Managing across diverse networks of care: lessons from other sectors

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Abstract
Introduction: The creation of professional and organisational networks is likely to have a major impact on the future quality of health and social care. However, the concept of the 'network' is difficult to define and better understanding of the management of networks is needed. This paper summarises the findings of the first systematic literature review to examine the management of networks. It identifies a taxonomy of network forms and derives implications for management, governance and policy in health and social care
Methods: A systematic literature review employing electronic database searches; hand searching of key journals; and use of an expert advisory group to access unpublished material. Four sectors were targeted for in-depth review: health and social care; crime and disorder; biotechnology; and defence materiel contracting.
Results: A typology of network forms was developed ranging from highly managed (hierarchical); to exclusive groups (enclaves); to those based on procurement and markets (individualistic). Different types of network predicated different management and governance strategies.
Conclusions: There is no 'ideal' network solution. Successful networks require effective craftsmanship and management skills to articulate the ties between organisations that are robust enough to endure, legitimate enough to be accepted, and flexible enough to tackle the weaknesses that all inter-agency arrangements are subject.

Introduction

Public sector policy makers and managers internationally have developed a growing interest in the concept of 'networks'. In the UK NHS, for example, attention has focused on the development of 'clinical networks' that concentrate on the creation of new linkages between primary and, more particularly, between secondary and tertiary care. The developing concept of the 'network' has been extended beyond the idea of the 'hub and spoke' model to encourage more integrated bodies which act collectively as the organisational leader of care provision, dominating the interests of individual hospital institutions (Edwards, 2002). The idea of such 'network organisations' is increasingly being drawn into mainstream policy and decision-making discussions, particularly in Scotland where 'managed clinical networks' are being piloted across both specialties (such as neurology) but also diseases (such as diabetes and cancer) (Woods, 2001).

One of the key attributes about a clinical network is that it allows for a continuous working relationship between organisations and individuals to improve the treatment of patients who require care across a range of different institutions. Hence, clinical networks are argued to be potentially advantageous in a number of ways, for example:

- making more efficient use of staff;
- reducing professional and organisational boundaries;
- sharing good practice
- putting the patient at the centre of care, and
- improving access to care (NHS Confederation, 2002).

However, the concept of the 'network' is difficult to define. Networks, it is often argued, are characterised by 'flat' organisational structures and underpinned by 'soft' values such as trustworthiness and egalitarianism. Hence, many authors suggest that management approaches need a greater emphasis on negotiation rather than old-style command and control (Ferlie and Pettigrew, 1996). The creation of such new professional and organisational networks will have a major impact on the future quality of health and social care and upon the experiences of users and carers. Better understanding of the leadership and management of networks is vital for the development of sound policy, intelligent management practice and management training.

This paper summarises the findings of a systematic literature review, commissioned by the NHS SDO Research and Delivery Programme, that examined the management of networks by drawing on lessons from various public and private sector literatures and from different countries (Goodwin et al, 2004a,b). A series of lessons and implications for the management, governance, leadership and policy in developing health and social care networks are provided.

Methodology

Three key research methods were employed to identify the relevant literature on networks:

- examination of electronic databases using a range of keywords and descriptors based on 'network' synonyms - specifically targeted at the four case areas of defence, biotechnology, health and social care, and crime, drugs and disorder;
- hand searches of twenty key journals, and the subsequent 'snowballing' of references; and
- the use of an advisory group of 'experts' to advise on appropriate journals, references and 'grey' sources of literature.

Each piece of literature retrieved was rated and prioritised by the research team in terms of their 'relevance' and 'rigour' using a system developed from previous policy-based literature reviews (Popay et al, 1998). Thus, systematic reviews and surveys were prioritised for analysis ahead of theoretical articles or opinion leaders. The purpose of the prioritisation was to ensure that the most relevant pieces of literature be examined first (for a full discussion of methodology, see Goodwin et al, 2004a).

Since the breadth of literature material on networks is considerable, the research concentrated on four case areas: the defence industry, biotechnology, health and social care, and crime, disorder and drugs. This paper illustrates the key findings of the research using examples from the health and social care literature.

Understanding the concept of networks

A major difficulty in understanding the term 'network' has been the lack of a sound paradigm through which to examine them. There are a number of rival accounts of what characterises a 'network' and the different variety of network forms that exist. These interpretations differ in how open they are to influence and, hence, have different implications for management and leadership styles. Some accounts of networks are very broad, suggesting that a network is any system of linkage between nodes (White, 2001; Knoke, 1990). Others define a network in ways that specifically exclude hierarchical forms in favour of 'flat' and internally egalitarian systems (Powell, 1990; Bradach and Eccles, 1989). Hence, definitions differ by whether they allow links in the network to be loose or tight, weak or strong, formal or informal.

One of the aims of the research was to provide a theoretical and conceptual understanding of the term network. Given the wide range of interpretations of the term, a broad definition was used that viewed a network as an inter-organisational or multi-organisational system that exhibits:

> *any moderately stable pattern of ties or links between organisations or between organisations and individuals, where those ties represent some form of recognisable accountability (however weak and however often overridden), whether formal or informal in character, whether weak or strong, loose or tight, bounded or unbounded*

A simple way of visualising the characteristics of networks is shown in Figure 1 in which four generic structural 'types' of network are described. The four network 'types' are essentially types of social organisation and are derived through a cross-tabulation of two basic dimensions of social organisation that were first presented by Durkheim (1951): the degree of social regulation and the degree of social integration (Douglas, 1970). Social regulation relates to the degree to which social life is governed by rules or given facts (such as laws), whilst social integration relates to the degree to which social life for an individual is bonded to others, particularly to peers within bounded groups. The four 'types' can thus be described as follows:

1. Hierarchical networks: strongly regulated and strongly integrated, such networks have an organisational core with authority to regulate the peripheral network members. Such networks exhibit many characteristics of individual organisations.

