Networks: a key to the future of health services

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Abstract

Health service reforms and structures have, in general, emphasised hierarchical systems to enable control and accountability. In doing so, policies have substantially sidelined networks and their potential for contributing to health service performance. Networks play a number of roles, such as in supporting expertise development, arranging referrals, coordinating programs, undertaking projects, sharing common interests and providing mutual support in managing common conditions. They handle knowledge, support expertise and deal with complexity in ways that hierarchies are unable to, and are fundamental to supporting professionalism. Until networks are used to a greater extent, the development of health services will be substantially impeded. This will require enhancing the role and contribution that networks play, which is dependent on resources, leadership and skills.

Aust Health Rev 2005: 29(3): 317–326

What is known about the topic?

Hierarchical structures have been shown to have limitations in addressing the issues that health systems face, yet there has been limited focus on understanding and capitalising on network process in health services.

What does this study add?

This paper outlines the nature and roles of networks in health services, and their relationship with hierarchical structures. It suggests networks are better able to handle complex, nuanced knowledge and to engage a widely ranging and distributed expertise in addressing issues to promote system-wide consistency.

What are the implications for practice?

This paper suggests the need to recognise and exploit networks as major decision-making mechanisms. In particular, health professionals should enhance their networks with colleagues across the system to strengthen practice and contribute more effectively to policy. In the community, interest groups should strengthen their networks to better understand experiences of health and health services across the system; and finally, policymakers should engage with networks to address health system issues.

HEALTH SYSTEMS AROUND THE WORLD have been searching for better ways to improve their performance. In general, they have moved away from the traditional dominance of clinical professions to a greater reliance on managerial control and accountability, either through a politically structured hierarchy, or through market forces of some type. This may be supplemented by increasing engagement with patient and/or community interests. In New Zealand, Australia and the United Kingdom, political accountability has tended to dominate, with a hierarchical structure consisting of a regional body (District, Area or Trust) which is responsible to a central body for managing health services in that region.

Despite this clear assignment of accountability and the presence of supporting control structures, there remains extensive dissatisfaction with the way that services are managed and provided,[1,2] resulting in continual modification of services and, at times, substantial restructuring. A major reason for this situation is that little recognition has been given to the limitations of hierarchies and central bodies when dealing with diverse, complex services with uncertain outcomes.[3]

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1 Prominent network functions in health services

Expertise networks involve sharing and developing expertise among a group of similarly qualified people. They are often formally structured to promote and protect a particular professional group.

Referral networks enable a range of expertise to be accessed to address individual cases. They form a key coordinating element for independent practitioners and also exist within and between institutions.

Program networks create the structure for a variety of organisations and professionals to work together to provide integrated services for specific types of cases. They are usually well structured, and are increasingly common in such areas as mental health and cancer services.

Project networks bring together critical expertise to achieve a particular goal. These may be formal or informal, and require close cooperation for a limited period. They may be involved in establishing a service, undertaking a research project or writing a paper.

Experience networks involve people experiencing similar demands or conditions, such as suffering a disease or the need to care for a relative. The people involved may be diverse in character, but work together for mutual support, to promote their interests and to learn from each other.

Interest networks are usually open, characterised by informal exchanges between a wide range of people interested in the same issues, with ad-hoc communications depending on the inclinations of the members. These have proliferated on the Internet, enabling them to be of international scope.

There is also neglect of networks in distilling and integrating the knowledge and understanding required for the provision of services, for strategic decision-making and for the development of the industry. The demands on the hierarchical structure are beyond its capabilities and the support networks that enable clinicians and patients to contribute to addressing problems are inadequate.

The meaning of "networks"

Networks are complexes of links between individuals and organisations, driven largely by the interests of the parties and their recognition of the value of working together. Although networks have always pervaded society, especially where knowledge has been important, only recently have they been recognised as a key element of organisation. Recent books have highlighted their increasing role as commercial alliances[4] and public sector collaborations.[5] Tenbensel details network hierarchy and market mechanisms: "Whereas price and authority are the mechanisms applicable to markets and hierarchies respectively, the equivalent control mechanism for networks is trust." (page 7)[6]

As Bradach and Eccles explain, "Trust is a type of expectation that alleviates the fear that one's exchange partner will act opportunistically." "Trust is an important lubricant of social system. It is extremely efficient; it saves people a lot of trouble to have a fair degree of reliance on other people's word." (page 282)[7] Levin and colleagues find that "... when it comes to knowledge sharing, trusting people's benevolence consistently matters, but trusting their competence is even more important when the knowledge is difficult to codify." (page 6).[8]

Networks have always been intrinsic to health services, epitomised by professional associations and referral networks, although rarely adequately recognised. In the United States, hierarchical control and integration have been championed by health service theorists, despite the increasing prevalence of networks.[9]

Networks usually arise naturally, are frequently informal, even ephemeral and difficult to define, can be elusive, concealed and even subversive. Nevertheless, they can be very powerful, and are the basis of many effective services, particularly with the recent expansion of communications technology, which has greatly enhanced the potential for networking.[10]

Networks can take very different forms and serve different functions. Box 1 outlines some of the forms prominent within health services.

