis services to reintegrate victims back into the community, according to the cultural norms of the community.

Figure 11-4: Community-Based Response to Sexual Violence Against Women[40]

During the Rwanda refugee situation in Ngara in 1994, sexual violence reportedly became a serious problem as the refugee population started settling down. Through discussions with all parties, the idea of **Crisis Intervention Teams (CITS)** was developed. All teams were made up of refugees and supported by community service NGOs. Teams were trained by staff from UNICEF, CARE and UNHCR who had experience in working with victims of sexual abuse. Training information was drawn heavily from the UNHCR manual – *Sexual Violence Against Refugees: Guidelines on Prevention and Response.*

CITS members were expected to:

- Provide psychosocial counselling and support to the victims and their families
- Mediate between the victims' and perpetrators' families if necessary
- Make contact with community groups with a view of helping victims reintegrate into society by getting involved in community activities like income generation schemes, cultural or educational programs or women, youth or religious groups
- Raise awareness in the community of the problem of sexual violence, how it could be prevented, and what to do when it occurred

Note: *Unfortunately, the above-mentioned community-based response program did not last long enough to produce materials that could be used elsewhere because of the sudden return of refugees to Rwanda.*

Emergency Post-Coital Contraception

As noted in the section on Family Planning, emergency post-coital contraception should be introduced during the acute emergency phase, as part of the reproductive health program's MISP to assist women who have been victims of sexual violence. Trained health professionals should maintain a regular supply of the combined oral contraceptive, or the cooper IUD and offer them to all suspected victims of sexual violence.

Confidentiality

It is critical that field staff ensure strict confidentiality about any specific incidents of sexual or gender-based violence. The possible consequences of inadequate confidentiality about these issues include the stigmatisation of victims, violent revenge against those committing the violent acts, and the reluctance of other victims to seek assistance. In addition to maintaining the anonymity of any victim's identity and security of any written information about him/her and the incident, field staff should ensure that counselling and other activities are carried out in a manner that will not immediately identify individuals as victims of sexual violence. This also includes medical examination and/or any legal proceedings that may result from the incident.

Information/Education and Other Preventive Programming

- Information and education for all community members about the basic rights for all groups to protection from physical abuse and sexual violence.

- Information and communication programs advising vulnerable groups about the risks and prevention of sexual violence and domestic violence and how to obtain emergency reproductive health care.

- Programs to combat male frustration and boredom (which can increase the incidence of sexual violence).

- Programs to address alcoholism and other forms of substance abuse, which can impair the judgement of both the perpetrators and victims of sexual and gender-based violence.

- Programs supporting women's activities, such as income generation and literacy training, which may promote women's self-sufficiency and empowerment.

- In instances where communities hosting displaced populations may perceive negative consequences of the displaced population, extending external assistance to the host communities (such as improving local schools, airstrips, or other facilities) can help "keep the peace" between host and displaced populations.

Security for Detainees and Imprisoned Persons

Sometimes, displaced persons may be detained and/or arrested by local authorities for various reasons. Field staff should ensure that these individuals are afforded the same medical care and protection from sexual violence (which is common under such conditions the world over), to every extent possible.

Controlling Female Genital Mutilation (FGM)

Control of FGM involves exposing the irrationality of the practice to the concerned community, as well as providing medical care for complications. However, this should be approached with caution because of the following factors:

- Proof of virginity may be an economic asset — dowry of a girl is higher if she is proven to be a virgin when she is married.

- Not all forms of FGM can be easily condemned — some religious circles may favour the sunna type.

- The economic survival of midwives and sometimes health workers may depend on performing the operation.

Considering the above factors, there are a number of activities that can raise the awareness of both the displaced populations and heath workers serving them, about the health effects of FGM. These include the following[41]:

- Campaigns (including the use of videos where possible, as well as drama and other cultural activities) to emphasise the harmful health consequences of FGM practices:
  - increased individual risk of blood-borne infections such as HIV
  - the formation of rigid scar tissue around the vaginal opening which often leads to delays in the second stage of labour placing both mother and child at risk
  - difficulties in using certain contraceptive methods such as the IUD
  - difficulty in diagnosing STDs

- Discussions between health workers and members of the displaced population to enable health workers to understand the prevalence and nature of any FGM practices.

- Education of target populations (both men and women), such as religious leaders, traditional leaders (chiefs, elders, and political leaders), teachers, TBAs and other health workers, as well as the general displaced population about the harmful health consequences of FGM. It is particularly important to educate young girls about these issues.

- Integration of FGM issues into campaigns and workshops covering related reproductive health issues such as STDs, HIV/AIDS, safe motherhood, etc.

- Supporting other income generating activities for those who earn money through harmful practices (often village women, TBAs, or male barbers). Traditional practitioners must be helped to find other ways to secure the respect of their community.

- Promoting other "rite of passage" activities, which encourage the "coming of age" for young women without the use of FGM.

- Promoting female education in general. The incidence of harmful traditional practices, such as female genital mutilation and early childhood marriage, decreases as literacy increases.

MONITORING AND EVALUATING REPRODUCTIVE HEALTH PROGRAMS

The progress of relief operations must be regularly reported to donors and other stakeholders. This is best achieved through project monitoring and evaluation. To maximise the use of limited resources, reproductive health activities should be monitored and evaluated with other primary health care services. It is important to consult the displaced community and share with them any results from monitoring and evaluating reproductive health activities.

Monitoring

Regular monitoring is necessary for reviewing the progress of each reproductive health activity in reaching the set objectives, as well as in detecting reproductive health problems. Only two or three indicators should be selected for each activity, which are based on the goals and objectives of the reproductive health program. Various tools e.g., clinic registers, forms, internal reports, etc. may be used for monitoring as well as for program management (especially supervision and decision-making).

The following table gives examples of indicators and sources of information that may be used to monitor reproductive health activities.

Table 11-15: Indicators for Monitoring Reproductive Health Projects

Project	Activity	Indicator	Source of Information
Safe Motherhood	Antenatal care	• Number of ANC consultations in last 3 months (antenatal care coverage) • Percent of pregnant women given micro-nutrient supplements (specify supplements and reason) • Percent of high risk pregnancies detected • Percent of pregnant women screened and testing positive for syphilis (RPR test)	Program Manager's records, Clinic records, Outreach worker's records, Exit survey, KAP survey
	Delivery Care	• Coverage of home deliveries • Percent of deliveries with complications (home, health facility) • Percent of new-borns with low birth weight (below 2.5 kg.) where recorded	Program Manager's records, Clinic records, Outreach worker's records
	EOC	• Coverage of complications • Percent of deliveries through caesarean section • Incidence of maternal deaths (home, health facility) • Perinatal mortality (incidence per 1,000 live births per year)	Program Manager's records, Clinic records, Outreach worker's records, KAP survey
	Postnatal Care	• Percent of women visiting post-natal care services (within 6 weeks of birth) • Neonatal mortality (incidence per 1,000 live births per year)	Clinic records, Outreach worker's records, KAP survey
STDs and HIV/AIDS	Universal Precautions against HIV/AIDS	• Number of communications about universal precautions (group talks, lectures, posters, etc.) per month • Percentage of staff complying to universal precautions • Number of stock-outs of essential materials for universal precautions in last month	Program Manager's records, Clinic records, Logistics records
	Condom distribution	• Number of condoms distributed and mechanism per month • Percent of population with access to condoms • Percent of population reporting condom use during most recent sexual intercourse	Outreach worker's records, Clinic records, KAP survey
	IEC on HIV prevention	• Number of IEC communications conducted (group talks, home visits, media messages, films) per month • Percent of population aware about the three main methods of HIV transmission • Proportion of adults reporting one or no sexual partner over the last three months	Outreach worker's records KAP survey
	Safe blood transfusion	• Percentage of blood tested for HIV before transfusion • Prevalence of HIV positive in donor blood	Clinic records
	STD management	• Number of cases diagnosed with STDs in last month • Number of cases treated for STDs (by age, sex, syndrome) per month	Patient records Exit survey

-continued

Project	Activity	Indicator	Source of Information
Family Planning	Availability of contraceptives	• Number of contraceptives distributed or administered • Number of contraceptive stock-outs in last month	Clinic records, Logistics records
	Client recruitment and follow-up	• Number of new acceptors in last three months, per method • Number of family planning visits in last month • Family planning drop-out rate, by method • Contraceptive prevalence rate*	Clinic records Outreach worker's records
	IEC campaign on family planning	• Number of communications (group talks, home visits, media messages, posters, etc.) per month • Percent of population reporting knowledge of at least 3 contraceptive methods	Clinic records Outreach workers records, Program manager's records, KAP survey
Sexual and Gender-based Violence	Monitoring	• Number of reported cases of sexual and gender-based violence per month (incidence per 10,000 population) • Level of insecurity around settlement	Clinic records, Outreach worker's records, Focus group discussions
	IEC campaigns	• Percent of population aware about how to prevent incidents and assist victims	
	Crisis Response	• Percentage of victims of sexual violence who received medical care within 3 days	Clinic records

*(CPR = A x D, where A = acceptor rate/year and D = average "life expectancy" or duration of contraceptive use)

Evaluating

Evaluation of a reproductive health program can serve a number of purposes. First, it provides important lessons to the concerned program managers about designing future activities and corrective measures where necessary. The information can also help donors to determine the impact of their investment. The evaluation process and results should be shared with all project participants, the partners, and beneficiaries for whom the program has been designed.

Evaluation information, particularly in the field of refugee reproductive health, can be used by other organisations faced with similar problems around the world. It is only recently that significant focus has been placed on the reproductive health needs of refugees. To date, there is limited documentation on fertility, sexual violence, the incidence of HIV/AIDs, and maternal deaths in refugee situations. It is therefore vital that both successful and failed programs are evaluated and the information shared with other organisations and concerned parties, to the extent possible.

Pre-defined goals, objectives, and indicators of a project should serve as the basis for an evaluation. In terms of the practical aspects of evaluation, emergency workers must consider the following questions in designing the evaluation exercise and required tools:

▪ Who needs and will use the information (i.e., what is the purpose of the evaluation)? Answering this question will help to determine whether the evaluation should be *internal*, *external*, and/or *participatory*.

▪ How will the information be used? To adjust on-going activities (process-oriented) or future activities (outcome-oriented)?

▪ What kind of information is needed? Quantitative, qualitative, or both?

The table below outlines some sample question for various reproductive health issues that need to be evaluated:

Table 11-16: Sample Questions for Various Reproductive Health Issues

Issues	Sample Questions
Breadth of Services	• What reproductive health services are in place (MISP, Safe Motherhood, etc.)? • What other reproductive health services are operating within the reach of the displaced community? • What resources could be accessed at the national level for technical assistance, supplies and support? • Are the present services adequate for the health needs of special groups (unmarried women, men, adolescents, disabled, etc.)?
Access	• Are the services within walking distance? Is transport available for those women who are unable to walk to the clinic? • Is the walking route safe and if necessary patrolled with security? • Does the clinic operate during hours that do not conflict with women's obligations to their family or community? • Can women get to services privately (without their families or peers' awareness)? • Are outreach efforts made to accommodate those women who do not come to the clinic and those who need follow-up?
Usage	• Are services used as expected? • Do women readily seek treatment at the clinic? • Are men supportive of women pursuing or participating in delivering the services? • Do men and adolescents feel comfortable using these services? • What factors prevent them from using the existing services? • Is protection necessary and/or available for women who actively promote reproductive health care in the community?
Resources	• Are there sufficient resources (human, material) to deliver the reproductive health services? • Are sufficient resources (staff, management, equipment, supplies) available in the host country to support the reproductive health program? • Are the available resources used to maximise program coverage and efficiency?
Service Integration	• Are reproductive health services closely integrated with general health services? • Are referral systems in place between services? • Are findings from reproductive health surveillance shared with other sectors (e.g., nutrition, protection)? • Do staff and management in other relief sectors support the reproductive health services?
Quality of Care	• Are reproductive health care guidelines available and promoted? • Are the staff sufficiently trained? • Are sterile equipment and procedures consistently followed? • Are IEC materials available and appropriate for the target audience?
Empowerment of Women	• Is health education and training of displaced women a major component of the staff's work? • Are displaced women involved in management decisions related to health, sanitation and service delivery? • Are women consulted about whether reproductive health services are beneficial?

(Further details about doing program evaluations are discussed in the *Management* chapter.)

APPENDIX A

Estimating the Number of Pregnant Women in a Population (assuming the total population is 100,000)				
If CBR is per 1,000 population	55	45	35	25
a) Estimated number of live births in the year	5500	4500	3500	2500
b) Estimated live births expected per month (a/12)	458	375	292	208
c) Estimated number of pregnancies that end in stillbirths or miscarriages (estimated at 15% of live births = a x 0.15)	825	675	525	375
d) Estimated pregnancies expected in the year (a+c)	6325	5175	4025	2875
e) Estimated number of pregnant women in a given month (70% of d)*	4400	3600	2800	2000
f) Estimated percent of total population who are pregnant at a given time	4.4	3.6	2.8	2

*This is a weighted estimate of full-term pregnancies plus those pregnancies that terminate early.

APPENDIX B: REPRODUCTIVE HEALTH REFERENCE RATES AND RATIOS

The figures shown here have been collected from various sources and cover different periods. They are intended to give estimates of what may be expected in some populations. These figures are not to be used as definitive baseline rates or as rates to be achieved. They merely indicate the possible range and may assist with resource planning and with targeting specific programmes.

Abortions

10-15%	of all pregnancies may spontaneously abort before 20 weeks gestation
90%	of these spontaneous abortions will occur during the first 3 months
15-20%	of all spontaneous abortions that occur require medical interventions

Hypertensive Disorder of Pregnancy (HDP) or Pre-eclampsia

5-20%	of all pregnancies will develop HDP
5-25%	of all primigravida pregnancies will develop HDP

Labour and Delivery Complications

15%	of all pregnancies will require some type of intervention at delivery
3-7%	of all pregnancies will require a Caesarean section
10-15%	of all women will have some degree of cephalo-pelvic disproportion (higher in poorer socio-economic populations)
10%	of deliveries will involve a primary postpartum haemorrhage (occurring 24 hours or more after delivery)
0.1-0.4%	of deliveries will result in uterine rupture
0.25-2.4%	of all deliveries will result in some type of birth trauma to the baby
1.5%	of all births will have a congenital malformation (does not include cardiac malformations diagnosed later in neonatal period)
31%	of these malformations will result in death

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EMERGENCY MENTAL HEALTH CARE

Description
This chapter is intended to serve as a guide for setting up mental health programs for displaced populations in developing countries. It describes the psychological problems of people exposed to violence and provides guidelines for planning emergency mental health programs.

Learning Objectives
- To discuss the mental and emotional impact of exposure to violence.
- To define what mental health programs can contribute to an emergency response effort.
- To design the building blocks of a mental health care program.
- To recognise the factors that are important for establishing long-lasting mental health programs.

Key Competencies
- To recognise the mental health problems caused by social unrest.
- To apply standard guidelines when designing, implementing, or evaluating an emergency mental health program.

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Overview

There is no universally agreed upon definition of mental health. But people with good mental health have the following qualities in common:

- Being able to understand and respond to the challenges of day-to-day life.
- Being able to feel and to express a range of emotions.
- Being able to maintain good relationships among people in families and communities.

Many factors, which could be biological or environmental, contribute to having good mental health. People are frequently exposed to positive as well as negative factors in their everyday life. Mental health problems occur when the stress from negative factors, such as pressure from work, illness or death in the family, or lack of income, greatly exceeds normal levels, or the exposure to these negative factors lasts for a long period of time.

During social unrest, people's entire way of life is torn apart. Living conditions may become intolerable, and even the most basic needs may be lacking. These conditions, along with an uncertain future and a constant state of insecurity, put great stress on families and communities. Prolonged stress can break some people down emotionally and mentally, leading to mental health problems. These problems may exhibit themselves physically (fatigue, headache, back pains), emotionally (fear, anxiety, mood changes), or through major changes in behaviour (domestic violence, alcohol abuse). Many of these problems can be dealt with. If these problems are not treated early, people can suffer long after the emergency is over.

Mental health services are becoming a common part of post-emergency relief efforts. The aim of a mental health program is to prevent or control the progression of mental health illness among displaced populations. Many lessons have been learnt from past mental health programs. The key to setting up successful programs is to link the experiences in treating mental health illness in developed countries with the cultural practices and traditions of the affected community in developing countries.

STRESSORS, PROTECTIVE FACTORS, AND MENTAL HEALTH DISORDERS IN HUMANITARIAN EMERGENCIES

Introduction to Mental Health Disorders

Mental health care is concerned with normal as well as abnormal reactions to a given situation. One way of looking at mental health is to see the relationship between stressors, protective factors, and mental health problems, as well as the role of mental health services:

- **Stressors** challenge the ability of people and communities to cope.

- **Protective factors** help people continue to cope even at a time of crisis.

- **Mental health disorders** occur when stressors outweigh protective factors.

- **Mental health services** help people with mental health problems to recover and move forward with their lives.

Understanding the four parts to this relationship is essential for planning mental health programs (see Figure 12-1 below).
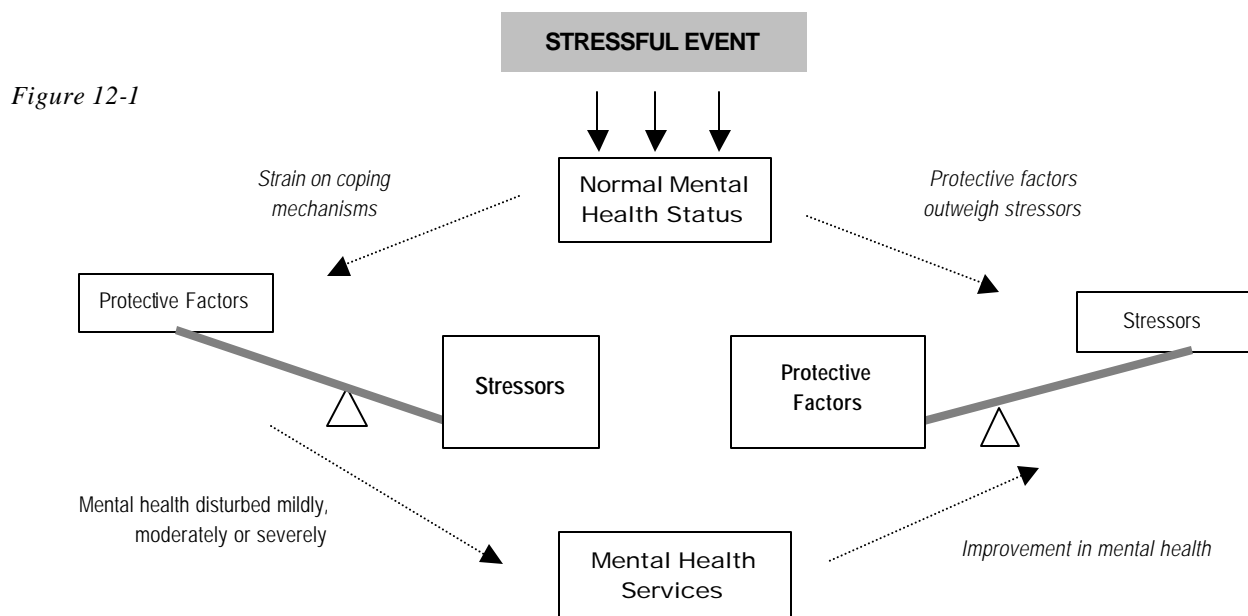
Figure 12-1

Table 12-1: Terms and Definitions

Anxiety	Intense and prolonged fear or worry, which can lead to mental distress or panic.
Cope	Behaviour that protects a person from internal or external stress; it may be healthy or unhealthy as follows: • Examples of healthy coping behaviour: reaching out to others for help, actively working to find a solution or resolving the source of stress. • Examples of unhealthy coping behaviour: a voiding the source of the threat, ignoring the threat or denying the effect in order to function normally
Counselling	Guiding a person or groups of people through discussion about traumatising events to help them integrate their memories in a healthy way.
Depression	Intense and prolonged feelings of sadness, tiredness, hopelessness, or lacking interest in normal activities.
Empathy	Identifying with and understanding another person's situation and feelings.
Grief	An emotional reaction to the death of a loved one; it may be expressed in two ways: • Healthy grief: feelings of sadness which diminish over time; missing the loved one but being able to return to normal activities after a reasonable length of time. • Unhealthy grief: feelings of extreme loneliness, overwhelmed by sadness; being unable to resume normal activities even after a reasonable period of time.
Normalcy	The state or fact of being normal.
Protective factors	Qualities in a person or the world around them that shield him/her from the full force of a stressor.
Psychosis	Losing touch with reality. It can range in severity from mild distortions of reality to hearing or seeing things that are not there
Post Traumatic Stress Disorder (PTSD)	Mental illness affecting people who have been exposed to severe violence or abuse. Affected people frequently remember their painful experiences and feel tormented by them. They have difficulty defining real from unreal events.
Social Support	A network of people that one trusts and seeks help from. Includes family and extended family members, neighbours, friends, religious leaders, teachers, etc.
Somatisation	When a person's emotional status affects how he/she feels physically. Anxiety or depression may be expressed as follows: fatigue, gastrointestinal complaints, headache, cardiac symptoms, diffuse aches and pains, muscular and joint problems, or sexual dysfunction.
Stressor	A factor that adds to people's stress, e.g., loss of family or home, lack of food, etc.
Trauma	Extreme level of stress reached when a person has lost control and can no longer handle a situation, e.g. exposure to violence such as torture, rape, etc.

Stressors

Stressors are factors that add to people's stress. Stressors exist in everyday life (e.g., physical injury, a death in the family, or financial problems). They can cause reactions to problems or difficult situations that are positive or negative. Normal and healthy reactions to stress include a temporary dryness of mouth and feelings of fear or worry. The ability to cope with normal stress depends on various factors, including the nature of the stressor, access to social support, and prior level of functioning. If the stressed person is not cared for early or is ignored, it can develop into a serious mental health disorder. This can bring about the break-up of families and entire communities or even suicide.

Stressors in humanitarian emergencies should not be viewed in the same light as stressors in non-emergency situations. Displaced populations experience extreme forms of stressors (particularly in conflict situations). As a result, the behaviour of displaced people can only be partly compared to behaviour of the average non-displace population. Below is a list of unique stressors that displaced people commonly encounter during a humanitarian emergency:

1. Displacement

Forced displacement, whether it results from conflict, persecution, violence, or social and political collapse, is one of the most stressful human experiences. Fleeing from war or civil strife is a more common factor in developing countries than displacement due to natural disasters such as floods or famine. Forced displacement is often associated with multiple and prolonged exposure to three groups of stressors:

- *loss* (of family, homes, possessions, identity),
- *deprivation* (of basic needs, normal life, safety)
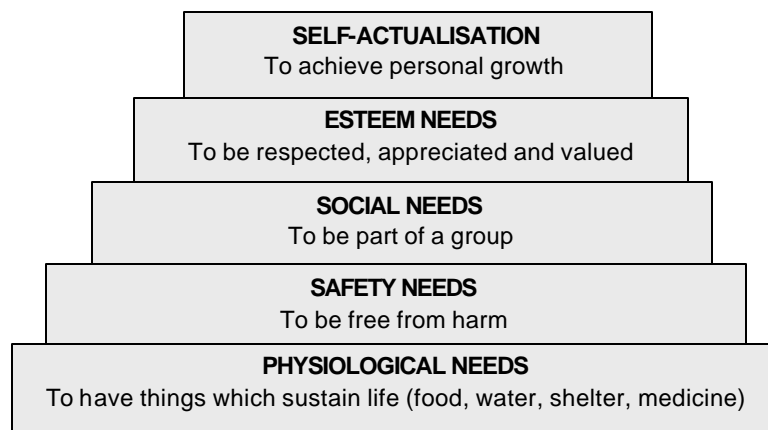- *trauma* (from witnessing or experiencing rape, killing, etc.).