2. Enclave networks: weakly regulated but strongly integrated, these networks have no 'core' but instead are characterised as a densely knitted group or enclave with a high level of social cohesion based on common interests. They exhibit high equality between members, but also are highly bounded to the exclusion of others.

3. Individualistic networks: weakly regulated and weakly integrated, the individuals (or organisations) in such networks seek to occupy a central position between different hierarchical organisations or enclaves in order to control the connections between such groups. This is sometimes called a 'bow-tie' or 'butterfly' network.

4. Isolates: strongly regulated but weakly integrated, isolates have few bonds of accountability to others and are generally not involved in networks.

Figure 1: A typology of network forms in health and social care
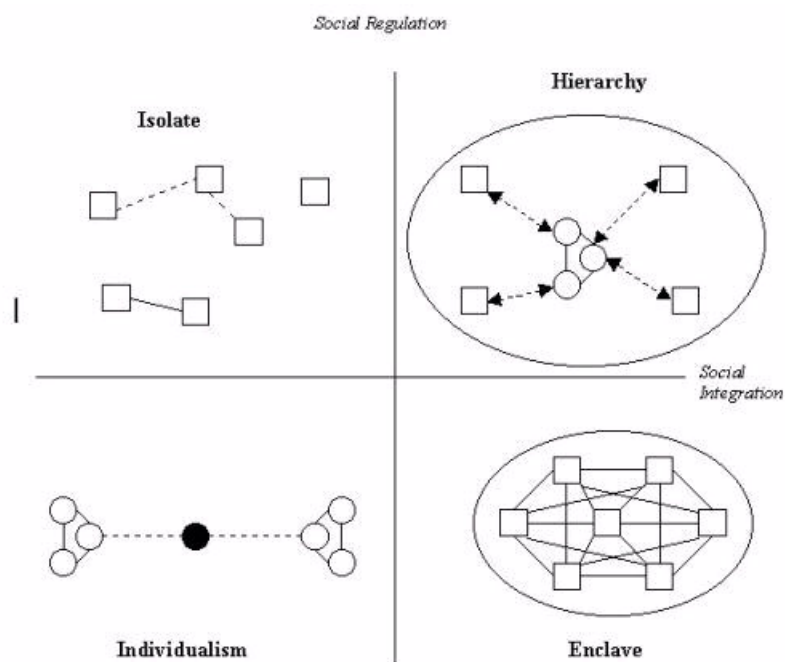
In practice, real networks are often hybrids of the four stylised forms. However, analysis that identifies the basic form of a network also helps serve to identify the scope for management and governance within that network and the scope for change over time in that form of network. It is important to note that this taxonomy of networks rejects any sharp distinction between networks on the one hand and either markets or hierarchies on the other. Indeed, the research revealed a range of networks that are highly managed (hierarchical), or based on procurement and markets (individualistic), or exclusive to professional groups (enclave) (Goodwin et al, 2004a,b)

Interpreting Networks in Health and Social Care

Health care networks vary across a range of key dimensions, such as the strength of regulation and integration, and the level of cohesion and common values. This variation is important in the interpretation of care networks since different network forms may be more, or less, suited to achieving different tasks and may predicate different approaches to their management and sustainability. The key characteristics in this regard of the three 'active' forms of network types are as follows:

Enclave networks: This type of network is sustained through common bonds and by a 'flat' structure in which there is a high level of equality, commitment, trust and egalitarianism between members. The network shows little aptitude to accept central or mandated authority. Principled commitment and integrity are powerful cohesive forces but these networks tend to 'fail' in the presence of demotivation and can be unstable due to insufficient institutionalisation (such as shared resources). Such networks have great value, for example, in creating and developing 'bottom-up' legitimacy and trust between individuals, professionals and organisations to the sharing of information, ideas, strategies and new ways of working. Examples in health and social care would include local professional groups and wider associations, local implementation teams, and larger informational networks (see below).

Hierarchical networks: These networks have an organisational 'core' which has the authority to regulate the work of its members. Such networks are often controlled by steering groups and via authorities that, for example, undertake inspection and accreditation. Such networks are most successful in co-ordinating and controlling a pre-defined task such as the minimisation of transaction costs or improvements in quality. These networks may 'fail' through over-regulation and over-bureaucratic procedures that limit the ability to innovate and/or demotivate its membership. To succeed, these networks require the mandate to manage from its membership. Examples of such networks in health and social care include 'hub and spoke' hospital networks, integrated care pathways, managed clinical networks in Scotland (at least in theory - see Woods, 2004), and Social HMOs in the USA (see Kodner and Kyriacou, 2000).

Individualistic networks: Individualistic networks are those in which a single individual or organisation develops an association of affiliates in order to achieve a certain task. Such networks can be based on the procurement of a 'network' of service providers through the negotiation of contracts. Managerial control of information and/or resources provides the central organisation with the power to exercise leverage and hence shape the network. Such networks tend to be innovative, flexible with the capacity to respond to change as membership is fluid. However, such networks can fail, or remain sub-optimal, due to a high level of transaction costs and the competition and conflict between agencies that can restrict the capacity and motivation for joint working. Examples of the individualistic network include care pathway commissioning and integrated healthcare networks (see below).