Networks in health services

Expertise networks, in the form of professional colleges and associations, have been the basis for

the development and enhancement of clinical expertise. Such networks involve a variety of engagements, from the casual exchange of information or opinions to a more structured exchange of experience with scrutiny of practices, as well as quantitative comparisons or "benchmarking", and research. The more specialised the expertise, the broader geographically the networks usually become, and may be national or international in scope. Research networks are common in specialist groups, and have also proven successful in general practice.[11] Nursing networks, such as the Global Nurses Network,[12] promote nursing practice, develop research, and support career development. Networks may also be Internet-based, such as the Critical Care Medicine list,[13] and the more local Australia and NZ Intensive Care Society list.[14] Networks may also occur in management, as with the District Health Boards New Zealand (DHBNZ)[15] and the Australian Healthcare Association (AHA).[16]

Professional networks are a special form by which "... members willingly exchange information and technology and collaborate in production ... without the agency and inefficiency costs of authoritarian supervision ..." (page 667)[9] whereby they form the norms and references that inform professional practice, providing a means of standardising practice and a common ideology.[17] They also provide a sense of identity and support,[18] which influence professional decision-making.[19]

Referral networks link the diverse capabilities required to address the needs of particular patients, or classes of patients. They are central to most practices and are usually developed informally over a period of time as clinicians learn who they can trust and work with. Referral networks also exist in the community, within the many disease-oriented service and support groups (Alzheimer's, cancer, mental health, organ transplant, etc.).

Program networks are increasingly emerging among institutions to address the needs of particular classes of patients, most notably in cancer. They often extend across administrative boundaries and have been developed extensively in the United Kingdom.[20] There, networks have become so prominent that they have attracted editorial attention in the *British Medical Journal* with the suggestion that they may be becoming the "latest management fad" (page 63).[21] Hospitals are also commonly networked in the United States.[22] In New South Wales, the Greater Metropolitan TransitionTaskforce (GMTT) has programs networking 16 specialty services, enabling the coordination of activities over a population of at least 5 million.[23] These networks enable different types of clinicians to work with management and community representatives over many administrative boundaries.

Project networks often arise when there are major projects to be undertaken or problems to be solved. The planning, design and commissioning of new facilities at the sophisticated Auckland City Hospital required numerous project networks to bring expertise to the new facility. The management of the Sudden Acute Respiratory Syndrome (SARS) epidemic arose in part from the work of largely spontaneous networks of specialists supporting the World Health Organization.[24] Networks between regional information systems programs have also enabled major savings through common initiatives, such as in Auckland[25] and New South Wales.[26]

Within the community, a complex of ***experience networks*** for patients suffering specific conditions play important roles, usually being incorporated in the community-based, disease-oriented organisations mentioned above. These networks may link with professionals through referral or program networks. They may also develop significant formal structures with regional and national centres. Such networks have tremendous potential to promote understanding of the experiences of patients, their ways of responding to disease and treatment, and personalising treatment options. Networks may also have therapeutic value, as has been demonstrated in mental health.[27]

Interest networks have proliferated on the Internet, involving many people within and outside the health system addressing health-related issues. They can be of enormous value in provid-

ing opportunities for sharing, learning and developing ideas.

Some networks are purely links between individuals, with no formal structures; others develop levels of organisation and can become formal structures in themselves (such as professional colleges), while others consist of relationships between already structured organisations. Each brings its own challenges of leadership and management, but all involve negotiating issues of purpose, benefit, interests and trust.

Networks can range from being well defined to quite amorphous; they can have varying intensities and sizes and can overlap. Different media may be used to communicate within networks, including face-to-face meetings (formal or informal), telephone, letter, videoconferencing or the Internet. Some networks may involve only a few communications per month, while others may have many every day.

