

# Innovation in Australian hospitals

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## Abstract

*This paper examines the challenge of innovation, and reports on innovation in the Australian hospital sector. Through review of both published and 'grey' literature, the analysis of the innovative record of Australian hospitals is focused on two key questions: How has the hospital sector made use of opportunities for renewal and improved effectiveness in its ongoing response to the challenges it faces? And are the conditions for effective innovation in place? To be truly innovative, the Australian hospital sector requires greater supporting mechanisms including: a consistent policy and funding framework, greater ability to harness the power of information, and development of innovation skills. The government has an important role to play in stimulating the creative capacities of hospitals and their staff.*

## Introduction

In a rapidly changing environment for health care, hospitals are often seen as big and slow moving, hungry, self-interested and unresponsive to the need to adapt. But the record shows that hospitals have responded to the pressures and changes in health policy and health care in a variety of ways, with some impressive improvements in productivity (see Hargreaves, Grayson and Titulaer, 2002) and an expansion in the use of alternatives to inpatient care (see Walsh, 2002). These initiatives have resulted in improved outcomes in many areas, but in others, proven good practice has not been effectively disseminated, and imbalances have been caused in other parts of the system.

In this chapter we focus on innovation, and attempt to address two major questions. How has the hospital sector made use of opportunities for renewal and improved effectiveness in its ongoing response to the challenges it faces? And are the conditions for effective innovation in place? We conclude that there are some significant barriers to innovation, and offer suggestions as to how the capacity to innovate might be enhanced in the future.

To address these questions, we first consider the nature and role of innovation.

## What is innovation?

Innovation is generally defined as the introduction of "... an idea, practice or object that is perceived as new" (Rogers 1995 p11), or more pragmatically, "innovation is about putting ideas to work" (Department of Industry, Science and Resources 2000 p9); and "innovation is a synonym for the successful production, assimilation and exploitation of novelty in the economic and social spheres" (European Commission 1995 p1).

We have taken the view that the introduction of a new process or system is innovation, even if the hospital concerned is not the first to undertake that particular change. There are two reasons for this: firstly, it is important to acknowledge the uptake of new ideas, even if they were 'not invented here'. Secondly a real but sometimes neglected challenge in innovation lies not so much in knowing the right answer, as in achieving the changes necessary to have it adopted.

Innovation itself is not new and has characterised society since the transition from the stone age through the tool age to the current wave in information and communication technology. A review of innovation waves over time has concluded that large social and economic changes occur with each wave, including:

- evolving 'best-practice' form of organisations
- changing skill profile of the workforce, impacting on both worker quantity and quality
- different product mixes
- infrastructure investment

(Department of Industry, Science and Resources 2000)

It is these aspects that support and reinforce the necessary behavioural changes among workers required for successful innovation. A recent review of innovation in service industries found a strong link between service innovation and organisational change (Stevens 2000). This suggests that successful innovation cannot be achieved without corresponding changes at the operational, organisation and industry levels, and confirms that the management of change is a challenge in itself.

It is important to note that, exciting as innovation is, it is a means towards goals like productivity, quality, effectiveness, competitive positioning and long-term growth, rather than an end in itself. Not everything new is worth having.

## **Innovation in Australian industries**

The 2000 National Innovation Summit provided an opportunity to review innovation in Australia. Australian governments have not typically taken a strong role in encouraging innovation, with government intervention more focused on addressing market failure than pro-active innovation development strategies (Department of Industry, Science and Resources 2000). This has resulted in little coordinated effort, with the existing Australian innovation system described as:

- highly fragmented
- producing sub-optimal research
- having poor, or even non-existent linkages among public and private sector participants, and
- having little coordination of effort between government agencies

(Department of Industry, Science and Resources 2000 p.26).

In comparison with companies in other countries, Australian firms do not have a strong track record in successful innovation. In fact, Australian-owned firms have shown a pattern of decreased innovation over recent years (Department of Industry, Science and Resources 2000). "Australia's geographical isolation from the developed western economies has inhibited the development and adoption of new products and processes" (Innovation Summit Implementation Group 2000 p.5). Australia has historically had a comparatively high cost structure, which has resulted in a lower level of Research and Development (R & D) expenditure. When businesses cannot match the operating results of other countries, there is little incentive to invest in R & D.