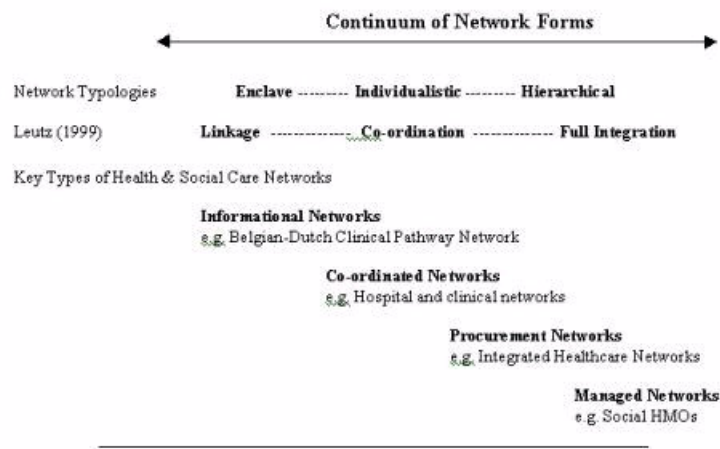## Networks in Health and Social Care

Networks in health and social care occur across a wide spectrum of agencies and individuals reflecting the often fragmented nature of health and social care delivery, particularly for vulnerable client groups (such as the frail elderly) and for complex chronic illnesses (such as cancer) . The creation and mandation of new professional and organisational networks is gaining policy credibility. In the UK, the search for a 'third way' in the delivery of public services has encouraged network structures leading to a growing debate on how to lead, manage, and govern such networks effectively (NHS Modernisation Agency, 2003). The same is true in many other countries such as the Netherlands where central government often mandates collaboration but leaves the detailed choice of partners and arrangements to frontline staff and local agencies (Kickert et al, 1997).

There is a lack of evidence to support the positive benefits of networks. The literature is generally characterised and limited to a wealth of opinion leaders and theoretical discussions of the process of network development and case descriptions on networks in the early stages of development (e.g. Moir et al, 2001; Tait and Baxter, 2002). However, the majority of the literature tends not to be based on research and evaluation studies.

Different models of health and social care networks

The literature on health and social care networks show that they can take a wide variety of forms from the informal to the highly structured. As Figure 2 shows, health and social care networks operate at different positions along a continuum that measures the level of 'organised' or 'managed' integration manifest in the level of management centrality, governance, resource control and organisational complexity. The position of such networks on the continuum is not static, but dynamic. Hence, certain networks (such as cancer care networks in the UK) are currently 'co-ordinated networks' but developing greater network 'centrality' and hence moving further to the right of the continuum - that is, in the direction from *linkage* and *co-ordination* to *full integration* (Leutz, 1999).

Figure 2: A conceptual continuum of network forms in health and social care

The literature supports four main 'types' of health and social care network: '*informational', 'co-ordinated', 'procurement'* and *'managed'* each of which has its own characteristics in terms of network goals, management structures and ideals. The following sub-sections provide a synthesis of their characteristics and provide key lessons in terms of their limits and management implications.

Learning and Informational Networks

This is a very common form of network that brings together stakeholders into a facilitated network for the sharing of information and ideas. Such networks are generally supported financially by the individuals and organisations that represent its membership. Most are co-ordinated by either an elected body to represent the group (such as professional networks); by a Government agency subsidising events; or by a 'neutral' institution providing support and facilitation such as a university or even a library. Typical examples might include national associations or societies such as the National Pathways Association in the UK or the Centre for Case Management in Boston, USA. The purpose of learning networks is to share best practice and align policies and strategies between institutions, but *not* necessarily to develop or engender new integrated delivery structures between providers. For some, informational networks may be a first step on the road to a more hierarchical network form.

Specific evaluated examples of facilitated informational networks include the Belgian-Dutch Clinical Pathway Network that targeted the use of integrated care pathways in large acute hospitals (Vanheacht and Sermeus, 2001) and Project CHAIN in South Wales, a community network of health and social care agencies (Warner et al, 2003). In both cases, the networks were facilitated and co-ordinated by a university.

In the former example, the incentive for acute hospitals to join the network was primarily influenced by the financial need to reduce length of stay. Membership was based on a contract that ensured 'lock-in' and incorporated a fixed annual contribution and agreement to a three-year commitment signed by the hospital CEO. Each hospital assigned a clinical pathways co-ordinator and had to develop, use and evaluate at least one new integrated care pathway (ICP) without duplication with other members. The network allowed for the sharing of good and bad progress and a forum for challenging and improving ICP design. Task forces were created to examine outcomes (clinical, service, cost, process), financial impact and IT issues. The network also encouraged benchmarking and the use of comparative indicators to evaluate and compare, for example, different ICPs for stroke care. The network expanded from an initial pilot of three acute hospitals in 1999 to a seventeen by 2001 covering 10,700 beds and operationalising over 100 ICPs. (Vanheacht and Sermeus, 2001).

Important lessons from the evaluation of these informational networks have been the need for them to be 'benefit rich' in terms of the usefulness and reliability of the information shared. A second key observation, drawing on the work of Burt (1992) was the assertion that *well structured networks obtain much higher results than non-structured networks*. In other words, that the learning network greatly required the cohesion, facilitation and drive provided from the academic institution. Moreover, the *independence* of the co-ordinating body was considered important as the members would be more willing to tread in neutral ground. It is clear that the universities acted in an individualistic way, proactively developing ties and promoting membership, in a very similar way to that of universities in commercialising findings in biotechnology.

Another example of the learning network is that developed to share expertise between professional groups, often through the use of enhanced information systems. As Castells (2000) has argued, in industry the rise of information technology has been a key facilitator to a 'network society' that has enabled organisations to increase efficiency of operations within and across organisational boundaries. Indeed, advanced industrial economies appear to be moving rapidly towards a 'knowledge economy' to help develop innovative products and exploit markets (Drucker, 1991, Neef, 1998). In health and social care, information technology has enabled the creation of networks between geographically-dispersed professional specialists, and even managers, to enhance learning and innovation (Fulk and DeSanctis, 1998) and to perhaps co-ordinate reciprocal interdependencies (Kuldeep and van Dissel, 1996).

In their review of the Boston healthcare industry, Tanriverdi and Venkatraman (1999) studied the development of professional networks through the use of telemedicine and video conferencing. They examined the role of information technology as a tool to enable professional networks to co-exist with integrated healthcare delivery networks in which physicians were required to collaborate to enhance accessibility, improve quality, but also control rising costs of medical care. Their study found that the use of telemedicine had enabled a reduction in the duplication of services, aided the development of common treatment protocols, and better co-ordinated and streamlined care across different hospital facilities. Moreover, consulting physicians gained access to work on difficult cases whilst referring physicians were able to gain access to world-class medical expertise. Exposure to intellectual challenges, learning material and contact with physicians with high professional reputation were positively related to the use of the professional networks. However, this was also a key inhibitor since many leading physicians were often unwilling to share their knowledge and expertise. Professional networks are more enclaved and are hence built on reputation and experience that engender other professionals to be 'in' the network (Ibarra, 1992). Such networks may be limited, however, where competition exists between professionals (Quinn et al, 1996). The Boston example is particularly interesting as it managed simultaneously to develop prescriptive care utilisation with professionals incentives to collaborate.