The value of networks

Networks prove their value particularly where information and knowledge is critical, as Powell explains:

> Networks are particularly apt for circumstances in which there is need for efficient, reliable information. The most useful information is rarely that which flows down the formal chain of command in an organisation ... Rather, it is that which is obtained from someone whom you have dealt with in the past and found to be reliable. (page 272)[28]

Rhodes goes further, emphasising complex situations where:

> Actors need reliable, "thicker" information; quality cannot be specified or is difficult to define and measure; commodities are difficult to price; professional discretion and expertise are core values; flexibility to meet localised, varied service demands is needed; cross-sector, multi-agency co-operation and production is required; such co-operation confronts disparate organizational cultures; actors perceive the value of co-operative strategies; long-term relationships are needed to reduce uncertainty; monitoring and evaluation incur high political and administrative costs; implementation involves haggling. (page 81)[29]

In the professional context, networks find a role as: "social devices for supporting the growth and refinement of disciplines and the quality of their practice".[30] The socialisation involved in networks is essential for transferring the tacit knowledge that frequently distinguishes high performance teams.[31] "Trust, in itself, becomes an asset that group members can rely on more generally to help solve problems of cooperation and coordination." (page 543)[31]

Expertise networks between services enable comparison of experiences and practices by those who know their intimate detail, and facilitate the sharing of opinions about how to deal with new developments. Networks are central to quality management, and in particular, "Benchmarking encourages each unit to take control of its own destiny, and yet to learn collaboratively from competitor and ally alike." (page 110)[4] Thus networks play a central role in the way learning takes place by enabling the distilling, consolidating, enhancing and validating of knowledge that is distributed over a wide range of people.

The value of networks is being recognised in the corporate sector, particularly in highly skilled professional industries.[32] Many global corporations such as BP, Ernst and Young, HP and Xerox[33] are promoting networks of various types as a means of enhancing their skills and capabilities. The United Nations Secretariat and agencies are engaging with networks of non-government organisations (NGOs) through the NGO Liaison Service, and some global protest movements have been extraordinarily effective using quite informal networks.

Networks and hierarchies

While networks and hierarchies represent very different modalities, they often co-exist. Powell[28] outlines the way hierarchies and networks intermingle in many organisations, and the way net-

works play a major role within hierarchical organisations as well as between them. Such relationships can be seen in a typical hospital where much clinical activity, both internally and externally, may be coordinated through networks of relationships that have little to do with the hierarchy. Interestingly, Ouchi[34] identifies the source of the norms of the network relationships as being in the society generally, rather than with the organisation itself.

In general, the differences between hierarchical and network relations can be summarised as follows: in hierarchies, people look to their superior for authority; in networks, people look to the most competent colleagues, wherever they may be. Hierarchies are focused on organisational coherence and viability, while networks are focused on expert achievement. Hierarchies are based on formal control, accountability and extrinsic motivation, while networks are based on expertise, collegial values and intrinsic motivation. Hierarchies bring structure, control and accountability, while networks bring knowledge, innovation and capability. Managers, politicians, and policymakers tend to be more comfortable with hierarchies while professionals gain more from networks.

Networks and hierarchies represent different ways of bringing information and decision-making together.[9] Networks position decision-making with the front-line provider, while hierarchies move information to the manager. The complexity of clinical knowledge and the competence required to understand it explains the prominence of networks in clinical services, and helps explain the focus of traditional hospital administrators on infrastructure.[9] This separation is no longer adequate, of course, as policy and funding information which comes through the hierarchy is increasingly important, hence the necessity of combining the two modalities to exploit their strengths.

The domination of hierarchies

The move from clinical to managerial control over the last few decades in health systems in Australia and New Zealand has meant a move from networks to hierarchies. Policies and documents are now couched in top-down terms, emphasising the hierarchy, with the responsibility for implementation lying with the regional bodies. Those issues that have traditionally been handled by networks are now addressed by centralised clinical councils in areas such as quality, [35] risk management and workforce. While networks may still play a role, particularly in program management, and are often crucial to policy implementation, they usually remain subsidiary to the hierarchy.

2 Issues requiring broad involvement and system-wide consistency

- Standards of practice
- Adoption and use of new technologies
- Education provision and standards
- Ethics of health care
- Information management
- Benchmarking
- Public education
- Professional responsibilities and accountabilities
- Legal frameworks
- Specialist service distribution and coordination
- Financial and budgeting standards

This hierarchical thinking has also extended to the clinical sphere where medical leaders are looking to politicians for leadership in health services.[1,2] This thinking is also demonstrated by the response to clinical failures such as in the National Women's Hospital in NZ[36] and the Bristol case in the UK.[37] While these were both failures by the existing professional expertise networks to respond to deficiencies in practice, the solutions prescribed were predominantly hierarchical with little to address the underlying professional weaknesses.