Displaced populations may be at increased risk of illness and deaths. Many deaths can occur due to physical exhaustion after fleeing from danger with only a few resources. Displaced populations may remain in camps for years or may later become refugees in a foreign country. In both situations, people have to adjust to unfamiliar surroundings and to a different way of life. For those who are able to return to their home, the negative changes that may have taken place in their absence (e.g., lost property, different community) can also cause high levels of stress.

2. Lack of Basic Needs

War and other major disasters can tear apart a society and deprive people of their means for survival. Farmers are not able to plant their seeds and markets close. People are forced to migrate to places that have little to offer them. Displaced populations in developing countries usually end up in camps or slums that are overcrowded, have poor sanitation, and have limited access to water, food, and health services. As a result, the affected population is exposed to higher risks of malnutrition, disease and death.

The relief response to an emergency situation aims at meeting the basic needs of displaced populations. Once people get the things that sustain life, other needs will appear more important. It is only after people feel reasonably safe from harm, that belonging to a particular group and gaining self-respect becomes a priority. Some of these needs can only be met after rebuilding the community and resuming a normal life. The following Figure shows Maslow's ladder of basic human needs.

Figure 12-2: Maslow's Ladder of Basic Human Needs

SELF-ACTUALISATION
To achieve personal growth

ESTEEM NEEDS
To be respected, appreciated and valued

SOCIAL NEEDS
To be part of a group

SAFETY NEEDS
To be free from harm

PHYSIOLOGICAL NEEDS
To have things which sustain life (food, water, shelter, medicine)

3. Social Disruption

Social unrest disrupts the social support network of families and destroys their future hopes. Societies in developing countries are based on relationships within families and communities. People in non-emergency situations help one another to cope with stress. During a humanitarian emergency, chaos often disrupts the everyday rules and social practices of a community. Families can be broken apart by physical separations and by a breakdown in family functioning. Unlike women in refugee camps

who retain their role as caretakers of children, men find it difficult to cope when they have no occupation. As a result, spouses may become abusive to one another and children may question moral or cultural values and become more defiant of their parents.

4. Exposure to Violence

The greatest cause of stress is trauma. Forced displacement is often associated with violence, which may be due to political, ethnic or other factors. During social unrest, most people flee when they fear or witness violent acts such as murder, rape, robbery or torture. These experiences may produce long term physical, psychological and social consequences. Some people who are unable to cope may resort to alcohol or other forms of substance abuse. Others may become aggressive and violent. This causes displaced people to look at each other in a less supportive manner. The social order and rules of the community fall apart, and the affected people may continue to sense danger long after they are taken to safety.

Protective Factors

Not everyone will respond to a stressful event in the same way. This is as true in extreme situations, such as war, as in everyday life. Protective factors are qualities in a person, or in the surrounding environment that shield a person emotionally and mentally from the full force of a stressful event. The fewer protective factors people have, the more likely they are to develop mental health problems. Knowing what protective factors exist among a displaced population can help agencies select which mental health services should be offered. The first step is to identify those groups or individuals that lack one or more of the following basic protective factors:

1. Prior Level of Functioning

People's level of functioning may vary according to their age, sex, personality type, cultural beliefs, etc. Therefore, not everyone comes to a stressful situation with equal abilities to cope mentally and emotionally. People who were having problems functioning before will be especially vulnerable to developing mental health problems during times of widespread violence and social unrest. For example, children who have been living on the streets are easy victims of violence, hunger, and abuse. Identifying such people and helping them cope during the emergency situation should be a priority for any emergency mental health program.

2. Social Support

The more social support an individual has, the better he or she is able to deal with stress. People separated from their family and community may have a more difficult time coping than people who are surrounded by their family members and community and have immediate access to support following exposure to a stressful event. Not only is being alone stressful, but the events that led to becoming separated from the family and community are often horrific. These people will have an increased risk for developing mental health problems.

Incident 1

A traditional healer said she developed depressive illness after soldiers executed her son and two daughters, leaving her with only one son. She cries all through the night. She is not happy. She is alone with one son, so she (almost) has no one to help her, which makes her unhappy.

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3. Ability to Cope

The ability to cope is generally greatest when the first stressful event occurs. As more stressful events occur, the likelihood of developing mental health problems increases. An example is a recovering rape victim. Given proper services, a woman has a reasonable chance of recovering her mental and emotional well being following a rape. However, if a victim is raped a second time, her mental health problems may be far worse than after the first rape.[1]

How long a person is exposed to a stressor also affects their ability to cope. For example, the suffering of someone kept in a prisoner of war camp for years may be greater than someone imprisoned for only a few months. In addition, the more intense or traumatic the stressor is, the worse the emotional and mental health problems will be. Some traumatic events may be more deeply felt and have more long-lasting effects, e.g., torture, watching the slayings of family members, etc.

Emergency mental health services need to identify and reach people who have suffered repeated, prolonged, or extremely stressful events. Among this group could be anyone who has lived for a long time in a war zone.

4. Moral Belief Systems

People have an easier time recovering from traumatic events if they believe they are good, loyal members of the community, and if they believe living with their community is still good for them. But, if they have broken moral codes important to the community, they may be tormented by their actions. Also, people may lose faith in the government if officials betray them or act in violent or immoral ways against its own people. Land may no longer be seen as fit for planting if killings took place there.

> **Incident 2**
>
> A woman told of soldiers throwing her baby into the trees and then telling her to run before they shot her. She ran to save her own life, but several years later, she was still overwhelmed with guilt. She felt that, as a mother, she should not have considered her own life, and told workers she hears her baby crying almost everyday.

> **Incident 3**
>
> A soldier reported being forced to kill a prisoner of war as an act of initiation into a warring group he had been forced to join. Now, he thinks that slitting his own throat would be the only way to rid himself of the guilt he feels.

Moral belief systems are deeply woven into the fabric of daily life. So much so that an outsider can never fully understand it. Local staff will be better able to understand how cultural and religious morals may have been broken. It is only by gaining proper understanding that mental health workers will learn how to help people heal after a breach of their moral belief system.

5. Return to Normalcy

It must be remembered that displaced populations are people whose normal life has been disrupted by an emergency situation. A disruption that seems endless creates additional stress, fear, and lower self esteem. Dependency can develop, which destroys the displaced person and his family's natural way of coping and can worsen symptoms of disability, even in extensive emergency health programs. The more quickly an individual is able to return to a structured daily life, the less likely a mental health problem will develop. For people who were forced to leave a community or have lost family members that they never see again, there may be no return to normal routine. The impact of stressors for these people stretch indefinitely into the future.

Mental health programs should include efforts to help people go back to normal activities as soon as possible. Schools and cultural activities can bring back the feeling of normal life even in a displaced population settlement. Time for play can help children overcome their fears and remember a better time and place, no matter where they are. For women, a chance to talk together can be a comfort and a reminder of an old way of life, even in a prisoner of war camp. Having a chance to farm or work can help a man feel like a husband and father again, even if he is far from home. Repairing a damaged community building or resuming normal activities in a new location can be an external act that leads to healing *inside* a person and a community.

Mental Health Disorders

Surviving a disaster does not necessarily mean that a displaced population can cope with the emergency situation. Whether the negative effects of their experiences subside or become more severe will depend on the availability of psychosocial support. Lack of mental health care for people whose ability to cope with stressors is pushed to its limits, can increase their chances of developing a mental health disorder. Below is a list of the mental health problems commonly seen among displaced populations:

1. Mild Mental Disorders in Children and Adults

Not everyone in an emergency will develop severe mental illness. But the mental and emotional well-being of everyone who undergoes sadness and mourning may be affected for varying length of time. Constant feelings of loss or worry may be common, which can lead to depression and anxiety. Mild symptoms of anxiety and depression may be present in a large number of people. Even after the day-to-day life of a village is restored, people will struggle to regain the feelings of trust and safety that once made them feel like a community.

These problems can be addressed in many ways, such as community wide programs like public education, community projects, and cultural rituals and festivals.

2. Somatisation

Somatisation is present when a person's emotional problems affect how he or she feels physically. For example, anxiety or depression may be expressed as different symptoms, including fatigue, gastrointestinal problems, headache, sexual dysfunction, etc. People with a somatization disorder believe that a physical illness is causing their health problems. However, the true source of the problem is emotional.

Health workers in Africa report that in conflict zones, patients frequently complain of malaria, headache, and sleeplessness assume there is a physical reason they are not feeling better. They expect medical treatment to cure the problem. However, after taking the patient's history, the health workers note that the symptoms often appeared shortly after the patient had been displaced, exposed to violence, or lost a member of his family. The patient's physical complaints can be stopped without any medical treatment simply by talking to the patient about his ordeal or directing him to an agency that can address other underlying problems and help him function as a member of the community.

3. Depression

Depression can be defined as intense and prolonged feelings of sadness, tiredness, hopelessness, or lacking interest in normal activities. It may be caused by a feeling of not having control over things that are happening, or by feeling cut off from familiar people and places. Depression is a common reaction in children who are separated from their parents. It is also a common reaction to the loss of family, community, or property.[2] Depression can also occur in people who are disappointed in themselves for something they have done or not done.

Depression sometimes leads to suicide. Some people will take active steps to end their life. Others may take a less obvious approach, such as placing themselves in danger, not taking care of a medical condition, or not eating. It is common to hear stories of people who intentionally provoke a soldier, break curfew, or violate other rules, hoping that someone will kill them.

Depression often causes increased irritability and a tendency to lose control more quickly. This seems to be especially true in children. In men and boys, depression may lead to increased aggression. In women, depression may prevent them from caring for themselves or their children.

4. Behaviour Problems in Children
When parents lose authority, families can fall apart. Many children will respond to confusion and fright by isolating themselves from others or by misbehaving. Once children have seen their parents lose control over family life, they may no longer be able to trust their parents to take care of them. Problems like bed-wetting, nightmares, clinging, and lack of interest are common among children who are nervous or scared.

Note: *Please refer to the* Needs of Children and Adolescents *chapter for more details about mental health problems of displaced children and adolescents.*

5. Alcohol and Drug Abuse
People who feel that life has become too much to bear commonly use alcohol and drugs as an escape. These substances may also be considered a means for dealing with anxiety, depression, or a number of other problems including sleeplessness. An increase in alcohol and drug abuse is common after widespread social unrest. However, substance abuse does not reduce the stress. Instead, it reduces one's ability to cope. Substance abuse over a long time leads to more problems for the individual, the family, and the community.

6. Psychosis
Psychosis means losing touch with reality. It can range in severity from mild distortions of reality to hearing or seeing things that are not there. People who become psychotic during a humanitarian emergency may have symptoms related to their experience, for example:

- People displaced and caught in fighting may lose touch with the world around them and become convinced they are safe at home.
- Victims of violence may hear screams and see blood long after they have been taken to safety.

People who are severely psychotic may be agitated or aggressive. Full recovery from this condition is possible if it is detected and treated early.

7. Post Traumatic Stress Disorder (PTSD)
Post-traumatic stress disorder (PTSD) is a mental illness in people who have been exposed to severe violence or abuse. People suffering from PTSD have painful memories about the trauma, even when they try to forget what happened. Because they have difficulty in differentiating the real world from the unreal, they always have a feeling of being on guard, ready to run or fight at a moment's notice. People often avoid things that remind them of the trauma as a way to stop the memories from coming back.

The American author, Annie Dillard, uses metaphors to describe memory as follows:

> *Dillard describes memory as standing beside a stream and those events that are in the present are right before us. As time passes, the events move further down stream, eventually tumbling over the edge of a waterfall out of view, and out of our everyday awareness.*

> *In her description of traumatic memories, Dillard talks about events as hovering at the edge of the waterfall but never tumbling over and out of view; events we remember often no matter how long ago they happened.*

Having unpleasant memories that do not fade is the core of post traumatic stress disorder. Individuals who have experienced a traumatic event often talk about how much they try to "forget" but continue to recall the terrible event and suffer the emotional impact all over again.

> **Incident 5**
>
> A woman talked about being raped by soldiers, along with a group of women. Because it was dark, her most vivid recollection was the sound of cloth being ripped as the dresses were torn from the women's bodies. She said even now, several years after the event, if she hears cloth being ripped, it "all comes back to her."

> **Incident 6**
>
> A child reported having trouble staying in school because there was a boy in her class with the same name as the neighbour who had killed her family. She knows, and tells herself all the time, the boy in her class has nothing to do with the killer, but when she hears the teacher call his name, she remembers watching her family die and feels overwhelmed with fear.

If left untreated, PTSD can become part of a person's personality and can prevent them from functioning normally. Children with untreated PTSD often believe they will not live into adulthood. They also may become much more aggressive if the violence they have seen becomes a part of their play and behaviour. For adults and children alike, PTSD can lead to secondary disorders such as depression.

Conclusion on Mental Health Disorders

Mental health disorders can be recognised as signals of severe and persistent stress. One may even fear that displaced populations would be unable to resume normal physical and psychological function after being settled in a more secure and less traumatising setting.

The majority of people affected by humanitarian emergencies do have the capacity and ability to cope, with or without external help, and avoid the long-term effects of their negative experiences. There are also reports of displaced people becoming more mature and active within their community than they might have become under normal circumstances. A solution, however, is necessary for the few displaced people who are at risk of developing or actually have depression or other severe mental health disorders. Community-based mental health care is the best solution.

EMERGENCY MENTAL HEALTH PROGRAMS

Successful mental health programs are those that consider past lessons, the local environment, and resources. The following steps may be useful for setting up a program. Each is discussed in detail below.

1. **Lessons Learned** — review evaluations of past or current emergency mental health programs to avoid repeating mistakes.

2. **Program Planning and Administration** — create the program in a step-by-step manner (e.g., using the planning cycle). Be sure to consider the critical issues that may affect the success of the program.

3. **Selecting Mental Health Services** — consider treatments used in developed countries but do so against the cultural background and resources of the affected population in developing countries.

4. **Selecting Staff** — select staff from the affected population who are well respected and chosen by their community.

5. **Evaluating Mental Health Programs** — plan the evaluation in advance and identify suitable indicators for measuring how effective the program is in achieving its objectives.

Lessons Learned

In stable developing countries, traditional networks of family and community are available to help people cope with crisis. There are formal structures of associations, community leaders, churches, and traditional healers, as well as informal networks of extended family and ethnic identity. When a society is torn apart, support from these networks is no longer available.

In wealthier, developed countries, the resources people rely on for help are often less personal. People are more likely to go to mental health professionals even for their most personal concerns. Turning to a complete stranger in time of need is more common in Europe than in Africa.

The common factor in the two cultures described above is that, in time of need, people turn to others for help. When people are upset, distressed, grief stricken, or overwhelmed, the help often found is in the form of talking, listening, and giving advice.

Existing emergency mental health programs try to train local people in developing countries to work somewhat like qualified therapists in developed countries. While the role of listening and giving advice is well known in developing countries, confiding in strangers (even from the same country or ethnic group) is new and may be difficult to fit in with the local culture.

1. Barriers to Successful Mental Health Programs

Because so many relief agencies are heavily funded and staffed by people from developed countries, many programs have a combination of local and developed country mental health systems. However, most of these programs have failed to take root. There are many reasons why externally supported mental health programs in developing countries in Africa fail:

a. Poor fit between the program design and the needs of the local people.

    Too often even the expatriate staff with the best intentions fails to understand the local lifestyle and culture. As a result, they set up programs that resemble the mental health programs in developed countries. This makes it difficult to make good decisions about how the local population can best be helped using the resources available.

b. Bringing local people in too late in the planning process.

    The program is about to be implemented. To create a program that can endure and fits the local culture, local groups and leaders should be involved from the earliest stages and encouraged to give their input throughout the planning process.

c. Cultural differences between developing and developed countries.

    People from developing countries do not give criticism directly even when they strongly disagree with something. This may be in contrast to people from some developed countries who prefer to openly tell one another their opinions. If time and effort is put into understanding the cultural differences in approaches, it is likely that everyone involved will benefit. With a more culturally-appropriate approach, a program can be created that will be relevant and sustainable to the local community.

2. Guidelines for Setting Up Mental Health Programs

Bringing together two cultures is crucial to the success of a relief program. Below are the keys to successfully blending systems from both developed countries and developing countries:

a. Do not set up a developed country's mental health system.

    Instead, use the lessons about treating mental health disorders from developed countries to educate and support developing countries interested in creating their own mental health programs.

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b. **Involve the affected community in decision-making from the beginning.**

Representatives of the community should be made equal partners in program planning and implementation. Their full involvement from the start increases the chances that programs will be planned and implemented to best serve the people with the greatest need.

c. **Integrate externally supported mental health programs with the local health care system.**

Many issues that will be faced by an agency trying to provide mental health services may have already been resolved by the existing health care system.

d. **Link mental health services with other resources within the community to help rebuild the daily structure, family unit, and communities.**

It is easier for affected individuals to also regain their mental health and get back to their normal routines as families and communities heal.

Program Planning and Administration

Planning and running a successful mental health program involves a wide range of issues. Program planners should begin by recognising that the displaced population is made up of normal people who have been exposed to abnormally stressful experiences. Many of those affected may be temporarily unable to cope with the emergency situation.

Displaced people may be expected to go through the following phases in their recovery (with some differences due to age and maturity):[4]

Table 12-2: Phases of Recovery for Disaster Victims[1]

Phase	Duration	Normal Reaction of Disaster-Affected People
Heroic Phase	Begins prior to the impact and lasts up to a week afterwards	Affected people struggle to prevent loss of lives and minimise damage to property.
Honeymoon Phase	Lasts two weeks to two months	Massive relief efforts lift the spirits of survivors and hopes of quick recovery run high, but the optimism is often short-lived.
Disillusionment Phase (sometimes called the Second Disaster)	Lasts from several months to a year or more	There is delay in recovery. Outside help leaves, and the affected people realise they have a lot to do for themselves.
Reconstruction Phase	May take several years	Normal functioning of the affected people is gradually re-established.

Mental health services should aim at helping the affected population reach the reconstruction phase without developing chronic mental health problems. The critical steps of planning an emergency mental health program include:

- making contacts with the affected community
- measuring the need for services
- assessing the resources
- setting goals and objectives
- developing the right approach
- working towards a sustainable program

The Johns Hopkins and IFRC Public Health Guide for Emergencies

1. Making Contacts With the Affected Community

In developing countries, most people in rural communities associate with people they know well. Observing traditions and customs is highly valued. Bringing in outsiders to create and deliver a mental health program can create communication barriers between staff members and the people they want to help. Any mental health program that is introduced to a community as part of emergency relief services needs to first link with the affected community. A top priority of the incoming program officers should be to identify and consult with community leaders, to seek their advice, and to make sure they participate in decision-making throughout the life of the project.

2. Measuring Need and Resources

A multi-sectoral assessment team, which includes members of the displaced population, can be organised to gather the priority information for setting up a mental health program. Carrying out a mental health assessment helps to identify the unmet physical and psychosocial needs as well as to reassure displaced people that they are under caring, concerned and competent emergency service providers. Areas to assess include the ability of the displaced individuals to do what they need to do everyday and to assume an active social role in the community. Efforts should be made to carefully adapt any assessment checklist or survey brought in from the outside to assess the people being served.

The following checklist may be used for a mental health assessment only after being adapted to the local situation:

Table 12-3: Mental Health Assessment Checklist

Background on disaster:	Mental health symptoms:
• Demographic profile — total population, number of men, women, children, elderly. • Disaster experiences — pre-flight, flight, camp, etc. • Population characteristics — language, religion, rural or urban culture, level of education. Health status: • common causes of deaths (serious injury, disease) • common causes of illness (serious injury, disease) • nutritional status and micro-nutrient deficiencies Trauma events (experienced, witnessed, or heard about): • rape or sexual abuse • torture or isolation • unnatural death or murder of family or friend • forced family separations • lost or kidnapped • any other frightening event	• physical – fatigue, headache, aches and pains, etc. • emotional – feeling sad, hopeless, anxious, lack of interest • behavioural – alcoholism, drug abuse, aggression • difficulty in recognising real from unreal events, frequent, painful memories of past events Resources available: • local services: PHC, schools, mental health care • social support network (family, peers, neighbours) • community services: traditional healing, religious or traditional ceremonies • technical resources of mental health and social workers, drugs, and health services • national curriculum on mental health training • national policy on mental health care

In addition to the above information, special surveys should be carried out. These surveys are listed and are discussed in detail below.

a. Identify local beliefs and customs about mental illness.

b. Screen the general population and identify those with mental health problems.

c. Individual evaluation of anyone identified as having a mental health problem.

a. Identify Local Beliefs and Customs about Mental Illness

It is important to identify local terms and traditional beliefs about the causes of mental health problems. This will help identify coping behaviour and the resources available locally for mental health care. A recent assessment of how mental illness is perceived by those who are displaced was carried out in Moxico, Angola. The displaced people classified mental illness into two categories — *traditional illnesses* and *illnesses from God*.

Traditional illnesses were defined as those due to evil intent of the living (e.g., witchcraft), bad spirits, or the dead. These illnesses are not recognised by western medicine and cannot be treated by them unlike illnesses from God. In fact, an important way of diagnosing traditional illnesses is for a doctor not to find anything wrong with the patient. Most of what developed countries describe as mental illness falls into the traditional illness category and is, therefore, often ignored by clinics and hospitals.

The following table defines the local terms for mental illness among the displaced people in Moxico, Angola:

Table 12-4: Local Terms for Mental Illness (Moxico, Angola)

Local Terms for Mental Illness	Perceived Causes	Signs and Symptoms
CUHONGA in adults	Thinking a lot about bad events or problems, Witchcraft or bad spirits, Cuhonga in mother	Cannot function or work well, Moving slowly, difficulty getting started, Being unhappy, Crying at night, Bad dreams, sleepiness
CUHONGA in babies	Cuhonga in mother, Abdominal worms (in babies)	Weight loss, Not moving much, Crying, Poor feeding
KUKASUMUKA	Thinking a lot about a terrible event, Abdominal worms	Frequent waking at night, Startling easily, Neck stiffness, Laziness, weakness, falling down, Weight loss, reduced appetite
KUZALUKA (equivalent to English concept of "madness")	Thinking a lot about terrible events, especially own actions, Bad spirits, Serious illness	Running a lot, running all day, Assaulting, attacking people, Headache, Not staying in the house, Not able to wear clothes
MATACHI (early form of Kuzaluka, which can progress to other forms)	Serious illness, Wanga (witchcraft), Drugs/alcohol	Running, moving constantly, Not sleeping well, waking early, Attacking people, Irrational acts, Talking a lot
MANYONGA (remember/re-experience what happened in day time)	Thinking a lot about a terrible event (intelligent people)	Re-experiencing a terrible event when awake, Nervousness, weakness and thinking a lot while this is happening, Talking to oneself, Unhappiness, Thinking a lot

b. Screen the General Population

Because individual screening is not practical for a large displaced population, it will be necessary to first identify people that have the greatest difficulty functioning. There are various ways of collecting this information including carrying out interviews, focus group discussions, surveys. The following sources of information may be approached:

- *Community health workers* — to identify individuals with frequent physical symptoms, e.g., headache, gastrointestinal disorders, respiratory symptoms, etc.

- *Health workers* — to identify cases of attempted suicide of other illness of uncertain cause.

- *Social services workers* — to identify and assist individuals who cannot function, e.g., mothers neglecting their children, families with reported domestic violence, etc.

- *Field officers/Camp officials* — they may have access to a wide range of information about the health and well-being of a displaced population in a settlement.

- *Community leaders/officials* — they are often aware of families and individuals facing more difficulties then others in the community, e.g., substance abuse, malnutrition, etc.

- *Family system* — family members often endure common stressors. Ask parents to identify troubled children and then investigate the whole family.

- *Traditional health care providers* — they may report on those who visit them most frequently or have major health problems.

