Asia Pacific Journal *of* Health Management

ACHSM

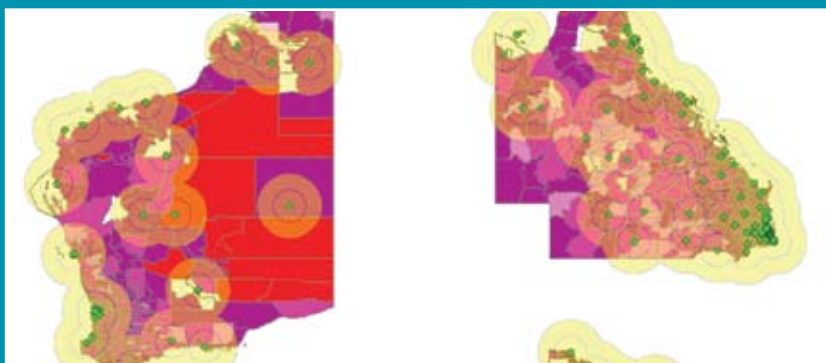. . . Health Declarations

Features:

Simulation of Clinical Work Environments using BIM and Computer Gaming Technology

Spatial Analysis of Public Dental Clinic Locations

Health Reform

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. . . and more

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Cover Pictures: Traditional Thai dancers, courtesy of the First International Conference on Health Services Delivery Management, Phitsanulok, Thailand; Staff Nurse avatar with patient, courtesy of Mitchell and Lowe; fixed adult dental clinics graphic courtesy of Perera, Kruger and Tennant. The three pictures demonstrate the diversity covered in the articles that feature in this issue.

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The objective of the Asia Pacific Journal of Health Management is to promote the discipline of health management throughout the region by:

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- facilitating transfer of knowledge among readers by widening the evidence base for management practice;
- contributing to the professional development of health and aged care managers; and
- promoting ACHSM and the discipline to the wider community.

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A positive or critical comment about the Journal or a particular article or perhaps some suggestions for future Journal themes or suggestions for improving reader interest in the Journal.

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Everyone Wants a Better Health System, but not Everyone can Agree on the Best Way Forward: why?

Those who are interested in health reforms on the world stage will inevitably notice what is happening in the United States. Only days after President Barack Obama's signing into law the *Patient Protection and Affordable Care Act* on 23 March 2010, it is reported that Republicans are vowing to work toward repeal and make Democrats pay at the polls in the November mid-term elections. [1]

Being the biggest healthcare spender in the world, the United States had seen a plethora of initiatives to try to fix its healthcare system, perceived by many to be broken. No one had succeeded in delivering major reforms since President Lyndon Johnson signed Medicare and Medicaid to become part of the *Social Security Act* in July 1965. This includes the former Democrat President, Bill Clinton, whose 1993 reform plan aimed at introducing passionate and ambitious fixes to transform the United States' healthcare system, but failed despite a Democrat majority in both the Senate and House of Representatives at the time.

Obama's victory is in many ways remarkable, especially since the path to the history-making legislative success was anything but smooth. It was more than a year of battling with Republicans and struggling to round up sufficient Democrat support. Some observers now warn that celebration should be limited as major challenges lie ahead because 'formidable implementation hurdles must be surmounted if health care reform is to achieve its goals'. [2]

America and other's experience highlight perhaps one sobering lesson for today's reformers: everyone wants a better health system but not everyone can agree on the best way forward. Why? This question and the extraordinary difficulty of adopting or implementing comprehensive healthcare reforms should be interesting studies in health policy research.

In Asia, where all of the world's major healthcare financing models are in place, the more noticeable recent system-wide transformation was implemented nearly ten years ago when Thailand introduced its 30 Baht Scheme in 2001, extending the government-financed coverage to all uninsured people to achieve near-universal coverage. [3] The more prominent ones before that were probably Taiwan's national health insurance scheme with a single-payer system implemented in 1995 and Hong Kong's corporatisation of its public hospitals back in 1991.

By and large, Asia has trod carefully over the past 20 years in delivering large scale reforms even though fears of unrelenting growth in demand against an unwilling background of runaway costs, ageing populations, workforce shortages and increasing government fiscal pressure were common concerns among government officials, policymakers and reform advocates. When China came out in April 2009 with an assertive reform plan to provide universal access to basic healthcare that prioritises public health, rural health development, essential medicines and primary care facilities, it was hailed by outsiders as an encouraging and laudable decision. [4] But that decision was a product of years of seeking public opinion from inside and outside the country.

While the reform agenda and path must be appropriate to the country's context in terms of values, goals and disease burdens, the factors that might have contributed to the behaviors of Asia's reformers or perhaps its people in adopting sweeping healthcare reforms should also be meaningful comparative policy research topics for scholars and researchers.

Could it be that Asia's healthcare spending has not yet reached a crisis level? For example, the total and per capita total health spending in Hong Kong, Japan, Singapore, South Korea and Taiwan are below the OECD average and among the lowest in the developed economies. [5] These economies have also the world's best health outcome indicators such as infant mortality rate and average life expectancy at birth. [6]

Or, are Asians taking more responsibility for their own health and therefore expect little government intervention? Many people in Hong Kong, for example, pay out-of-pocket to seek private healthcare for most of their primary care and

purchase private health insurance coverage for more personable hospital and specialist care even though the public system provides comprehensive services at nominal charges. Many also seek care from Chinese Medicine providers for ailments that they feel western medicine cannot do the job or as good a job. Half of total health spending in Hong Kong comes from private sources.

Furthermore, could it be that Asia's health systems, albeit adopted many years ago, are serving its people well? For example, Taiwan's national health insurance scheme has been regarded as highly efficient [7] and its experience a relevant one to America's real problems. [8] It, too, ranks number two in terms of the Economist's worldwide health rankings. [9] A national poll in 2009 indicated that an impressive 82.9 percent of the population was satisfied with the scheme. [10]

From another perspective, could it be that Asian govern-ments and policy-makers are very much aware of the fact that there is 'no such thing as 'simple' health reform', as Princeton's Uwe Reinhardt writes in his *New York Times* column [11] and, are thus contemplating strategic incremental steps instead of big-bang approaches that may easily end up being a 'catastrophic victory' – a term coined by Peggy Noonan, a columnist for *The Wall Street Journal*? [12] Healthcare is complex and the system has many moving parts. Fixing the broken parts with the same parts that caused the problems in the first place might be just adding dead weight to the already failing system. Is it worth it? Why is it so difficult to break out of the existing paradigm of access, costs and quality constraints to focus explicitly on motivating people to improve health, enhance prevention and sustain health, especially during old age?