The Karpin Report (Industry Task Force on Leadership and Management Skills 1995) suggested that Australian work practices and management skills were not attaining world's best practice. This report recommended upgrading of vocational education, training and business support, best practice management development, and reform of management education. In support, the background paper for the 2000 National Innovation Summit suggested that Australia would not achieve world class innovation without attention to the work and management practices highlighted in the Karpin Report (Department of Industry, Science and Resources 2000).

## **Innovation in the hospital sector**

In this section, we review the record of innovation in the hospital sector in relation to changes in the delivery of care and in the structure and management of hospitals; and analyse the factors which have contributed (or not) to the effectiveness of innovation. We use the term 'hospital sector' to include both hospitals and central health authorities, whose decisions shape the delivery of care and the management of hospitals in profound ways. For the present purposes, it is not possible to separate one from the other in a meaningful way.

## Reforming care delivery

The drivers of change in hospitals over the last 20 years have been a powerful combination of improved technical capacity (to diagnose, treat and provide care); expanding demand; the resultant need to contain costs to sustainable levels; and a wave of global changes in public sector management which aimed to improve the efficiency and responsiveness of public services (Pollitt 1995). In this context, the struggle to contain increasing demand and provide timely access for public patients to inpatient care with available resources has dominated efforts to reform care delivery. Yet there is evidence from around the world that hospitals admit patients for whom less intensive care could be effective (eg De Coster et al 1999; Hider et al 1998).

‘Our reliance on hospitals has developed because hospitals are historically the most well funded and politically visible institutions in the health care system. They were the first part of the system to be universally insured and access is based on need without financial barriers; any system of alternatives to acute care must share these characteristics’ (DeCoster et al 1999 p160).

One source of local evidence of the discretionary nature of some admissions lies in the variation in admission rates between Australian States and Territories, with South Australians experiencing a 17% higher separation rate than people in NSW (Duckett 2002 p5). In comparison with international standards, the substantial variation in Australian hospital admission rates also suggests that there is room for reduction (OECD 1999).

The growing predominance of emergency admissions has further complicated access problems. Over the last 10 or more years, hospitals have experienced a fundamental and continuing shift in their workload towards emergency admissions (Emergency Demand Coordination Group 2002). The unplanned nature of these admissions, combined with high daily bed occupancy rates, make it more likely that emergency patients will wait for a bed (Bagust, Place and Posnett 1999) and elective patients will experience cancellations.

Hospitals have responded with a range of innovations directed to reducing the utilisation of inpatient care, through reducing the rate of admission and/or lengths of stay. Methods for managing the level of demand for care have been the subject of several Australian government reports and literature reviews in recent years (New South Wales Health Council 2000; Patient Management Task Force 2001; Anderson et al 2001; Dwyer and Jackson 2001; Institute for Public Health and Health Services Research and Centre for Community Child Health 2000). Examples of demand management innovations by Australian hospitals include ‘rapid response’ services in Emergency Departments (Coopers and Lybrand 1997) and post-discharge interventions such as assistance with management of medication (Stewart et al 1998).

The most significant single innovation aimed at improving throughput has been the shift to day admissions (day surgery and some medical day admissions such as for chemotherapy) and ‘day of surgery admissions’. The proportion of same day admissions in Australian hospitals has increased from 30% to 49% since 1991. Day-of-surgery admissions (DOSA), supported by the use of pre-admission clinics, have also made a significant impact. The NSW Health Council (2000) has proposed a target for day surgery of 60% and DOSA rate of 80% (p14), and these levels are now achieved in many hospitals.

Improvements in discharge practice are also widespread, supported by increased availability of community- and home-based support services (Health Services Research Unit 2000). Yet, those who require admission to long-term care are still most likely to experience delayed discharge (Harris et al 1997; Department of Human Services (Victoria) 2002).

