

Counter-disaster planning in a paediatric hospital

Nightmares

As the eyelids close and sleep drifts upon you a telephone call from work informing you of an incident involving 200 possible casualties has a certain way of helping you to focus extremely quickly!

Such was the call I received one evening following the collapse of a circus tent in a country South Australian township, far from Adelaide. Fortunately no one had life threatening injuries and while there were quite a large number of people with some degree of injury at the end of the day we only received two casualties at our hospital. However the situation could have been very different and the outcome horrendous... Near miss events such as these serve as a timely reminder to all of us and especially to myself and my own Emergency Department to look closely at our ability to cope in the event of a 'real' major emergency such as this. Most major incidents occur very unexpectedly and I had to ask myself that night 'Were we prepared! Could we cope if large numbers had been injured? What would our response have been? Would we have passed the test?'

New beginnings

In 1995, a year or so after my appointment as the Nursing Unit Head of the Paediatric Emergency Department (PED), we saw major building developments occur with the Queen Victoria Hospital and the Adelaide Children hospital being amalgamated on the same site to form the present Women's and Children's Hospital (WCH). As the nurse in charge of the PED, I became aware that we had some very real issues to deal with in regard to our counter disaster plan. Having recently gone down the path of blending two hospitals into one new one it was very clear that it was a timely thing to review our practices. When I began to look closely at the plan I realised the impact of the building changes which had occurred, indeed some of the buildings mentioned in the plan were no longer standing. Clearly a total review had become an urgent necessity.

A 'children's' hospital is a very different place from that of an adult institution. In the PED of the WCH in Adelaide we see 35,000–40,000 patients per annum with a wide range of illnesses and injuries. We do not see the large volume of serious injuries from Motor Vehicle Accidents (MVAs) nor the Myocardial Infarctions of an adult

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hospital. However, we do see very sick children and when a child is seriously injured or ill things can change very quickly. We still find it necessary to have a knowledge of the first-line management of adult patients as at times we have to contend with emergencies amongst our 2000 staff and the many visitors who sometimes need attention with anything from headaches to infarcts.

Review process

Recognising the need to review our counter disaster plan in early 1995, a formal Counter Disaster Planning Committee was formed and, as the head of an area likely to be in the 'front line', I became heavily involved. I have always believed that a well-planned attack is the best line of defence. Whilst our chances of having a major disaster are considerably less than many places complacency is not a good thing and to me it is very important to be well prepared and well practiced. Being very aware of the differences between an adult and paediatric hospital I felt it was even more important that the staff knew exactly what would be expected of them in the event of a major incident.

In reviewing the plan, with the committee's blessing I spent some time interviewing key players around the hospital asking how they perceived the current situation and how well they felt their own area would be able to respond should a major emergency occur. I also asked what changes they felt were needed to make their own plans more functional. In conjunction with this I took the opportunity to improve my own knowledge as widely as possible and this included:

- visiting other departments in major hospitals throughout Adelaide to research what they were doing with regard to major incident planning
- undertaking a training course at the Emergency Management Institute in Mt Macedon
- attending local lectures especially when renowned speakers were available.
- reading and educating myself as widely as possible on the issue, including referral to the Australian Emergency Manual of Disaster Medicine, the Internet and

papers relating to specific major incidents.

It seemed very important to me to ensure staff understood the current situation and that the revised plan to be prepared should be a functional and meet the specific needs of children. It was imperative not to develop something so complicated and long that it was impractical on the day. What was also very clear was that with children and young people specific issues are likely to be encountered such as:

- it is very important to have staff well trained in children's emergency medicine and paediatric advanced life support available
- there is a need to provide a wide range of sizes of equipment to cope with all age ranges
- emotional issues and parental anxieties are likely to be considerable and social work and counselling support will need to be available for both families and staff
- Whether we like it or not the combination of children and injury make good headlines so we need to anticipate that there may well be lively interest from the media and therefore need to cater for them.