Box 1: Key lessons for network management from informational networks

- Learning networks behave like enclaves in that their union survives through the commitment of its members to share information. Unlike enclaves, such networks require facilitation by a 'neutral' individual or organisation to provide 'cohesion'. The aim of network management is mostly supportive and administrative since it is important that the membership of the network drives the agenda and provides the skills, expertise and knowledge to make it work.
- The network co-ordinating individual, or organisation, may have the most to gain from the network. The co-ordinating agent must 'sell' the network to non-members through pro-active lobbying whilst ensuring and monitoring over time that the goals of the network members are being met.
- The network needs to be 'benefit-rich' and characterised by 'usefulness' and 'reliability'. Without perceived added value the network will die of natural causes;
- Informational networks based on the understanding of things like current policy priorities or the use of new technologies that later become obsolete will be time-limited. The goals which formulated their creation determine its end.
- In networks with organisational membership, professional 'ownership' within member organisations is required before commitment should be provided.
- Key professional leaders with charisma and commitment are needed to engender peer-support and to 'sell' participation to prospective members.
- Informational networks should not be imposed or mandated. Such networks thrive through avoiding 'control' mechanisms, so hierarchical forms are inappropriate.
- Some degree of 'lock in' through financial or other commitments by individuals or organisations helps provides greater stability to the network.

Co-ordinated Health and Social Care Networks
Co-ordinated care networks move one pace up the continuum of network forms towards more formal integration. An important attribute of the *co-ordinated* network is that financial and clinical responsibilities of the parties involved remain separated and that the network is not

bounded to any binding contract. Their purpose is to promote service redesign through cross-institutional professional partnerships. Like informational networks, the co-ordinated network may be a precursor to something more structured. For example, managed care networks in Scotland are seemingly shifting clinical accountabilities, governance arrangements and financial resources from individual agencies to the network - hence becoming more managed and hierarchical in design.

The appeal of the co-ordinated network is centred on the belief that the creation of links between agencies is a more effective way of organising health and social care. Some economic analyses point to the importance of co-operative relationships between organisations within a network in reducing costs (Robinson and Casaliano, 1996). However, their effectiveness in terms of quality outcomes against existing separate services has not been proven and the literature provides relatively little in terms of any formal evaluation of network effectiveness.

Co-ordinated networks of care have a continuum of their own. At one end of the spectrum are hub and spoke models of care that share tasks between hospitals to co-ordinate better access to care and/or make better effective utilisation of care *between* them. At the other end, co-ordinated networks attempt to develop care integration *within and between* care providers, usually through the imposition of specific guidelines or protocols on professionals. Whilst neither approach fundamentally threatens the status of different organisations, the latter is generally more controlled by network managers and attempts to develop a network of care that overrides organisational boundaries.

The development of co-ordinated hospital and clinical networks has been a feature of many countries and has taken many forms. Examples of the process internationally would include managed clinical networks in Scotland and Northern Ireland; collaboratives and cancer networks in England; medical programmes and 'Chains of Care' in Sweden; hospital 'clusters' in Hong Kong and Singapore; and clinical streams and 'condition' models in Australia.

Hospital Networks: Hospital networks of hub and spoke character co-ordinate and delineate activities between providers of care (Ham et al, 1998). Such hospital networks are created to deal with the demands of increasing specialisation; to ensure equality of access and consistency of treatments and outcomes; to shift care to primary and community-based settings; and to share risks and costs between providers under financial pressures. The creation of hospital networks to retain viable services in rural locations has become accepted practice in the case of the West Highlands of Scotland (HSMC, 2003) and in Northern Ireland, acute hospital networks are seen as a potential solution to the political need to retain local services, and employment, within distinct communities.

Hospital networks are characterised by detailed referral processes and protocols to promote continuity of care and determine and differentiate provider roles and functions. For example, the Metropolitan Hospitals Planning Board in Victoria introduced health care networks for the aged, particularly in the areas of psychiatric, palliative, rehabilitation and home-based services (Victoria Government, 2000). The key aim of the network was to promote better access and standards of care to elderly patients in the suburbs of Melbourne by transferring activities from larger hospitals in the city centre to the smaller 'spokes'. Each separate Hospital Board was 'incorporated' into the health care 'network' which developed its own board of directors, though overall accountability for finances and clinical care to patients remained with the individual hospitals. A review of the network suggested that effective co-operation between clinical disciplines resulted in a range of integrated care packages for older people developed across a range of disease areas helping to increase continuity of care between hospitals. Over five years, the caseload of elderly patients treated in outer Melbourne increased from 37 per cent compared to a 5 per cent increase in the city (Victoria Government, 2000).

Ugolini and Nobilo (2003) examined the development of a similar clinical network for cardiovascular disease in the Italian region of Emilia Romagna. Based on a 'hub and spoke' model of care, the purpose was to develop more appropriate transfer of cardiac patients from peripheral to central units based on a threshold protocol of case complexity. The authors reported quicker transfers and more appropriate sharing of the various phases of cardiac care between members of the network. The network was managed by a full-time 'planner' with a mandate from the hospitals to co-ordinate decision-making in accordance with pre-established objectives. A very similar approach to cardiac care services was undertaken within one of the largest managed care organisations in the USA, leading to similar outcomes in terms of utilisation effectiveness (Plogman et al, 1998).