- *School teachers* (in formal or indigenous schools) — to identify children and adolescents who have problems paying attention or are withdrawn.

c. Individual Evaluation

Every person suspected of having a mental health problem through the general screening should be referred to the health facility for an individual mental health evaluation. This will help identify the nature of the problem and determine the effects of the emergency experiences. Standard evaluation instruments may be used, which allow an individual to disclose more about his/her psychological state and trauma experiences than they might otherwise do. Below is the Hopkins Symptom Checklist-25, which has been successfully used by mental health workers and health providers. It was found to be a valid and reliable instrument for detecting symptoms of anxiety and depression among individual Southeast Asian refugee patients.

Table 12-5: Hopkins Symptom Checklist-25 and Analysis

Anxiety Symptoms	1 Not at all	2 A little	3 Quite a bit	4 Extremely
1. Suddenly scared for no reason				
2. Feeling fearful				
3. Faintness, dizziness or weakness				
4. Nervousness or shakiness inside				
5. Heart pounding or racing				
6. Trembling				
7. Feeling tense or keyed up				
8. Headaches				
9. Spell of terror or panic				
10. Feeling restless, can't sit still				

Depression Symptoms	1 Not at all	2 A little	3 Quite a bit	4 Extremely
11. Feeling low in energy, slowed down				
12. Blaming yourself for things				
13. Crying easily				
14. Loss of sexual interest or pleasure				
15. Poor appetite				
16. Difficulty falling asleep, staying asleep				
17. Feeling hopeless about the future				
18. Feeling blue				
19. Feeling lonely				
20. Thoughts of ending your life				
21. Feeling of being trapped or caught				
22. Worrying too much about things				
23. Feeling no interest in things				
24. Feeling everything is an effort				
25. Feelings of worthlessness				

Note: *Before administering the checklist to individual patients, it must be adapted to the local language and culture.*

Analysis of the Hopkins Symptom Checklist-25

To identify individuals with mental health disorders, responses in each table are summed up and divided by the number of answered items, as shown below:

$$Anxiety = \frac{Items\ 1\text{-}10}{10} \qquad Depression = \frac{Items\ 11\text{-}25}{15} \qquad Total = \frac{Items\ 1\text{-}25}{25}$$

Individuals with any score greater than 1.75 are considered symptomatic.

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3. Setting Goals and Objectives

It is important to set goals and objectives of an emergency mental health program to provide a basis for all activities as well as for evaluating the program's success. Below are examples of **goals** that may be appropriate:

- to restore normal functioning among the affected population
- to relieve and alleviate stress and psychological suffering resulting from the emergency situation

Immediate and long-term **objectives** should be defined that can help achieve the goals that have been set. Objectives are useful for monitoring the effectiveness of the program. Below is a list of possible objectives:

- to help the people in the affected community understand the current situation and their options
- to increase awareness about normal and abnormal reactions to stress
- to mobilise social support within the community
- to reinforce normal coping mechanisms
- to identify those individuals who are unable to cope
- to offer support to those who cannot cope with the current situation
- to effectively prevent milder mental health problems from becoming long-lasting mental health disorders
- to reduce the need for medical treatment in somatization disorders

4. Developing the Right Approach

Emergency mental health programs differ from traditional mental health care systems in terms of who benefits and how services are provided.

During the *acute emergency stage*, most relief agencies focus on providing basic needs such as food, water, sanitation, health care and shelter. Because most of the survivors appear to cope (while undergoing the heroic or honeymoon phase of mental health) establishing an emergency mental health program may not be a priority at this stage. However, mental health needs, can still be addressed in a general way, to prevent long-term consequences. The following measures may be adequate:

- Reinforcing normal everyday routines, such as fetching water and cooking.
- Encouraging the population to form communities.
- Linking vulnerable groups such as children, women, or the elderly to existing services and resources.

During the *post-emergency stage*, some degree of social order and daily routine may have become established among the affected population. Having adequate family support under these circumstances can help most displaced people to recover over time, without need for emergency mental health services. However, certain people, because of their individual characteristics or exposure to more stressors, may experience persisting mental health problems. These individuals should be evaluated to determine the appropriate level of mental health services they need to help them achieve the reconstruction phase.

5. Working Toward a Sustainable Program

Ways of sustaining a program should be determined at every step of program planning. Displaced people may suffer from mental health problems for years after the emergency is over. Many people continue to suffer long after the relief agencies pull out from the program, and the effects can be felt well into future generations. Even though there is much sympathy for these problems, resources for promoting mental health care for displaced populations are extremely limited. Therefore, the design of the program should not be too ambitious and planners should develop cost-effective ways of complementing the program, which focus mainly on local resources and volunteers.

From the start, relief agencies must decide how long they are going to support mental health services. Well-established mental health services may not be suitable for relief programs that are supported for two years or less. Programs that intend to go on longer should have a well-developed plan in place that shows how the program will continue both financially and administratively.

It is important to gain the support of the local health system, locally-based relief groups, and any NGOs. Externally supported mental health programs often bring resources that local health care systems lack, such as transportation, and technical and financial support. Below is a list of the benefits from mental health programs that link with local health care systems:

- gaining the co-operation of all health care providers.
- increasing likelihood of being able to educate general health care providers about mental health. This increases the network of individuals who can provide services.
- more easily overcoming misgivings and misunderstandings the local community may have about mental health services.

6. Train the Trainers Model
A word of caution may be in order for programs that are considering a "train the trainers" model. This model is built on the idea that the number of service providers can be greatly expanded when each newly trained worker trains a new group of workers, and so on. While this model sounds good in theory, in practice there is often no quality control over the second and third generation of trainees. The quality of the overall program deteriorates rapidly.

Selecting Mental Health Services
A basic building block of any mental health program is choosing the types of services to be provided. The best choice depends on the needs and traditions of the people being served, and the resources available. The following services have been included in existing mental health programs:

General Measures
Most of the mental health problems (e.g., somatisation, mild mental health disorders, behaviour problems) can be managed through simple, measures that target the entire displaced community, for example:

1. Aiding People to Resume Normal Cultural Practices
Every individual, family, and group has some social practices or rituals they engage in to heal themselves. For some, it is prayer. For others, it may be getting together with others to eat, dance, or sing. Sometimes healing for the society as a whole can begin through national holidays, the media, or installing leaders who will bring peace.

In humanitarian emergency situations, individuals, families, and communities may lose touch with the rituals they rely on to cope with hardship and tragedy of everyday life. Displaced people should have the freedom and opportunity to practice their customs, beliefs, and traditions according to their culture. Mental health programs working through cultural leaders can build on the strengths of a community by taking active steps to reintroduce cultural practices into everyday life. For many affected people, this type of support may be enough to help them cope with any mental or emotional problems they are having.

2. Educating the Community
When people are educated about health and disease they are able to take better care of themselves. So, by making people aware of mental health problems, they are able to tolerate their negative reactions to the emergency situation and cope better. In addition, the stigma of seeking mental health care will be overcome and they will be more willing to accept services. Programs can spread information in several ways:

- through the media, by putting educational programs on the radio or in the newspapers
- by making leaders from the affected community aware of common mental health problems
- by giving additional training on mental health to health workers and social workers
- by training local staff about mental health problems so that they can educate other support groups

3. Linking People with Other Services

Displaced people often need food, shelter, and health care, as well as non-emergency social services. For the affected population to fully benefit from a mental health program, relief workers must pay attention to the people's material needs as well as their emotional needs. Linking people with other essential services can help them take the first steps toward regaining their health and normal routines. In addition, relief agencies and the host community should help the affected people find opportunities for meaningful work. This includes involving the displaced people in delivering relief services as much as possible.

The following table identifies some of the needs of displaced people. Even though some needs may be of a non-emergency nature, meeting these non-emergency needs will help them cope better with their situation.

Table 12-6: Needs of Displaced People

Problem	Service	Target Group
Insecurity	Teach self-protection, ensure sufficient camp security, promote peace/reconciliation	All displaced people (especially vulnerable groups)
Family Missing or Killed	Tracing, family reunification, foster family placement	Orphans
Food Insecurity	Provide adequate food supplies	All displaced people, vulnerable groups (elderly, female-headed households)
Interrupted Education	Re-establish schools, sports, play	All children and adolescents
Disability	Counselling, health care, rehabilitation (including mechanical aids)	Physically and mentally-disabled people, mentally ill/retarded, landmine victims
Idleness	Support small-scale IGAs, response to substance abuse, education	Entire population (especially men, youth, and the elderly)
Insufficient Health Services	Extend coverage via outreach, ensure regular drug supply	Physically ill people

Therefore, mental health workers must be aware of the resources available to the affected community and be prepared to help people reach the resources they need. Whenever possible, they should use the affected community's own resources for this effort.

Specific Mental Health Services

Displaced individuals whose mental health condition does not respond to the above general measures may require more specific mental health care, such as:

1. The Talking Cure

There is a lot of discussion and disagreement within the field of emergency mental health services about the use of western-oriented "talking therapies" in Africa. Most of the disagreement centres around two concerns:

- It is not possible to provide *individual* talking sessions with a specially-trained worker for every displaced person in need of mental health services in a poor or war-torn country.

- Cultural norms tell people what they can and cannot talk about and to whom. Programs that expect victims or patients to talk openly about traumatising events to someone who may not be related to them may never be fully integrated into the communities they hope to serve.

However, talking therapies can be especially useful in helping displaced people deal with their traumatic experiences and to adapt to their new environment. People in distress often seek someone who is experienced and compassionate in talking and giving support during a crisis. Someone that can help them find solutions to problems, resolve conflict, bear the burden, or provide soothing comfort. This relationship in developed countries consists of a therapist and a patient.

In developing countries, the therapist may be a relative from the extended family, a traditional healer, or other member of the community. In either culture, talking can be useful for the following:

- affected individuals to promote individual healing

- affected families to promote healing of the relationships between family members

- affected groups and communities (from classrooms to entire cities) to promote healing of a society

Note: *Those who cope by avoiding talking about their experiences should be assisted in overcoming their negative experiences through other means, such as support groups.*

2. The Medical Cure

There is strong cultural resistance toward treating displaced people having mental illness with Western style medical treatment. Cultural beliefs about the root cause of mental disorders and their probable course should be understood before prescribing psychotropic medication. To be effective, it should be combined with other mental health interventions, such as counselling.

Psychotropic medication can be useful for controlling severe symptoms of mental illness. However, it is not enough to solve all mental health disorders. Caution is essential when introducing medications in an emergency program because of the following:

- Medication for mental health problems is usually expensive and can be difficult to obtain.

- Using medication requires advanced medical training that is not available to many doctors.

- To be useful, it usually needs to be taken regularly for weeks, months, and possibly longer.

- Displaced people unfamiliar with psychotropic drugs may share their prescriptions with other people complaining of similar symptoms.

- Other drugs (prescribed or over-the-counter drugs, traditional remedies, etc.) may interfere with the action or increase the side effects of psychotropic medication.

Nevertheless, for programs operating in areas where money and medical expertise is available, the following psychotropic medications may be considered as a treatment option for people with major mental disorders:

- *Benzodiazepines* may be given for problems of anxiety or sleeplessness.

- *Imipramine* may be a cost-effective choice for depression.

- *Other drugs* may be necessary to treat serious psychosomatic symptoms such as hypertension, peptic ulcers, and migraine headaches.

Note: *Any program considering using psychotropic medications should first consult with local doctors and WHO to assess the availability of these medications in that area.*

The above medication is relatively inexpensive and can be administered with little concern for side effects. Thorough education and re-education of the patient and his or her family is necessary to prevent compliance problems and unpleasant side effects. The patients should be cautioned against taking higher doses without approval of the physician.

3. Crisis Intervention
A timely, discrete and non-stigmatising approach is essential for assisting individuals who require specialised and prolonged care for emergency mental health conditions. Special interventions may be developed with the health care team and community members to assist the following:

- *Severely depressed or suicidal patients* that have experienced tremendous loss or stress may require special medical care with close monitoring to ensure safety during their period of hopelessness. Mechanisms for integrating the individuals back into their families and community should be in place.

- *Victims of sexual violence* — counselling and treatment of rape victims call for a high degree of discretion and sensitivity. Many well-meaning initiatives by NGOs to identify and help rape victims have failed. Rape victims may prefer to remain silent and hidden from the outside world. How these victims are helped at the individual, family, and community levels requires exploration of each particular emergency situation.

- *Survivors of extreme violence* (e.g., torture) — may require care by specialised mental health centres and health providers to prevent long-term mental and physical health consequences.

Conclusion On Mental Health Services

Figure 12-3: Mental Health Services within a Primary Health Care Framework
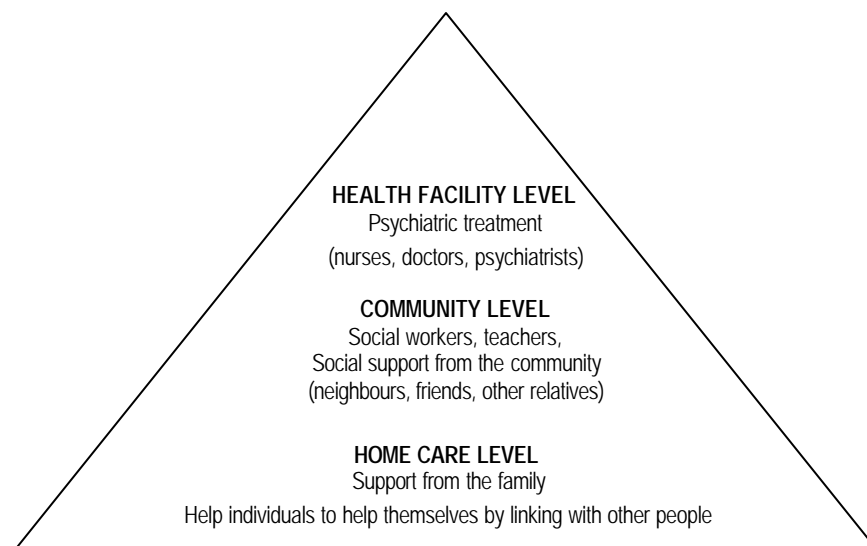
The above Figure shows how various mental health services can be supported within a Primary Health Care framework. A mental health program that is modest in scope, but is well staffed and relies mainly on local resources and services, will provide better assistance to the community. Therefore, emergency mental health services should include both general measures and specific mental health care that involve the family, community and health facilities. Most of the mental health services should be delivered through community and home care, the levels that can assist individuals with minor mental health disorders more effectively. Only a few individuals will have severe or chronic mental health disorders that require more advanced mental health care.

Selecting Staff

Mental health care providers should have the following skills:

- an understanding of the affected people's culture and reactions to stress

- the ability to listen to the affected individuals, groups and communities as a whole, relate their experiences, and identify their specific need

- the ability to give guidance and support, which are necessary for easing anxiety and tension

Three categories of staff are required for a mental health program:

1. *Administrative staff who will be based at the project office and make regular field visits:* in addition to the above skills, they require management skills for co-ordinating activities and collaborating with other partners.

2. *Mental health professionals who will be based at the health centre and hospital*: require technical and interpersonal skills to deliver mental health services and train other staff

3. *Direct service staff who will be based within the community (outreach):* may not always have full technical qualifications but must have strong interpersonal skills.

1. Administrative Staff

In order to succeed, a program needs the *right* administrative staff, including representatives from the affected community. These representatives can be valuable in making contact with the community and helping the program to respond to the needs of the community.

Whenever possible, administrative staff should be people who are able to make a commitment of at least one year to a program. The staff that is selected should be able to accept and work with people from different backgrounds for a common cause.

2. Mental Health Professionals

A mental health program will be more effective if it is staffed by people who are technically qualified to provide mental health care, who can train the local staff to deliver services, and who can educate the affected population about mental health problems. However, most humanitarian emergencies occur in developing countries that have very few or no mental health professionals.

When there are not enough skilled people locally to carry out a mental health program, expatriate staff may be recruited as a temporary alternative. Expatriate staff must focus on transferring the essential mental health skills to the local staff. This will increase the level of mental health expertise within a country and decrease the long term need for expatriate staff.

3. Direct Service Staff

The success of mental health services depends greatly on the interpersonal skills of the worker and how they relate to the people being treated. These mental health workers must be able to reach the most needy of the affected population, to observe and communicate with them, and to offer the required support and guidance.

Mental health programs should be staffed by people from the affected population who are well respected and chosen by the community. They may be peers, educators, religious leaders, or community health workers who are involved in other community-based activities. The direct service staff will require additional training to do the following:

- increase awareness among the affected populations about normal and abnormal reactions to stress and the possible existence of mental health problems

- actively screen and recognise those who are unable to cope with stress on their own

- refer those with mental health needs to the appropriate providers

- mobilise the social network to provide the necessary mental health support

Evaluating Mental Health Programs

The success of mental health programs for displaced populations are rarely measured because no standards of measurement have been developed. Many relief agencies set up inappropriate mental health programs because there are no guidelines for collecting base-line data. This data would be helpful in determining the true needs and available resources. In addition, measurable objectives may not be set, making it impossible to measure the benefits of the mental health programs.

Monitoring and evaluating should be carried out for mental health services as well as other related services that may affect the success of a mental health program (e.g., basic health and social services).

Monitoring helps programs to improve services by adapting them to the changing needs of a community. To monitor the program effectively, mental health workers should be trained to keep records of the people assisted, the service provided, and the resources used. Valid indicators can be defined based on this information to measure if a program is meeting its objectives and for tracking the outcome of various activities. The table below shows examples of indicators which may be useful.

Table 12-7: Useful Indicators for Tracking Activities

Services/ Target Group	Activities	Program Indicators	Outcome Indicators
Cultural	Ceremonies, prayer	Frequency of events, attendance	Normal function
School	Education, sports, play	Attendance, lessons taught	Teenage vandalism, Hyperactive children
Self-Help	Relief services, gardening, markets, etc.	Workers recruited	Violence
Family Reunification	Tracing, counselling	Contacts made	Domestic abuse
Women	Support network	Women involved	Psycho-somatic disorders (missed periods)
Unaccompanied Minors	Nutrition, shelter	UAM fed	Malnutrition rate
Physically Handicapped	Rehabilitation, surgery, counselling	Crutches issued, people counselled	Frustration, boredom
Mental Health Education	Home visiting, meetings, advertising	Home visits	Attitude to mental illness
Talking Cure	Counselling, emotional support	People counselled	Level of mild mental health disorders
Medical Cure	Diagnosis, treatment, counselling, referral	Cases treated, drugs issued	Level of chronic mental health disorders
Basic Services	Food supply, sanitation, water supply, health care, security	Coverage	Psychosomatic illness, communicable diseases malnutrition rate

Evaluating the program after it has begun can help ensure that the program stays on course and that objectives are being met. The following table highlights information that may be useful for evaluating a mental health program:

Table 12-8: Information Provided from Evaluating a Mental Health Program

1. What were the objectives of the program? To what extent were they achieved?
2. Was the strategy valid, appropriate, and adequate?
3. How was the program started, organised, and run? Was the organisation and decision-making favourable for achieving the objectives?
4. Did the program help the growth of new links and networks between different communities and with concerned agencies?
5. What were the benefits of the program? Who was supposed to benefit and who actually did benefit?
6. What effect did the program have on the affected community's coping mechanisms for their situation?
7. Did the program foster or damage these coping mechanisms? Was dependency created?
8. What effect did the program have on the social processes in terms of how things got done in the affected community?
9. What effect did the program have on the ways in which the affected community interact?
10. What effect did the program have on the ways in which groups of the community participate in public life?

SUMMARY OF EMERGENCY MENTAL HEALTH PROGRAMS

This chapter is aimed at relief agencies and NGOs interested in designing, implementing and evaluating community-based mental health programs that can help displaced people to resume normal lives.

The chaos and confusion that come with a humanitarian emergency is devastating not only physically, but also emotionally and psychologically. The emotional toll can result in mental health problems that, if left untreated, can affect people and communities for years to come. Humanitarian agencies usually have limited resources and are faced with displaced populations with overwhelming needs. Addressing the mental health needs of victims in a humanitarian emergency is a courageous step. Emergency mental health programs are relatively new interventions and there are no clear standards. But some programs have had success. To ensure sustainability, there should be greater involvement of the affected community and use of local resources within the displaced families and the community.

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Available: This report was made possible through Cooperative Agreement Number HRN-A-00-96-9006 between the US Agency for International Development and The Johns Hopkins University; and the support of Moxico staff of Save the Children USA

For information on psychological support for disasters and stressful life events, see:
The Federation Reference Centre for Psychological Support, Danish Red Cross, Post Box 2600, DK-2100 Copenhagen 0 Denmark. ╱

ENDNOTES

1. It is also important to be realistic about how much good mental health programs can accomplish when fighting is ongoing. Healing usually only takes place in a safe environment. Emergency mental health programs must be sensitive to the dangers, real or imagined, the people they serve are worried about. Security takes precedence over healing, and resources may be wasted if mental health services are introduced into an emergency situation before safety, food, shelter, and basic health care are in place.

2. Adapted from Farberow and Gordon, 1981, pp 3-4; Weaver, 1995, pp 31-32)

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[1] www.disasterrelief.org/Disasters/991203Turkmentalhealth/index_txt.html

NEEDS OF CHILDREN AND ADOLESCENTS

Description
This chapter can serve as an aid for education and social services non-specialists who are trying to meet the psychosocial needs of children and adolescents. It highlights the experiences and needs of displaced children and adolescents and the educational and social services interventions that may be set up for different emergency settings.

Learning Objectives
- To characterise children's needs for normal physical and psychological development.
- To describe the experiences and psychosocial reactions of children in emergencies.
- To define culturally appropriate social services interventions for the most vulnerable children.
- To discuss the educational strategies and resources for different phases of the emergency.
- To describe how to evaluate social services and educational programs.

Key Competencies
- To understand the needs of children for normal physical and psychological development.
- To recognise children's reactions to different experiences in emergencies.
- To identify practical ways of meeting the psychosocial needs of displaced children.
- To organise culturally appropriate social services interventions for the most vulnerable children.
- To design appropriate educational interventions for different phases of the emergency.
- To plan an evaluation of social services and educational programs.

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Overview

In many emergency situations, more than 50% of the affected population are children and adolescents. This group is very vulnerable to the stress of disruption of family and community structure, lack of basic needs, and outbreaks of violence. Most relief operations focus on providing basic survival needs (food, water, health care, shelter) without addressing the long-term physical and psycho-social consequences of children who have experienced major loss, deprivation, and trauma. Educational and social services programs can facilitate the transition from traumatic emergency experiences to normal recovery and development of affected children and adolescents. In addition, these programs can foster children's knowledge and skills and prepare them for future repatriation or resettlement.

Although much is known about implementing educational programs in developing countries, little is known about how to implement them in refugee settings. In most developing countries, the basic education system and social services depend largely on limited government resources. When governments collapse, the impact on these services is greater than on the food supply or other services. Few donors are willing to support educational or social services programs because their impact on displaced children and adolescents is difficult to measure. However, educational and social programs can be established with community-based resources.

OVERVIEW OF VULNERABLE CHILDREN

Childhood is the time when good health and nutrition, a stable and secure environment, adult support, daily structure and play are needed most for physical and psychosocial development. Many **children in armed conflict**, **refugee children**, and **internally displaced children** lose their possessions, homes and loved ones. Some may experience or witness extreme forms of violence. In addition, normal activities, such as schooling, playing, traditional and religious gatherings—which symbolise stability and safety—no longer exist. Adult refugees are unable to respond to the needs of their children because they have unmet needs of their own.

The primary purpose of relief should be to provide preventive and curative care to children. Yet there are few primary prevention programs for children that address the emotional, psychological, and educational needs of children under the age of 18 years. For children in emergency settings to recover from their traumatic experiences, they must have access to recreation, family and community support, and education. Otherwise they may not develop normally after being repatriated or resettled in a new world.