Action plan

- A review of the current areas identified for inclusion in the plan (Some areas as previously identified had been demolished in the recent rebuilding programme)
- To develop a simple and functional plan for the hospital.
- The plan should be developed to be user friendly to the most inexperienced person likely to be involved and based on accepted standards of practice.
- Being a paediatric hospital the plan should be drawn up to deal specifically with the needs of children.
- To ensure all departments developed plans to meet the needs of the hospital as well as their own needs and which would meld into the main hospital plan effectively.
- To develop a control centre facility close to the emergency department which could be fully operational within minutes of declaring a major incident (the previous centre was on the far side of the hospital with minimal communication facilities available).
- To develop a hospital wide control team and a means to access these people or alternatives quickly.

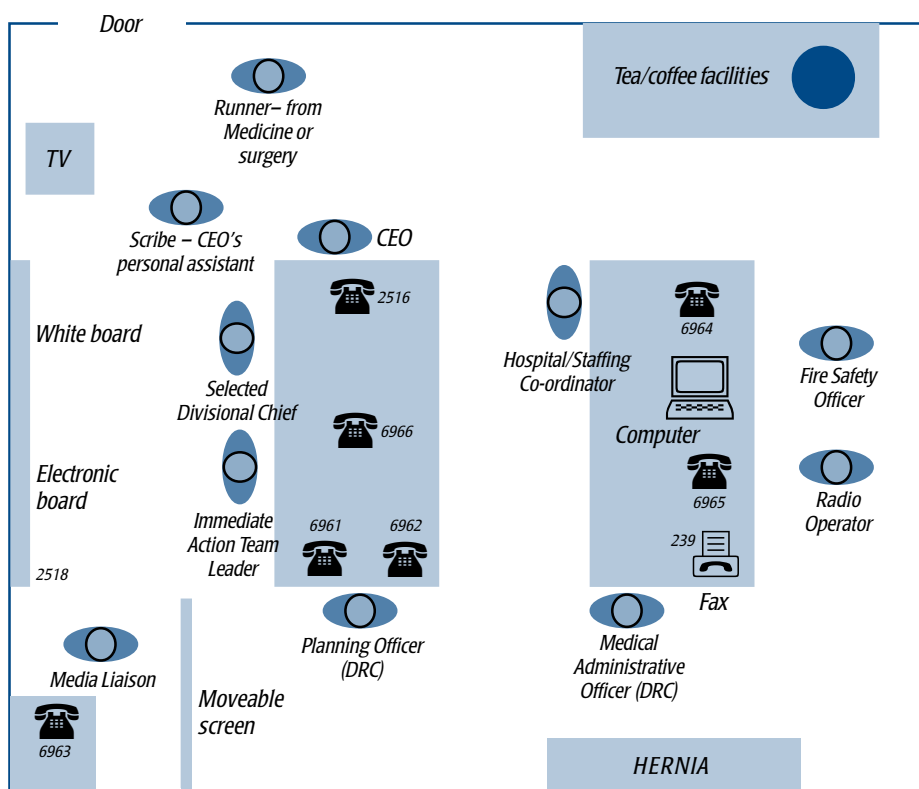


Figure 1: Control Room layout (Paediatric Emergency Department seminar room)

- to test and evaluate the plan regularly, by use of both desk-top and operational exercises.
- to include in the plan strategies to deal with various specific incidents, eg How to cope if we 'became' the disaster or how to cope with chemical incidents.

Starting point

Order and planning is vital in counter disaster management, so our first thoughts were to develop strategies. We had recognised that while we needed a 'live' main hospital plan we also needed each area to develop individual plans, which would link into the whole as well. We had become very aware of the need to relocate our control room to allow it to be closer to the PED and to provide more effective communication to the hospital as well as to any outside agencies who may be involved in an incident.

The Control Centre

The designated control centre was identified as the PED seminar room. This was closely located to the main area of the department but out of the immediate line of fire was. The hospital has taken the issue of our ability to provide an appropriate response to major incidents seriously and as a result has set aside an annual budget to allow restocking and replacement of items to take place. We were also given a significant initial allowance and have been able to purchase a number of items urgently needed to allow this room to be set up within minutes of declaration of an emergency. This has been a cost-effective exercise as the room is also used for education and some of the equipment purchased

is able to be used for both. The new centre contains a floor plan of the layout and how to set up the equipment, as well as an action plan list of what the first person to arrive should do etc (see Figures 1 and 2).