Finally, might it be that Asian governments are sensing that people do not like what they hear and therefore hesitate to risk an uncertain political struggle or even worse a disaster? In Hong Kong, all of the Health Secretaries since the inception of the public hospital management reform in 1991 have initiated some form of public consultation on healthcare financing reform but all of the proposals were withdrawn because of the lack of public support. [13] There are now studies and selected consultations in the works behind the scene. The public is again left waiting silently for the government's next move.

In early March 2010, the Australian Government issued a document outlining its National Health Reform Plan which is to be one of the biggest reforms to the federation in history and aims to provide better health and better hospitals so that all Australians may enjoy access to high quality, efficient and sustainable healthcare in future decades. [14] The objectives are high sounding and the reform agenda ambitious, far reaching and expensive.

Much of the thinking is focused on making drastic changes in the financing and services delivery infrastructures. Little is outlined for how health may actually be improved and sustained. The old paradigm persists again. Will the Australian reforms be embraced and successful? Only Australia's people can influence or shape the outcome and they will.

Geoffrey S Y Lieu BA, MHA, DBA, FHKCHSE, FCHSM, LFACHE
Assistant Editor

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The photographs on the cover of this issue reflect its contents. We thank the authors of the respective articles for the use of the photos. Mitchell and Lowe for the Avatars, Perera, Kruger and Tennant for the geo-spatial map and Tejativaddhana for the Thai traditional dance photo from the First International Health Service Delivery Management Conference held in Thailand, October 2009, and from where the Health Declarations article evolved.

The timing of this issue placed the Journal in the midst of debate about proposed national health reforms in Australia that have attracted much political, media, community debate and, scholarly activity from our academic colleagues. The APJHM has attempted to respond to this opportunity by first requesting Dr Geoffrey Lieu, one of our Assistant Editors and colleague from Hong Kong, to contribute the editorial for this issue. The intention in this approach is to remind our readers, particularly those from Australia, that health reform is not peculiar to that country but is a global phenomenon that is challenging all health systems. He presents perspectives from North America and the Asia Pacific and draws on lessons from that experience for Australia to consider.

The Journal then approached a number of well known and respected academics with a primary interest in health policy to provide a brief commentary on Australian health reforms. A challenge in itself, as the reforms are still unfolding and the detail is limited. However, quite a number have responded positively and we are pleased to present contributions from Leeder, Podger, Leggat, Martins, Baber, Short and Dwyer. This commentary section replaces our normal Q&A feature. Finally, in terms of health reform, we publish a review article from Isouard that examines the reforms in terms of implications for health management and the education of future health managers, important territory for this Journal and the College. From the Editorial to the commentary contributions and the article by Isouard you will see common themes emerging that will make an important contribution to the debate.

In this issue you will find a contribution from Grima, President of the College, about recent initiatives and entitled 'Networks of Collaboration' that reflects international and local collaborations that advance the cause and role of the College. These initiatives are to be more fully explored at the College national congress. Arising from these initiatives and the College participation in the First International Health Services Delivery Management Conference in Thailand last year, is the article by Briggs, Tejativaddhana and Kitreerawutiwong on health declarations. This article describes the role and use of declarations in health and the development of the declaration from the conference that has become known as the Phitsanulok Declaration.

The article 'Simulation of Clinical Work Using Building Information Modelling (BIM) and Computer Gaming Technology' was developed from a presentation by the authors, Mitchell and Lowe, at the 2009 ACHSE National Congress. It is an interesting and unique article that should be of interest to health managers and health professionals that are or might be involved in physical facilities planning. The technology has, of course, wider potential in education and training as well. In a further example of the use and potential for technology in service planning, Perera, Kruger and Tennant examine the distribution of rural dental clinics in three Australian States utilising spatial analysis. Continuing on with some emphasis on technology, Georgiou and Westbrook contribute an article on the implications of e-ordering for the communication environment in a hospital laboratory service.

A further article arising from a presentation at last year's ACHSE national congress presents a literature review about lean health approaches and customers in healthcare. Hayes, Reed and Fitzgerald pose some interesting questions about who are the customers in applying lean health concepts to the health environment. Parmenter and Cruickshank also go to the literature to examine aspects of visiting at rural Australian residential aged care facilities and the implications of our current limited knowledge for policy, planning and management of these important services.

We also appreciate the contribution of College member (Alison) Dwyer for participating in the Sixth Health Services and Policy Research Conference and contributing a report on those proceedings for the benefit of all readers. The contribution by College Librarian Sue Brockway again demonstrates a high standard of contribution and a valuable service to College members. Again, the timing of this issue provides the opportunity to present the new Chief Executive of the College, Daryl Sadgrove in 'In Profile' and to extend an appreciation to Angela Magarry as our book editor.

Appreciation to
Angela Magarry
– *Book Editor*

Angela has taken the decision to move on from the book editor role with APJHM. Angela has served as book editor from the Journal's beginning and has made a significant contribution as a member of the College to the Journal through that honorary role. On behalf of the Journal team and, I am sure the readers, I would like to formally thank her for her much appreciated contribution.

Contributing to the Journal as Angela has done is an effective means of undertaking continuing professional development and at the same time for College members, an opportunity to contribute to the profession. We would like to hear from College members who may be interested in making a contribution to the APJHM through this role. Please contact the Journal at: journal@achsm.org.au

DS Briggs
Editor

LETTER TO THE EDITOR

Inappropriate requests for Diagnostic Imaging (DI) are a significant problem [1,2] and result in risk and cost without benefit. Such risks include missed or delayed diagnoses, the potential for false-positive diagnoses and 'red-herrings' as well as the ineffective allocation of limited health resources, wastage of imaging specialists' and technologists' time, detrimental effects on flow of patients through the emergency department and access block. In particular, the exposure of patients to unnecessary ionizing radiation is a major concern.