The focus on hierarchical structures in the health system is understandable given the policy focus on control and accountability. However, the central authority (eg, Ministry or Department of Health) is limited in the number of issues it can handle, the range of knowledge it can access, and the commitment it can engender. While regional

bodies may be closer to local issues, they have an overwhelming array of issues to address, and have difficulty generating consistency between them. As the deficiencies of the regional bodies become evident, the central authority then becomes more intrusive, with the generation of extensive regulations and requirements. These measures, in turn, increase the cost of management and limit the regional bodies in their flexibility to address their problems in the way they see as being most appropriate. At worst, this can result in a highly politicised situation where the Minister responds directly and intrusively to public exposures, as reported at the 2003 Australian Healthcare Summit by John Menadue: [38]

> This preoccupation with daily crises and micro-management has many unfortunate consequences — long-term issues such as the agenda we are discussing at this summit, are put on the back-burner. Senior executive officers are confused and reluctant to make decisions. They become gun-shy. They manage upwards to the Minister. The Minister becomes the client and not the public. Disproportionate resources and energy are spent serving the Minister and particularly his or her staff. The central department also becomes too close to the political agenda of the Minister with the emphasis on news management. Private staff in my experience are petrified at the prospect of robust discussion and debate.

While central clinical councils are often seen as a solution to these problems since they bring clinical expertise to policy issues, they suffer constraints similar to that of hierarchies. The number of clinicians they can involve at any depth is very limited and the number of issues that they can address is only a small fraction of those needing attention. While they may have some significant achievements, there is much that they must overlook.

Hierarchical structures cannot effectively engage the knowledge that lies in the clinical workforce and the community to develop consistent solutions to the many complex issues that the health system faces (see Box 2). High-level policy measures on their own are often insensitive to the needs of clinician and patients (in all their diverse contexts) and lack means of implementation. Alternatively, local initiatives by clinicians and/or patients, are usually focused on local conditions with little awareness of developments elsewhere. A combination of such initiatives results in mediocre and fragmented practice across the system. If practice is unnecessarily diverse, then the basis of sharing between centres is reduced, and response to common challenges must be generated separately for each context. Such diversity makes it difficult for widespread changes to be implemented.

Challenges of networks

While networks have many strengths they also have weaknesses and challenges.

> Network building is a long-term, emergent process of development that may have unintended consequences ... There are other documented hazards ... such as increasing complexity, loss of autonomy and information asymmetry, all of which can hamper innovation and the learning process. Social capital too, may not always be beneficial. For example strong norms and mutual identification, while positive for groups, can, at the same time, produce collective blindness through an over-convergence of viewpoints leading to poor outcomes. (page 542)[31]

Cost is also a problem, as networks require resources and effort from the people concerned. Networks are time consuming to create and maintain, and may collapse if not seen as productive by participants, or if key players pull out.[31]

While networks are based on trust and sharing, influences of power and conflict are often present and may be based on the position or character of the people involved.[28,39] Leadership is thus very important in promoting appreciation of common interests and addressing issues undermining the network.[40] Limerick and Cunningham argue that effective networks require a "collaborative individualism" that cannot be captured by group dynamics, but is able to work together with others for a common goal. (page 97)[4]

For health service managers, networks can be difficult. They are often poorly delineated with little reference to formal organisation. They seldom fit with the decision-making structures of either policymakers or managers, and may form power centres outside, and sometimes opposed to, formal structures. Expert networks may master very sophisticated knowledge and become extremely powerful, as evidenced by many professional associations.

When networks become formalised, they usually form centres for coordination and representation, with rules, principles, and even hierarchies, which can develop bureaucracies. While such structures may be required to support large networks, they also embody principles that conflict with the essence of networks, detracting from their flexibility and dynamism. As networks become larger and more powerful, they can become highly political, with competing concepts of values and priorities. Examples are clearly evident in many of today's professional colleges and associations.

Engaging with networks requires care, recognising the complexities and ramifications.

The opportunities of networks

Despite their potential problems, networks provide the opportunity for flexible engagement with a reservoir of interest and expertise throughout the health system. Such engagement can help resolve dilemmas in setting policies (for example, in exploiting new technologies such as drugs or genetic engineering) and in addressing population health initiatives. As pressures rise for changes in professional practices and relationships, networks can keep clinicians in touch with each other across the system, enabling them to learn from the best experiences of others, avoid the worst, and minimise unnecessary changes in practice. In this way professional integrity and consistency can be maintained to enable coherent training programs and common standards. Such a commonality simplifies legal issues and enhances clinician mobility and career viability.