Clinical Networks: Clinical networks, based on professionals rather than institutions, are often seen by governments as a way of producing more patient-focussed care across primary and secondary care, with professional staff working to agreed protocols for a specific group of patients (Frater and Gill, 2002). Clinical networks, in this definition, are 'managed' care networks, a concept reviewed in a number of case studies by James and Miles (2002). Such networks have often taken a 'passive' form through the protection of existing hospitals and/or certain medical specialties rather than the 'active' form in the development of new or more effective services.

Given that much of health and social care policy appears to favour the mandation of clinical networks, an important study to reflect upon is that reflecting the development of government initiated geriatric networks in the Netherlands in the late 1990s. Four pilots with networks in specialised care for older people were initiated by the national government. The pilots had to provide insight into the added value of networks and had to address:

- the development of preventative services;
- the diffusion of specialised expertise (for instance by additional training and consultation);
- the development of services for geriatric patients in hospitals with no geriatric ward;
- adjustment and optimisation of clients' care pathways through the various services in the network; and

- improve collaboration and co-ordination at the level of health care regions.

Each network attempted to be inclusive of all organisations or professions who might have some relationship with the target group. A project-team for day-to-day management was established in each pilot and each had a project manager either externally appointed or seconded from one of the participating organisations. The project team systematically monitored the progress of activities across the network and established a further sub-network of working groups. The pilots ran from 1996 to 1999 and were externally evaluated on process and outcomes leading to management workbook on 'do's and don'ts'(Gerritsen et al., 2001).

According to Nies et al (2003), decision-making appeared to be a crucial issue in the effectiveness of the networks. Whilst it was 'quite easy' for network members to reach consensus on mission, objectives and key local priorities, when it came to decisions to implement new structures, projects or innovative services, decisions would be postponed or implemented with significant delay. Whilst horizontal ties between professional had intensified as a result of the informational arm of the network, application of protocols, joint assessments, and new treatment and care delivery were prominent only among a few active participants. Two main barriers were described: first, networks that started with a very broad definition of their target group found it difficult to come to effective decision-making; and second, that professional members had often conflicting interests and priorities.

In Scotland, managed care networks have been proposed for various for various individual specialities and diseases with initial demonstration projects in neurology and peripheral vascular disease. More recently, the approach has been extended to areas such as cancer, coronary heart disease, diabetes, renal transplantation, and palliative care (Woods, 2001). In terms of their emerging design, accountability of professionals appears to have remained to their employing Trusts which, together with the Local Health Board, approve the creation of the network and co-design rules of engagement. Nevertheless, the tone of the legislation (NHS Management Executive, 1999) makes it clear that managed care networks are centrally mandated and impose a number of 'must do' tasks on managers and professionals.

Evaluations into different managed care networks in Scotland are ongoing and the research literature is sparse. In Dumfries and Galloway, a managed clinical network for cardiac services has been subject to an eighteen month evaluation (Hamilton et al, 2001). The initial research has so far found that the network has been successful in involving patients, sharing information, mapping patient pathways, and constructing protocols, standards and guidelines. However, and reflecting the Dutch experience (Nies et al, 2003), the pilot has been far less successful in identifying and implementing changes for clinical and service improvements. Evidence in network progress from an evaluation of the South East of Scotland Cancer Network (SCAN)

(Livingston and Woods, 2003) similarly enabled agreement across its professionals on service priorities (equity of access and quality, improved survival, and better patient experiences) and the development of protocols and patient pathways, audit tools and quality standards, and work plans for service redesign. However, to achieve this, the research found that network members wanted a more clearly defined understanding of outcomes (impact on organisations and professionals as well as services) and that trust and relationship building needed more attention. For many respondents, 'seed money' was important to facilitating incentives and support to the network, suggesting that control or allocation of resources to the network would be an important design feature of the future.

The key messages from these co-ordinated and managed care network experiences suggests that the ending of experimental or central funding may signal the end of network activities. In particular, it seems that commitment to the networks needs to be related to their 'core' business. Whilst partners appear generally happy to co-create mission statements and/or analyse service shortcomings, few wish to cede vital interests and autonomy through new joint delivery methods. Overall, social ties seem weak due to the tension between autonomy and dependency except in sub-networks that provided a structure to develop 'adhocracies' (Mintzberg, 1983) where ties were stronger and collaboration became much more operational (Woods, 2001). Moreover, centrally defined objectives were hard to operationalise and implement as no single organisation 'owned' the network. Indeed, 'top-down' imposition of networks risked disharmony suggesting that mandated hierarchical networks may fail unless a balance can be struck between network governance and professional autonomy.

Procurement Networks

A major trend in the US is the development of integrated healthcare networks that provide all elements of the care continuum from health insurance, outpatient and inpatient services to long-term care maintenance. Among the presumed benefits are better quality of care, better services, more accessibility, enhanced products, strengthened customer relationships, more effective operations, and reduced unit costs (see Coddington et al, 1994; Conrad and Shortell, 1996). Moreover, similar to most network management methods, managed care tools such as case management or disease management programmes have often been used to achieve integration across the network.

The development of integrated healthcare networks in the USA arises from fundamentally different motives due to its business model. Managers of such networks design services and choose physician and provider partners to maximise effectiveness, efficiency and quality (Scott 1993, Luke and Begun, 1988). The strategic impetus for networks comes from a range of organisational strategies:

- enlarging the network size (corporate strategy);
- venturing into non-hospital provision (business strategy);
- integrating information systems and financial arrangements for co-operative purchases (functional strategy); and
- clinical integration through case management (functional strategy).

However, the literature and research on contractual networks suggests that only a 'moderate' level of integration has been achieved - particularly in the areas of financial planning and organisational culture manifest in low clinical integration and physician-system integration. Moreover, benefits to patients by providing a 'continuum of care' has been effort potentially 'not compensated' by the additional costs and process efficiency of integrating services. Research by Bazzoli et al (1999, 2000) across 1000 health network hospitals showed that the broader the scope of activity within the network, the harder it was to centralise management arrangements and make a profit. They found that hospitals in single ownership models, such as the managed care system of Kaiser Permanente, had both a better financial performance and better health outcomes than those based on contractual networks. Moreover, in provider networks, the more centralised hospital networks appeared to perform better than looser affiliations. However, there is some evidence to suggest that overly-centralised networks were 'over bureaucratic' and inhibited innovation leading to the conclusion that moderately centralised systems performed best.