In Western Australia, an on-line application ('Diagnostic Imaging Pathways' – DIP – www.imagingpathways.health. wa.gov.au) has been developed over many years with the purpose of reducing inappropriate DI and, conversely, promoting cost-effective guidelines for its use.

DIP is a clinical decision support and educational tool aimed at referrers to diagnostic imaging and as an educational aid for medical students and junior doctors.

The application comprises about 130 clinical scenarios organised by organ system. For each scenario there is a flow chart showing the appropriate order of imaging and indications for imaging. There is extensive accompanying referenced text; each reference is graded according to the Oxford system. There are direct links to PubMed abstracts for the references with the higher grades of evidence. DIP is evidence-based but also consensus based; each flow chart having been developed by an iterative process involving a multitude of specialist radiologists and clinicians (including GPs), under the auspices of an Editorial Panel.

Each scenario is accompanied by 'teaching points' in dot form and by an image gallery (which is in the process of expansion).

There are also sections dealing with an overview of common radiological procedures and ionizing radiation. Consumer information on DIP and common medical conditions can also be downloaded.

The electronic format of DIP allows for continuous updating and addition. DIP is a non-commercial venture and access is free.

DIP is endorsed by the Royal Australian and New Zealand College of Radiologists and the Royal Australian College of General Practitioners, complies with the 'Health on the Net' (HON) standards and is linked to HealthInSite.

However there are limitations to 'stand-alone' guidelines. There is a need for evidence-based and consensus-based guidelines integrated into clinicians' workflow. This can best be achieved by integration of clinical decision support into electronic physician requesting. This project is in progress and is being carried out by our group in collaboration with Dr David Glance's team at the University of Western Australia Centre for Software Practice.

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Senior Thai health officials get together with representatives from Australian health and academic organisations on their study tour to Australia in 2010.

There is considerable growing interest in the Asia Pacific in the value of College affiliation and membership. At this year's National Congress in Perth in July, we will be welcoming our existing colleagues from New Zealand and Hong Kong, with some 15 expected from Hong Kong alone. There will also be two delegates from Singapore.

The value of College membership and the attainment of Fellow status were also powerfully demonstrated last year in Thailand at the First International Conference on Health Service Delivery Management in October 2009. As a consequence, there is now strong interest in developing a similar College in Thailand with affiliation and membership of ACHSM. As a result of this interest, we are anticipating some 14 delegates at the National Congress in Perth.

Recently, the College organised some professional development study tours for senior Thai health officials to Australia, and signed a Memorandum of Understanding with six other Australian, and Thai organisations with the objective of promoting health management as a profession.

The Hong Kong relationship continues to strengthen with 14 of their members undertaking the Fellowship program. I have been invited to Hong Kong to be part of the examination panel.

These initiatives have brought another benefit to the College by expanding the network of organisations with which we cooperate beyond that within which we have traditionally operated. For example, at the recent Thai study tour

Pictured left to right: Emeritus Professor Boonchob Pongpanich, President of the Cardiac Children Foundation of Thailand, Dr Kajit Choopanya, President of the Royal College of Family Physicians of Thailand, Dr Weerawat Pankrut, Deputy Secretary General, National Health Security Office, Dr Siriwat Tiptaradol, Deputy Permanent Secretary, Ministry of Public Health, Thailand, Professor Jim Barber, Vice Chancellor, University of New England, Mr Robert Grima, Federal President, Australasian College of Health Service Management and Dr David Campbell, Vice President, Australian College of Rural and Remote Medicine.

conducted in Sydney, some five academics from different Australian universities, some not from health management schools and at least seven health organisations participated, including some with which we have previously had little direct contact. Therefore, the initial contact with Thailand has brought us into closer alignment with Australian organisations, which will benefit our Australian members. For example, contact and involvement with the Australian College of Rural and Remote Medicine and the Australian General Practice Network will ultimately benefit our rural members and those with an interest in primary healthcare.

To build on these initiatives and explore how best we can collaborate at an international level, the College will be meeting with delegates from these countries pre-congress. We would also be interested in hearing from our colleagues who operate internationally, about how we might work together to our mutual advantage, as has already occurred in the above contexts.

R Grima FCHSM
President
Australasian College of Health Service Management

Leading and Managing the Implementation Process: the key to successful national health reform

G Isouard

Abstract

Introduction: The Australian Government recently announced major reforms to the health system – *A National Health and Hospitals Network for Australia's Future*. The national health reform plan involves substantial structural change which the Government expects will deliver 'better health and hospitals' for future generations.

Approach: A review is undertaken of the proposed set of reforms to determine whether its frame of reference can contribute to the effective achievement of the desired health and hospitals outcomes.

Findings: The national health reform plan was found to have two striking weaknesses. Firstly, it fails to account for the political, cultural, behavioural and professional aspects of change. Secondly, it fails to position leadership and health management as central to the implementation of reform.

Conclusion: The complexity of major structural change is such that major health reform strategies need to incorporate proper assessment of organisational behaviour aspects within a system which values the central roles of leadership and health management. A new leadership model for introducing health reform is presented.

Abbreviations: ACHSM – Australasian College of Health Service Management; NHHRC – National Health and Hospitals Reform Commission; NHS – National Health System; SHAPE – Society for Health Administration Programs in Education.

Key Words: health reform; incremental change; SHAPE Declaration; structural change; future health managers.

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Introduction

The Australian Government recently announced a significant overhaul of the structure of the Australian healthcare system. [1] It followed a period of intense review and consultation through the National Health and Hospitals Reform Commission (NHHRC). The NHHRC recommended reform to address numerous challenges, including that of current access and equity issues that negatively impact on health outcomes; attaining a health system that responds effectively to emerging challenges; and, enhancing the health system for long-term sustainability. [2]

The proposed national health reforms involve substantial structural change to the current health and economic systems in order to provide the required financing and governance foundations. It is widely regarded as the most significant health reform since Medicare was introduced. Despite evidence that health reform strategies rarely realise the targeted efficiencies and improvements, [3-5] the Australian Government has placed high expectations on the reforms in that they will deliver better outcomes and sustainable improvements in hospitals and healthcare for future generations.