Table 12a-1: Terms and Definitions

Adolescent	Any person between the age of 10 and 19 years old.
Adult Support	Warm, close interactions with adults who are available when needed.
Child	In the UN Convention, a person is a child up to the age of 18 years.
Child-to-Child (CTC)	A way of teaching about health that gets children to participate actively in the learning process and to put into practice what they have learned and to help others do the same. May help to develop co-operation among the children and between groups of children and other members of the community.
Community	A group of people living in the same environment and sharing resources. They have common problems, concerns, hopes and ways of behaviour, which give them a sense of belonging to each other. Often have leaders, ways of communicating ideas and activities, rules and ways of dividing work and participating in functions that are vital to its members.
Daily Structure	Routines that provide stability and safety, e.g., going to school, interacting with friends, traditional social gatherings.
Non-formal Education	Learning basic skills by studying core subjects, but the courses do not necessarily lead to recognised diplomas and certificates.
Play	Promoting fantasy and releasing stress through physical exercise and games with others in a joyful, co-operative, and supporting manner.
Recreation	Refreshing one's mind or body through amusing or stimulating activities, e.g. playing, games, sports.
"Street Children"	Unaccompanied minors living on their own but within the vicinity of the camps.
Trauma syndrome	Startle reactions, intrusive memories, nightmares, avoidance behaviour.
Unaccompanied Minor (UAM)	A child up to the age of 16 (or older if the child perceives him/herself as vulnerable and in need of support) whose parents or relatives cannot be found in or outside the camp. (UNHCR Guidelines for the Care of Rwandan Unaccompanied Minors in Refugee Camps)
Vulnerable Children	Children who are at greatest risk of developing immediate or long term physical or psychological disorders, for example: • Children with decreased social support – unaccompanied minors, orphans • Children in poor physical health – very ill or malnourished • Children who are victims of violence – unaccompanied minors, victims of child abuse, children of minorities • Children who participated in war or violence – child soldiers • Children with physical disability or deformity • Children with mental disorders or retardation – depression, psychosis, substance abuse, PTSD, delayed reaction • Children undergoing difficult developmental stages – adolescents
Young People	Any person whose age is between 10 and 24 years old
Youth	Any person whose age is between 15 and 24 years old

Key Facts

1. There are over 12 million refugees world-wide, and it is estimated that half of them are children.

2. In 1996 UNICEF reported that within the last decade, 2 million childhood deaths occurred due to war.

3. It is estimated that 800 children are killed or maimed by land mines each month.

4. Children in the age group of 3-7 years make up an estimated 20% of the refugee population.

5. More than 60 million children and adolescents have been displaced in the past decade by humanitarian emergencies.

6. Three out of every four refugees are hosted in developing countries where educational and social services operate with limited resources.

7. Many complex emergencies go on for many years, from mass displacement to acute emergencies and recovery, leaving a generation of uneducated children.

8. During and after conflicts, basic education programs have received little attention and resources compared with programs for basic relief.

Emergency Experiences of Children

Children are highly vulnerable to the stressors that extend beyond war, flight, and refugee settlement. These stressors fall under three main groups —**loss**, **deprivation**, and **trauma**.

Even though emergency situations differ, these stressors may be experienced in different ways, as described below:

1. War and Flight

Loss
- Homes, possessions, or friends and sometimes parents or siblings are lost. The loss of a parent (particularly a mother) is a major disaster.
- Some children may be separated from their family.

Deprivation
- They may lack basic needs, such as water, food, and shelter. The consequences depend on how long the child is deprived of these basic needs.
- Lack of safety and security may drive children to join armed forces for protection. They may be used for spying, mine clearing, household duties, sexual services, etc.
- Ongoing political instability may disrupt the delivery, or reduce access to, essential services such as basic education and curative and preventive health care (e.g., immunisations).

Trauma
- Psychological trauma: Children and adolescents may suffer or witness rape, torture, murder, and other forms of abuse or violence.
- Physical trauma: Children may be maimed or killed by land mines and other weapons of war.

2. Refugee Settlement — Emergency Phase

Loss
- Community structure and familiar routines are lost.

Deprivation
- Unaccompanied minors (UAM) may become malnourished due to insufficient food and water.
- They may be at increased risk of disease and death due to unhygienic living conditions and inadequate preventive health care.

- Children who lack adult protection (UAM) may be exploited by military and armed forces in or around the camp.
- Because of the loss of safety, status, control of one's life, and possible physical violations, parents may not sufficiently supervise their children. This situation may force children and adolescents to shoulder family responsibilities they are not ready for, e.g., looking after younger siblings and elderly family members.

Trauma
- Children may be mentally disturbed or traumatised by the stressful living conditions and the lack of parental and community support for dealing with bad experiences.
- Young girls are particularly vulnerable to sexual violence, usually rape or coercive sex. Sexual violence may be used against boys as a form of torture or humiliation.

3. "Refugee Settlement" — Post-Emergency Phase

Loss
- Childhood status is lost.
- Unaccompanied minors (UAM) may have problems adjusting to family life after being reunited or being placed in new homes.

Deprivation
- Children may lack access to basic education due to cultural taboos (girls), excessive physical workload (carrying water/food for large families, collecting firewood, farming or trading), etc.
- Lack of an occupation or guidance may drive young people to indulge in substance abuse (e.g., drugs, tobacco, alcohol). This can result in more violence, rape, and unwanted pregnancies.
- Children may become sexual slaves or child prostitutes in order to secure food.
- Children with mental and physical disabilities may lack support.
- The effects of HIV/AIDS may be felt (e.g., children caring for members of the family with AIDS or problems caring for children orphaned by AIDS).

Trauma
- Harmful practices may become obvious, such as early marriage, folk medicine (e.g. burns), female genital mutilation, etc.
- If ethnic or political hostilities begin again, children may become victims of discrimination or harassment.

4. Repatriation and Reintegration Phase
Problems will depend on how the community adjusts to the services provided and the measures taken to address the special needs of displaced children.

Loss
- Loss of identity and culture force children to adopt the ways of an alien world.
- Isolation and loss of peer support can lead children to socially abnormal behaviour.

Deprivation
- Role reversal: because children often learn the local language more quickly than adults, the child may become the caretaker for the adults.
- Parental authority is weakened in a changed world.
- No access to psychosocial support, which is essential for healing from stress of previous experiences and for rebuilding a new life.

Trauma
- Parent-child conflicts increase as children reject traditional values and customs.

Psycho-Social Reactions of Children

The nature of the stressor as well as the age, stage of development, and individual characteristics (personality, access to adult support, etc.) will influence how children cope with stressors. Frequent and chronic exposure to multiple stressors can decrease the likelihood of a child reacting normally to a stressor. The more stressful the experience, the more likely a child is to develop emotional or mental disorders. To judge whether a child's reaction to experiences of war, flight, and camp life is "normal," it is essential to understand the basic stages of a child's development, as summarised in the table below.

Table 12a-2: Stages of a Child's Development

Stage	Normal Development	Possible Reactions After War and Violence
Infancy to 3 years	• Totally dependent on nurture and support of mother (or other caregiver). • Gradually learns bowel/bladder control, to eat by themselves.	Reactions often reflect state of mind of caregiver, e.g., excess crying, refusal to feed, sleeping problems, withdrawal.
3 to 6 years	• Begins to play with other children. • Gradually develops speech, memory and ability to write and draw. • Unable to grasp finality of death and may relate disappearance to his or her own behaviour.	• Adopts behaviour of younger child (regression), e.g., baby-talk, bedwetting, clinging, wanting to be fed. • Has nightmares. • Portrays frightening scenes during games.
6 to 13 years	• Less reliant on fantasy and imagination. • Less dependent on parental support. • Able to understand basic rules. • Develops ability to reason. • Able to learn in a formal environment. • Begins to understand the finality of death.	• Depressive reactions – sadness, lack of interest, social withdrawal • Aggression to hide despair/confusion • Sleeping problems and weight loss • "Survivor guilt" if family killed in war • Psychosomatic symptoms of stress • Poor concentration due to distress • No reaction ("frozen") – suppress feelings due to burden of responsibility
Adolescence	• Needs parental support to deal with changes of puberty and sexual and aggressive impulses. • Tries to develop a personal identity. • Learns to become independent and self-supporting.	• Revenge – desire to fight and defend (more among boys) • Idealism – desire to do good in world (more among girls) • Psychosomatic – headache, stomach-ache • Self-destructive behaviour (drugs, alcohol, sexual promiscuity) • Parent-child conflict • Developmental acceleration – become more mature and independent

In the early years of life, parental support, particularly the mother's, is the most critical factor for normal physical and psycho-social development. As children get older, they may cope well if they have other people to turn to (such as relatives, friends, and neighbours) when parents are unavailable or unsupportive. Both family and community support are critical protective factors for children exposed to stressors. (Refer to Mental Health Chapter for more details on stressors and protective factors.)

In emergencies, the normal development of children is more difficult. They may function normally in everyday life, but memories of their friends, relatives, schools, etc. can make them sad. How adults react to war, flight, and camp life will also affect how children will react. There is evidence that children exposed to conflict situations can cope well if they retain a strong attachment to their families, and if families continue to project a sense of *stability, permanence,* and *competence* to their children. Parents who cannot cope with the emergency situation transfer their feelings of insufficiency to their children. As a result, young children feel disappointed, abandoned, and anxious, and may react by becoming depressed or aggressive. Older children may try to take over more responsibilities.

Children who are exposed to traumatic events cannot cope on their own. They need an adult who listens to and understands their (natural) reactions, such as depression or nightmares. They also need someone to help them interpret and accept why these events happened in order to alleviate feelings of stress and guilt. Unfortunately, many parents in emergency situations are unaware about the psychological needs of their children. They do not understand that allowing their children to talk about their bad experiences is actually helpful rather than harmful. Children who are unable to express or work out their reaction with their family or other member of the community suffer psychosocial effects that last long after they have healed physically.

The Most Vulnerable Children in Emergencies

Some children may be at increased risk of developing immediate and long-term physical and psychological disorders and may need special assistance. These include:

1. **Children with Decreased Social Support**

    The most vulnerable people among a displaced population are children who are not protected by parents or guardians, for example:

    - **Orphans and Unaccompanied Minors** — The families of these children may have become separated or killed during the war or flight. As a result, children usually arrive with other family groups or in adult company, often in very poor health condition, needing immediate care. They are often quiet and withdrawn, with trauma and fear reflected in their eyes. Even though they may initially be registered within a household, they are soon abandoned or leave the family they arrived with to join other families or fend for themselves. Identifying and registering these unaccompanied minors is not easy.

    - **Abandoned Children** — When families feel that they are unable to care for their children, they may decide to send them away from home to find their own means of survival. Their parents hope that relief agencies will be sympathetic and take care of their children. Because the children have no secure food ration, they become "street children." Physically and mentally disabled children are more likely to be found among abandoned children.

    In the initial emergency phase, many orphans and UAM live with substitute families without any formal agreement or support. Older children may register themselves as single heads of household in order to receive more relief supplies. Others, who may not be siblings, may live in family-sized groups. Arranging foster care and monitoring the children's situation may not be feasible during the acute emergency phase. Older children may be fostered by widows, single men, or the elderly, who themselves need someone to help them cope. Infants and babies are more difficult to place.

2. **Children in Poor Physical Health**

    In emergencies, the children may be in poor physical health due to the following conditions:

    - **Malnutrition —** Children have a greater need for food than adults because they need to grow and develop. As a result, the effects of malnutrition may appear sooner in children than adults. Malnourished children are more likely to suffer from infectious diseases because they need proteins and other nutrients in the body to fight disease pathogens. Long term consequences of malnutrition include stunted growth and brain damage.

    - **Infectious Diseases —** In addition to malnutrition, children may be at increased risk of illness and death from infectious diseases because of inadequate childcare. Parents may not be aware of the importance of immunising their child against measles--one of the biggest killers of children in large displaced populations. Poor access to family planning and taboos against breast-feeding during pregnancy may be other factors that contribute to inadequate childcare. Long term consequences of infectious diseases include malnutrition, physical disability, brain damage, and death.

    - **Recent Injuries During War, Flight or Camp Life —** High casualties among children may result from landmine injuries, beatings, torture, etc.

3. Children Who Are Victims of Violence

Emergencies, particularly conflict situations, may expose children to traumatising events and losses. The danger of suffering lasting psychological trauma is greater among the following:

- Child abuse or neglect by families is not a common problem in many developing countries where most communities value children and are proud of their child raising practices. However, in refugee settings, parents may become preoccupied with their own problems, and incidents of domestic violence may increase.

- Unaccompanied children placed with non-relatives are at higher risk of being abused and neglected. Girls in foster families may be abused and sent away or may be forced into early marriage and early pregnancy. As a result, older children may leave their foster homes and move with other families, live on their own, or become "street children."

- Children of ethnic minorities living among mixed communities may be at increased risk of violence, including torture, sexual violence, and death. They may have to be sheltered separately from the rest of the displaced population and be given special protection.

4. Children Who Participated in the War and Violence

As conflicts become prolonged and there is a shortage of combatants, children may be forcefully or voluntarily recruited as child soldiers. Children from destitute families are more likely to be recruited than other children. Child soldiers may initially serve as messengers, porters, or spies. Later, they may be used to lay or detect mines, for suicide bombing, or for sexual services. Girls are at increased risk of unwanted pregnancies, STDs, and HIV/AIDS. Child soldiers suffer high casualties and death rates due to their inexperience and lack of training. The most common injuries among child soldiers are loss of limbs, loss of hearing, and blindness. Their poor diet, unsanitary conditions, inadequate health care, and regular beatings make them prone to starvation, infectious diseases, injury, disability, and even suicide. The physical disabilities and psychosocial effects of child soldiers in refugee settings may greatly compromise their normal development and future integration into society.

5. Children with a Physical Disability or Deformity

Children may become physically disabled before or as a result of the emergency.

- Children who become disabled through violence due to war injuries, beatings, or torture may need immediate medical attention.

- Children who were disabled through disease or injuries *before* the emergency situation can only flee with the support of their family. Their need is not as urgent.

6. Children with Mental Disorders

Displaced children may have mental disorders prior to or as a result of the emergency. It is important to identify the nature of the mental disability, for example:

- **Parental Somatization —** Some parents frequently take their children to the health facility even when they are in good health. Health workers should recognise that parents are simply expressing their anxiety about the emergency situation.

- **Depression —** This is more common among adolescents with learning disabilities or those adolescents who are using drugs. It may be more difficult to recognise it in younger children whose symptoms may include excessive sleep or aggressive behaviour.

- **Mental Retardation —** Organic disorders such as birth trauma, infection, malnutrition, and accidents can cause brain damage. If the disorder is of short duration, the effect may be less severe, for example children may only have difficulty in learning new things or solving problems. Children with learning disabilities that existed before the emergency may have adopted a particular family role, e.g.

performing simple household chores. These children require community and social support for their social development and to prevent further deterioration.

- **Psychosis/Mania** — Few children with acute mental disorders arrive at the camp either because families may leave them behind or they may not survive the flight. The demand for psychiatric services may initially be low, but new cases may appear if preventive mental health measures are delayed.

- **Substance Abuse Disorders —** There are initially very few children with this problem, but the number may increase over time.

- **Post Traumatic Stress Disorder —** Depending on the duration and severity of the traumatic events, some children may need help in dealing with flashbacks, repeated dreams, personality change, etc.

- **Delayed Reaction —** Some children do not exhibit emotional or psychological reactions to their experiences, i.e., they are "frozen." Members of the community may commend them for being strong. However, reactions may be suppressed for a long time and may resurface many years later due to some trigger.

7. Children Undergoing Difficult Developmental Stages

Adolescence is a challenging period even under normal circumstances. In emergency situations, normal development of adolescents can be impaired once the family and community structure is disrupted. Adolescents may be neglected because they adopt a mature, adult-like behaviour under stress. They may have to take over more family responsibilities, which may be harmful and lead to psychosomatic diseases. Lack of parental and community support can increase problems among adolescents, such as substance abuse, aggressive behaviour, sexually transmitted diseases and HIV, unwanted abortions and even suicide.

Adolescents rarely seek health care because health care programs in refugee situations as a rule target the very young children and adults. Often, there are no special facilities or services to care for the problems of adolescents. The assumptions are that they are healthy and strong, and if they need health care they would use services for adults.

PLANNING EDUCATIONAL AND SOCIAL SERVICES FOR CHILDREN IN EMERGENCIES

> *"A child's mental health and psycho-social development is to a large extent dependent upon the restoration of daily routines and activities and the resumption of educational, recreational, and cultural activities."*[i]

Introduction

Even though relief assistance in the acute emergency phase does not aim to promote children's physical and psychosocial development, simple measures can be taken to prevent or reduce their psychosocial disturbances. Focussing on basic relief and preventing disease outbreaks during this phase helps to reduce the long-term consequences of malnutrition and infectious diseases in children. Once the immediate needs for survival (food, water, sanitation, shelter) have been met and basic health services (immunisations, treatment of common illnesses) are in place, relief agencies should begin identifying and caring for displaced children with special needs. However, assistance for children during the post-emergency phase must address children as part of the larger social system. This is because the impact of emergency situations on children depends largely on how their family and community are affected.

Rather than just focusing on the child's physical and psychosocial wounds, emergency programs should support the healing process and restore a sense of normalcy. This may be achieved through the following principles and approaches[ii]:

1. **Apply a long-term perspective that includes the psycho-social well-being of children.**
   Adopting a community-based approach encourages self-help and builds on the local culture, perceptions, and realities of child development. Also, it helps adults recover a sense of control and stability by creating opportunities for them to earn income and satisfy material needs.

2. **Promote normal family and everyday life which reinforces a child's natural resilience.**
   Do this by restoring a caring, safe, and stable family environment and re-introducing familiar routines, e.g., school, interacting and playing with other children.

3. **Focus on primary care and preventing further harm to children's psychological wounds.**
   Do this by re-building children's trust in others, re-establishing their self-esteem and a positive sense of identity and direction.

4. **Provide support as well as training for staff members who care for children.**
   Do this by providing psycho-social support for staff to ensure they can work effectively.

5. **Ensure clarity on ethical issues in order to protect children.**
   Do this by training staff to recognise and deal with ethical issues concerning the protection of children without invading their private lives.

6. **Advocate children's rights based on the political and social realities.**
   Do this by making children, adults, and other people responsible for assisting displaced people aware of the Convention of Children's Rights and ensure its provisions are met.

Assessment
To ensure that the developmental and psycho-social needs of children are considered as early as possible, educators and social services and protection officers should be involved in the initial assessment and planning of the emergency program. They can gather *child-related* information, while other team members focus on measures to maintain survival. The child-related information may cover the following areas:

Table 12a-3: Child-Related Information to Be Gathered During an Assessment

Vulnerable Children	**Basic Education Needs**
• Age and sex composition of children and adolescents	• Number of school-age children (6-18 years)
• Pre-flight/ flight/camp/post-camp experiences: loss, deprivation or trauma	• Number of teachers (qualified/unqualified, by gender)
• Number of children lacking adult protection	• Home country educational curriculum
• Number of children severely malnourished	• Host country education and training programs
• Number of children with physical disability	• Displaced children's access to basic education
• Number of children who are victims of violence or sexual harassment	• Local supply of textbooks and materials
• Number of children belonging to social or ethnic minorities	• Existing primary schools and other educational facilities
• Number of children who participated in war	• Local NGOs supporting education and training
Parents	**Resources within the Community**
• Emergency experiences	• Group care services for unaccompanied minors
• Priority concerns related to children	• Traditional care arrangements for children separated from parents
• Pre-/post-emergency child rearing practices	• Social support network for families
• Family life-style and coping behaviour	• Community measures addressing vulnerability and capacity of children and adolescents
• Social relationships: relatives, friends, neighbours	• Non-formal educational activities for children
Community	• Adult literacy and available skills
• Changes in social structure	• Available social workers, community leaders, traditional healers, religious leaders, etc.
• Traditional ceremonies related to child development (circumcision, initiations, etc.)	• Available women's groups, youth groups
• Awareness of children's needs and rights	
• Traditional responsibilities of children	

The information in Table 12a-3 can be gathered through questionnaires, interviews, focus group discussions involving health providers, camp officials, community leaders, parents, and other child care providers. If a survey is required, it is important to inform the community about the purpose of the survey and assure them of confidentiality of all information. The community should receive some form of assistance linked with the survey. For example, extra food rations may encourage their participation in future activities.

Note*: The most important source of information about children's suffering and trauma experiences are the children themselves. Parents often underestimate the degree of violence their children have experienced. The parents may be pre-occupied with survival concerns or may avoid talking about traumatic experiences with children.*

Set Priorities

> *"In keeping with their age and maturity, obtain and give weight to the opinions of refugee children on all matters affecting them."*[iii]

Members of the displaced population who are concerned about the special needs and interests of children {e.g., teachers, religious leaders, traditional healers, as well as the youth) should be directly involved in determining the priority problems. Major problems existing within a community usually affect the family and children. The following table shows how ranking was used by focus groups to rank the primary psycho-social concerns of different Sudanese refugee groups in five districts in Northern Uganda.

Table 12a-4: Main Psycho-Social Concerns — By District and Ranking

Problem	Gulu	Adjumani	Lira	Kitgum	Arua	Overall Ranking
Physical insecurity	2	—	1	4	1	1
Lack of basic needs	1	5	2	1	4	2
Social breakdown	3	1	7	3	3	3
Family breakdown	4	3	6	5	7	4
Emotional distress	5	2	5	7	2	5
Educational breakdown	6	4	3	2	6	6
Economic insecurity	7	—	4	6	5	7

Source: NUPSNA field data

In the above ranking exercise, each number represents the order of priority (1 = highest, 7 = lowest). *Physical insecurity* due to the persistent threat of violence and suffering (which normally exists in conflict situations) is the overall leading concern, followed by *lack of basic needs* due to poor access. After identifying the life-threatening concerns, refugees then turn their attention to worrying about the effects of the conflict on families and individuals.

The above ranking exercise could also be carried out when selecting the most appropriate solutions to priority problems. This can yield surprising results. Despite extreme poverty, the displaced community may consider basic education to be of higher priority than other activities, such as the following:

- Vocational training in carpentry, tailoring, shoe making, construction, etc.
- Agriculture and animal husbandry
- Arts and crafts
- Learning the host country language

If the displaced population's priority concerns are neglected, as education often is, they may take the initiative and set up indigenous schools. However, because not all clans or clusters of households may be involved, some children may not have access to these schools. Therefore, addressing the population's priorities will ensure all children have access to education and social services and that the program has the support of the community.

Set Goals and Objectives

Every new activity starts with a vision. The goal of community-based care and services for children may be stated as follows:

> *To preserve and restore a stable family environment, normal daily structure and special services for children in order to ensure successful child development, reintegration, and resettlement.*

The following may be specific, realistic, and measurable objectives for achieving this goal:

- To prevent the separation of families where possible, and reunite separated family members as soon as possible.
- To provide appropriate protection and care for the most vulnerable children.
- To re-establish daily structure, play, and access to adult support for children.
- To re-establish the community services that are essential for children, their family, and their community.

Define Strategies

To ensure the best care for children, any assistance must be *group-focused,* and not only targeted toward the individual child. This can be approached as follows:

- Providing direct care to the child.
- Helping the family to take better care of the child.
- Assisting the community to increase its support to the family and child.

In addition, programs to assist children should adopt a *preventive* approach, namely:

- **Primary prevention:** targeting children who are *at-risk* of developmental or psycho-social trauma rather than children already *suffering* from a disorder or disability.

- **Secondary prevention:** focusing on early detection and prompt treatment so that the child can resume normal function and the physical or mental disorders do not get worse.

- **Tertiary prevention:** rehabilitation can reduce the severity of physical or mental disorders and prevent permanent disability. This will enable the child to live independently.