The equipment also included clearly embroidered tabard tops for staff to wear which identified each person who would be in the room and their particular role. We were very fortunate to be able to call upon the help of a talented member of our own staff to design and make these, which helped us to keep our costs to a minimum. Each top has a pocket in which is placed a pen and a role card, again reaffirming each individual's prescribed role and tasks. We also made similar tops but in a different colour for the team of people to be involved with the victims out in the actual department. Experience has showed that in the heat of the moment it was very easy with the resultant anxiety for people to forget or become confused about what they were supposed to do and it was therefore very important for the role cards to be available. It was seen as imperative that everyone knew who to go to by role and not by personal name as this can be a source of confusion when a large number of people are working together (see photo).

The room has been equipped with nine telephones, a TV, video and radio, photocopier and fax as well as connections to the state Hospital Emergency Radio Network in Adelaide (HERNIA) to allow immediate and constant link up with emergency services and the state control centre should this be activated. The room also houses computers

What to do first

Information for the control centre

First person to arrive or controller will check that the following has occurred

If the equipment for the room is not already there collect from the disaster cupboard

1. Set up room according to plan on the door.
2. Ensure centre table phone lines connected to corresponding connectors on the ceiling
3. Turn on computer to network
4. Bring in electronic media board
5. Plug in the HERNIA phone
6. Ensure all staff arriving don tabards indicating their role
7. A fax machine from the secretaries office can be moved to the control room should this be necessary. Likewise other computers are available in the MUH and NUH office.

Controller will allocate any specific roles as he/she desires.

- All staff take instructions from the Controller as they arrive.
- Controller will allocate a person to be the receptionist (usually a DRC). They will proceed with the reception documentation to the main reception desk in the entrance way and document arrival of all staff.

In the Control Room

- All telephone calls MUST be logged on the sheet provided.
- All requests for anything must be entered on an event sheet.
- The controller will complete a situation report each hour (or as appropriate).

Figure 2: What to do first in the Control Centre

which are networked into current programmes used by the hospital staff and also for monitoring the patients while in the department throughout the duration of an incident on the Health Automated Systems Emergency Departments (HASED). In the event that power supply becomes an issue during an emergency the control centre has been isolated in its entirety on the hospital emergency generator system.