There are a growing number of reports that argue the need for major structural reform to address important

organisational behavioural factors. Political, cultural, behavioural and professional factors have been found to be inextricably linked to the process involving structural changes to systems. [6,7]

Research also indicates that appropriately qualified and experienced health managers are of central importance to the successful implementation of health reform. [8] The recently developed Society for Health Administration Programs in Education (SHAPE) Declaration provides a number of guiding principles that define the profession's position on major healthcare reform in terms of policy focus, systems enhancement, service delivery and governance. [8] The importance of health service managers and the need for government commitment to their education and development are included as critical components of successful reform implementation. [9,10]

The aim of this paper is to review the recently announced National Health Reform proposals so as to determine whether its frame of reference can contribute to the effective achievement of the desired health and hospitals outcomes. Where significant issues are found, alternative strategies are proposed.

Health system reform

1. The need for reform
The need for improvement is evident. Rising health costs, the growing impact of chronic disease, an ageing population and the inefficiencies derived through a disjointed funding and policy mechanism, are just a few of the many challenges ahead. Despite current national health expenditure rising sharply in recent years, significant issues exist in terms of access and equity, safety and quality, poor health outcomes for Indigenous people and others with special needs, workforce shortages and a lack of focus on the promotion of health and wellbeing.

In proposing major reform, the Australian Government has readily admitted that the current health system is not prepared for future challenges. [1] Health and hospital services are viewed as struggling in an environment of escalating growth in demand. Major reform is seen as the only measure which can guarantee that future generations of Australians will attain world class quality healthcare.

2. Effectiveness of reform
Across healthcare systems internationally, there remains no real preferred model for the organisation and reform of healthcare. [4,11] Several reports, however, indicate that where major structural reforms have been implemented, there have been issues raised regarding effectiveness,

impact, performance, negative disruptions and instability to organisational function. [12-14] There has also been a lack of clarity as to the purpose of the reforms. [3,15] In evaluating the effectiveness of health reform, there needs to be an evidence-based process that defines how the targeted benefits and outcomes are achieved from the proposed reform strategies. [6]

3. Essential elements of the National Health and Hospitals Network
Following the recent report of the NHHRC, [2] the Australian Government announced its major reform to the national health system – *A National Health and Hospitals Network for Australia's Future*. [1]

The reforms will result in the Australian Government:

1. becoming the majority funder of public hospitals;

2. having funding and policy responsibility for General Practice and primary healthcare services;

3. directing around one third of annual Goods and Services Tax allocations to fund this change;

4. changing the way hospitals operate from centralised to Local Hospital Networks; and

5. changing the way hospitals are funded, by paying Local Hospital Networks directly for each hospital service rather than by a block grant from the Commonwealth to the states. [1]

The reform plans set out the blueprint for several fairly ambitious health and hospital outcomes. Although generally lacking in detail, the documentation of the plan does indicate several drivers for achieving these. Table 1 shows a summary of the key expected outcomes and the main drivers.

Leading and managing the implementation process
In this section, a review is undertaken to identify the key elements required to successfully introduce reforms. The analysis and discussion will be in the context of the proposed national health reforms and will seek to identify any gaps in the implementation process that could preclude the achievement of the designated outcomes.

1. Impact on health outcomes
The proposed national health strategies are essentially 'big bang' reforms that will provide significant structural change to the health system nationally. The Government's expectation is that changes to funding arrangements, together with the strategic introduction of locally controlled networks, activity-based funding, and national governance functions, will drive the change processes. These measures

Table 1: The drivers for the National Health Reform Plan

EXPECTED OUTCOMES	DRIVERS
Better healthcare and better hospitals	**National health reforms**
- sustainable free public hospital care	- nationally unified and locally controlled
- sustainable access to primary care	- Commonwealth funding of GP and primary care
Quality healthcare system	**Activity based function**
- improved efficiency	
- reduced waste	**National governance function**
- greater transparency and information	- independent pricing
- increased accountability	- performance reporting
- improved clinical governance	- clinical standards
- sustainable improvements	**Direct payment for services to Local Health Network**

are seen as important drivers towards greater efficiencies, increased transparency and accountability, and sustainability into the future. There is an unsubstantiated assumption that restructuring to obtain systems improvement directly leads to better health. Typically, published reports have indicated that big bang changes, often accompanied by increased spending on healthcare and delivery, have an upfront assumption that the population will benefit through improved health status. [6,14] The current proposal for national health reforms appears to have adopted this position.

In a review of various options to reform the Australian health system, Boxall and Buckmaster found that the likelihood of successfully introducing any big bang reform plan is rather limited. [16] This view was similarly shared by others who supported a smaller scale incremental approach to national health reform. [6,17]

In recent years there has been strong support and evidence for acknowledging factors outside of the health system as determining the health of the population. These factors, social determinants of health, are seen as having a significant influence on health at the individual or population level. [18,19] Thus factors such as socio-economic status, environment, education attained, employment and community capacity, are regarded as influencing health status throughout life. [20]

2. The political, cultural, behavioural and professional aspects

Despite growing evidence that a structural view of health reform is largely ineffective, [4,5] health reform based on such foundation continues to be introduced. Recent research evidence has indicated that major change through health system reform is significantly impacted by a variety of organisational behavioural and professional issues. [14,15,21] However, despite such fairly compelling evidence, those committed to reform tend to ignore their significance. [5,6]

There is a growing view that a structural approach to change needs to be appropriately accompanied by due consideration to the key organisational aspects; political, cultural, behavioural and professional factors. [5,6,7] Such factors provide invaluable insight into strategically planning for the implementation of systems change. [7,22]

In particular, health reforms represent a major change in organisational culture. [23] As cultural change is regarded as a significant lever for health system reform, [22] one needs to adopt strategies that account for it in the organisation. [4] Recently, Stewart and Dwyer reported that cultural change was necessary if clinicians were to be re-engaged in the implementation of the Garling recommendations for the New South Wales public hospital system. [24]

In addition, professional practice and its membership are key factors that need to be accounted for when planning and implementing health reform measures. Health professionals have historically provided leadership in advancing health and clinical services and similarly resisted change through a process of professional socialisation, training and advancement. [7] It is, therefore, imperative to consider these professional aspects when planning the implementation of reform strategies.