Several other new approaches have been shown to be effective and are being widely adopted, including emergency department observation/short stay wards (Williams et al 2000), Chest Pain Assessment Units (Hider et al 1998) and Hospital in the Home (HITH) (Shanahan et al 2001). While HITH has good patient outcomes and acceptance, the evidence on cost effectiveness is mixed (Bonevski et al 2002; Goddard, McDonagh and Smith 1999, p124; Hider et al, 1998, p117; Parr et al 1996; Stessman et al 1996).

Reductions in total average length of stay (ALOS) across all acute hospitals continued throughout the 1990s, with a total reduction of one third (to 3.8 days) but this is almost entirely due to the effect of same day admissions (Duckett 2002 p7). This relatively static overall result masks some real changes, including reductions in obstetric and some surgical ALOS on the one hand, and on the other, increases in the length of time spent waiting for discharge to sub-acute or residential care, largely by older patients (Department of Human Services (Victoria) 2002).

The significant and sustained effort by the hospital sector to design, introduce and sustain these innovations has not resolved the problem. Some initiatives have demonstrated success in reducing ALOS or the need for admission or readmission for the targeted patient groups. However, any gains have been swamped by continuing underlying increases in demand, and evidence on the cost-effectiveness of the alternative services is equivocal (Goddard, McDonagh and Smith 1999 p158). These authors also note that even if alternative services are cost-effective, they may not be cost-reducing due to expansion of eligibility and/or coverage.

The next major step forward is likely to be through investment in post-acute and sub-acute care, and the removal of organisational and financial barriers against the transfer of patients between settings (Dwyer and Jackson 2001). Again, increasing efforts by acute hospitals to improve the efficiency of internal processes are likely to suffer diminishing returns, and the real gains will flow from change in the policies and incentives which drive current practice.

Several reviewers conclude that the only feasible way to address the trend of increasing demand is to make major improvements in the capacity and availability of alternative forms of care and alternative approaches to the management of complex chronic illnesses (Goddard, McDonagh and Smith 1999; Department of Health (UK) 2000; DeCoster et al 1999). This is primarily a case for innovation in policy, structure and funding of the health system, rather than for increased innovation in hospital care.

Consistent evidence regarding the drivers or enablers of innovation in the system of care is scarce. Clearly, the daily pressure experienced in emergency departments, on the inpatient wards and from adverse media coverage have driven interest in innovation for clinical staff, hospital management and central health authorities. Given the lack of evidence, it is difficult to predict the factors that facilitate innovation with any certainty, but it does seem clear that the availability of funding to support innovation has been critical.

Perhaps the largest single funded experiment in innovation has been the Co-ordinated Care Trials. Findings from the National Evaluation of the Coordinated Care Trials (Silagy et al 1999; Department of Health and Aged Care 2000) suggest that while the various forms of care management trialled in these pilots had many benefits, they did not uniformly reduce the use of inpatient care. Subsequent studies have also demonstrated that while patient satisfaction was high, the costs of care management outweighed any savings from reduced use of acute care (Perkins et al 2001).

However, evidence from other approaches to integrated care (Parr et al 1996, Eng et al 1997) indicates that real gains in terms of reduced demand are possible. Building on the basic concept of co-ordinated care, several health care providers and jurisdictions have begun funding and trialling 'disease management', which aims to better manage complex, ongoing conditions, in partnership with patients and their families/carers (see, for example, Emergency Demand Coordination Group 2002).

A great deal of effort by State and Territory governments has been devoted to assisting hospitals to address access difficulties (for example NSW Health Council 2000, Patient Management Task Force 2001) with some success. Their methods have included targeted funding and a range of incentives and penalties for performance on key targets (see, for example, Department of Human Services Victoria 2001).

The Commonwealth has contributed to this effort through the Best Practice in Health Program (National Health Strategy 1993), the National Demonstration Hospitals Program (Department of Health and Aging 2002), and funding for innovation included in the Australian Health Care Agreements.