Tabards are used to delineate roles

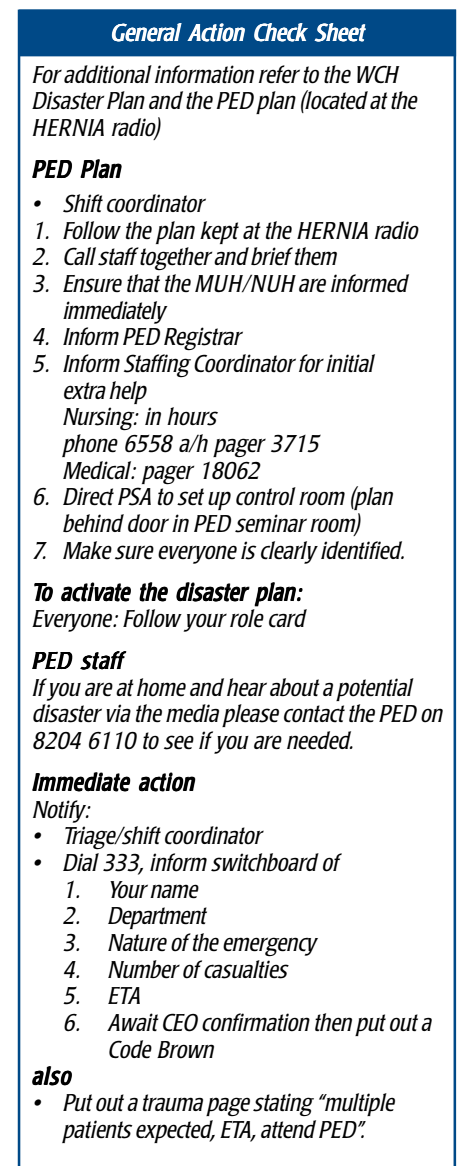
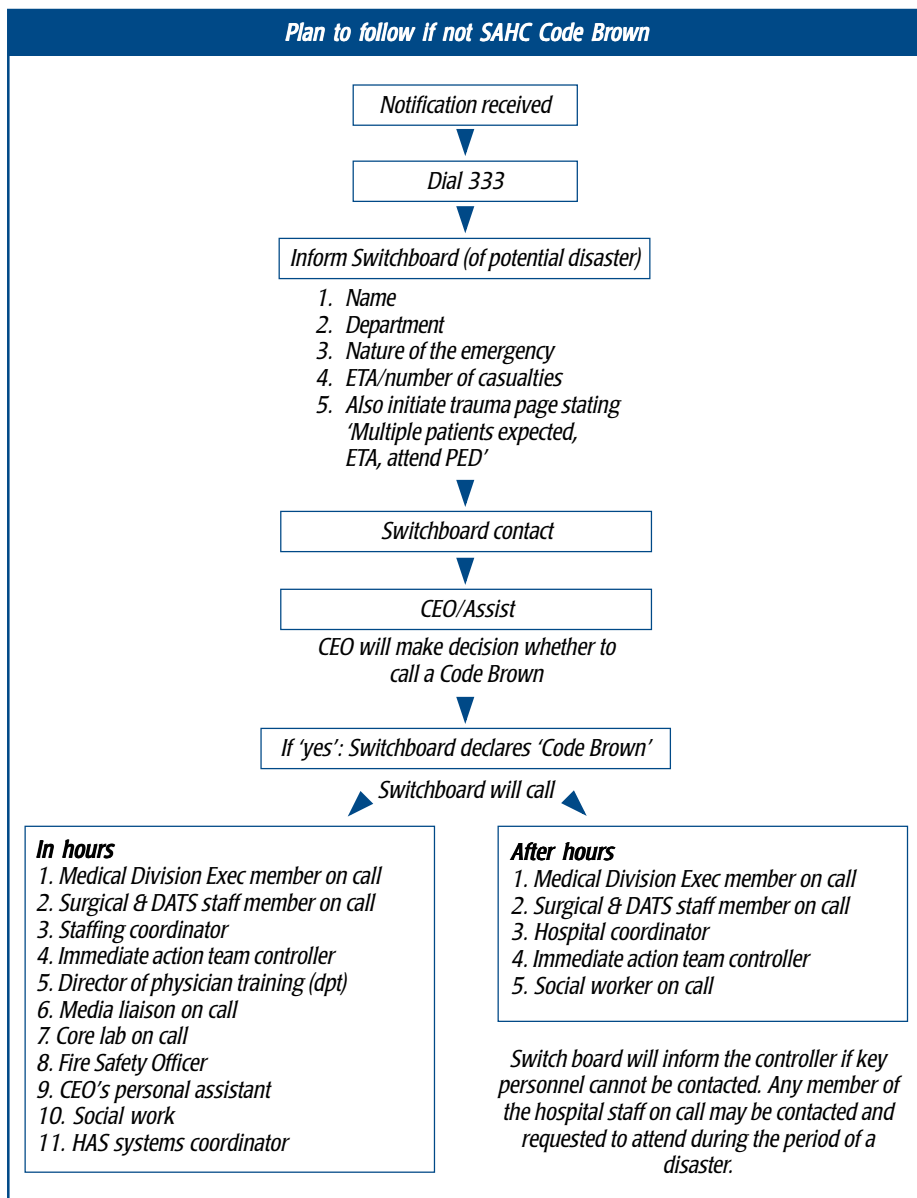


Figure 4: PED Major Incident Counter Disaster Plan General Action Check sheet

Figure 3: Plan to follow if not SAHC Code Brown

Once an incident has been declared, the staff who know they are involved are expected to attend the control centre without delay. A list of the control team personnel and their telephone numbers is kept in the Control Centre, Emergency Department, CEO's office and with the telephonists. The plan is set up in such a way that it is quite clear on arrival that if a Patient Support Attendant (PSA) has not yet set the room up then the first team member to arrive should do so according to the displayed layout of the room as described in Figures 1 and 2.