3. Development of future health managers and leaders

Over the last decade there has been growing interest in the importance and contribution that leadership and management can play in the health service delivery and health reform process. [25-28] Leadership has emerged as a key strategy to address the unique challenges in healthcare. [9] Despite leadership being central to implementing reform, [4] the current national health reform strategies refer more to leadership from an Australian Government perspective than at the important healthcare and health services level.

The recently developed SHAPE Declaration provides a number of guiding principles that define the profession's position on reform in terms of policy focus, systems enhancement, service delivery and governance. The importance of health service managers and the need for government commitment to their education and development are viewed as critical aspects for successful change. [8,10]

The Australasian College of Health Service Management (ACHSM) has supported the SHAPE Declaration and called for an informed public debate on the contribution health service managers make to the health system. [29] In particular, ACHSM has sought significant investment from government, health departments and healthcare providers into health management education and training; the qualifications and credentialing of health service managers; and the continuing development of the health manage-ment workforce. [30] This was regarded as necessary to allow the health system to be effectively led and managed.

Developing leadership capability has been crucial to the achievement of targeted reforms in the National Health Service. [31] A strategy has been to develop leadership and management skills for healthcare professionals through organisations creating appropriate conditions which ultimately support new models of leadership. [31,32]

In terms of leadership and management development, the SHAPE Declaration includes provision for minimum standards of health management education, structured work-based training and experience and continuing professional development of the workforce. [8]

4. A leadership model for introducing health reform

Managers need to be central to the planning, implement-ation and change process. In reviewing the various published models that propose major structural reforms to health systems, two striking features emerge that appear to characterise the ones that failed to realise their desired outcomes.

These are:

1. Failure to account for the political, cultural, behavioural and professional aspects of the process of change.

2. Failure to position leadership and health management as central to the implementation of health reform.

In reviewing the frames of reference for introducing health reform, two questions were raised:

1. Are the reforms likely to be effective in achieving the designated health outcomes for individuals and the population?

2. Are leadership and health management at the healthcare and health services level considered central to achieving successful health reform?

In terms of the current assessment of the proposed national health reform strategies, the responses to each of the above questions would be as follows:

1. Unlikely – the major assumption is that changing the health system will lead to improved health to the nation.

2. Leadership and management at the healthcare and health services level were not considered.

The proposed national health reform model is, therefore, seen as having several inadequacies that are likely to impact negatively in it achieving the desired outcomes. As such, a new leadership model for introducing health reform has been developed. As shown in Figure 1, it includes the aspects that have been reported in this paper as important in the change process.

Discussion

This brief review of the current national health reform plan has revealed that if implemented, two striking weaknesses would exist. The plan fails to account for the political, cultural, behavioural and professional aspects of change, and does not position leadership and health management as central to the implementation process. The complexity of significant structural change is such that evidence has shown major health reform strategies need to incorporate proper assessment of organisational behaviour aspects within a system which values the central roles of leadership and health management.

The limitations found with the current reform plans led to the development, by the author, of a new leadership model for introducing health reform. In its simplest framework, the new model for change takes due consideration of key organisational and leadership factors.

Figure 1: A leadership model for introducing health reform
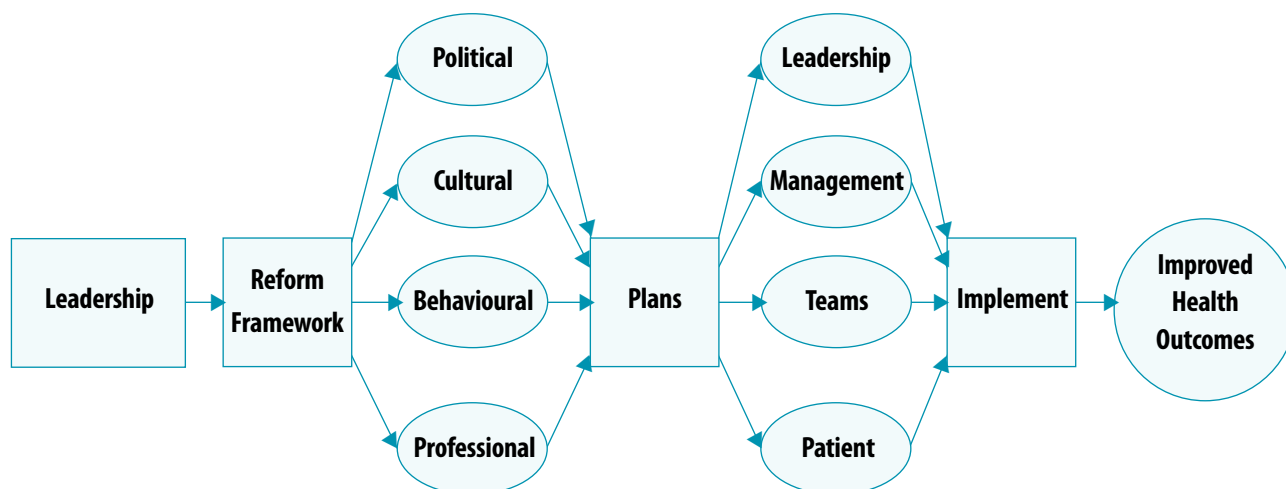
The study has also confirmed the growing evidence of the importance and contribution of leadership and management in the health reform process, and as promulgated in the SHAPE Declaration. The health management workforce requires managers to be appropriately qualified and trained, and skilled in engaging at various levels of healthcare delivery within complex health service organisations.

Competing Interests

The author declares that he has no competing interests.

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COMMENTARY

Can you provide our readers with an initial impression and response to the recently announced national health reform plan – *A National Health and Hospitals Network for Australia's Future* – **and identify what you see as the major benefit and the major challenge in the adoption of the plan?**

Given the announcement of the recent proposed health reforms we have taken the opportunity to ask key health policy leaders and commentators on their views of the benefits and challenges that such sweeping reforms will bring.