Table 12a-5: Programs to Assist Children

	Primary Prevention	**Secondary Prevention**	**Tertiary Prevention**
Individual Child	Reduce stress or effects, Develop social relationships, Inform child of their rights	Screen health clinics and schools, Enroll in school and play, Re-integrate into social network	Provide specialised care, Rehabilitate disabled, Restore hope, trust, and self-esteem
Family	Restore family units, Encourage self-help, Educate on good child care	Support caretakers, Improve coping skills, Educate on stress, Monitor caretakers	Form support groups for parents with similar problems, Link with traditional helpers
Community	Increase security & safety, Rebuild and strengthen the natural support system, Respect traditions/customs, Prevent substance abuse	Increase awareness of children's rights, Support social groups, Promote good traditional treatment	Support traditional helpers, Link modern practitioners with traditional healers

Plan of Action

All sectors assisting children directly (e.g., food/nutrition, protection, water/sanitation, health services, and maybe, mental health and reproductive health services) should be consulted when planning education and social activities. This will increase the program's support and access to resources. Involving the displaced community in designing the program will ensure it draws upon traditional coping mechanisms. These mechanisms are essential for healing and promoting psychological well-being. The following table gives examples of the social services that may be implemented during the acute phase and post-emergency phase:

Table 12a-6: Social Services That May Be Implemented

Acute Phase	**Post-Emergency Phase**
- Tracing and reunifying family members - Caring for and/or protecting unaccompanied minors and orphans - Restoring recreational and socio-cultural activities to help children express their fears and anxieties - Introducing self-help projects for families — e.g., gardening, markets	- Assisting other children with special needs — physically disabled, adolescents, child soldiers, etc. - Re-establishing non-formal education (which leads to formal curriculum-based education) - Introduce vocational skills training to create self-employment opportunities for adolescents

All sectors dealing with children should be co-ordinated. The following table outlines the important child-related activities for each sector.

Table 12a-7: Child-Related Activities for Each Sector

Sector	Important Child-Related Activities
Community-based Mental Health	• Re-establish a sense of normalcy, stability, and competence in caretakers. • Increase awareness about child development and children's rights. • Mobilise the community and build a natural supporting network with all care-givers (health workers, teachers, social workers, women, youth, traditional healers, religious leaders, etc.) • Vocational skills training and substance abuse prevention for adolescents and families.
Protection (children & mothers)	• Improve security and safety for women and children around the refugee settlement. • Ensure access to basic services for the most vulnerable. • Build a core group of outreach workers for early detection of children at risk. • Trace and reunify families whose children have become separated.
Nutrition	• Surveillance and monitoring of growth and nutritional status of children and adolescents. • Ensure adequate nutrition for the entire family (calories and nutrients). • Enroll malnourished children in selective feeding programs that are linked with health services and community education. • Promote breastfeeding and restrict the distribution and use of substitute milk products.
Health Care	• Screening and basic health care of children and adolescents (MCH/OPD clinic). • Rapidly identify and treat children with life-threatening conditions, e.g., measles, pneumonia. • Refer children or adolescents with serious health problems, e.g., attempted suicide, acute psychosis, critical injuries from violence. • Respect and promote traditional practices that are healing and discourage those that are harmful to children and adolescents.
Infectious Disease Prevention & Control	• Maintain high immunisation coverage for all children at risk. • Improve access to water and sanitation for the family and community. • Promote household and environmental hygiene. • Organise community-based vector control measures. • Surveillance for common infectious diseases of children and adolescents.
Reproductive Health	• Surveillance and confidential reporting of sexual and gender-based violence. • Encourage attendance at antenatal clinics and discourage inappropriate dietary restrictions during pregnancy. • Respond to reported incidents of sexual violence (emergency contraception, STD treatment, counselling, legal action, social rehabilitation). • Educate adolescents on family life and sexuality, in a culturally appropriate way.

Set Standards

Care and protection of children should be provided according to set standards and guidelines. In addition to achieving Sphere's minimum standards for sanitation, water, feeding and basic health care, the following UNHCR guidelines may be used for community services for children[iv]:

- Each child should have at least one adult caretaker responsible for his/her protection and well-being.

- Children should be given special attention and care for unaccompanied minors (UAM) should be integrated into general programs for children.

- There must be a balance between services provided in centers for UAM and services reaching other refugee children. This will prevent vulnerable families from abandoning their children for care in the centres.

Identify Resources

Because education and social services are often a lower donor priority than life-saving initiatives, resources for implementing these programs may be limited. In addition, as funding for relief programs declines, education and social services are the first to be closed. It is essential to identify *community-based* resources (skills, information, materials, etc.), and to assist displaced people to provide educational and social services in their own way.

The following resources are required for education and social services:
- Human resources — educators, social workers, tracing staff, outreach workers, etc.
- Durable goods — furniture, communications technology (radios), films, etc.
- Consumable materials — stationery, etc.
- Sites — existing structures, large tents
- Education and training materials

The following human resources may be considered:

- **Local members or groups within the community** — Teachers, health workers, community leaders, women and youth groups can be trained to increase awareness on the health rights of children and adolescents, to discourage recruitment of child soldiers, to rehabilitate and integrate traumatised children and adolescents, to discourage self-destructive practices, etc.

- **Children** — Establish *child-to-child* activities, which use children to pass information to other children. They can also encourage other children to participate in environmental hygiene and disease control activities. However, beware of misunderstanding of concepts by children and insufficient knowledge of facilitators. They could cause harm.

- **Existing staff and volunteers** — To make existing services more "child-friendly" and "adolescent-friendly," train local staff and volunteers with the same cultural and linguistic background as the displaced people to promote better care for children and adolescents. To be effective, these front-line workers must be accepted by the community, have empathy for needy children and adolescents, be able to develop trusting relations with caregivers and work with them.

Train Education and Social Services Workers

Training is greatly valued by displaced people because it improves their self-esteem. When establishing social services, it may be necessary to train social workers because they may be lacking. Rapid in-service training for those delivering education and social services can help to integrate learning with practical experience. Resources for training should be available from the early phase of the emergency response.

Note: *There may be many teachers and other literate adults present, but educated women may be very few.*

Training Priorities

Training should focus on recognising and helping children with special needs, for example:

- How to identify unaccompanied minors and their priority needs.
- How to recognise the psychosocial problems of children:
    - in different developmental stages
    - affected by different stressors in emergency situations
- How to recognise and help victims of torture, rape, and other violence with their families.
- How to rehabilitate children with permanent physical and mental disabilities.
- How to mobilise the community care network around children.

Target Groups for Training

The following human resources may need training to deliver education and social services:

- Headmasters and teachers
- Child counsellors (one for each school) who will:
    - give information and advice to other teachers, parents and children
    - work closely with class teachers, to assist them in finding ways of helping troubled children
- Health workers: MCH, OPD, mental health, reproductive health, feeding centre staff
- Tracing staff, protection officers, and social workers caring for UAM
- Day care staff and other community members caring for other children of working parents
- Members from women's and youth groups

Common constraints in training human resources for community services that need to be considered include:

- Lack of time to prepare for training, particularly during the acute emergency phase.
- Lack of a sustainable structure.
- No practical facilities such as shelter, basic equipment, and materials.

IMPLEMENTING SOCIAL SERVICES FOR CHILDREN

Social services should be introduced as soon as possible to help displaced children, families, and communities overcome their emergency experiences and resume normal lives with hope, dreams, and expectations for the future.

Care for the Most Vulnerable Children

Not all children will require special assistance to achieve normal development and psychological well-being. It is important to establish community-based screening of children to identify those who are most vulnerable. Once identified, these children should be the first to benefit from social services that meet the special needs of vulnerable children in a culturally appropriate way.

Note: *Children who are victims of violence and child soldiers may not be willing to report their traumatising experiences. Social workers should be trained to recognise and follow-up any child with physical injury or somatic symptoms.*

1. Children with Decreased Social Support (Unaccompanied Minors)

> *Every child has the inherent right to life, and the State has an obligation to ensure the child's survival and development.[v]*

Care for UAM should be arranged as soon as possible. Avoid setting up child-care institutions for UAM. If this cannot be avoided, establish *temporary* shelters while waiting for more suitable placement within the community. The following activities should be included:

- Identify the *causes* of separation and provide assistance to prevent more separations.

- Assume a reunion with missing parents or other family members is possible and quickly establish services for tracing and reunifying family members.

- Arrange for long-term *family-based* foster care and protection of UAM whose families cannot be traced.

- Establish community-based psychosocial rehabilitation of traumatised UAM.

To protect UAM from abuse or neglect, reliable community members must be found and trained to screen potential foster families, take care of placements, and make regular follow-up visits (at least once every two weeks).

Common problems that may arise at the beginning of a program for assisting UAM include the following:

- Difficulty in identifying or registering UAM due to lack of a common definition of UAM.
- A reliable system for tracing missing persons may not be in place.
- Screening and follow-up of minors being deposited at the centres may not be in place.
- The general relief distribution lacks a fair and functioning system for supporting foster families.

2. Children in Poor Physical Health

> *States shall strive to see that no child is deprived of access to effective health services.[vi]*

An emergency health and nutrition program for children (e.g., mass immunisation, selective feeding) should be set up during the acute emergency phase. Children with malnutrition or severe infections should be referred to the health and nutrition team. Other children arriving with recent injuries may require immediate medical attention (trauma surgery, antibiotics, blood transfusion, anti-tetanus injection) to save their lives and prevent permanent disability.

Other ways of assisting children in poor physical health include the following:

- Delivering health education to caregivers and showing them how to improve their child-rearing practices.

- Developing mutual support groups among mothers. This will ensure ongoing care for very young children of mothers involved in family care activities, e.g., collecting water or cooking.

- Where possible, introduce self-help activities such as trading, gardening, etc. to build the capacity of caregivers to support their children.

Note: *See the* Food and Nutrition, Control of Communicable Diseases, *and* Health Services *chapters for further details on caring for children in poor health.*

3. Children Who Are Victims of Violence

> *State Parties shall take appropriate measures to promote physical and psychological recovery and social integration of a child victim of any form of neglect, exploitation or abuse, torture, etc.[vii]*

Children who are victims of violence may be directly assisted in various ways:

- By introducing educational and recreational activities in the early stages of the emergency through the schools. This will improve children's learning and protect them from trouble or harm.
- By rehabilitating permanently disabled children.

Social workers can be trained to raise awareness about children's rights in a culturally appropriate way. This will build the community support for vulnerable children and protect children from recruitment, discrimination, sexual exploitation, and neglect. The following approach may be used:

- Discuss children's rights with national or local government officials.
- Ensure soldiers and armed forces are aware of their duty to protect civilians.
- Make the displaced community, leaders, women, as well as children aware of the rights of children.
- Elect reliable community members to monitor and investigate serious violations of children's rights.

Reported incidents of violence against children should prompt an immediate investigation. Victims may need both the community support and the help of professional social and mental health workers where available. Legal action should be taken against perpetrators of major incidents. This requires co-operation and co-ordination between protection officers and local government officials.

4. Children Who Participated in the War and Violence

Full recovery and rehabilitation of child soldiers may begin by re-uniting the children with their families. Child soldiers in poor health should be given the appropriate health care, and their families should be given support if they are impoverished. For social reintegration of the child soldiers, the family and community should be consulted because they understand the underlying factors that led to the children's recruitment and participation in the conflict. They also know what assistance can and cannot work and whether a traditional ceremony may help the community to integrate the returning child soldiers.

Relief agencies can help provide basic education and vocational training for all children (without giving priority to child soldiers). This creates employment opportunities which improves the economic security of the family. The following measures will help these children re-integrate as well as prevent re-recruitment:

- Being able to contribute to the family's income will help families accept and value the child soldier who has returned.
- Reviving traditional systems of teaching local values and ethics to children will help child soldiers re-learn cultural norms and behaviour.
- Regular schooling can help to normalise the life of child soldiers and help them to overcome their experiences of war and violence.
- Activities that promote peace and reconciliation can help to demobilise child soldiers and increase ethnic tolerance for peaceful co-existence within the community.
- Vocational skills training for adolescents can create opportunities for self-employment.

5. Children with a Physical Disability or Deformity

> *A disabled child has the right to special care, education, and training to help him or her enjoy a full and decent life in dignity and to achieve the greatest degree of self-reliance and social integration possible.[viii]*

If there are many disabled people in the settlement, it may be appropriate to start community-based rehabilitation services. It is important to integrate disabled children into the normal family and community life, by encouraging them to play, attend schools, and participate in other community activities. This may require training interested community members and groups.

6. Children with Mental Disorders

Referring children to professional care may not be possible due to lack of professional mental health and social workers or insufficient funding. Instead, a community-based approach will probably be the only way of assisting the affected children and their families. This includes:

- promoting safety and security
- providing access to basic needs and health care
- promoting sympathetic care-giving (preferably by both parents)
- restoring daily routines of family and community life
- re-introducing structured activities, e.g., school, sports
- encouraging playing and interacting with others

Note: *This chapter addresses the community-based measures that should be taken to prevent long-term mental disability among children affected by war, flight, and camp life. See the* Mental Health *chapter for details on other measures.*

7. Children Undergoing Difficult Developmental Stages

Adolescents need help in dealing with their emergency experiences as well as in deciding about their future health and behaviour. The number of children dropping out of school may increase as adolescents become older and search for income or engage in destructive behaviour. Programs should involve the adolescents and the community in finding appropriate solutions such as:

- Improving literacy, numeracy, and survival skills through schools.

- Promoting social support so that adolescents with additional responsibilities, such as caring for very young siblings, can attend school.

- Finding replacements for the traditional educators of family life and sexuality.

- Providing vocational skills training with opportunities for self-employment, etc.

- Providing "adolescent-friendly" health services, particularly reproductive health care. For details, see the *Reproductive Health* chapter.

Tracing and Family Reunification

Tracing and reuniting family members should be started as early as possible. In conflict situations, carrying out tracing activities may be more difficult because of poor security and mobility. The ICRC often sets up tracing services to help reunite families separated during the flight. These services should continue as long as the conflict is going on and there is no other means for separated family members to communicate.

Tracing services should extend as widely as possible, from the local level to the regional and international levels. Local leaders and religious representatives should be included to provide psychological and emotional support to bereaved family members. The success of tracing (locating the missing person alive or finding evidence of death) depends on proper co-ordination, a lot of paperwork, and accuracy. Depending on the political environment, some information cannot be publicised.

There are various ways of tracing missing persons:

- By families: the spontaneous approach
- By "active" tracing: systematic approach
- By posting photographs on bulletin boards (usually gets a very quick response)
- By using photographs or broadcasting in the media (local radio, newspaper, etc.)
- By a non-governmental organisation that is providing direct assistance locally or regionally
- By Red Cross Messages (RCM) using the ICRC and national societies network

Local staff may be recruited to do basic documentation and tracing of families. In addition to being provided with technical guidelines and equipment for tracing, they should be trained to assist UAM in the following way:

- Reassuring children and using all available means to trace missing family members as quickly as possible.
- Giving regular information to children and their guardians about the progress in tracing.
- Restoring family links and maintaining contact, even with detained family members.
- Preparing children for, and doing follow up on, family reunions.
- Delivering news of death of a missing person in a culturally appropriate manner and with empathy.

Note: *Psychological support is critical for local staff who have been traumatised by the conflict situation since they may experience a reawakening of painful memories while carrying out tracing activities (secondary traumatisation).*

BASIC EDUCATION PROGRAMS FOR EMERGENCIES

The Goal of Education

> *Education shall aim at developing the child's personality, talents and mental and physical abilities to the fullest extent. Education shall prepare the child for an active adult life in a free society and foster respect for the child's parents, his or her own cultural identity, language and values, and for the cultural values of others.[ix]*

Access to education is a fundamental right of all children.[x] Yet most humanitarian organisations stretch their efforts and budgets to address basic needs without ever considering education. Where education is provided, it is usually the first sector to be targeted for cut-backs during crisis situations. Education has traditionally been excluded from the emergency response because it is considered a "developmental initiative" which contributes to the future economic and human resource development of countries in crisis rather than immediate relief.

However, in 1997, UNHCR made the following recommendation:
Education should be made the fourth component in emergency assistance (after food, medical care and shelter) and assessment of needs should include formal and informal structures.[xi]

In addition to providing safety zones and protecting children from recruitment, discrimination, sexual exploitation, and from engaging in destructive behaviour, educational and recreational activities in emergency situations may help in the following ways:

- Preventing conflict and fostering a peaceful society by encouraging conflict resolution, environmental awareness, tolerance of diversity, etc.

- Encouraging preparedness in the pre-emergency stage, as well as generating planning strategies to address the needs of emergency affected groups.

- Serving to normalise the situation by establishing routines. This decreases psycho-social stress, addresses immediate needs, and prepares for a better post-emergency society.

- Offering a window of opportunity for educational development, innovation, and improvement in the transition from emergencies.[xii]

Challenges to Providing Basic Education in Conflict Situations

Possible constraints that should be anticipated include the following:
- Physical insecurity of relief workers.
- Difficulty in educating all children because of poor access to the displaced populations.
- Lack of information about the appropriate educational content.
- Difficulty in long-term planning due to the inability to predict future circumstances.
- Lack of resources affecting the availability of services.
- Poor health and undernutrition may affect school attendance.

There is a close association between health and education. Schools promote healthy behaviour and provide protection in conflict areas. Children who have good health and nutritional status attend schools more regularly and remain in schools longer. School attendance may be improved through school feeding programs.

Strategies for Basic Education

To ensure a successful basic education program, it is important to ensure the following:
- The community is involved in developing the program.
- The programs are flexible and culturally sensitive.
- Recreational activities are integrated into educational activities.
- Educational content is age and/or gender appropriate.
- There is regular and ongoing monitoring and evaluation of the program.
- Co-ordination and sharing of information occurs among interested agencies and organisations.

The UNHCR *Guidelines* describes three phases for basic educational program for emergencies:
- First Phase — recreational/preparatory
- Second Phase — non-formal schooling
- Third Phase — re-introduction of the curriculum[xiii]

Each phase is described below.

1. First Phase — Recreational/Preparatory

> One of the earliest signs of emotional disturbance in a child is the inability to mix and play with peers. In contrast, it is known that if a child has many friends of his/her own age and plays happily with them, it is unlikely that there is a great deal wrong with the child emotionally, even if the parents have many concerns about him/her.

It is important to establish recreational facilities as soon as possible during the acute emergency phase. Initially, teachers and community members may find it difficult to communicate with traumatised or troubled children, especially about stressful situations. Children should be encouraged to use the traditional ways of communication, e.g., through songs, stories, and games. The sooner play can be reintroduced in the life of a traumatised child, the sooner healing can begin and hope can re-enter the child's world. Play is an adaptive mechanism that helps children to get relief from the events around them and to express their fear and anxiety in their own special way. Other recreational activities and socio-cultural events should be encouraged, such as sports competitions, football games, musical groups, dance groups, art festivals, and group outings, where possible.

2. Second Phase — Non-formal Schooling

During the acute emergency phase, humanitarian workers and community members should develop a non-formal education system. However, it may be difficult to find qualified teachers, the necessary educational materials, or suitable locations for the school. The UNESCO-PEER Teacher Emergency Package is a **pre-packaged teaching kit** that can be adapted to the local language and culture and used to set up an interim educational program.

Note: *Humanitarian agencies should become involved in this phase in order to discourage the dissemination of political messages to children and young adults through education.*

3. Third Phase — Re-Introduction of the Curriculum

The care and maintenance phase is a good opportunity for reaching displaced populations who have settled in their new environment. Because they are uncertain about their future, they are eager to learn and acquire new skills. Providing a standard curriculum to children and adolescents in emergency situations may take several months. The following table outlines a logical approach for defining an educational curriculum.

Table 12a-8: Approach for Defining an Educational Curriculum

Situation	Decision
Large refugee population in transition outside their home country.	Adopt the curriculum and language of the home country, including final examinations that are approved by the home country's Education Ministry, where possible.
Large-scale displacement with expected delay before refugees can return to their home country.	Adopt the curriculum of the home country with some elements of the host country curriculum, e.g., language.
The refugee population is allowed to settle in a host country.	Adopt the host country curriculum, including some elements of the home country curriculum.
Only a few refugee children living near a local population in a host country.	The most cost-effective solution is to accommodate the displaced children in the local schools, with some arrangement for language, etc.
Internally displaced persons or refugees returning to their original homes.	Ensure quick integration into a well-functioning national school system where possible.

Continuation of the education will promote psychosocial healing and reproduce the children's educational skills for their survival. The schooling hours must be flexible so that children with family responsibilities are able to attend school on a regular basis. Child recreation and stimulation can be extended to feeding centres. This will motivate more mothers to support educational and social activities.

Characteristics of Basic Education

Table 12a-9: Program Characteristics of Basic Education

	OBJECTIVES	PROGRAM CHARACTERISTICS
PRIMARY (grades 1-6)	• Provide basic education (literacy, numeracy & life skills). • Meet psycho-social needs of displaced/traumatised children and adolescents. • Provide a foundation for secondary education (high-achieving students). • Prepare children/youth for repatriation, reintegration, or local settlement.	• Pre-school classes for children <6 years not often funded by UNHCR or donor agencies except for materials and training • School curriculum based on country or area of origin • Language used in schools in the country of origin • Target of primary schooling for all • Special afternoon classes for out-of-school children & adolescents, with appropriate curriculum • Minimum of 4 hours/day for grades 1-4; 6 hours/day for classes above grade 4 • Two shifts of pupils and teachers to increase the number who receive schooling each day • Use of final examinations that are recognised by the Education Ministry of the country of origin • Community support mobilised via a community education committee or a parent/teacher association
IN-SERVICE TEACHER TRAINING	• Improve professional teaching skills through in-service teacher training. • Up-date teachers on subject knowledge, psycho-social issues, and life-skills such as health, environment, conflict resolution and human rights. • Prepare teachers for repatriation, reintegration, or local settlement.	• Teachers selected based on tests or performance at "new teacher workshop" • Training to include teaching methods, school subjects, meeting children's psycho-social needs and messages on sanitation, health, environmental awareness, conflict resolution, human rights, etc. • Teacher training to be documented and recognised by country of origin, if possible • In-service training for all teachers for at least 10 days per year during vacations, week-ends, or special days • In-school training provided by project education advisers and school mentors • Refugee teachers to benefit from host country training programs and vice versa, as applicable

Standards for Basic Education

UNHCR has developed minimum standards for basic primary education (grades 1-6) in complex emergencies. These standards state the materials required, the school infrastructure, and the equipment and materials for in-service teacher training. Examples of these standards include:

- one reading and one arithmetic textbook per student
- a classroom size of about 6m x 7m
- a playground sufficient for recreational activities
- sanitation facilities and potable water supplies in all schools
- simple clean seating for all students, based on local practice
- one complete set of teaching manuals per school

Resources for Basic Education

Establishing educational programs with community-based resources will ensure that educational activities can continue after the relief agency has finished its job. The community can be mobilised to construct or repair existing schools and participate in activities that they are capable of doing. At the same time, implementing agencies may provide the educational and training materials for the first and second phase (which should be procured together).

Standard educational kits with standard instructor's guide are appropriate for the first two phases of the educational response. They can be produced locally, according to the local language and culture, in about four weeks.