Initial response

While the plan has a full and comprehensive explanation of what to do an initial response has been developed in an algorithm style as this has been shown to be easy to follow especially for the inexperienced staff member who may find themselves in the line of fire on the day. This has drawn up so that any member of staff would be able to follow the instructions if they received a call

informing them of an impending incident (see Figure 3).

This included:

- what details to take from the initial caller
- what to do
- who to contact
- plan of action for both in and out of hours.

As previously stated, linked with this main hospital action plan, each department or division of the hospital has also reviewed or developed a comprehensive plan of their own which links clearly into the main plan.

Blank minds

Developing a plan for the PED took a considerable period of time to achieve. I was very aware that the previous plan contained pages and pages of really useful information but it would have been very hard to decipher and pick out the important points needed to put plans into action.

To help overcome this I have developed a small immediate action card (see Figure 4). Staff are encouraged to carry this. It is also strategically placed near the triage area so

that if 'the call' should ever come when the mind goes blank, as happens to us all, there is something to bring you quickly back to reality and start the staff off in the right direction. Once the first call has been dealt with the card directs the reader clearly onto the main plan.

Individual roles in the PED

Individual roles have been defined for each of the main players in the PED. Each member of the staff stays responsible for the area they have already been allocated to for the shift eg the resuscitation room nurse looks after Area A which is the resuscitation area (see Figure 5). They have cards to guide and enable them to coordinator their given area. Assisting staff sent in to help from outside areas will be given a patient load, directed to an area and instructed to stay with that patient under the guidance of that particular area coordinator. Anything they need they should request from the coordinator as that is the person who knows the area best and it is appropriate for them to be locating

equipment needed thereby leaving the staff sent to assist free to concentrate on the care of the patient. The system is applied across the whole discipline of staff including the Patient Support Attendant (PSA), medical and clerical staff as we assumed the same principle will apply.

Each member of the departmental team will as previously stated be allocated a tabard with role card to clearly indicate what their area of responsibility is and to whom they are responsible. The role and task card provides them with appropriate tasks to do in preparation for the arrival of patients through to eventual standdown. On the bottom of each card are the telephone numbers individuals may need during the incident including the appropriate number to ring if they need to contact the control centre.

Triage

Triage will occur at the doorway and will be carried out by the triage Registered Nurse (RN) for the shift and the senior doctor. Both are experienced in emergency assessment of children. The role card the individual carries clearly guides them to set up the area with the appropriate equipment, including computer. A network point has been installed for this purpose at the entranceway. As the patient arrives they will be triaged and hospital identification label applied using prepared identibands from a notes pack. The notes and a clinical equipment pack for that patient will then be placed on the barouche, and the patient allocated to an area. A doctor and nurse from staff, who have been sent to assist, are asked to wait by the area. They will then be assigned to the patient and proceed with the patient.

Equipment

Area A Team Leader

(Resuscitation Rooms 1 and 2)

(Team Leader is the RN allocated to the Resus/Treatment rooms)

Wear tabard stating Area A Team Leader

1. Receive briefing from Shift Coordinator/NUH
2. Prepare Area A
3. Check oxygen and suction
4. Prepare to take 3 patients (1 in Treatment Room, 2 in Resuscitation Room)
Prepare barouches.
5. Prepare IVs, monitor equipment.
6. Open DDA cupboard (give 40 ampoules of morphine to Field Medical Teams).
7. Allocate roles to nursing staff as they arrive.
8. Co-ordinate area throughout disaster.
*Review available staff and act as runner.
Allocate relieving staff to the patients.*
9. Following Stand Down re-equip area for normal daily use. Be involved in debriefing as appropriate.