1. Too many unanswered questions

The main argument in favour of a single government funder for the health system is to promote a patient-oriented system. It rests on the increasing extent to which effective healthcare involves providing individuals with a mix of services over an extensive period, so that cost effectiveness requires the ability to shift resources easily between types of care. Such substitutability needs to be possible, at least to some degree, at a number of levels. At the national level, what a single government funder could help to do is to build the capacity to monitor the health of particular groups of high-risk patients (such as diabetics) and their care services and to provide support and guidance to improve cost-effective care.

It is also important to have some capacity to substitute resources across the system at much lower levels, to fill gaps (most obviously in rural areas but also in some outer metropolitan areas), to ease transition between services (to give more priority to rehabilitation and to involve GPs more in the overall process) and to offer convenient as well as lower cost services in place of the current over-reliance on hospitals.

A single government funder also offers the opportunity to rationalise co-payments, the relationship between public and private health insurance and the roles and efficiency of our public and private hospitals. The potential gains are probably of the same order as those from better allocational efficiency. The single funder may also lead to greater technical efficiency such as through wider use of activity-based funding of hospitals, but this was never the primary focus.

So how do the Rudd proposals stack up?

Frankly, not all that well on the basis of what has been revealed so far.

There is no explanation of how local hospital networks are to be linked to primary care or aged care, either locally or regionally.

Figure 11 in the document released in March is telling. [1] It purports to identify proposed roles and responsibilities, but the 'Regions' column is completely blank. The Prime Minister's discussions with the Australian Capital Territory Government also reveal confusion as to the role of the networks. Are they 'local' or are they regional? Are they providers only of acute care or responsible for broader health services? Will we see a primary care led system or a hospital dominated system?

There is also no clarification of how nationally the Commonwealth intends to take advantage of its direct involvement with paying for individual patient episodes in hospitals to improve cost effectiveness of care for the chronically ill and frail aged. With Medicare Australia now operating outside the health portfolio and no longer contributing significantly to its original 'health insurance' role (rather than just making payments), some new administrative arrangements are needed at the national level.

The National Health and Hospitals Reform Commission (NHHRC) [2] was also deficient in these areas. Rudd seems to be pursuing much of the NHHRC's 'Healthy Australia Accord' model, but with every indication that he does not like the NHHRC's preferred 'Medicare Select' model for the long-term. If that is not the long-term model, what is?

Regrettably, the NHHRC did not offer an alternative long-term model, rejecting the regional purchasing option (Option B) it described so poorly in its first report. [3]

Four years ago I set out in the first three issues of this Journal, my suggested model for the Australian health system based on the Commonwealth being the single government

funder. [4-6] This was a regional purchaser model, offering considerable opportunity to re-allocate resources between and within regions, as well as nationally. Importantly, I described in some detail funding, purchasing and providing responsibilities (and structures) at the national, regional and local levels, and outlined an implementation process. I noted it would be possible to move on from this model to a managed competition model (such as Medicare Select), but importantly the model also represents a long-term, stable structure with in-built flexibility to meet changing patient needs if managed competition is not favoured. Unlike the Rudd proposals, or the NHHRC's 'Healthy Australia Accord', it is not just a step towards something else.

That said, there is merit in Rudd's proposals, particularly if it is accepted that a direct move to a single funder is too risky. There are also weaknesses in many of the complaints by the Premiers.

The proposals do provide a basis for the Commonwealth to monitor the effectiveness of health services for the chronically ill, to improve primary healthcare and to address many of the gaps in the health system. Importantly, it opens the door for fundamental financial restructuring through its proposals to redirect GST revenue back to the Commonwealth to meet its increased health responsibilities. For these reasons I have been giving the proposals qualified support: they seem to be broadly in the right direction and there may be time over the two year implementation period to get the structure more nearly right.

The Victorian Premier has been focussing his attention on demands for extra spending by the Commonwealth. It is too easy to identify good things to spend more money on: the central reform issue is to develop a structure that is likely to encourage the most cost effective use of whatever monies are available. More telling criticisms by the Premiers concern the details of the proposed activity-based funding of hospitals, including who will bear what responsibilities.

Rudd may yet reveal satisfactory answers to the unanswered questions. But he must also be wondering now whether it would have been more sensible to go the full distance to a single government funder, and allow the Commonwealth to rationalise existing federal and state structures rather than allow the two to continue to co-exist and to continue to pull in different directions.

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2. Rudd's recipe for rude health

Something profound is happening in the Australian community when a debate at the National Press Club between the Prime Minister and Leader of the Opposition focuses on healthcare. An active interest is growing in public policy as a major instrument to achieve social goals and individual aspirations.

But Australian public policy problems have a habit of turning into conflicts over federalism, and this is dull fare. The immense imbalance in resources and responsibilities between the federal government (controlling most of the revenue) and the states (delivering services such as education and healthcare), transforms attempts to improve services into intergovernmental fiscal battles, leaving both sides locked in a circular game of cost shifting and finger pointing: are shortfalls in the hospitals the result of a lack of money (blame the Federal Government) or poor administration (blame the states)?

The Rudd reforms of healthcare have the virtue of confronting this administrative confusion. The Federal Government proposes to increase its share of hospital funding, capital and recurrent, from less than 40% to 60%. This adjustment is coupled with a resounding rhetoric of reform, promising a breach in the log-jam of federalism. The reality of the proposal falls short. The states are left, in Rudd's phrase, with considerable 'skin in the game' – their 40% share promises new versions of the old inter-governmental 'blame game'.

The second arm of Rudd's reforms involves a shift to more efficient pricing of hospital services. Victoria has been using a modified case mix system to fund its public hospital system – its apparent transparency has been taken, with remarkably little serious evidence, as proof that this should be the national model. Critics quickly invoked the diversity of the federal organisation of healthcare. Costs are quite different from state to state and even on a regional basis, making a

simple extension of the Victorian system impossible. Rudd has already promised to exclude smaller rural hospitals from the efficient price system. More concessions are likely to follow as regional and sectional interests mobilise, including academic interests in medical research and education in major hospitals. A national system could emerge, but with political compromises rendering the health economic 'efficiencies' illusory.