The National Demonstration Hospitals Program funded a large set of projects aimed at improving throughput, reducing utilisation and supporting the dissemination of best practice. Round 1 focused on increasing the use of day surgery and DOSA, addressed above. Round 2 resulted in the development of the concept of Integrated Bed Management, defined as 'the management of all admissions, stays, transfers, and discharges by a hospital within a framework that integrates and coordinates all processes related to these activities' (Department of Health and Aged Care 1999, p1). NDHP enjoys strong support and is seen by the public hospitals that have been involved as a positive investment in their capacity to innovate and improve care (Department of Health and Aged Care 2001).

Similarly, the Clinical Support Systems Program, sponsored by the Commonwealth Department and auspiced by the Royal Australian College of Physicians, has enjoyed remarkable support from clinicians and managers (Long et al 2002). This Program aims to demonstrate methods of ensuring that new knowledge is effectively translated into workable new models for health care delivery.

The enthusiasm with which funding for innovation has been taken up can perhaps be seen as evidence of the hunger for resources in the hospital sector. It can also be seen as evidence of the underlying recognition that care processes, and the organisational structures and work practices which have evolved to support them, need to change in a fundamental way. In any case, it is clear that funding has been a vital enabling factor for innovation in this area.

## Reforming structure and management

Hospitals have historically been very stable organisations, characterised by local governance, a strong commitment to professional autonomy for clinicians, and a hierarchical formal structure. The same forces which have driven change in the organisation of care have caused significant change in both the structures and the management styles of hospitals over recent years.

Industries are rarely static, with ongoing evolution changing the structure and mode of operations. The stages of this evolutionary process include crystallisation, expansion, fragmentation, reconsolidation and potentially termination (Kotler & Turner 1981)<sup>1</sup>. Like other industries, the hospital sector has been travelling this evolutionary path. In recent times in Australia the hospital sector has been oscillating between fragmentation and reconsolidation.

'Like the square-rigged sailing vessel of centuries past, the stand-alone general hospital is increasingly an anachronism' (Dexter 2000 p63).

This is true in most parts of the world, with, for example, more than 72% of all hospitals in the United States belonging to a network or system (Bazzoli, Shortell et al 1999). The shift away from the stand-alone general hospital has also been profound in Australia. The Area Health Services in NSW, established in 1986, are perhaps the most stable example, bringing responsibility for hospital services and some forms of primary health care within one governance structure. Changes in other States have often been short-lived, in keeping with the political cycle – as Stoelwinder and Viney (2000 p201) point out, 'the process of reform is primarily political' in Australian public hospitals. For example, in Queensland, the Regional Health Authorities were abolished in 1996 after 8 years, to be replaced with the strong centralism more traditional to the Queensland system. On the other hand, in Melbourne, the Health Care Networks established in 1995 were reformed in 2000, replaced by Metropolitan Health Services which retain many features of the Networks, including in all but two cases the absence of single, stand-alone hospitals (Ministerial Review of Health Care Networks 2000).

In South Australia the non-metropolitan hospitals and health services have been regionalised in an attenuated form, but only piecemeal change has occurred in the major metropolitan hospitals. One significant amalgamation was reversed after 5 years, and one attempt by four health care organisations to form a regional health service was rebuffed by the Department of Human Services despite previous support (Van Eyk, Baum and Houghton 2001). In Western Australia, an attempt to establish one Board and one administration to operate all of Perth's public hospitals was dogged by problems from Board level down, and was abandoned in 2001 following a change of government. It was replaced with 4 metropolitan hospital networks (Health Administrative Review Committee 2001).