This research is backed up by an analysis of America's 100 most integrated systems by Wan et al (2001) which showed that those employing 'forward integration', or networks venturing into non-hospital services such as sub-acute care and long-term care, tended to have far lower profit margins. They concluded that, whilst status-enhancing, such strategies in providing a continuum of care did not improve either cost efficiencies, better clinical integration, nor higher profits.

As an observation on these findings, it is typical in the USA for integrated healthcare networks to use a combination of both ownership-based (managed) and contractually-based (procurement) methods. Robinson et al's study of 'tiered' hospital networks described how insurers used differential 'tiers' of providers backing up Bazzoli's conclusion that a mix of directly managed hospitals needed to co-exist with a procurement network for 'non-core' services. The evidence in the USA may suggest that a UK PCT acting as a procurement agent within a provider market might best attempt to employ a mixed network model of direct ownership for 'core' services with a network of independent and competing hospital affiliates.

Care Pathway Commissioning: Policy direction in the NHS, encompassing Foundation Hospitals and provider pluralism, appears to be following a path towards a consumer-driven system in which PCTs will contract for health care with a range of private and independent providers. The lesson from the evidence on procurement networks in the USA might suggest that the use of contracts in promoting integration is less effective, and more expensive. However, drawing on the sub-optimal experience of clinical networks to date, it has been argued that networks should become formalised by contracts to ensure integration (Andersson and Karlberg, 2000). Some have suggested that contracts should be a core element to develop integrated care in networks (Grone and Garcia-Barbero, 2002; Nies at al, 2003). Indeed, the potential of developing costed care pathways is under active consideration in some UK PCTs (Balfour, 2003) and is reported to have been piloted by county councils in Sweden through their 'Chains of Care' approach (Ahgren, 2001, 2003). The purpose of care pathway commissioning is to help overcome the competitive and isolate tendencies associated with creating competition between providers to improve choice yet retain integration.

Lessons from the development of Chains of Care in Sweden suggest similar findings to those that have gone before - support for overall plans, but no significant changes to clinical services; resistance from medical professions; need for peer-respected champions, weak overall incentives for compliance; and no dedicated or responsible managers to lead the process of development (Ahgren, 2001, 2003). There is no evidence to suggest the effectiveness of such a model yet, like clinical networks in England, 'Chains of Care' are seen as the next key step in Swedish health care policy.

Managed Networks
Within the literature on integrated health and social care, the emphasis is often placed on the ability to make the transition from some sort of 'loose' or 'co-ordinated' network to a more organised, controllable and closed network form. On the provider side, there appears to be an explicit assumption from many writers that the creation of a *fully integrated network* is an end point to be reached in order to establish more durable and long-term relationships between organisations and attainment of the goals for integrated care. The fully integrated model is more akin to 'network' organisations such as Kaiser Permanente (Robinson and Steiner, 1998; Kodner, 1999) and hence have a series of key characteristics:

- a population defined by enrolment;
- contractual responsibility for a defined package of comprehensive health and social care services;
- financing on the basis of pooled multiple funding streams;
- a 'closed' network to a selected group of contracted and/or salaried providers;
- emphasis on primary care and non-institutional (extramural) services;
- use of micro-management techniques to ensure appropriate quality of care and to control costs (utilisation review, disease management) ; and
- multi-disciplinary professional teams working across the network with joint clinical responsibility for outcomes.

The literature on fully-integrated networks of care generally comes from the USA. It is suggested that such models appear to work best with small subsets of patients that have unstable and functional conditions and who frequently interact with health and social care systems. In other words, the fully integrated and hierarchical networks may be appropriate only where all the agencies within the network are required to provide ongoing collaboration between professionals to provide the care. In this sense, the hierarchical network may appear to be an overly structural solution if the gains from it are sub-optimal.

A good example of the managed network is the Social HMO which is a federally-funded demonstration project that combine health and social care, both acute and long-term, into a single, care managed delivery system - or hierarchical network (Robinson and Steiner, 1998; Leutz et al, 1985). Such programmes have generally target elderly Medicare patients on the predication that integration will deliver more appropriate care and lower costs. There are currently just three Social HMO sites in operation in the USA (Kodner and Kyriacou, 2000): *Medicare Plus II,* sponsored by Kaiser Permanente in Portland, Oregon; *Elderplan,* sponsored by Metropolitan Jewish Health System, New York; and *SCAN Health Plan,* Long Beach, California

The Social HMO is open to all Medicare beneficiaries aged 65 and over within the communities served by the sites and enrolment is voluntary. The fundamental challenge within the Social HMOs has been to graft on a long-term care support system to the conventional medical care delivery system. This has required 'managing complex provider relationships and care arrangements across a relatively diffuse organisational network' (Kodner and Kyriacou, 2000). Over 100 journal articles and book chapters have addressed different aspects of the Social HMO demonstration models and the results are complex, contradictory and controversial. The overall findings, however, suggests that the model fell short of expectations since:

- The single organisational structure did not translate into integration at the clinical level (Newcomer et al, 1999);
- Frail elderly enrolees received well-co-ordinated home and community care services through their care managers (Calkins et al, 1999) but higher hospitalisation rates and nursing home admissions for post-acute care were observed (Boose, 1993; Dowd et al, 1999); and
- Social HMOs did not find any cost-savings to the system compared to a range of comparators (Manton et al, 1993; Newcomer et al, 1995).

In their synopsis of fully-integrated models of health care, Kodner and Kyriacou (2000) suggest that the existence of a single, accountable, organisational centre allows for the optimum impact on network integration. However, it was also clear that such centralisation of accountability within a hierarchical network was not of itself sufficient to ensure network efficiency. In particular, it would appear that the managerial task of integrating health and social care *within* networks remains crucial. This finding support the thesis developed in this research that the tools of managing networks are not ostensibly different to those required to manage organisations.