The largest hurdles derive from the most popular part of the policy, captured in the slogan 'funded nationally: controlled locally'. Pre-empting policies of the conservative opposition parties, Rudd moved to mobilise popular hostility towards the states and profound morale problems in many of the highly centralised state systems and promise effective, though undefined, control to local hospital-focused 'health and hospitals networks'. The proposal has won support from sections of the medical profession, including the normally hostile Australian Medical Association, to the consternation of sections of Rudd's Labor Party. Population health has an awkward future in such a fragmented structure.

So far Rudd's reforms have had a remarkably easy ride. Massive majorities for change in national opinion polls have reduced the opposition parties to carping negativity. Rudd's speeches commence with dire warnings about the crippling burdens of chronic illness in an ageing society; the policies that follow are focused thus far almost entirely on hospital funding. But much more is promised. Effective reform must avoid the quagmires of hospital finance and the sterile games of fiscal federalism. The roll-out of the entire federal health policy, informed by two years of consultation and expert deliberation, is likely to maintain public interest and, we may hope, lead to even better health and healthcare for all Australians.

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3. Bringing decision-making closer to the hospital?

The National Health and Hospitals Network plan is extremely short on detail. At the time of writing, we await more announcements, including some answers about primary healthcare and the relationship between hospital and non-hospital care. From the point of healthcare managers, one thing is clear and can be welcomed – staff of the 100 odd hospitals and health services consulted since July last year gave a strong message: we want decision-making to be closer to the hospital! Clinicians tell stories of hopeless delays in getting quite small local decisions made, and the many degrees of separation between them and anyone who has authority. The Leader of the Opposition has been hearing the same message, making this the one structural topic on which there is bipartisan agreement.

This is what the Prime Minister said early in his speech to the Press Club:

> These Networks will bring together small groups of hospitals in a local area, where local professionals, with local knowledge, are given the necessary powers to deliver better hospital services to their local community. (Prime Minister's speech to the National Press Club, 3 March 2010. www.pm.gov.au/node/6534.)

Are Australian hospital managers ready for a 180° turn? It's not so long ago that everything got centralised, in a great wave where decision-making authority was pulled right in to state health authorities around the country. It happened (in the 1990s and earlier this century) because governments wanted tighter accountability in a portfolio that always blows its budget. The belief that devolved governance (in the hands of semi-autonomous boards and their CEOs) was failing was based on budget deficits and some insubordination by hospitals wanting a bigger or more glamorous role.

Victoria was the only standout, keeping boards but reforming them twice – former Premier Kennett made bigger networks and more business oriented boards; former Premier Bracks made them smaller and reduced their autonomy. Victoria is now seen as the best performing system, although the evidence for this view is slim. On the other hand, there is no evidence that centralised governance has reduced hospital budget deficits, which continue relentlessly. So we observe the winds of change, and wonder.

Will the Rudd/Roxon plan work? That is impossible to say – there are too many unanswered questions. But there is one certainty worth noting. Change will happen, and for many reasons: people are convinced that reform is needed (93%

of respondents to a 'quick survey' on this question on the 'Your Health' website answered yes); the government has hung its hat on health reform (and Obama's just done it); and some states can't afford to operate health systems for much longer.

The major benefits will be increased funding and hopefully, the money following the patients, along with restoring operational autonomy to hospitals so they can get on with business a bit more responsively. The biggest challenges will be to retain the policy and administration skills that are currently in state health authorities; and to make sure that Canberra doesn't start to micro-manage instead.

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4. Hospital services: we know and can do better

Australia has been well endowed with health economics and policy professionals. Therefore, it is regrettable to see hospital services being treated like amateur hour on TV. The Federal Government's *A National Health and Hospital Network for Australia's Future* reflects on the skill and experience of those involved in its preparation. It illustrates approaches to health services in increasing centralised federal and state governments that try to micromanage the system with 'benchmarks', 'standards', financial 'budgets' and now 'efficient prices'.

The document proposes to continue to rely on the states to manage the system. So what is the advantage of the proposals to deal with 'fragmentation', 'blame-shifting', lack of 'cohesion', 'cost-shifting', 'increasing demand', 'innovations in technology', and 'increasing health costs' that 'outstrip revenue'?

The proposals deal mostly with structures and processes with abstract outputs and outcomes. First, the states give up about a third of their GST revenue, to make funding 'revenue neutral' (p.51). They set up hospital networks and manage them (p.64). The Federal Government pays 60% of the 'efficient price' of 'public' inpatient and outpatient services in public hospitals (p.27). The states are left with the responsibility for the rest of the 'efficient' and 'inefficient' costs of operation (p.35). Direct management of each 'Local Hospital Network' is given to a 'Professional Governing Council' and a 'Chief Executive Officer' appointed by the Council (p.63). Consumers have nothing to offer. Canberra oversees the system and gets the states to make these

councils 'to operate efficiently' according to set 'standards' and 'service contracts' (p.61 and 64). The standards of clinical and other functions will 'evolve from the Australian Commission on Safety and Quality in Healthcare' (p.59). More consultants needed? The Feds 'will be alerted to poorly performing hospitals' and 'will require states to step in and fix these problems' (p.58 and 64). The hospitals will be funded by direct payment in accordance to the set 'efficient price'. In the case of dispute about the 'efficient price' and or 'scope of activity' a new and independent bureaucrat will be the 'umpire' and arbitrate (p.70). Et voila, there shall be one national non-fragmented system instead of eight different ones (p.28), 'reasonable levels of access', 'clinical safety', 'efficiency' (p.33) and 'a high quality health system that is sustainable into the future' (p.74). Are we that naïve? [1]

Let us start with 'fragmentation'. A major element in the fragmentation of the 'system' is between private and public services that involve clinicians, highly commercialised pathology and imaging services, hospitals, aged and extended care services, and many other elements in the private and public sectors. 'Local Hospital Networks' will not have the capacity to resolve this public/private aspect of fragmentation, as the 'hospital boards' of old did not. The Federal Government has no constitutional power to deal with private medical practitioners either. For instance, why are there only a few cases of 24-hour privately run services in public and private hospitals to serve drop-ins and those seeking medical care after private surgery hours? The proposed 32 GP super-clinics are unlikely to overcome this problem (on average: one clinic for 600,000 people). The same applies to governments' lack of action in ensuring quality aged/extended care in the private sector. This fragmentation is going to fade away with wishful thinking about GP services. Additional funds would help but it is not just funding. There is also fragmentation inside hospitals between clinical and ancillary services and due to professional boundaries that effect continuity and team approaches to hospital care. Similar management arrangements in the United Kingdom (in the good old days) to those proposed did not resolve and, at times, consolidated professional boundaries and a non-cohesive management. These are management issues that 'standards' and/or 'activity-based funding' are not well placed to deal with.