The ongoing tension between consolidation and fragmentation of hospitals and other health services is an indication of uncertainty about balancing these two competing tendencies in the structure of health care. On one hand, integration of the range of levels and types of care – vertical integration – is seen to provide economies of scale in infrastructure, more effective deployment of specialised skills and resources and a greater ability to respond to patients' needs with the appropriate level and setting of care (Gillies, Shortell & Young 1997). This is supported by a recent study comparing the UK National Health Service (NHS) to Kaiser Permanente in California which suggests that an integrated system can deliver better quality at comparable cost (Feachem, Sekhri & White 2002). This model also enables a focus by the board and senior staff on the most effective responses to the health needs of the people rather than simply the interests of individual hospitals or other care providers, and this has been seen to be successful in NSW (Stoelwinder and Viney 2000). The need to refocus resources in areas of population growth has also been prominent, particularly in Sydney and Melbourne (Metropolitan Hospitals Planning Board 1995) but with only modest success (Stoelwinder and Viney 2000).

The move away from stand-alone hospitals has also created sufficient size for hospitals to outsource many non-core services cost-effectively, resulting in more effective management and/or lower cost in the support services,

as well as access to specialised expertise (Sunseri 1999). Problems have arisen from failures in service specification or contract management by the hospitals, and from inadequacies in the 'market' of potential providers. Gradually, the limits of the outsourcing strategy have been tested and defined, and good practice standards for both sides of the contractual relationship have been more clearly identified.

On the other hand, local hospitals and care teams need flexibility to innovate to best meet local health needs. Bazzoli et al (2001) suggest that overzealous consolidation, while providing the advantages of centralisation such as consistency in strategic and operational direction and resource deployment, foregoes the aspects of decentralisation that are necessary for innovation. In all industries in recent years the validity of a strategy that encapsulates all the elements of production within a single firm has been questioned, and focused concentration on identified core competencies is sometimes seen as more effective (Friedman et al 2001).

The concept of the hospital as a 'focused factory', with highly specialised services consolidated in a relatively small number of sites, and with greater differentiation between emergency-driven hospitals and elective care, has been advanced to describe the optimally efficient arrangement for most types of hospital care (Leung 1999). This model may provide one way to optimise the benefits of integrated infrastructure with local flexibility. That is, a single governance structure for several hospitals makes it easier to reduce the number of sites at which a specialised service (such as full ED services, obstetrics, or an elective surgical specialty) is provided, with resultant cost savings, potential improvements in quality and the emergence of more focused roles for each site. Centralised governance can to some extent be balanced with local management autonomy for the constituent hospital and other health service sites, with their 'focused' service delivery roles and differing styles and operating imperatives<sup>2</sup>.

Today various organisational models exist in Australia, ranging from consolidation of virtually all levels of public health care within a single regional health service to fragmentation with multiple independent boards and CEOs, but it is not yet possible to assess the impact of different governance arrangements on innovation. Like Australia, health care systems in most parts of the world have been the subject of successive waves of reform in structuring, financing, accountability and the operating environment. However, there is little confidence that the goals of reform – generally expressed as improving the ability for the system to deliver equity, efficiency and quality – have been achieved.

## Plus ça change?...

Participants in the bumpy ride of the hospital sector in Australia during the 1990s have experienced an interesting paradox: while change is all about them, many intractable problems seem incapable of resolution. The 'best practice form of organisation', referred to above as an important characteristic of successful waves of innovation, has not yet emerged. On the other hand, the barriers against changing hospital structures and locations are strong, as several governments have found when they have attempted to move inner city hospitals or close country ones. Relationships between clinicians and managers retain much of their traditional character, with jealous guarding of the contested border between clinical autonomy and management prerogative. While there are some promising signs that the concept of clinical governance is providing a new way of thinking about this problem, the development of effective shared decision-making between clinicians and managers is a major outstanding challenge.

In comparison to other industries, health care systems throughout the world are seen to have been slow to change and to adopt the many new and improved methods, techniques and ideas that become available each year (Adamson and Adamson 2001; Rogers 1995). Hospitals, like universities, large accounting and law firms, are characterised by a culture that welcomes technical or program innovation, and at the same time can be fiercely resistant to systemic change (Mintzberg, 1991, p714). The culture of teaching hospitals in particular values new insights and technologies, and often rewards those who originate and implement them. On the other hand, innovations perceived as disruptive, which challenge established orthodoxies are often rejected, at least for a while (Christensen, Bohmer & Kenagy 2000), and system change, when it challenges established work practices and professional roles, can be very difficult to achieve. The often quoted lament that '...the problem with hospitals...is that they are run by people who like them' and who therefore fail to see the need for change (US Commission for the Future 1996), is one perspective on this tendency.