Integrated care pathways: A key finding from the different network forms across the continuum was that regardless of the level of network management 'centrality' (hierarchy) the key issue of professional and clinical integration remained a common problem. Possibly due to the fact that most of the literature focuses on medical networks, common approaches to the management within networks were based on the use of utilisation procedures induced through shared clinical or care pathways. The extensive literature on ICPs suggest these can lead to greater internal cohesion between clinicians and provide efficiency gains.

> *"If you cannot get collectivism [between professionals] from care protocols and pathways to provide the same things, then there is no point to a network"*
> (Smart and Daws, 2003)

The process of care pathway development has been problematic and effectiveness often unproven. Moreover, the deployment of ICPs appears to be time-consuming to establish ownership and consistency in usage. A review of 100 different ICPs concluded that benefits could be articulated but that the pathways were highly context-specific and not necessarily transferable between organisations (Bryson and Browning, 1999; Campbell et al, 1998; Peters et al, 2002). Indeed, the highly prescriptive nature of the approach has encountered natural resistance from medical staff causing difficulties for managing within a network as professionals were often observed reverting to traditional ways of working (Young et al, 2002). For example, Miller and Nugent (2003) described clinician objection to the imposition of a surgical integrated care pathway for colorectal cancer on the grounds that it reduces independence and increased bureaucracy. Such compliance difficulties are very common suggesting that managed clinical networks do not necessarily mix well with existing professional enclaves or isolates working to historically established practice that seemingly have in-built resistance to change. Hence, management within networks requires dedicated co-ordinators to provide continuity and momentum. Such 'boundary spanners' are needed to nurture the process and, hence, deal with the different professional partners through their energy, time and good communication skills. Moreover, it is clear that implementation needs executive-level decision making, as well as a comprehensive educational programme on ICP aims and usage, to facilitate both ownership and acceptance (Ellershaw and Murphy, 2003).

Discussion: The Nature of Health and Social Care Networks

This examination of networks from the health and social care literature has revealed a mixture of individualistic, enclave and hierarchical types - most usually being a hybrid model across the general dimensions, and also subject to dynamic changes (Figure 3). *Informational* networks appear to have primarily 'individualistic' and 'enclave' forms yet also seem to require some form of 'neutral' co-ordination and small bureaucratic core to facilitate joint learning. *Co-ordinated* networks, however, tend to be primarily 'individualistic' and/or 'hierarchical' with a continuum within that group that might place, for example, a simple hub and spoke model with little regulatory and no social ties in the 'individualistic' category, to managed clinical networks that appear to be far more 'hierarchical' in design. However, there are some, such as those developed via Health Action Zones, that also exhibit enclave characteristics. *Procurement* networks follow the same dimensions as co-ordinated care networks, perhaps edging closer to individualism along the continuum. *Fully-integrated* or *managed* networks, such as Social HMOs, are strongly hierarchical.

Figure 3: A typology of network forms in health and social care
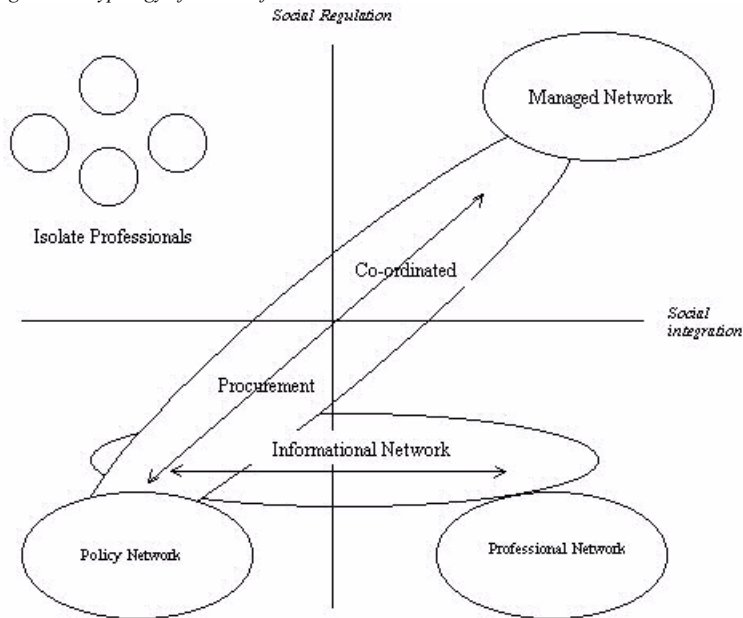
None of these network 'types' appear to provide the 'best' solution, though there is evidence to support the development of a 'hybrid' model. For example, the literature on procurement networks revealed that financial performance and health outcomes were not as good as single ownership or hierarchical models. However, hierarchical models, despite being 'assumed' by many writers to be superior for integration, were shown to be potentially over-bureaucratic and controlling to the detriment of professional involvement. A potential mixed model of interest to health system procurement agencies (such as English PCTs, Dutch sickness funds, or US insurance agents) may be to directly manage 'core' services in tandem with a network of affiliates for additional care.

Whatever the model, it is clear that managers will face the same kinds of problems when managing within them. Moreover, treading the line between autonomy and dependency is clearly a key task since health and social care professionals and organisations often exhibit independent characteristics (Nies and Arends, 1992). More pertinently, the literature is clear that imposed and mandated networks lead to sub-optimal outcomes *unless* network priorities link directly to the priorities of professional members or organisations, in which case interdependencies strengthen.

The literature also suggests that competing interests can co-exist in a network as long as core interests of all parties are catered for. Hence, the Boston telemedicine case enabled both managerial control over utilisation and treatment protocols, whilst professionals gained access to exclusive clinical expertise and a network of respected peers (Tanriverdi and Venkatraman, 1999). Indeed, the presence of professional, as opposed to managerial, leadership of networks was a key success factor, as was the ability to convince network members that the usefulness of the network rewarded their time and investment within it.