Figure 5: Paediatric Emergency Department Sub Plan

Considering equipment for a 'children only' facility is a complicated undertaking. Children are not always small and many teenagers are in fact as large as the adults who may be treating them. The Paediatric Intensive Care Unit (PICU) staff have developed excellent equipment for the hospital, based on the Thomas packs. Thomas packs are designed specifically for field medical retrieval teams. The backpack can be purchased and filled with appropriate equipment, or purchased empty and then purpose filled by the hospital, as the WCH have decided to do. The WCH packs consist of six identical backpacks. Each pack has equipment to cater for all ages from birth to adult, and provides airway and oxygen equipment, intravenous access and lines for four

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patients. It can then provide 1.5 litres of fluid for four patients and advanced life support for two more.

There is also a selection of extra items such as drugs, chest drains and dressings etc. Consideration has been given to ensure the right equipment is taken to cater for all age and size ranges for twenty patients in two sets in as lightweight and concentrated a form as possible. With children a wide range of sizes of equipment is needed, and as a result a one-size fits all approach cannot be used. This makes equipping a children's team very costly and it can be bulky to carry if not carefully planned. PICU has also designed a very specific softpack to hold all the equipment together for transporting to the site of an incident, fixed to the stretcher inside a plane or ambulance.

Within the emergency department we have also purchased a wide variety of sizes for the emergency equipment needed. This

also included notes for up to fifty patients. Each set includes all age-group charts and forms pre-stamped and labelled for ease of use etc. Triage equipment has been packed together and includes wipe boards, markers, clinical packs containing emergency first line equipment to deal with ABC for each patient, as well as the laptop computer and its connections. There is also extra equipment to provide advanced life support for patients in areas other than our standard resuscitation area, and extra intravenous fluids. We have included in the department a Braselow kit which has added significantly to the variety of disaster equipment items available. This is made up kit of equipment called a 'flying carpet', a commercially-produced kit containing aged related sealed packs of equipment to deal with ABC. Much of the equipment is single use only and each section of the pack is clearly labelled. Each section of the pack is affixed by velcro to the inside of the case lid and rolls out for easy access, hence the name 'flying carpet'. The kit also contains an emergency tape which can be used as a quick guide to calculate the size of equipment needed to treat a child as well as drug dosage. The principle being that the tape is laid alongside the prone child and the length determines the equipment size and drug dosages. The tape is available for purchase separately or as part of the whole kit. The kit has considerable potential for country and rural areas who need to have specific equipment prepared and ready for the severely injured child. The tape as a separate item is an extremely useful tool to keep in any trauma or disaster kit as a reference tool to use in emergencies when time matters. All equipment and drug dosage are size and weight related in children and the tape means relative accuracy can be achieved when little other details about the child may be available to assist the clinician in the initial stages of a major incident. A clearly labelled cupboard for storage of this equipment and its contents is available and these are checked regularly. This was something that was important to instil in staff—that equipment must always be checked, in date, and fully functioning. It is very easy to think the task is 'done' when it can be forgotten.

Field medical teams

The PICU staff, as stated, have developed kits of equipment to take out to the scene of an incident should this be necessary. It is anticipated that they would be able to supply two field medical teams with equipment at any time. Both the medical and nursing staff in that area are highly skilled in retrieval of sick and injured children, which is quite

different from the management of adults. It is imperative that staff who are going to be involved with injured or sick children at any stage have had such training. Advanced Paediatric Life Support (APLS) and Paediatric Advanced Life Support (PALS) courses are available for medical and nursing staff to attend and compliment emergency response training and Emergency Management of Severe Trauma (EMST) as well.

Communication and signs

Reading instructions relating to major incidents communication often seems to be a real issue. In our own counter disaster plan we have given this a lot of thought, and made every effort to ensure these problems are kept to a minimum. We found this to be true in our operational exercises and as a result have added considerably to the signs and directions for even the most simple of things.

Children injured in a major incident in particular cause great emotions to be raised and communication and the rights of families become very important. We have made sure in preparing this plan that there is a well-defined area providing individual rooms for counselling and information to be given to families. The press has also been catered for near to the emergency department but not 'in the way'. If we keep them too far away they will 'break out' and get to us anyway, and it is often very helpful to have them on our side.