A more structured networking between similar departments across the system can enable units of a particular specialty (cancer, transplant, maternity, etc.) to work together cooperatively. Such programs as the Australian National Demonstration Hospitals Project (NDHP)[41] and the GMTT in NSW[42] have demonstrated the ability of institutions to learn from each other in comparing practices, benchmarking performance, developing innovations and testing alternative systems. Such exchanges can facilitate the development of guidelines for budgets and accountability systems, enabling the move towards nationally consistent, yet practical and flexible, standards. The appropriate inclusion of managers, policymakers and patient representatives in these processes could provide a level of accountability, and assurance that balance and appropriate goals would be maintained.[43] Such a structure could work in conjunction with regional bodies, maintaining and developing standards for integrated services such as cancer, diabetes, mental health, cardiac services, etc., with the local Boards responsible for local coordination of the different services, and for addressing local issues. The GMTT program experienced a much stronger engagement of clinical leadership in taking a broad integrated view of their services, coordinating and rationalising facilities and working with both the community and management.

The contribution that networks can make to clinical practice has also been demonstrated by the "SAFE Study Investigators", a collaboration of the Australian and New Zealand Intensive Care Society Clinical Trials Group, the Australian Red Cross Blood Service, and the George Institute for International Health. This network has enhanced clinical practice through their Saline–Albumin Care Study.[44] The Orthopaedics Associations in Australia and New Zealand also contribute to quality management through their joint-replacement registries.[45,46]

Network structures can thus bring together a wide range of expertise and interests to address the important current and emerging issues within the sector.

Working with networks

Networks within health services should not be seen as something new, but as elements that are intrinsic to services, and that can be enhanced and exploited to make major contributions to management, operations and outcomes. Networks flourish when there is a perceived benefit in working together, the means to do so, and the leadership to drive it. A number of factors are required to bring this about.

Policy and management frameworks need to engage with existing networks and exploit their contribution to decision-making. This will involve challenging clinician and patient groups to work together across the system to address critical issues, on a continuing basis, if necessary. There will need to be more information on the types of networks, their activities and the roles that they play in providing health services and addressing service problems. Similarly, professional and community organisations need to identify and strengthen network processes within their memberships as a means of enhancing their capabilities and standing.

A variety of approaches could be used. Education, manpower and quality issues could be pursued principally by clinical associations working across the system, together with relevant institutions such as universities. Critical emerging issues could also be put to existing networked groups such as the SAFE Study Group or the World Health Organization networks. Resources would need to be provided to support these processes and enable groups to enhance their networking capacity. Multidisciplinary issues need the engagement of several groups, linking specialist networks and local interdisciplinary networks.

An alternative approach, demonstrated by the NSW GMTT program, involves a major gathering of interested people around the issue of system-wide (in this case state-wide) coordination of a specialty service, followed by the formation of multi-stakeholder working groups to address specific issues.

Such processes will only be effective if participants have confidence that their conclusions will be incorporated into policy, and policymakers have confidence that participants will take broader policy issues seriously. Accountability could be maintained by a substantial level of transparency and the involvement of policymakers in the network.

The personal and political implications of greater reliance on networks need to be recognised. Effort will be required from many more people than are currently involved, which in turn will demand resolution of barriers to communication. In particular, professional groups will need to be more open about their internal decision-making, and address legacies and traditions that inhibit free exchange and assessment of practice. Managers will need to recognise the value of networks of managers and clinicians in defining and supporting clinical practice, and develop their role in supporting and coordinating network activities. Similarly, policymakers will need to engage with the networks, welcoming the greater insight they might gain by such involvement.

The skills required to participate in networks also need to be promoted in clinical schools and ongoing professional training. Better understanding is required of the way that networks function; the factors that make them work best, how they achieve results and the problems involved in doing so.

Conclusion

Networks within health services play a vital role in developing knowledge and understanding, and providing essential support for professional services. The general neglect of such processes by policymakers and managers has seriously degraded the ability of the system to address its problems effectively, and to support its professionals. By strengthening and engaging networks, the expertise and commitment of clinicians and patients could more effectively combine with the perspectives of managers and

policymakers to develop better ways of promoting the health of the community.

Disclaimer

David Galler's views are personal and not necessarily those of the Ministry of Health.

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(Received 14 Oct 2004, accepted 13 May 2005) □