There has been significant change in the structure and management of hospitals, with some real gains in the effectiveness of governance, and some improvements in resource allocation decisions. But the evidence is scant, and some of the changes have been ineffective, and/or have been revised or reversed too quickly for reliable judgements to be made. There is also a sense that most of the big questions are left unanswered (Lovelace 2000).

Problems of adequacy and alignment in financial policy are endemic, and the current system incentives have not been structured to encourage innovative behaviour. In particular, funding guidelines and eligibility criteria pose significant barriers to the integration of care for patients who must move between settings: “How do providers keep going financially when the incentives are misaligned, when lack of rewards for keeping people healthy is coupled with diminishing returns from payers (government and commercial insurances)...?” (Linekugel 2001 p.27).

Despite a relatively clear understanding of the forces impacting on the health of the population and the nature of health care delivery, there has been relatively little successful translation of the collective global knowledge of best practice into the practices of the Australian hospital sector. As noted by Braithwaite and Hindle (1999) “More recently, advances in practice and technology have been impressive, but the sector (health) is exhibiting signs of systems failure, despite the skills and efforts of the individuals who work within it” (p.292).

Ferlie and Shortell (2001), in a major paper on quality improvement, have suggested that effective change in the health system needs to be based on concerted action at four levels: the individual, the group or team, the organisation, and the larger system or environment. They suggest that the relative lack of success of change in health care organisations relates to the fact the system embraces narrow, single-level technical and programmatic change, while resisting more innovative, comprehensive, multilevel approaches. Perhaps it is true that what is missing is a coherent multi-level strategy for innovative change.

## **Facilitating innovation in hospital care**

Peter Drucker once said that “Innovation will be the core competency of the next century”. How then might the capacity of the Australian hospital sector to achieve real innovation and change be enhanced?

Researchers in innovation suggest the need for linked elements to promote innovation within an industry. Although innovation cannot be forced, governments and industry participants can create an environment that supports and encourages innovation through enabling elements. Based on our analysis of innovation in the Australian hospital sector, we conclude that innovative capacity can be enhanced through the following enabling elements, addressed in turn below.

- A consistent financial, policy and governance framework
- The ability to harness the power of information, including information dissemination, and technology transfer and diffusion mechanisms
- And, a supporting human resources and education and training regime that equips the workforce with the skills to innovate.

### **A consistent financial, policy and governance framework**

Countries with a successful innovation record tend to have governments that take a proactive approach, addressing conflicting incentives for public and private sector participants, but also creating conditions that are conducive to innovation. The characteristics of the Australian hospital sector (such as high cost structure, relatively low R & D investment, lack of a strong export base and geographic isolation) suggest the need for coordinated Commonwealth, State, and perhaps even local government, support for innovation.

The funding and regulation of the health system by both Commonwealth and State/Territory governments is generally recognised as a fundamental cause of complexity. Our analysis supports the view that this complexity results in rigidities and conflicting incentives which militate against the effective functioning of the system as a whole, and against innovation. Without consistent incentives for all aspects of the health care system there will be limited innovation. “Funding and payment systems must provide the incentives for the governance and management of.... health systems to develop focused strategies that can be implemented by physicians and health care teams to meet patient and community needs” (Shortell et al. 2000 p.285).

Smith (2002) has suggested that the short timetables, changing ideologies, and demand for instant gratification characteristic of the most politicised health systems (which 'do the worst') are inconsistent with the management and operation of a huge, complex health service. The more levels of government that are involved, the more politicised the health service, with ever increasing difficulties in matching the political agenda with the health service agenda.

In Australia's federal system, innovative solutions are required that enable integration of care and alignment of incentives without requiring structural change to the constitution and system of government. The Department of Veterans Affairs, in taking over the role of purchaser of services for eligible veterans, has demonstrated the beginnings of one such approach (Department of Veterans Affairs 2000). Recent proposals to allocate all responsibility for the care of the aged to the Commonwealth (Duckett 2001) may offer another.