1. **RECREATE Kit**

   A RECREATE Kit is a basic recreational kit that consists of a box of sports and other recreational materials plus an instructor's guide. It is expected to serve 80 to 160 children. Two to four instructors are expected to work with a group of 40 children at a time.[xiv]

2. **Teacher Emergency Package (TEP)**

   The Teacher Emergency Package or "school-in-a-box" is designed to serve as an incentive for resuming educational activities. It is useful for up to six months of teaching, while preparing a formal textbook-based curriculum. It contains enough materials and methodology for teaching literacy and numeracy skills to about 80 children of primary age, in their home country language. Where Arabic or Latin script are not used, local versions may be created or purchased from UNESCO-PEER's Office for US$140.00 (1997).[xv]

Table 12a-10: Contents of a RECREATE Kit and the Teacher Emergency Package (TEP)

RECREATE KIT	
BOX FOR CHILDREN	**BAG FOR INSTRUCTORS**
• Sports: skipping ropes, volleyballs/nets, small balls, footballs, pickets with flags, skittles, coloured tabards, etc. • Musical: tambourines, flutes, cymbals, rattles, triangles, etc. (depends on local culture) • Dance: dance costumes (depends on the local culture)	• Teacher's guide (translated to local language) • Stationery: registration book, notebooks, pens, chalk, tape measure • Sports: powdered chalk, hand-bells whistles, pumps, puncture repair kit • Musical: tambourines

TEACHER EMERGENCY PACKAGE	
BOX FOR CHILDREN	**BAG FOR INSTRUCTORS**
• Hard slates, crayons, chalk, cleaning cloths • Exercise books • pencils, erasers, sharpeners, pens • Wooden clock, game-board (depends on the local culture)	• blackboard, paint, brush, duster, tape measure • pens, pencils, sharpeners, felt pens, erasers • chalkboard compass/ruler/set-square • "scrabble sets," cloth charts (alphabet, number, multiplication table), map • attendance book, notebook, teacher's guide

Advantages of using these pre-packaged educational supplies in complex emergencies include:

- They represent the first step by identifying monitors, teachers as well as future school children through recreation and non-formal schooling.

- They provide the education sector with a systematic approach for setting up an educational program.

- They can be stored and transported easily which enables displaced people to carry them safely when schools or the entire populations are moved, e.g., during repatriation.

3. Supplementary Survival Package

The aim of the supplementary survival package is to increase awareness about specific topics among children and adolescents in emergency situations. This package has been developed but needs to be adapted to the needs of each displaced population. Common themes for the supplementary survival package include the following:

- **Environmental awareness** — to increase awareness about the individual and community responsibility to the environment and how to meet one's needs without compromising those of future generations. See Environmental Health chapter for details.

- **Cholera awareness** — to increase awareness about the link between poor hygiene and disease in order to improve hygiene behaviours, leading to better health. See Communicable Diseases chapter for details.

- **HIV/AIDS awareness —** to increase awareness about transmission and prevention of HIV/AIDS infection. See Reproductive Health chapter for details.

- **Land-mine awareness** — to remind children about the horrors of mines and enable them to live safely in areas where minefields cannot be cleared over a short period.

- **Peace and reconciliation** — to introduce or reinforce the concept of non-violent solutions to conflict in order to build and live with peace. (Various *Peace Education Packages* containing art, games, stories, and songs addressing peace, reconciliation, and human rights have been developed in Somalia, Burundi, and Mozambique. However, the impact these packages have has not been properly evaluated.)

EVALUATING SOCIAL SERVICES AND EDUCATIONAL PROGRAMS IN EMERGENCIES

Many agencies carry out formal and informal educational activities related to health care, nutrition, environmental hygiene, etc. Unfortunately, not all agencies document or evaluate their activities. Evaluating the educational and social services in emergencies helps determine if they are effective in improving the overall well-being of children and adolescents as well as in identifying important lessons for improving future programs.

When evaluating educational and social services programs, information may be gathered from various people, including:
- the children themselves
- their parents (particularly mothers)
- the teachers and social workers
- women and youth groups
- other individuals that are knowledgeable about education and social services

The following methods can be used to gather information for the evaluation:
- Surveys
- Interviews (of individuals or small groups)
- Observations – classroom, play, a walk through the camp
- Reviewing existing records (school, health clinics, social services), situation reports, etc.
- Photos or drawings

The evaluation attempts to identify important lessons for improving existing and future programs. Specific areas to evaluate are shown in the table below.

Table 12a-11: Specific Areas to Evaluate in Social Services and Educational Programs

Evaluating Social Services and Educational Programs in Emergencies	
What were the benefits of the educational and social services programs? Have they supported the physical and psycho-social development of children and adolescents?	What methods were used to find the educational and social services capacities among the displaced populations?
Who were the principal beneficiaries?	How were the educational activities timed to meet the evolving phases of the emergency?
Were there any constraints in getting access to or participation from certain beneficiary groups (girls, child soldiers)?	Which interventions proved valuable and cost-effective?
What methods were used to increase the participation of children and adolescents at risk of educational disruption?	What are the indicators of success in the educational and social services programs?
Did the educational or social services program cause any undesirable consequences (e.g., refusal to repatriate? How would these consequences have been prevented?)	What role did the implementing agency play in facilitating educational and social services interventions?
What capacities were created among the displaced community that did not exist before the program?	Have mothers been involved? How can their participation be measured?

Findings from the evaluation should be documented and shared with the beneficiaries, the local authorities, the implementing agencies headquarters, the donors and other relief organisations.

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[ii] United Nations General Assembly, 78th Plenary Meeting, New York, December 1991, Resolution 46/182, Strengthening of the Coordination of Humanitarian Emergency Assistance of the United Nations.

[iii] Convention on the Rights of the Child, Article 12

[iv] UNHCR: Refugee Children - Guidelines on Protection and Care, 1995

[v] UN Convention on the Rights of the Child, Article 6: Survival and Development.

[vi] Ibid, Article 24: Health and Health Services.

[vii] Ibid, Article 39, Rehabilitative Care

[viii] UN Convention on the Rights of the Child, Article 23: Disabled Children

[ix] (UN Convention on the Rights of the Child, Article 29)

[x] This is stated by the Universal Declaration of Human Rights, the World Declaration on Education for All and the Convention for the Rights of the Child.

[xi] Norwegian Refugee Council Conference in Oslo.

[xii] International Bureau of Education, Report: Interagency Meeting on Humanitarian Assistance and Refugees, May 1996.

[xiii] UNHCR, Revised guidelines for educational assistance to refugees, Geneva, PTSS/UNHCR, 1995.

[xiv] To be effective, the recreational kit should only be delivered after training, for at least one day. Creativity and imagination are the key. Once the emergency phase is over and regular school has been established, the material can be used for physical education activities, sports competitions, games, etc.

[xv] Somali, Kinyarwanda, Afar, Portuguese, French and English versions may be procured from UNESCO- PEER's office in Nairobi. Current address is: P. O. Box 30592, UN Complex Gigiri, Nairobi, Kenya.

NEW TECHNOLOGIES IN HUMANITARIAN EMERGENCIES

Description

Most disasters occur in developing countries where the technology infrastructure is limited or non-existent. Even though high-level or sophisticated technology save more lives in developed countries, only technology that is easy to use, durable, inexpensive, and field-tested should be introduced to a relief operation. Otherwise, existing constraints can cause sophisticated technology to be left idle. This chapter reviews various technology-based approaches and tools that can enhance the effectiveness of disaster operations.

Learning Objectives

- To discuss the main concerns about introducing new technologies in relief operations.
- To define the levels of communications essential in relief operations and the technical solutions for each level.
- To discuss different uses of computerised systems for information management and health care.
- To define how geographic information systems (GIS) and global positioning systems (GPS) are used for disaster mapping.
- To describe different types of high-level medical technology and its application to the disaster environment.
- To define the technology available for predicting weather forecasts.

Key Competencies

- To recognise the limitations of new technologies in relief operations.
- To design a basic communications systems for a relief operation.
- To understand how information management and health care can be improved through computerised systems.
- To use geographic information systems (GIS) and global positioning systems (GPS) for disaster mapping.
- To understand the importance of high-level medical technology in the disaster environment.
- To select appropriate technology for predicting weather forecasts.

USE OF NEW TECHNOLOGY IN EMERGENCIES

Disasters place great demands on humanitarian workers, particularly when they occur in locations with poor communications and information systems, and low quality health care. The potential of relief operations can be enhanced by new technology, such as telecommunications, computerised systems, and medical technology. However, great caution must be taken when introducing new technology in emergencies. The table below defines commonly used technology terms.

Table 13-1: Terms and Definitions

Appropriate Technology	Emphasises that the most sophisticated technology is not always the best for a particular situation. Important factors include lifetime cost, durability, training requirements, ease of use and maintenance.
Computerised Systems	Computer hardware and software used to support an information system by storing and retrieving large amounts of information.
Computer Hardware	The actual machines – desktop and laptop computers, printers, etc.
Computer Software	The programs that enable information to be stored on computers, such as: • Operating systems – MS-DOS, Windows • Word processors – MSWord, WordPerfect, Lotus AmiPro, etc. • Spreadsheets – Lotus 1-2-3, MSExcel • Databases – EpiInfo, Access, FoxPro • Accounting – Scala • Electronic mail – Eudora, Outlook Express • Other – internet, resource tracking, mapping, weather
Medical Technology	Methods, equipment, and materials that enhance the capacity of health facilities to provide effective preventive and curative health care. The following tools can be used safely by health workers at health centres: • "Dipsticks" or saliva tests to diagnose HIV, STDs • Non-invasive diagnostic tools: ultrasound machines • Single dose oral treatment: for STDs, worms, measles, polio
Telecommunications	Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems (International Telecommunications Unit).
Telecommunications Tools	Radio, telephone, telex, telegraph, telefax, satellite and data transmission

New technology has been introduced in various developing countries. However, it may not always produce the expected results. The table below lists the advantages and disadvantages of introducing new technology.

Table 13-2: Advantages and Disadvantages of New Technology

Benefits of New Technology	Problems of New Technology
• Faster • Smaller • Cheaper • Simpler • Fewer workers • Increased productivity • More efficient • Increasingly digitised • Increasingly mobile	• Too complex for some workers • Equipment may have to be imported • Need training to install, use, and maintain • May result in loss of jobs • May require utilities (electricity, water, etc.) • Under-use/misuse/over-use • Increasing dependency • Not resistant to dust, humidity, heat • No spare parts locally • Needs a maintenance plan/budget

Assessing Technology Needs

Most problems with new technology occur because of *poor planning and understanding* by decision-makers, *inappropriate expansion,* and *insufficient maintenance*. Before introducing new technology, it is important to carry out a proper assessment of the technology needs, the local environment and the relief workers. This will help determine whether introducing new technology is really necessary, appropriate, or sustainable.

The following steps may be used to carry out the assessment:

1. The technology unit should first advise relief planners on the benefits and practical use of new technology, as well the required maintenance in a particular emergency setting. Relief planners can then determine whether new technology is necessary for improving the quality of humanitarian assistance. If they deem it necessary, they should determine at which level within the relief operation it would be most beneficial.

2. It is important to assess the types of technology in the local market and the experience of people who may have been using new technology locally. Any technology that is introduced must be *appropriate*, in addition to making work more efficient and effective. It must fit the environment in which it is used.

3. After selecting any new technology that is to be introduced, planners should assess the ability of relief workers to use the equipment properly and the level of training required. The most common cause of equipment breakdown is improper use, which is usually related to lack of training.

4. Because maintaining imported technology in developing countries can be difficult, the capacity to maintain technology should be assessed, in terms of skills of technicians, infrastructure, communications, spare parts, and funding.

Adopting New Technology

Any agency that is considering using new technology in relief operations should consult its technology unit. This is because successful adoption of new technology in a relief operation is a complex process. It involves procuring new equipment, accessories, and supportive equipment (e.g., generators, air conditioning systems), providing training and technical support as well as defining the operating and maintenance procedures.

The following steps can help ensure successful adoption of new technology to a relief operation:

1. Establish a technology unit to co-ordinate all technology-related activities. This should include anyone who needs to be involved (e.g., finance, administration, human resources, logistics). This multi-sectoral team can help develop policies about new technologies in emergencies.

2. Establish a suitable and understandable action plan for managing the equipment (installation, training,

procurement of supplies, infrastructure requirements, maintenance, etc.).

3. Train and supervise staff who will install, use, and maintain the technology.

4. Introduce and enforce operation and safety procedures to everyone who will use the new technology.

5. Provide access to technical support for all users.

6. Ensure easy availability of consumable materials, similar equipment, and spare parts.

7. Budget for consumable materials, maintenance, and repair services. Materials and equipment should require minimum maintenance or should be maintained by regular (non-specialised) staff.

8. Make efficient and cost effective use of the technology.

Technology Maintenance

Maintenance should be a key factor when introducing new technology. A relief operation will usually not be able to support the training of special technicians or pay high wages for repairs. The technology unit at the headquarters should decide on the following:

- a maintenance budget (about 20% of the value of stock should be adequate on an annual basis)[1]
- training in technology maintenance at the local level
- where to send equipment for repair services

A maintenance plan should be developed. This should involve preventive maintenance as well as repairs.
All staff members using new technology should be trained to perform minor preventive and repair work.
This is because most of the maintenance can be done using very basic skills and a few spare parts. Improving access to and communications with maintenance services will ensure the technology is used properly.

TELECOMMUNICATIONS TECHNOLOGY

Most disasters occur in remote areas where the existing telecommunications system is usually weak. To avoid letting poor communication become the major obstacle in the relief response, new telecommunications systems must be set up as soon as possible. Benefits of good communication include:
- immediate reporting of an emergency situation
- rapid mobilisation of resources to assist victims
- increased safety of field personnel
- reduced cost of referrals through consultation by radio
- more efficient evacuation of emergency cases

Telecommunication Systems

When starting a relief operation, the existing telecommunications infrastructure should be carefully analysed.
A good telecommunications system can be set up for an operation with limited resources if the following issues are considered:
- Telecommunications equipment needs to be adapted to the local context.
- Good organisation is essential if equipment is to be used effectively.
- Efficient telecommunications can be expensive, but expensive telecommunications systems are not always efficient.
- Efficient telecommunications are not normally compatible with short-term arrangements.
- A telecommunications system costs less if it consists of standard equipment that everyone in the organisation is familiar with, if it is installed professionally and provides technical support for users.

- Telecommunications services are essential to support relief workers and should be viewed with a global perspective of the humanitarian organisation, rather than for a specific operation.

The efficiency of a relief operation is greatly increased if the telecommunications system is well organised from the start. Telecommunication systems are required for all levels of the humanitarian response:

1. *International level* — to link all concerned international agencies will help co-ordinate medical and logistics operations.
2. *Region-wide level* — to create a liaison with military units, governments, and non-governmental organisations based within the region.
3. *Field level* — to co-ordinate the activities of all concerned units in the disaster site. This includes the project team, local security forces (police, military), public works, emergency medical services, fire units, and a command/control network.

Telecommunication Tools

Telecommunication technology is developing at a very rapid pace. The table below describes various telecommunications technology and tools that may be used in emergency situations.

Table 13-3: Telecommunications Technology and Tools

Telecommunications Technology	Description of Available Tools
Telephone	Instruments for transmitting voice messages. There are various telephone systems: • Local telephone lines – may not be reliable • Cellular telephone systems – available in many locations • Satellite communications – provide better quality lines than local telephones
Telefax	Equipment that transmits exact copies of images or printed matter by electronic means. Requires a good quality telephone line. The telefax and telephone normally should not share the same line where the volume of communication is high.
Telex	Consists of teletypewriters that send and receive signals by telephone. The radio-telex is now more commonly used.
Radio	Equipment that allows two-way audio communication without connecting wires: • Very High Frequency (VHF) radio — hand held, suitable for local voice communication over a very short range (in a city or camp); e.g., MOTOROLA* • Ultra High Frequency (UHF) radio — similar to VHF but give better transmission in dense urban areas, e.g., MOTOROLA* • High Frequency (HF) mobile and base units — link VHF/UHF/HF communications (voice and written) over short, medium or long distances, e.g., CODAN* • PACTOR system — a special modem attached to a HF radio and computer to transmit text and data
Radio Repeater	Equipment that links VHF/UHF and HF radio users located at distances that prohibit direct radio communication. It may cause a slight delay when forwarding messages.
Satellite Communications	A variety of equipment for immediate transmission of various signals (voice, fax, telex and data messages), such as: • INMARSAT M • Mini M satellite systems
Computer-based Communications	Computers and telecommunications systems (telephone, radio and satellite) can enhance the flow of communication and information through: • Internet (the World Wide Web)

Electronic mail (e-mail)

The type of communication tool needed will depend on the desired level of communication, for example:

1. **International level communications** may require the following technology:
   - Portable satellite telephones that are widely available. The hardware is affordable, but the cost per minute of satellite transmission can be restrictive.
   - Ham radio type equipment is an inexpensive alternative (free transmission), but is subject to weather limitations.

2. **Regional communications** require equipment that is compatible among various agencies and partners. The following equipment may be considered:
   - Radio repeaters and antennas can greatly improve the range of radio communications (including the PACTOR). But installing radio repeaters requires access to a high point (e.g., a roof) and a

     telecommunications expert for possible breakdowns. Mobile repeaters and antennas have recently been developed (cost about U.S. $2,000.00).
   - High frequency (HF) radios need a heavy power supply, so hand held HF sets are not available. The quality of the message transmission depends on the weather, time of day, the distance to cover, etc.

3. **Field level communications** may be improved through the following technology:
   - Radio communication is cheaper to set up and use because fewer repeaters and antennas are needed. Field communication can be carried out using hand-held VHF/UHF radio units and base stations that are moderately inexpensive. However, all these systems require electricity for operation and battery charging.
   - The telex may be the only means for communication in some emergency settings. The machine should preferably be purchased or rented locally. The tape puncher/reader could be created from a normal word processor on a computer.

The Internet and Electronic-Mail

The Internet is a matrix of computer networks. It is useful for accessing a wide range of information as well as for communication, for example:
- direct access to information from all over the world
- online search for specific information
- frequent and fast updates on humanitarian issues and new developments
- links with different organisations, institutions, individuals, etc.
- numerous training opportunities for distance education through virtual classrooms
- widespread communication through electronic mail (e-mail)

The internet must be used with intelligence and care. Many relief organisations are developing their own web sites in order to share information about their relief operations with potential donors.

Relief organisations set up email systems for their workers wherever it is practical. E-mail is a highly effective, inexpensive, and fast way for individuals at different levels in a humanitarian operation to communicate. However, it requires a reliable telephone line and computer system to be useful.

COMPUTERISED SYSTEMS

Information Management

> *The right information, transmitted quickly, can save lives and help*
> *ensure an effective response to a disaster situation.*

Humanitarian organisations are becoming more aware of the value of managing information well. The last two decades have produced rapid advances in information management, from manual to computerised systems. Computer **hardware** has evolved from large and expensive machines requiring considerable space, technical expertise, and maintenance to less expensive, portable computers that can run on batteries. In addition, computer programs, or **software**, have simplified how computers are used so that less staff training is required.

Computer Hardware

Computer hardware is the physical equipment directly involved in the data-processing, communications and other functions. It includes desktops, laptops and printers. Most computers use the *MS-DOS* or *Windows* operating system. They may vary considerably in their data processing speed and data storage. Because computers and related equipment keep changing, no specific recommendations can be made about the most appropriate type for relief operations. Computer hardware should be selected in a systematic way that matches information management needs with the appropriate and available technology. Technical experts at the senior level should be consulted. In addition to cost, the following criteria should be considered:

- staff skills available for processing information
- local people's or group's experience with computers
- "tried and tested" computer systems in the disaster region
- commonly-used computer software programs
- availability of technical support services
- access and reliability of servicing and repair facilities
- reliability of power supplies
- existing environment (dust, heat, exposure to sunlight)

Computer Software

An in-depth discussion of computer software is beyond the scope of this text. The following points summarise the key software considerations.

1. Standard software packages can be used on desktop or laptop computers for various information management functions, including word processing, spreadsheets, graphic design, databases, and email. The following standard software packages are commonly used:
   - *Microsoft Office — Word*, *Excel*, *PowerPoint*, *Outlook*, *Access*
   - *Lotus Smartsuite — AmiPro*, *Lotus 1-2-3*, *Freelance Graphics*, *Approach database*, *Organizer* and *CC-Mail*
   - *Corel — QuatroPro*, *Paradox*, *WordPerfect*

2. Specialised software packages have been designed for storing medical records, financial reporting, or resource tracking, etc. The following specialised software packages are commonly used:

   a. *Database software* allows the data entered to be reported in the form of text, tables, charts or graphs.
      - *Epi-Info* is a useful general purpose software that was developed by the Centers for Disease Control and Prevention in the United States in collaboration with the World Health Organisation in Geneva. It is designed specifically for epidemiological studies and is used for word processing, designing questionnaires, data entry and validation, and statistical analysis, including simple tabulations. This software is available free of charge through the Internet.

- Others — *FoxPro*, *Access*, *Excel*, and *dBase* are also good choices.
- *ANACOV* and *COSAS* — these software programs are used for analysing vaccine coverage surveys. They are distributed by the World Health Organisation.

b. *Financial software* is useful for financial monitoring and reporting. Commonly used financial software programs include the following:
- Spreadsheet applications are inexpensive (less than US$300.00) and powerful. They can easily be used to track, record, and report financial transactions for emergency care in a disaster setting.
- Accounting system programs that have been used include *Field Returns*, *Scala*, and *QuickBooks.*

c. *Resource tracking* is an important logistics function. Several applications can be used to record supplies on arrival, supplies stored in the warehouse, and supplies dispensed. These applications are also effective for keeping track of expiration dates on medications, or calibration dates on medical equipment. An example of a widely used software is *SUMA*, a relief SUpply and MAnagement system that can be downloaded for free from the Internet. It is useful for managing relief supplies from the time pledges are made by donors to their arrival into the disaster area, then onto their storage and distribution. Information on the supplies is collected along points on the supply chain, such as the airport or seaport, the warehouses, and final distribution point. The information is forwarded to the central level in electronic format. As a result, *SUMA* can do the following:
- Keep authorities and donors informed of exactly what has been received by the country or region.
- Quickly identify and assign priority to those supplies that are needed urgently by the disaster affected population.
- Serve as a tool for inventory control on warehousing and distribution of supplies.

Note*: Software applications that are linked with bar code technology have the capability of printing bar code labels for almost any device, vehicle, medication, or other relief item.*

Staff Training

Basic computer training may be necessary for staff members who have not used computers before. Those interested in getting computer training should be encouraged to develop basic typing skills. Training them in word processing and data entry helps them to understand the problems of managing information and enables them to later assume greater responsibility. All newly trained staff should have access to on-site computer support and adequate supervision. The morale of staff doing boring tasks such as data entry can be increased by additional training in new techniques and software and giving recognition for satisfactory performance.

Maintenance of Computer Technology

Even though computers are becoming more and more dependable, staff members should be prepared for computer breakdowns. The following measures may help to improve the performance of computers:

1. Use standard computer hardware and software within the organisation and provide technical assistance.

2. At the end of each year, check and upgrade computer hardware and software as needed.

3. Establish a methodical back-up system for copying all data files on a weekly basis on two sets of backup floppy diskettes or other backup media (e.g., printouts).

4. Purchase more than one computer, so if repairs are delayed by lack of appropriate technical assistance or spare parts, work can continue to flow.

5. Protect computers appropriately to prevent loss of information or damage through the following ways:
- use power surge protectors and rechargeable batteries against sudden voltage fluctuations
- use air conditioning systems to protect against excessive exposure to heat
- have regular servicing and cleaning done only by approved computer dealers

6. Every precaution should be taken to detect and prevent contamination by computer viruses, which can

destroy the computer's memory.

- Installing software should be restricted to authorised persons.
- Floppy disks from outsiders should first be scanned before information is loaded onto the computer.
- Anti-virus software should be regularly upgraded.

Disaster Mapping

Disasters may occur in remote locations where accurate maps do not exist. Maps may be sketched by assessment teams using aerial photographs or with a compass and tape measures. However, more accurate mapping is needed for the following two reasons:

1. Planning access routes to the disaster site:
   - Air transportation purposes — to determine air traffic routes, the nearest airports, remote airfields, and areas for helicopter landing. Important air safety features such as mountains, radio towers, and power transmission lines must also be identified.
   - Ground transportation routes must also be shown. This is important in remote regions where roads are often poorly mapped.

2. Site planning:
   This is necessary because space is usually a limiting factor when planning a humanitarian operation. Scarce land must be divided to allocate space for various facilities, water resources, warehouses, medical units, and shelters. A construction manager must have an accurate picture of everything in order to allocate and control the space.