All health and social care networks appear to show the ability to create common goals, undertake joint reviews, and develop protocols and plans. However, at the implementation phase, the implicit changes to established practices are commonly resisted in all but the most committed cases. This reflects a structural, cultural and professional inertia that network managers will need to overcome. Hence, network management requires the attainment of a *tertius* position from which to wield power to effect change. Typically, this would need managers to control contracts and resources in addition to useful and reliable information. The role of the network manager leading *within* networks as a 'boundary spanner' is clearly crucial, the role being characterised by committed time and effort and proactive tie-building and educational roles. The ability to invest in specific network management and managers, therefore, is central.

Conclusions

The research of both the theoretical and empirical literature suggests that intelligent crafting of network forms is a problem of adapting the patterns of linkages between organisations that a manager finds already in place. Managers need to craft these linkages into styles that:

- articulate strategies for dealing with the task, the regulatory and the organisational environment;
- are as reasonably robust as can be expected against the types of organisational weakness that all inter-organisational arrangements are subject to, and
- are acceptable and legitimate within those organisations.

The various forms of network described in this report have clear advantages and disadvantages. Enclave type networks appear strong in securing legitimacy and trust yet cannot be readily managed or regulated by an external agency. Hierarchical networks are more suitable if the objective is to control a pre-defined task, such as an integrated care pathway, but such networks can suffer from being overly bureaucratic

and managers may suffer from a lack of legitimacy to control its workings, particularly if externally mandated. Individualistic networks are more suitable where fluidity and flexibility of membership is desired and there is a need to respond to change quickly. However, such networks tend to be a coalition of competing interests joined together through contracts without any deeply held common bonds. Evidence from the USA suggests that such networks are less good at promoting integration of services to the benefits of users and carers than hierarchical networks and organisations.

If networks are to be 'managed' or 'regulated', a strategy should be employed that attempts to combine the favourable elements, and avoids the negative elements, to produce some form of hybrid network approach. What also becomes apparent is that policy makers and managers have a choice as to which type of network should be nurtured or favoured. Whatever the choice of network, the review has uncovered some generic practical lessons for network managers that should be heeded (Box 2).

Overall. it is clear from this research that there is no 'ideal' network solution, though there is support for a hybrid network combining elements of hierarchy, individualism, and enclave. Whilst it is apparent that networks are not a panacea for all modes of complex collaboration, an effectively crafted network *may* provide a solid basis on which to achieve successful partnership working between organisations. Such craftsmanship requires significant network management skill in articulating strategies and ties between organisations that are robust enough to endure; legitimate enough to become accepted; yet flexible enough to tackle the inherent weakness that all inter-organisational arrangements are subject. In this way, networks may well prove to be an effective method for reducing professional and organisational boundaries in health and social care enabling the more efficient use of staff and resources, the sharing of best practice, and the improvement of access to integrated care.

Box 2: Key lessons for network managers

Management 'within' a network

- Develop a clear mission statement and unambiguous set of rules of engagement
- Be 'inclusive' during the objectives and design stage of the network of those individuals and agencies who will gain benefit from and contribute to the network, including users and carers
- Be user-focused in design, not structure-driven
- Avoid very large networks since costs will rise and inertia will develop
- Joint financing, or other shared commitment (such as common targets), provide 'lock-in' and stability of members to a network. Pooled resources between agencies may be advantageous
- Local networks work best when geographical and jurisdictional boundaries are made coterminous
- Direct co-ordination of a network by a 'neutral' or respected agency engenders commitment, trust and reliability - the 'boundary-spanners' to engage partner members are important
- Network co-ordination needs to be financed and pro-active
- Time is needed for managers to develop and learn the skills of network management
- Network co-ordinators need to 'control', or 'be', the source of the information, knowledge and/or incentives to help place the administration at the centre of the network

Management 'of' a network

- The key challenge for network managers is to find a balance between autonomy and dependency
- Managers need to establish a central position from which to exercise leverage - a single, accountable, administrative centre allows for optimum impact on network integration - this requires control of knowledge and/or resources
- However, networks should not be mandated or imposed as this risks disharmony, unless priorities are linked directly to professional interests. Thus, network design and operation needs to be inclusive of its members to promote legitimacy
- Professional engagement and sign-up to network principles is essential in this process - respected clinical leaders are necessary to promote networks to peers
- Interdependencies in a network need to be fostered, a process that is strengthened if professional imperatives and priorities are supported
- Whilst professional support is important, the network manager must also avoid the potential for 'capture', for example of a PCT commissioning network by the needs of a large acute hospital
- A network will survive as long as all the parties involved in its development and operation feel 'net worth' from being a member - competing interests can co-exist if mutual long-term self-interests are served
- Ownership may be facilitated by formalised contracts and agreements - clear and established operational procedures can lead to trust and understanding
- Senior management support and commitment to a network from key agencies lend kudos and priority to network activities
- Networks should be continuously reviewed and evaluated to ensure that 'net worth' remains - networks should be responsive to change and some will be time limited

Network governance

- All regulators 'outside' the network face the problem associated with authority to enforce power
- Voluntarily developed enclaves and individualistic networks tend to be self-governed leading to accountability issues, yet mandated networks appear to work badly because network members have not provided the authority for them to be governed

- The potential solution to this 'governance gap' lies in a choice of approaches that might include:
- Providing enough incentives to network members that they agree to a system of regulation and governance of their network by a chosen external (independent) agency that has the remit to preserve the 'constitution' of the network including a mandate to govern individuals and individual organisations based on the notion of dual accountability; or
- Developing a network based on the use of contracts across the care pathway to engender compliance through incentives or payments to fulfil 'network' objectives. However, the evidence suggests such procurement networks are less effective in integrating care provision than managed networks or single organisations

Government targets, audit and incentive arrangements need to be harmonised to promote and reward working in networks in order to avoid the potential of existing and differing targets within individual organisations preventing effective partnership working and networking

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