Recent health policy initiatives in Australia can be read as the search for effective ways of increasing the accountability of hospitals and driving their performance on key indicators (such as reducing lengths of stay, reducing waits, increasing use of day admissions etc). Measures such as casemix funding and health service agreements (contracts between health authorities and providers designed to codify required service levels and accountability arrangements) have brought some real gains for health care, not least of which is the incentive for hospitals to maximise the use of funding for the delivery of patient care.

However, the continuing pursuit of ever tighter accountability and ever more detailed reporting, while done with good intentions, is seen by many in the hospital sector as having re-introduced the "hierarchical culture emphasising rules, regulations and reporting relationships" that has been shown to stifle innovation (Ferlie & Shortell 2001). There is also evidence that successive waves of such policy and structural reform, without a well-articulated vision or feasible goals, have increased the resistance of hospital staff to change (van Eyk, Baum and Houghton 2001).

When business becomes complicated, strategy should be simple (Eisenhardt 2001). Instead of traditional complicated strategies built over time, simple rules are required that provide a strategic framework to seize opportunities. This is consistent with the research on complex adaptive systems<sup>3</sup>, which has suggested that relatively simple rules can lead to complex, innovative system behaviour (Institute of Medicine 2001).

An emerging theme among those who watch the hospital sector in Australia is the recognition that many of the factors, policies and procedures that shaped hospitals are no longer relevant and need to be re-examined (Braithwaite & Hindle 1999; Hillman 1999). While financing systems and regulatory mechanisms will always be detailed, technical and prescriptive, they can be based on agreed high-level goals and policies that utilise a simple rule framework, such as the 10 simple rules for the 21st century health care system proposed by the Institute of Medicine<sup>4</sup>. This may be the most effective approach for establishing the innovative environment required for the health system of the future (Plsek and Greenlaugh 2001).

## **Harnessing the power of information**

We have seen that the health system "has not delivered the desired health outcomes that are possible with current professional knowledge" (Ibrahim & Majoor 2002). This may be due to the rapid development of clinical technologies running ahead of the system's capacity. And it may be because the information is not readily available or, as suggested by Chassin (1998), because the information explosion, with increasing volume and complexity, makes it impossible for clinicians to know all that is required. Traditional ways of accessing, using and communicating information may not be sufficient. Hospitals need to be encouraged to work together to share learning, but must acquire the skills to know how to adapt proven solutions to local conditions. Although information about best practice is readily available, if clinicians and hospital managers are unable to translate the findings and implications to the local scene, innovation is unlikely.

Hospitals and health service organisations continue to under-invest in information systems and are judged to be at least 10 years behind in information investment as compared with organisations in other industries of comparable size and complexity (Ferlie & Shortell 2001; Friedman et al 2001). At present there are few health organisations with information systems that can effectively link and integrate financial and clinical data (Dexter 2000, p65) and Ferlie and Shortell (2001, p297) argue that information technology represents a "powerful untapped force for changes that can improve the quality of care".

Although there is growing evidence of the effectiveness of information management (IM) in improving hospital care (Institute of Medicine 2001), integrated IM, IT and knowledge management (KM)<sup>5</sup> have not been a strong



focus of the hospital sector. “Crossing the Quality Chasm” makes a strong recommendation on the need for national health information infrastructures that connect distributed health data to improve care. Our governments may need to play a leadership role in defining information technology requirements to ensure the development of ‘rules of the road’ that will meet future needs.

## Developing innovation skills

Some of the hardest challenges faced by reformers in the hospital sector arise when traditional roles and work practices of health professionals need to change. The traditional training and socialisation of the health professions tends to emphasise individual skills, autonomy, accountability and achievement. Recent work on improving the quality of care has consistently identified this individual focus as a barrier to system improvement (Institute of Medicine 2001), and argues that quality improvement depends on a system focus, and the development of working styles which support the complex team-based care required in hospitals. One of the underlying themes in many of the innovations in care delivery reviewed above is the redefinition of roles and relationships among the professions for more effective care and better use of scarce resources. Generalising these successes, while also addressing the lost autonomy that individuals may suffer as a result, is an outstanding challenge for Australian hospitals.