The following tools are available for disaster mapping:

- **Global Positioning Systems (GPS)** are inexpensive (approximately US$200.00), hand-held tools that are based on satellite technology. They use signals from three or more satellites rotating around the earth to track down the geographic location (in terms of latitude and longitude co-ordinates) of a person, vehicle, house, road, etc. anywhere on the earth. Most GPS receivers can store up to 100 data recordings. To display accurate maps at the end of the day, GPS data needs to be applied to Geographic Information Systems (GIS) software.

- **Geographic Information Systems (GIS)** is software that is required to analyse geographical data that was collected using Global Positioning Systems (GPS) and display it accurately as maps. This technology has also been used to show the distribution of disease cases in epidemiological studies. An increasing amount of GIS software is becoming available for laptop computers, for example *EpiMap*, *MapInfo*, *POPMAP*.

Weather Technology

Extreme weather conditions may be the root cause of a humanitarian emergency, or a major constraint to humanitarian operations that involve a political/military refugee scenario. There are dozens of weather tools and forecasts available on the Internet at no charge. These include satellite images, weather maps, forecasts and discussions for any location in the world. The requirements for computer and software are basic. However, access to the local telephone system or satellite communications system is essential.

HIGH-LEVEL MEDICAL TECHNOLOGY

Delivering effective health care is critical in any humanitarian emergency. In developing countries, the demand for health care is usually very heavy, yet the environment does not support the traditional health care system. Medical facilities often consist of tents without electricity or running water. Most diseases are diagnosed

and treated on a symptomatic basis. In many humanitarian emergency situations, the following medical technology are commonly used: simple microscopes and dipsticks for testing urine, blood sugar levels, and malaria parasites.

Every effort must be made to use portable and robust medical technology that can improve the capacity of an emergency health system to provide effective preventive and curative care. High-level medical technology to be considered in humanitarian emergencies include the following:

- **Rapid diagnostic tests**, e.g., "dipsticks," sputum or saliva tests for diagnosing tuberculosis, HIV, and other sexually transmitted diseases.

- **Single dose drug treatments** for STDs, worms, amoebiasis.

- **Oral vaccines** that can be given as a single dose to control communicable diseases such as measles and polio. New oral vaccines against cholera and typhoid have been developed and are under evaluation.

- **New inventions** will continue to expand the range of non-invasive monitoring equipment. Medical laboratories can be improved with equipment designed for emergency medical services and military use. In developed countries, this includes pulse oximetry, portable glucose reading, and portable cardiac monitoring.

- **Medical telemetry** is a useful tool. Physicians at a remote site can transmit images, video, electrocardiograms, and vital sign information to a distant medical facility through the computer for consultation. However, telemetry depends on an effective local telephone system or satellite telephone for transmission. E-mail is very effective for this purpose and may be corporate-based or internet-based.

- **The Internet**, which is becoming increasingly available in developing countries, offers reference materials for a wide range of curative and preventive health issues that arise in humanitarian emergencies.

Caution must be applied when introducing high-level medical equipment to the disaster environment. Not all equipment is suitable for all types of environments. Accurate calibration and the costs for operating and maintaining technical equipment need to be considered. In addition, the availability of maintenance service and spare parts are critical factors to consider in humanitarian emergencies. It is not enough to consult the medical workers (whose work may be improved by the new technology) because they may not appreciate all the technology requirements, such as training, maintenance, and community acceptance. Therefore, non-medical workers should be consulted as well as community representatives to ensure the cultural, social, and economic constraints are all considered.

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[1] Bloom and Temple-Bird. See above.

MEDIA AND PUBLIC AFFAIRS

Description
This chapter discusses the role of the media in humanitarian emergencies and its potential positive and negative impact. Even though opinions may differ on the quality of media, journalists are usually the first to report about humanitarian emergencies. It is important for humanitarian workers to understand how good media relations can benefit the relief response.

Learning Objectives
- To increase the participants' understanding and awareness of global, national, and local media.
- To improve the participants' skills in media interview techniques.

Key Competencies
- Increased awareness of the potential opportunities — and pitfalls — from the media.
- Improved skills in dealing with the media, in particular during negative or unexpected interviews.
- Greater understanding of the role of local media.

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OVERVIEW OF THE MEDIA AND PUBLIC AFFAIRS

Table 14-1: Terms and Definitions

Media Coverage	Securing and reporting details about a situation or event by the media
Mass Communication	Directing information or a message to a large number of people.
Mass Communication Medium	A means of public communication, which includes television (TV), radio, film, newspapers, magazines, books, and the internet.
Media	Channels for sending information or messages to groups of people, such as: • *Broadcast* — television, radio, satellite, and terrestrial • *Print* — newspapers, magazines, etc. • *Wire services* or *news agencies* — sell stories to broadcast/print outlets • *Electronic* — Internet-based news services
Public	A group of people sharing a common interest.
Live Link	An interview that is transmitted to listeners or viewers at the same time it is being recorded. (Only the experienced or very confident interviewees should agree to this type of interview.)
Target Audience	The persons or group whose attention a particular information or message is intended to attract.

Objectives of Mass Media

In humanitarian emergencies, the media aims to achieve the following:
- To provide the public with updated information.
- To warn the public about imminent disasters so they can be prepared to cope.
- To assist in the humanitarian response effort.
- To seek and obtain external support for a humanitarian response when needed.
- To stop rumours and to reassure the public about why certain actions are being taken.
- To convey instructions or other information to the public about epidemics and disease control.

The media is the primary source of news for most of the general population. It is usually the first source of information about disasters — and a useful source — from which to learn about what happened, what is being done, and what is needed. Even though opinions may differ about the quality of media, relief workers should recognise the media as a valuable partner for sharing information as well as a powerful tool for communicating with the public. Good media coverage can help build public support for a relief operation as well as increase donors' interest. Therefore all journalists must be treated with respect and restraint.

The table below describes a positive outcome as a result of health officials and relief agencies working closely with the media during an actual emergency situation.

Table 14-2: An Example of Positive Use of the Media

Positive Role of the Media

In 1997-98, the media played a vital role in mobilising an international response to the Rift Valley Fever Outbreak in Kenya and Somalia by the following actions:

- Rapidly drawing the attention of the authorities in the affected countries and the world at large to the existence of the epidemic.

- Providing critical information about the dangers of slaughtering and eating meat from sick animals. This proved to be a fast and powerful tool for health education.

- Reflecting facts in media reports. Throughout the outbreak, the MOH and WHO provided local and international media with timely and accurate information.

Providing timely and accurate information to the public in a responsible manner requires compromise from both the relief workers and the media. The following problems may arise between relief workers and the media during a humanitarian emergency:

- Relief workers may lack guidelines on how to deal with mass media representatives.
- The media does not understand relief worker's jargon (e.g., 100 meters^3 of water, CMR of 2/10,000/day).
- There may be conflicting priorities or deadlines — the media is concerned with selling news, while relief workers are more concerned about providing immediate relief to the displaced population.
- Past negative experiences — relief workers may have been misquoted or their messages interpreted incorrectly. This may occur because media messages are often crafted to sell to the target audience.

Target Audiences of Mass Media

When dealing with the mass media, it is important to first define the **media** or channel through which the news organization or grouping communicates with the public, for example:

- **Broadcast** — television and radio through satellite or terrestrial
- **Print** — newspapers, magazines, etc.
- **Wire services or news agencies** — sell stories to broadcast or print outlets
- **Electronic** — Internet-based news services

It is also important to define the **target audience** for the media. For example, CNN (Cable News Network), which broadcasts 24 hours a day to a global audience, may have a totally different agenda from a local newspaper that is published once per week. However, because news moves so quickly today, a new story filed by a local reporter has the potential to be broadcast on CNN within minutes. The following table shows the range of target audience for different media groupings:

Table 14-3: Target Audiences for Various Media Types

TARGET AUDIENCE	MEDIA
Global	- Broadcast (CNN International, BBC World) - Wire services (especially Reuters and Associated Press) - International publications (The Economist or Newsweek)
Regional	Mainly print publications, such as AsiaWeek or Africa Confidential
National	- Broadcast (nationwide television and radio stations) - Print (nationwide newspapers and other publications)
Local	- Broadcast (local television and radio stations) - Print (daily or weekly local newspapers)

It is important to note that the groupings in the above table may sometimes change. This means a reporter for the local newspaper can (and probably will) also stand in as a reporter for a national newspaper or television station. Therefore, a recorded interview for local radio can rapidly reach CNN and a global audience.

BUILDING GOOD PUBLIC RELATIONS

Relief organisations operating in the field should make every effort to build good relations with journalists (particularly with those regularly reporting on humanitarian issues). Good public relations will help ensure that more accurate information is reported about the plight of the disaster victims and the type of assistance that is needed. To further improve the media coverage, assessment teams should be prepared to share their findings about an emergency situation with journalists (within the regulations of their agency). However, a relief agency should avoid competing for media attention with other agencies where a public report may endanger or compromise staff security or the interview interferes with urgent relief activities.

Figure 14-1: Media and Public Affairs Practical Exercise I

Practical Exercise I

Imagine that you are working at a refugee centre and have to take care of a large number of new arrivals. Some reporters, hearing of the changing situation, have arrived this afternoon. As you are caring for some of the refugees, you turn around to find a microphone being thrust under your nose.

What would you do?
a.   Drop everything and address the reporter's questions, as this centre needs the publicity?
b.   Or tell the reporter to go away as you have more important things to attend to?
c.   Or tell the reporter you'll be with him or her in a few minutes after you finish what you are doing?

The correct response is c.

Remember that reporters are human. They also have a job to do. Help them to realise that you have to balance priorities. Be calm. Be open. You can either tell them politely and gently, "I'll be with you in (how many) minutes. This has to be my priority now," and return to the reporter later; or ask a more appropriate person to answer his or her questions. You can explain your limits and challenges, but try to understand theirs, too.

The following are suggestions for building good relations and mutual trust with the media:

1. **Keep communication lines open with the media.**
   The media can be your greatest ally and promoter if you allow them to be. Think of reporters as customers and get to know them by asking them the following questions:

   - What types of stories interest them?
   - When is the best time to contact them?
   - In what medium and format do they prefer to receive information to be printed or broadcast?
   - Who are your competitors for the media's time and space?

2. **Never overestimate the media's knowledge of the subject**.
   Provide reporters and journalists with background material. Ask them if they have questions. Educate them one step at a time.

3. **Meet deadlines**.
   Try and work within the media's time frame. If a reporter or journalist says he or she needs information by a certain time, always be prompt. For the media, deadlines are often met in terms of minutes, not hours.

4. **Train spokespersons for the relief operation**.
   When a disaster attracts international media interest, relief workers may be alarmed by the number of times their work is interrupted by media reporters. To ensure the smooth conduct of relief, a trained spokesperson should be placed at the project level to provide information about the operation to the relief agency's headquarters and to ensure good media coverage. He or she needs to be trained to do the following:

   - To portray an unbiased image of the disaster by describing not only the vulnerabilities and fears of the affected population, but also their capabilities and ambitions.

   - To provide the correct amount of information and maintain confidentiality where necessary.

   - To cooperate with the media as much as possible to increase public support, but not to allow the interests of external and internal audiences to overcome the primary goal of the relief operation.

   - To always treat media reporters with respect while remaining in control.

   - To know how and when to take the lead when dealing with the media, and not to simply stay in the "response mode."

5. **Useful tips when dealing with a photographer include**:

   - Give photographers ideas on what would make a photograph visually interesting, but let them use their own final judgement. They are the experts.

   - Preserve the dignity of disaster victims. Before taking photographs, get approval from the community leaders after explaining to them what is involved and how the pictures will be used. After using a video camera, ask the operator to show the video to those people who were filmed.

   - Allow photographers to get close enough to the subject and to compose the photograph appropriately.

KNOWING YOUR AUDIENCE

The best communicators are those who know what they want to say and say it clearly. It is very important to use words that will motivate people to act. Just as we spend time searching for a gift to suit a friend's tastes, we need to tailor our messages to suit the audience we want to reach.

While it is essential for relief workers to cooperate with the media, it is even more important to be prepared for the interviews. The following questions may help to define the target audience and the best way to communicate with them:

- **Audience**: Who is the message intended for?

- **Objective**: What is the aim of sending the message?

- **Approach**: What is the most effective way to give the message?

- **Medium**: How and when should the message be conveyed?

- **Impact**: What is the desired result from sending the message?

The very first step in communication is deciding whose attention needs to be attracted. The following steps may help define the target audience:

1. **Think about the external audience.**
   Be specific. Identify the members of the public, the local and international humanitarian organisations, the donors and media (television, radio, and print) who need to know or may be interested in your message.

2. **Remember the internal audience**.
   It is just as important for colleagues to be aware of their agency's view about the humanitarian emergency as it is for the public and press. Sharing information with colleagues prior to releasing it to the press can help to generate ideas about its implications and resolve challenges. It also presents a united and organised front to the public and media and builds teamwork and morale.

3. **There are many ways for relief agencies to become "visible" to the target audience through the media.**
   - By relief workers getting to know the people in the community and organising and sponsoring community support groups, first aid activities, etc.
   - By being a consistent source of information and support on issues such as cholera prevention, disaster preparedness and response, etc.
   - By having background material constantly available. Remember to use photographs, graphic displays and local art whenever possible. This will help to reach all community groups no matter what language they use.
   - Always featuring stories for the media about people around you in action, especially the volunteers and the people who have been helped.

INTERVIEW TECHNIQUES

It is important to follow certain "protocols" when one is getting interviewed in order to ensure a positive impact on the target audience and to avoid creating conflict within the relief agency. The following techniques may be helpful for improving your interview skills:

1. Inform your direct supervisor if you have been asked for an interview or have been interviewed.

2. Be prepared! A relief worker who is not prepared can do more harm than good during an interview.
   - Find out who will be doing the interview, whether it will be broadcast or printed and when it will be made public. Also, find out where, when, and why the interview is taking place.
   - Negotiate with the interviewer about how the interview will be carried out (e.g., duration, what issues will be discussed, limit to questioning, etc.) before it begins.
   - Do your homework — collect all necessary facts and figures and prepare a set of notes in point form.

Below is a list of questions that are frequently asked by the media and the public:

1. **What happened and what is the damage?**
2. **When did it happen?**
3. **Why did it happen?**
4. **How did it happen?**
5. **Who was affected?**
6. **Is there an underlying factor?**
7. **What has been done about the situation?**
8. **Who is taking responsibility?**
9. **What else is required?**

3.   During the interview, remember you are giving an interview to deliver your message to the public, not simply to answer the reporter's questions. Therefore, keep the following points in mind:

- Be brief and to the point. Then there is a greater chance that your own words will be used. Identify the key points (not more than three) that you wish to communicate. Begin with a statement on the basic facts — the first comment is often the most remembered.

- Tell the truth without exaggerating and do not be afraid to say, "*I don't know.*" If it is a fact you can get information about, offer to do so but make sure you get it to the reporter in time. A missed deadline is a missed opportunity. If it is a question in an area outside your field (e.g., about national or organisational policy), refer the reporter to the people who are best suited to answer that question.

- Do not discuss unverified, sensitive or confidential information. There is no such thing as "off the record." If you have information that you do not want reported, do not disclose it. If a situation is unclear, say so.

- Be polite, helpful, clear, and specific. Courtesy and cooperation help establish your credibility.

- Answer the questions skillfully and remember that you have your own agenda for the interview. Seize the opportunity to discuss the additional points you want the public to know about your organisation.

- Any news deserves comment. Never say, "*No comment.*" If possible, refer any questions that may cause some friction to your supervisor. Prepare a comment in advance for questions that may potentially cause a dispute.

- Though reporters are trained to ask questions in a probing manner, this does not mean that they are trying to "trick" you. Stay calm and do not be defensive. Listen carefully to questions before answering. Think first before answering a question.

- Clarify a false statement or accusation. Say, "*I believe you are misinformed, and this is why...*" Then explain. Do not repeat offensive words or statements that a reporter used in a question, even to correct or deny. A reporter's question will never be quoted in the story but your answer will.

- Ask the reporter specific questions to help you understand what information he or she is looking for, how much detail is needed, and how your material is going to be used. Usually, a couple of questions from you can help you give the reporter what is wanted. This is a courtesy they appreciate.

- Stop talking when you have said all that needs to be said. Smile and thank the reporter.

4. In summary, when communicating with the media, follow the suggestions in the table below.

Table 14-4: Suggestions for Communicating with the Media

1. Listen. Slant your responses to reflect the news.

2. Decide on the two or three points you want to make, and be sure these points are reflected in the responses you give.

3. Be clear, concise and accurate.

4. Remember that most people will only remember a few points from all that is said, so make the first words count.

5. Mention the role of your organisation at least three times.

6. Make a quick summary of important events. Stress the most important aspects of the story or message first and end with the least important.

7. Make what is said more personal through human-interest events or quotations. Talk about people in action, not statistics.

8. Do not lecture the reader, listener, or viewer. Use simple terms and avoid language that may sound arrogant or that is insensitive, bureaucratic, or patronising.

9. Ask questions. Initiate discussion.

10. Avoid self-promotion or expressing personal opinion.

11. Consider other people's (or agencies') concerns and be aware of their feelings.

12. Sum up the key points at the end, and always remember to say "*Thank you.*"

13. Follow up when you promise to get an answer to a question.

14. Monitor what is reported, and clarify any incorrect information.

THE MEDIA IN ACTION

Figure 14-2: Media and Public Affairs Practical Exercise II

Practical Exercise II

An English-speaking TV crew has arrived unexpectedly at your location, complete with satellite link, and is asking for a spokesperson to do an immediate three minute live link on "The current health situation of the refugee/local population."

- *Each participant should write down, briefly, the two points he or she wants to make and hand the paper to the facilitator before the interview.*
- *The facilitator will then conduct three-minute interviews with each of the participants.*
- *If a camera and VCR are available, a review and analysis should take place after all the interviews.*
- *If this equipment is not available, the review and analysis should take place with the group after each interview.*

Apart from exposing participants to a "live" interview situation, the aim of the above exercise is to see how each interview subject negotiates the interview before it begins and how well the points discussed in previous sections are followed.

The final review and analysis should focus on the following:
- The interview subject's attitude before and during the interview.
- The ability to provide clear, authoritative, and brief responses.
- The ability to appear relaxed rather than defensive.
- The overall impact of the interview.

In order to learn and improve their interview skills, participants should be assessed at the end of their interviews. The following table lists a few questions that can be used to assess the performance of the interview subject:

Table 14-5: Evaluating the Interview

1. Were the questions understood?
2. Did the key points get across?
3. Where the responses clear and concise?
4. Was the interviewee knowledgeable and friendly?
5. Was the interviewee well prepared?
6. Was any erroneous information given that needs to be corrected immediately?
7. Was the language simple?

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A

Access — The proportion of the population that can use the service or facility.

Accountability — The responsibility of demonstrating to stakeholders, including the beneficiaries, that humanitarian assistance meets with agreed standards.

Activity — An action within a project that is done to achieve an objective; activities transform inputs to outputs.

Acute Emergency Phase — Begins immediately after the impact of the disaster and may last for 0-3 months. Characterised by initial chaos and a high crude mortality rate (CMR). Ends when CMR drops below 1/10,000 people/day.

Adolescent — Any person between the age of 10 and 19 years old.

Adult Support — Warm, close interactions with adults who are available when needed.

Age-Specific Rate — A rate in which the information in the numerator and denominator is limited to persons within a particular age range.

AIDS (Acquired Immunodeficiency Syndrome) — A disease defined by a set of signs and symptoms characterised by the body's compromised immune response; caused by HIV and transmitted through body fluids (e.g., semen, blood).

All-Hazards Approach — Can be applied to any type of emergency or disaster, e.g., natural disasters, technological disasters, or complex humanitarian emergencies.

Anaemia — A condition in which the haemoglobin in blood is lower than normal. May be caused by disease or a deficiency of one or more essential nutrients, such as iron and folate.

Anthropometric Indicators — Measurements of the body (e.g., height, weight, age, and arm circumference) compared to similar measurements of a reference population to indicate nutritional status, for example:

- Height for Age (HFA) — expresses the height of a child in relation to his age.
- Weight for Age (WFA) — expresses the weight of a child in relation to his age.
- Weight for Height (WFH) — expresses weight of a child in relation to his height.
- Mid-Upper Arm Circumference (MUAC) — defines wasting in terms of fat and muscle mass in the mid-upper arm.
- Birth Weights — low birth weight defined as any weight less than 2500 g (WHO).
- Body Mass Index (BMI) — measures energy deficiency in adults; expressed as wt/ht^2.

Antibodies — Cells of the immune system that are generated upon exposure to specific pathogens and are capable of bringing forth a protective response against them.

Anxiety — Intense and prolonged fear or worry which can lead to mental distress or panic.

Appropriate Technology — Emphasises that the most sophisticated technology is not always the best for a particular situation. Important factors include lifetime cost, durability, training requirements, ease of use and maintenance.

Assistants or Auxiliaries — Medical assistants, nurse assistants, and technician assistants are health personnel who do not have the full training of the respective professional staff (doctors, nurse-midwife or technician), but dispense similar medical services under supervision. In some countries, medical assistants maybe called clinical officers or assistant medical officers and they may also be trained to perform minor surgery.

Asylum — Giving sanctuary, refuge, shelter or protection from seizure to a refugee from another country.

Attack Rate — The percentage of a well-defined population that develops an infectious disease over an outbreak period. Calculated by dividing the total number of people with the disease by the total population at risk at the start of the outbreak period.

Authority — The right to make decisions and enforce them when necessary; limits of authority may be defined according to one's position.

Average Dietary Energy — The average number of calories needed to sustain normal levels of activity and health, taking into account age, sex, body weight, and climate. On average, about 2,350 calories are needed by each adult per day.

B

Basic Health Facility — The first level of health care in the health system. Offers mainly ambulatory care, outreach and referral services. It is usually staffed by medical assistants, nurses, and auxiliary staff.

Benefits — Non-pay rewards, e.g. vacations, sick leave, medical insurance, use of vehicles, pension, etc.

Bias — Any effect while collecting or interpreting data that leads to a systematic error in one direction, e.g., recall bias.

Birth Spacing — Deliberate use of fertility control to extend the period between births. May be achieved through natural, barrier, hormonal, or intrauterine methods.

Blended Foods — A mixture of foods (e.g., cereals, pulses, oilseeds, soya beans or vegetable oil, and sugar) that have been milled, cooked and fortified, for example: Corn-Soya Blend (CSB), Wheat-Soya-Blend (WSB), UNIMIX.

Booster — Additional immunisations given to enhance immunity gained through routine EPI vaccination.

Branch — A component that responds to the operational needs of an incident. It can be mobilised or demobilised according to the needs of the event.

Breast Milk Substitutes — Any foods used to fully or partially replace breast milk.

C

Camp — A place where a group of displaced people temporarily lodge in tents, huts, or other makeshift shelters. A camp setting may vary as follows:

- Tented cities relying wholly on external support.
- Small, open settlements where the refugee communities have been able to maintain a village atmosphere.
- Larger, more crowded settlements where its inhabitants are more dependent on external aid. Level of control exercised by national and international authorities.

Capacity — The resources people possess, mobilise, have access to that allow them to have more control over shaping their own futures. Resources may be physical assets (land, money, etc.), skills (literacy, technical), social (community organisation), personal (will to survive), or beliefs (religion).

Carrier — A person that carries a specific infectious agent—and can transmit it to others—but has no clinical signs of infection.

Case — A person who is identified as having a particular characteristic, e.g., disease, behaviour, or condition.

Case Definition — Standard criteria for deciding whether a person has a particular disease or health problem. Criteria can be clinical, laboratory, or epidemiological.

Case Fatality Rate (CFR) — The percentage of persons diagnosed with a specified disease who die as a result of that illness within a given period.