Practice works towards perfect

Since the instigation of this plan we have held one desk-top exercise and two operational exercises with a further exercise planned. In addition to this the PED has routine emergencies mocks as part of its current education programme and we include counter disaster in this from time to time. For each operational exercise we have involved local high school students and ambulance staff to help us practise. Each exercise has proved a huge learning curve and each one related to a slightly different area, which we feel to be very positive.

The first operational exercise gave us the opportunity to look at a number of specific areas. Our disaster review had proved to be a major undertaking and in many ways we really had to start almost from scratch. This exercise was somewhat nerve racking to me as I felt a huge responsibility to ensure it all came together well. We arranged with the ambulance service to help authenticate the exercise and they were extremely helpful. The scenario used was a bus crash and as far as possible we tried to replicate the injuries that would have occurred.

To confine cost, and as this was our first practice of the new plan, we felt it was important to do this during working hours.

It became a major exercise in itself to encourage some areas of the hospital to 'play' but the assistance of the CEO and the Chiefs Operating Group, who helped by authorising the exercise with their 'seal of approval', its importance was emphasised to all staff. Being the first such scenario for some years we decided to let staff have some idea that a practice was about to happen in the next few days. It was interesting to note the huge increase in phone calls I received as the day approached and staff from other areas realised this was really going to happen and they were feeling very vulnerable!

On the day we had twenty-six victims sent to us in rapid succession over a two and a

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half-hour period. Many of the injuries were very severe and would certainly have stretched us considerably if it had been a real situation.

After the exercise had been completed we encouraged all staff involved, especially the control room staff, to stay and debrief over a buffet lunch. On this first occasion specific issues arose that we were able to resolve quite easily. These pertained mainly to communication and staff in other areas still unsure of their own roles, but also made us aware of the very significant role of the social work and counselling teams with specific emphasis on the needs of children and very anxious parents. The exercises encouraged many to go back and look more closely at their own plans to ensure they fitted into the whole plan to make the jigsaw complete. To realise the need to do that was in itself a very positive outcome. We had not

expected the exercise to be perfect and we feel it is important that staff realise this will never be a perfect procedure. This is because people are involved and it is an unusual and scary event and things change constantly. However it is important to be as prepared as we can be.

We recognise our learning will never stop and there are likely to be new and unexpected hazards to address in the future. In the future we intend to look more closely at some of the other problems we might one day have to face, such as:

- how would we cope if we were the disaster?
- as Adelaide sits on main geological fault lines, what would be our response to an earthquake?
- could we manage a chemical incident?

All these issues will no doubt be very challenging, but the preparation of our response has had other very positive effects. It has helped us to pull together as a team—surgeons and physicians, radiographers and social workers etc.—and has shown that in these and other similar circumstances we all have valuable knowledge to share. It is a time when roles may overlap and intertwine, to allow us to achieve the most effective management we can for the victims we treat. It has taught us that it is likely we will not get it completely right on the day and that does not matter because every incident is unique. What is important is that we are confident we have done our utmost to provide an effective, clear simple and functional plan which is easy for everyone to follow... a plan that has been regularly reviewed and practiced and that will allow all staff to provide care of the highest possible standard possible for the victims of any incident that they may be called upon to treat.

Glossary

NUH	Nursing Unit Head
PED	Paediatric Emergency Department
APLS	Paediatric Advanced Life support
PSA	Patient Support Attendant
HASED	Health Automated System for Emergency Departments
MVA	Motor Vehicle Accident
HERNIA	Hospital Emergency Radio Network In Adelaide
CEO	Chief Executive Officer
PICU	Paediatric Intensive Care Unit
ABC	Airway, Breathing and Circulation
PALS	Paediatric Advanced Life Support
RN	Registered Nurse
DRC	Divisional Resource Consultant
EMST	Emergency Management of Severe Trauma

References

Australian Emergency Manual—Disaster Medicine.