Current thinking on innovative teams suggests that the most successful teams are designed for learning, that changes are framed in a way that motivates team members, and the leader’s behaviour creates an environment of psychological safety (Edmonson, Bohmer & Pisano 2001). In innovative teams, the traditional hierarchy is replaced in a way that encourages team members to make suggestions, to try things that might not work and admit mistakes. The existing “professional prerogatives and separate roles” (Institute of Medicine 2001 p. 83) need to be replaced with work systems designed to enhance cooperation, trust and teamwork.

These and other challenges facing the health care workforce have been well documented. Gillies, Shortell and Young (1997) suggested that new models of health care required “new world” positions with “new world skills”. Unfortunately, the education and training systems have not been suitably adapted to provide health professionals with the requisite skills for innovation in the new environment.

Equipping health care teams for innovation requires that clinical education advance from the existing focus on the basic mechanisms of disease and pathophysiological principles to “how to manage knowledge and use effective tools” (Institute of Medicine 2001 p. 210). Albert Einstein once said “We cannot solve problems with the same thinking we had when we created the problems”.

## Conclusion

The Australian Government has a number of assistance programs to stimulate innovation, including the R & D Start Program, Australian Technology Group, Pooled Development Fund and the Innovation Investment Funds. In recent years Commonwealth and State governments have established a number of such drivers for the hospital sector. At the national level these include the National Demonstration Hospitals Program (Department of Health and Ageing 2002), the Clinical Support Systems Program, the National Institute of Clinical Studies, and the Australian Resource Centre for Hospital Innovation (ARCHI). At State/Territory level, funding has been provided for centres such as the Simpson Centre in Sydney, the Centre for Clinical Effectiveness in Melbourne, and the Clinical Epidemiology Units in Adelaide teaching hospitals, with the aim of making research evidence and new models of care available to staff and hospitals in a practical, timely way.

Such investment is vital to build the capacity for innovation, and needs to continue and expand. While the clinical focus of the innovation drivers outlined above has been important, there is now an argument that such investment should be extended to the management, governance and policy reform tasks facing the system.

We have argued that the Australian hospital sector has not yet realised the full potential of current, feasible innovative approaches, and that the reasons for this state of affairs are broader than resistance to change. With the benefit of effective enablers and drivers, greater innovation in support of goals like access, productivity, quality and safety is possible.

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- 1 As described by Kotler and Turner (1981) the crystallisation stage begins when a product or service is conceived to meet identified needs within a market. The expansion stage happens when additional suppliers of the product or service enter the market. Usually each new entrant attempts to serve a new segment of the market, but eventually all existing segments are covered and the providers invade each others' segments, causing fragmentation of the sector. The stage of fragmentation is often followed by a reconsolidation stage where changes in an attribute of the product or service reshapes the market.
- 2 The integration of primary health care and hospital services under one governance structure is a feature of several of the reforms reviewed above, but the costs and benefits of this important aspect of restructuring have not been addressed in this paper, which focuses on the impact for hospitals and their ability to innovate.
- 3 Health care systems and hospitals can be considered as complex adaptive systems. The large number of interconnections make them complex and the individuals providing the care ensure the systems are adaptive (Institute of Medicine 2001).
- 4 The simple rules are: Care is based on continuous healing relationships. Care is customised according to patient needs and values. The patient is the source of control. Knowledge is shared and information flows freely. Decision making is evidence-based. Safety is a system property. Transparency is necessary. Needs are anticipated. Waste is continuously decreased. Cooperation among clinicians is a priority.
- 5 Knowledge management recognises that an organisation's knowledge is a major asset, and aims to exploit intellectual capital in an organisation, through leveraging and reusing all information and knowledge, and encouraging organisational learning