Catchment Area — The geographical area from which all the people attending a particular health facility come.

Census — The counting of all individuals in a particular population. Usually includes other details such as age, sex, occupation, ethnic group, marital status, housing and relationship to head of household.

Chain of Command — A clear flow of information, up or down.

Child — In the UN Convention, a person is a child up to the age of 18 years.

Child-to-Child (CTC) — A way of teaching about health that gets children to participate actively in the learning process and to put into practice what they have learned and to help others do the same. May help to develop co-operation among the children and between groups of children and other members of the community.

Cluster Sampling — A sampling method in which each selected unit is composed of a group of persons rather than an individual, e.g., villages, households.

Cold Chain — Process by which a vaccine is kept cold from the point of manufacture to the point of use.

Community — A group of people living in the same environment and sharing resources. They have common problems, concerns, hopes, and ways of behaviour that give them a sense of belonging to each other. The group also has leaders, ways of communicating ideas and activities, rules and ways of dividing work and participating in functions that are vital to its members.

Community Health Workers/Volunteers (CHWs, CHVs) — Members of the community who are integrated into PHC programs after short training on health-related issues to act as direct intermediaries between the community participation and the health care administration. CHWs may be recruited as paid staff or volunteers.

Community Participation — Involving families and communities who, rather than being mere beneficiaries of health care, share the responsibility of caring for their health. This promotes individual involvement and self-reliance.

Complex Humanitarian Emergency — A major man-made disaster that may be complicated by natural disaster(s), and loss of life. It often requires the support of a multinational military peace operation.

A humanitarian crisis in a country or region where there is a total or considerable breakdown of authority resulting from internal and/or external conflict, which requires an international response that goes beyond the mandate and capacity of any single agency (UNDHA).

Complex Political Disaster — A situation in which the capacity to sustain livelihood and life is threatened primarily by political factors, and, in particular, by high levels of violence.

Computer Hardware — The actual machines – desktop and laptop computers, printers, etc.

Computer Software — The programs that enable information to be stored on computers, such as:

- Operating systems – MS-DOS, Windows
- Word processors – MSWord, WordPerfect, Lotus AmiPro, etc.
- Spreadsheets – Lotus 1-2-3, MSExcel
- Databases – EpiInfo, Access, FoxPro
- Accounting – Scala
- Electronic mail – Eudora, Outlook Express
- Other – internet, resource tracking, mapping, weather

Computerised Systems — Computer hardware and software used to support an information system by storing and retrieving large amounts of information.

Conflict Resolution — Settling any disagreement or dispute that individuals or groups of people may have.

Contraceptive Prevalence Rate (CPR) — CPR = A x D, where A = acceptor rate/year and D = average "life expectancy" or duration of contraceptive use.

Convenience Sampling — Selection of a sample that is nearby, easily reached, e.g., selecting people attending a clinic or those with shelters next to the road, etc. It is very biased.

Cope — Behaviour that protects a person from internal or external stress; it may be healthy or unhealthy as follows:

- Examples of healthy coping behaviour: reaching out to others for help, actively working to find a solution or resolving the source of stress.
- Examples of unhealthy coping behaviour: avoiding the source of the threat, ignoring the threat or denying the effect in order to function normally.

Counselling — Guiding a person or groups of people through discussion about traumatising events to help them integrate their memories in a healthy way.

Coverage — A measure of the people who have received a service compared to all who need it.

Counselling — Supporting a team member who is experiencing personal problems by providing a sympathetic ear and, where appropriate and possible, some advice.

Crude Birth Rate (CBR) — Number of births in a population during a year (or other limited time frame) divided by the total midyear population (or midpoint of the time frame selected).

D

Daily Structure — Routines that provide stability and safety, e.g., going to school, interacting with friends, traditional social gatherings.

Debriefing — A process by which information is obtained by management from those in the field. Field personnel contribute first-hand knowledge and provide management with important feedback.

Decentralisation — Transferring authority or responsibility in planning, managing resources and/or decision-making from the central level of government to the district and local levels.

Definitive Host — Person or other animal in which a parasite reaches maturity or passes through its sexual stage.

Delegate — (verb): Transferring authority to a subordinate for a specific purpose. (noun): Expatriate staff recruited from outside the country by a Red Cross or Red Crescent Society. May be from neighbouring or distant locations.

Delegation — Transferring tasks and authority to a subordinate in order for the person who delegates to have more time for tasks only he/she can do and to build the capacity of the subordinate.

Demography — The study of populations, with reference to size, age, structure, density, fertility, mortality, growth and social and economic variables.

Denominator — The lower portion of a fraction. In calculating rate, this number is the total population at risk.

Depression — Intense and prolonged feelings of sadness, tiredness, hopelessness, or lacking interest in normal activities.

Determinant — An attribute, variable, or exposure that increases (risk factor) or decreases (protective factor) the occurrence of a specific event.

Development — A dynamic process that enables communities and individuals to grow stronger, enjoy fuller and more productive lives, and become less vulnerable to disasters. The development process emphasises equitable sharing of resources, participation by all members of the community, improving the quality of life, and conserving the environment.

Development Relief — The process of reducing vulnerability and increasing self-reliance, based on the community's identification of needs and priorities. The goal is to strengthen the community's capabilities leading to self-reliance.

Disaster — Regardless of the cause, disasters have the following characteristics:

- A great or sudden misfortune
- Beyond the normal capacity of the affected community to cope, unaided
- The interface between vulnerable human conditions and a natural hazard

Disciplinary Action — Dealing effectively but fairly with workers who break rules or whose work is not up to standard.

Dispensaries (Health posts) — Health facilities where community trained health workers offer a limited range of ambulatory care (treatment of minor injuries/ailments, immunisation, referral of serious cases). Usually run by medical auxiliaries and community health workers.

District — The smallest, well-defined, administrative and operational unit of a central government. Represents the level where qualified personnel from different sectors can work directly with the community and other agencies.

District Health System (DHS) — A health care system set up for delivering primary health care to a population within a well-defined geographical area. It includes all concerned health care agencies, which are organised and co-ordinated by district health authorities. Managing a DHS requires involvement of multiple sectors as well as the community.

District Hospitals — Health facilities with the capacity to manage first-referral cases but for limited medical disciplines, namely emergency obstetrical/surgical care and follow-up, inpatient and rehabilitative care. Facilities include laboratory, blood bank, and X-ray services.

Drought — A condition of climatic dryness severe enough to reduce soil moisture and water supplies below the minimum necessary for sustaining plant, animal, and human life.

E

Ecology — The relationship between organisms and their environment.

Ectopic Pregnancy — A pregnancy whereby the embryo implants outside the uterus, usually in the fallopian tube.

Effectiveness — The extent to which an organisation is doing the right thing to reach its objectives.

Efficiency — The degree to which results (desired outcomes) are achieved without wasting resources. How economically inputs are converted into outputs.

Emergency Contraception — Post-coital mechanisms to inhibit ovulation and implantation.

Emergency Immunisation Kit — Kits equipped with cold chain and disposable material, designed for mass immunisation in emergency situations.

Empathy — Identifying with and understanding another person's situation and feelings.

EPI — Expanded Immunisation Program

Epidemic — The occurrence of cases of an illness clearly in excess of what is normally expected. This depends on the specific illness, the season, the location. Requires knowledge of previous incidence of the event in the same area.

Epidemiology — The study of the distribution and causes of disease in populations, and its application to the prevention and control of health problems and diseases.

Equity — Providing equal health care to all groups of people according to their needs. Concerned with ethical aspects of service being delivered: giving highest priority to those with greatest health needs.

Essential Drugs — Drugs required for the treatment of common illnesses affecting a population.

Evaluation — A periodic assessment of the relevance, effectiveness and impact of health interventions against the set objectives. Evaluation is a learning and action-oriented tool that requires the establishment of specific objectives, progress indicators and criteria.

Expatriate Staff — A person who has been recruited from outside his or her own country. May come from a neighbouring country or distant land.

F

Famine — A condition of a population in which a substantial increase in deaths is associated with inadequate food consumption.

Female Genital Mutilation (FGM) (aka female circumcision) — The removal of all or part of the female external genitalia for cultural or any other non-medical purposes.

Flexibility — The system applies to any incident (or management problem). It is not a system of checklists.

Food Access — The availability of enough food (through production, markets, gathering in the wild, gifts, etc.) and people's ability to acquire it (through their own labour, purchase, exchange, etc.). Access is central to food security (defined below) and should account for seasonal variation and supply mechanisms.

Food Availability — Sufficient quantities of appropriate and necessary types of food from domestic production, commercial imports, or donors that are consistently available to individuals or are within their reach.

Food Basket — A collection of food items that make up the rations for a particular general feeding program. Consists of the following: *basic foods* — foods that supply most of the energy, protein, and fat in the ration; and *complementary foods* — food commodities that add nutrients, taste, and variety to basic foods and enable people to make or improve their traditional foods.

Food-for-Work Programs — Projects that pay people with food for working on public works or community-development projects.

Food Security — Access by all people at all times to enough food for an active and healthy life. Its essential elements are the availability of food and the ability to acquire it.

Fortification — Adding one or more nutrients to foods to restore or enhance the quality.

G

Gender-based Violence — Violence that is directed specifically against a woman because she is a woman, or which affects women disproportionately.

General Ration — A complete basket of food commodities given in sufficient quantities to families to meet their basic nutritional requirements. Estimated as average dietary energy (kcals/p/day).

Goal — General statement about what is to be eventually achieved (i.e. impact) through a program.

Grief — An emotional reaction to the death of a loved one; it may be expressed in two ways: *healthy grief*: feelings of sadness which diminish over time; missing the loved one but being able to return to normal activities after a reasonable length of time; and *unhealthy grief*: feelings of extreme loneliness, overwhelmed by sadness; being unable to resume normal activities even after a reasonable period of time.

Growth Monitoring — Following a child's growth by regular weighing, plotting the weight on a growth chart, and comparing the child's rate of weight gain with weight gains of reference children.

H

Habitat — The area or environment in which an organism normally lives.

Haemorrhage — Severe (often difficult to control) bleeding from within the body.

Hazard — Extreme event (natural, man-made) that disrupts the lives of people, particularly vulnerable people, causing loss of property or livelihood, injury, or death.

Health Care System — The organisation of health care services within a designated geographical area (country, province, district, etc.).

Health Centres — First contact of the community with the formal health care system. Not usually staffed by medical officers, often run by medical assistants and other professional staff. Offer ambulatory care, limited inpatient care and reproductive health care, community outreach services, referral of emergencies and other serious conditions.

Health Workers — Physicians, medical assistants, nurses, auxiliaries, community health workers (CHWs) and traditional healers functioning within the health care system.

Herd Immunity — Level of immunity in a population, which prevents epidemics. The level of vaccine coverage necessary to achieve herd immunity depends on the disease.

Hospitals — Health facilities that are permanently staffed by at least one physician. Offer medical consultation and 24-hour nursing care, basic emergency surgery and blood banking.

Household — A group of people who eat from the same pot. Usually contains a family, i.e., the people related by blood or ritual (e.g., marriage). May include people who are not members of the family.

Human Immunodeficiency Virus (HIV) — The virus that causes AIDS; it causes a defect in the body's immune system by invading and then multiplying within white blood cells.

Human Resource Management — The mobilisation, motivation, development and deployment of human beings in and through work to achieve organisational goals. Defining the rules for optimal use of human resources to achieve organisational goals.

Hypothesis — A reasonable statement that is set up to be verified or proved.

I

Immunisation Coverage — The proportion of people at risk for a particular disease who are vaccinated.

Immunisation or Vaccination — The introduction of a vaccine to a person's body in order to protect him or her against a particular disease.

Immunity — Being resistant or not being affected by a specific pathogen.

Implementation — Transforming inputs through a set of systems and procedures to produce specified program outputs.

Incentive — Non-financial reward that a volunteer receives for performing a job. This includes getting recognition, training, promotion, etc.

Incidence — The number of new cases, events (illness, death, malnutrition, injury) or attendance that are diagnosed or reported, divided by the total number of persons in a population during a defined period of time (usually one year but shorter for outbreaks). Commonly used for acute, communicable diseases.

Incident Action Plan (IAP) — Plan for responding to disaster incidents which may be pre-defined or developed during the operation.

Incident Management System (Incident Command System) — IMS is an all-risk, all agencies, co-ordinated system for managing humanitarian emergencies.

Incident Manager (Incident Commander) — The individual in charge of the Incident Management System.

Indicator — A measure that shows whether a standard has been reached. It is used to measure and communicate the result of programs as well as the process or methods used. Indicators can be quantitative or qualitative.

Induction (Orientation) — The process of integrating new staff into an organisation. It includes welcome, introduction and briefing on the job description and expected benefits.

Infectious Agent — An organism (virus, bacteria, fungus, protozoa, helminth) that is capable of producing infection or infectious disease.

Inputs — The resources (staff, supplies, money, information) available for carrying out a project in a given time.

Integration — Neighbouring country of asylum allowing refugees to settle permanently with the host population without restrictions.

Internally Displaced Person — Persons who have been forced to flee their homes suddenly or unexpectedly in large numbers, as a result of armed conflict, internal strife, systematic violations of human rights, or natural or man-made disasters, and who are within the territory of their own country (UN Secretary General 1992). Also, persons or groups of persons who have been forced or obliged to leave their homes or places of habitual residence, in particular as a result of, or in order to avoid the effects of, armed conflict, situations of generalised violence, violations of human rights, or natural human-made disasters, and who have not crossed an internationally recognised state border (Inter-Agency Standing Committee Guiding Principles 1998).

J

Job — A collection of tasks, with the role and responsibilities linked to a position in the organisation structure.

K

Kwashiorkor — A severe form of malnutrition, attributed to inadequate protein intake and/or the stress of infection. It is characterised by oedema, flaking, skin lesions, hair changes, and enlarged liver.

L

Larvicide — (*noun*): pesticide used to kill arthropod larvae; (*verb*): killing of arthropod larvae

Leader — Someone who makes people work together, by motivating and inspiring them, to achieve a common goal.

Live Link — An interview that is transmitted to listeners or viewers at the same time it is being recorded. (Only the experienced or very confident interviewees should agree to this type of interview.)

Logistics — The procurement, distribution, maintenance, and replacement of material and personnel. *Push logistics* — standard quantities of equipment and supplies are estimated, and stored, ready to be quickly "pushed" to the scene. *Pull logistics* —ordering equipment and supplies after the need is determined.

M

Management — Searching for the best use of resources in pursuit of objectives subject to change (Keeling)

Mass Communication — Directing information or a message to a large number of people.

Mass Communication Medium — A means of public communication, which includes television (TV), radio, film, newspapers, magazines, books, and the internet.

Mass Immunisation — Immunisation of large groups "at the same time" as follows: *selective immunisation* – first verify the immunisation status of each individual in the target group and administer the vaccine to those with no official document; and *mass immunisation* – all individuals in the target group are vaccinated regardless of their immunisation status.

MCH — Maternal and child health clinic

Mean — Commonly called the average. Calculated by adding the individual values in a group of measurements and dividing the total by the number of values.

Media — Channels for sending information or messages to groups of people, such as:

- *Broadcast* — television, radio, satellite, and terrestrial
- *Print* — newspapers, magazines, etc.
- *Wire services* or *news agencies* — sell stories to broadcast/print outlets
- *Electronic* — Internet-based news services

Media Coverage — Securing and reporting details about a situation or event by the media

Median — The central value in a range of measurements that divides the data set into two equal parts.

Medical Technology — Methods, equipment, and materials that enhance the capacity of health facilities to provide effective preventive and curative health care. The following tools can be used safely by health workers at health centres:

- "Dipsticks" or saliva tests to diagnose HIV, STDs
- Non-invasive diagnostic tools: ultrasound machines
- Single dose oral treatment: for STDs, worms, measles, polio

Methods — Sequence of tasks or activities for achieving the objectives.

Minimum Standard — The minimum acceptable level (of service) to be attained in humanitarian assistance.

Missed Opportunity for Immunisation — Occurs when a child or a woman of childbearing age comes to a health facility or outreach site and does not receive any or all of the vaccine doses for which he or she is eligible.

Mitigation — Recognising that disasters will occur attempts to reduce the harmful effects of a disaster; attempts to limit their impact on human suffering and economic assets.

Mode — The most frequently occurring value in a set of observations.

Monitoring — An ongoing process of checking the progress of activities against the plan to ensure that all processes are going on as intended.

N

Non-formal Education — Learning basic skills by studying core subjects, but the courses do not necessarily lead to recognised diplomas and certificates.

Numerator — The upper portion of a fraction. In calculating rate, all people included in the numerator should be included in the denominator. This is not true for the numerator in a ratio.

O

Overhead Team — The total management group for a given event and includes the management staff, section chiefs, and branch directors. The Overhead Team also includes unit leaders in the operations support sections (logistics, administration, and planning).

P

Participation — Involving the community in the decision-making process, aiming to empower them to take responsibility for their lives.

Pathogen — Any disease-producing organism.

Performance Evaluation — The process of assessing a staff member's conduct and performance, and by which his job description is regularly reviewed and if necessary updated. It includes giving feedback on the staff member's achievements, perceived strengths and weaknesses.

Pesticide — Any substance used to kill or control organisms which are considered to be pests.

Play — Promoting fantasy and releasing stress through physical exercise and games with others in a joyful, co-operative, and supporting manner.

Population — The total number of inhabitants or particular groups in a defined area or country. In sampling, population refers to the units from which a sample is drawn.

Population Pyramid — A graphical presentation of the age and sex composition of a population. A typical pyramid for developing countries has a broad base, sloping sides, and a narrow apex is due to high fertility rate and high mortality at younger ages.

Post Emergency Phase — Begins when the CMR drops below 1/10,000 people/day and may last 1-6 months. Characterised by improvement and expansion of relief activities.

Post Traumatic Stress Disorder (PTSD) — Mental illness affecting people who have been exposed to severe violence or abuse. Affected people frequently remember their painful experiences and feel tormented by them. They have difficulty defining real from unreal events.

Preparedness — The readiness to predict, prevent, mitigate, respond to and cope with the effects of a disaster.

Prevalence — The total number of persons sick or portraying a certain condition in a stated population at a particular time or period, regardless when it began, divided by the population at risk. *Point prevalence* measures the proportion at a particular point in time. *Period prevalence* measures the proportion within a defined period of time.

Prevention — Activities taken to prevent a natural phenomenon or potential hazard from having harmful effects on either people or economic assets.

Probability Sampling — Uses the probability theory to select a specified number of persons for study such that every member in the target population has the same known and non-zero chance of being included. Provides a demonstrable degree of reliability.

Proportion — A ratio where the numerator (x) is part of the denominator (y). Expressed as x/y.

Protective factors — Qualities in a person or the world around them that shield him/her from the full force of a stressor.

Psychosis — Losing touch with reality. It can range in severity from mild distortions of reality to hearing or seeing things that are not there.

Public — A group of people sharing a common interest.

R

Random Sample — A selected subset of the population derived by random selection of sample units. Each individual unit (village, household or person) should have an equal chance of being included in the sample.

Rate — The likelihood that a particular event will occur in a specified period of time. Expressed as x/y x factor (e.g., 1000).

Ratio — The relationship between two quantities, represented by x and y. Expressed as x/y or $x{:}y$ (x need not be part of y).

Recreation — Refreshing one's mind or body through amusing or stimulating activities, e.g. playing, games, sports.

Refugee — Any person who, owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it (UNHCR 1951). Every person who, owing to external aggression, occupation, foreign domination, or events seriously disturbing public order in either part or the whole of his country of origin or nationality, is compelled to leave his place of habitual residence in order to seek refuge in another place outside his country of origin or nationality (OAU).

Rehabilitation or Reconstruction Phase — After the relief phase, reconstruction begins. This should lead to restoration of pre-disaster conditions (repaired facilities, functioning services, self-reliance).

Repatriation — Returning to the country of birth or citizenship. May be forced or voluntary.

Repellent — A chemical applied to the skin, clothing or other places to discourage arthropods and other disease agents from landing on or attacking an individual.

Representative Sample — A selected subset of a population that resembles the original or reference population in every way.

Reservoir — Any person, animal, arthropod, etc. on which an infectious agent depends for its survival where it reproduces itself for transmission to a susceptible host.

Resettlement — Allowing refugees to settle in a third country when repatriation or integration is not possible. Usually offered as a temporary solution.

Risk — The probability of being affected by the unwanted consequences of a hazard. It combines the level of a hazard and degree of vulnerability.

Risk Maps — Maps drawn showing the areas with risks that a community is most concerned with.

Rodenticide — Pesticide used to kill rats or mice.

S

Sampling — Selection of a specified number of persons in a population for study with the hope that they are representative of the entire population.

Sensitivity — The proportion of true positives correctly identified by a screening test.

Span of Control — No individual manages more than three to five sections or units.

Specificity — The proportion of true negatives correctly identified by a screening test.

Standard Deviation — A measure of the dispersion or variation of a set of quantitative measurements on either side of the mean.

"Street Children" — Unaccompanied minors living on their own but within the vicinity of the camps.

Surveillance — Ongoing, systematic collection, analysis and interpretation of health data for managers of public health programs, combined with feedback to all.

Survey — Periodic, focused assessments that collect health data from a population.

Systematic Sampling — A sampling method that uses a list to select, after randomly picking the first unit, additional units at regular intervals.

T

Target Audience — The persons or group whose attention a particular information or message is intended to attract.

Telecommunications — Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical, or other electromagnetic systems (International Telecommunications Unit).

Telecommunications Tools — Radio, telephone, telex, telegraph, telefax, satellite and data transmission.

Transmission — Any mechanism by which an infectious agent is spread from a source or reservoir to a host.

Trauma syndrome — Startle reactions, intrusive memories, nightmares, avoidance behaviour.

Trend — A long-term change in frequency, either upward or downward. A downward trend in a disease implies it is becoming less frequent.

U

Unaccompanied Minor (UAM) — A child up to the age of 16 (or older if the child perceives him/herself as vulnerable and in need of support) whose parents or relatives cannot be found in or outside the camp. (UNHCR Guidelines for the Care of Rwandan Unaccompanied Minors in Refugee Camps)

Unified Management (Unified Command) — There is a single person (or management team) in charge.

V

Vaccine — A suspension of chemicals (toxoids or micro-organisms) that are treated so that they do not cause severe infection but are capable of stimulating the body's immune system to produce antibodies.

Vaccine Effectiveness — Measures whether the vaccine protects against disease in "real life" situations.

Vaccine Efficacy — Percent reduction of disease incidence among vaccinated persons compared to the unvaccinated.

Validity — The degree to which a measurement actually measures what it is supposed to.

Variable — Any characteristic that can be measured (e.g., age, weight) or categorised (e.g., sex, marital status).

Vector — Any animal or arthropod capable of carrying disease pathogens from one host to another either mechanically or through its body functions.

Vulnerability — The defencelessness, insecurity, and exposure to risks, shock, and stress—and having difficulty coping with them. Living on an "edge" such that if something goes wrong, or if part of the situation changes, then the ability to sustain life is endangered. The potential that when something destructive happens, people will not be able to handle the consequences by themselves.

Vulnerability Maps — Locally drawn maps showing where vulnerable people who will need special attention during an emergency are located. These maps also show the community resources, e.g., shelters, local services, response groups, etc.

Vulnerable Children — Children who are at greatest risk of developing immediate or long term physical or psychological disorders, for example:

- Children with decreased social support – unaccompanied minors, orphans
- Children in poor physical health – very ill or malnourished
- Children who are victims of violence – unaccompanied minors, victims of child abuse, children of minorities
- Children who participated in war or violence – child soldiers
- Children with physical disability or deformity
- Children with mental disorders or retardation – depression, psychosis, substance abuse, PTSD, delayed reaction
- Children undergoing difficult developmental stages – adolescents

Y

Young People — Any person whose age is between 10 and 24 years old

Youth — Any person whose age is between 15 and 24 years old