The document recognises that the states have faced substantial increases in hospital utilisation. However, it does not clearly explain that more than half of this growth could be attributed to other reasons than population growth and ageing. [2] The states are using funding caps on hospitals to keep use within their perceived budgetary constraints, when Canberra reduced its share of public hospital funding

from about 45% in 1995-96 to less than 40% in 2007-08. (p.290). These caps are one of the perceived factors leading to waiting lists and times and moral problems in hospitals. Canberra proposes to use activity-based funding to pay 60% of the 'efficient price' (p.27 and 33). It is supposed to provide incentives to the states and hospitals to improve efficiency and produce more with the same funding. The document states that activity-based funding could yield savings of $0.5-$1.3 billion per annum (p.50). The mid-point in the range represents about three percent of the operating costs of public hospitals. [3] If the problem in funding is only three percent, it is not as great a problem as it is made out to be. It is curious that state incentives are supposed to rise while their share of funding is implied to fall! Further, future spending will 'be constrained to two percent per year' in real terms (p.54). If demand continues to grow above two percent, either the states will have to fund it or hospitals will not be paid according to their activity: is it back to blame-and-cost shifting, and possibly constraints on admissions and long waiting times? Where is the future financial 'sustainability'?

The paper accepts that, in addition to funding, there are issues concerning the supply of doctors and nurses and proposes to have more trained. There is no doubt that the welcome increase in the proportion of female medical practitioners, often balancing practice and family formation, will continue to require more doctors per head of population. However, the training of more nurses does not address why so many leave the system and are not inclined to return. The observed prevalence of a bullying environment and other working conditions [4] are some reasons for the perceived scarcity of nurses, in spite of the large reservoir of trained people. Again, these are important waste and management issues that are not dealt with.

The document states that 9.3% of hospitalisations in 2007-08 were 'potentially preventable' (p.37). These were attributed to such conditions as lack of vaccination, dental problems, convulsions, epilepsy, dehydration, gastroenteritis, pyelonephritis, diabetes complications, chronic obstructive pulmonary disease and congestive cardiac failure. The authors of these estimates indicated that these were potentially 'avoidable if timely and adequate non-hospital care had been provided'. [5] Analysis of the data showed that socio-economic levels and relative remoteness were factors associated with rates of these 'avoidable' admissions. These issues involve, among others, the organisation and practice of private medical care (not just funding). They need to be addressed and are unlikely to be resolved by the 32 super-clinics, additional GPs, hospital networks or activity-based funding.

Canberra is adding to 'fragmentation' by the possible release of separate proposals for mental health, aged/extended care, primary healthcare and health promotion. A hurdle in getting most of the real issues dealt with is the impression that the problem is about who funds what. This is the easy part of the conundrum. Canberra's take up of a larger shared responsibility for hospital funding may have only a short-lived and cosmetic effect, and may result in considerable wasted time and resources. Hospitals often present the symptoms of unresolved problems elsewhere. That little attention is paid to mental and physical health promotion outside the medical sector is a major issue – the paper from Canberra indicates the failure of longer working hours (that may affect physical and mental health) leading to better policy work. The inept attempts to deal with the organisation and practice of private medical care and continuity of care among complementary services in the public and private sectors are rudimentary. Within hospitals there is reluctance to handle relevant management of clinical services. Yet another factor is the continuing mismanagement of human resources. These issues point to management rather than just funding questions. They suggest the need for more skilful managers and management in addition to any extra funding. Some of the proposals may prove useful such as more local management responsibility and the evolution of clinical standards. These could be considered needed but not sufficient conditions. Further, as far as the proposed composition of professional Governing Councils are concerned, it is useful to note that clinical training gives no assurance of hospital management skill, and financial skills are inadequate, and often inept, in handling human resources, the mainstay of healthcare. We know and can do better.

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5. It may be national and focuses on hospitals, but it is definitely not about health. . . .

As I read *A National Health and Hospitals Network for Australia's Future* I was transported back to my post-graduate studies at the University of Toronto. I can clearly see Dr Eugene Vayda standing at the front of the lecture theatre explaining how the Canadian healthcare system became expensive, because the national government gave money to the provinces for doctor and hospital care. [1] The Federal Government bribed the provinces to join up to the national health insurance scheme, but made the mistake of enticing them through the most expensive parts of the system. Dr Vayda emphasised that it was no wonder that health system costs were outpacing government revenues, when the federal government did not consider the needs of the population to provide a policy and funding package that was designed to keep people healthy in their community, but instead threw money at doctors and hospitals. This happened in Canada in the 1950s, and Canadians have spent the next 60 years trying to re-orient their healthcare system.

With the benefit of the knowledge of what has happened in healthcare systems around the world, why would the Australian national government use a policy approach that did not work in the 1950s to try to reform a 2010 healthcare system?

In my opinion the attention on GPs and hospitals in this reform process is misplaced, and healthcare costs will continue to rise. The 'national standards for a unified health system' set expectations for greater use of hospitals. Standards that focus on increasing access to public hospital care do not reposition the system from one of caring for the ill to ensuring health. There is clear evidence from organisations such as Kaiser Permanente that setting standards that require population health to improve results in a system that is better at meeting population needs [2] (as compared to our system, which is very good at meeting health professional needs). Even the United Kingdom has figured out that system standards should have something to do with improvement in health. The implementation of the PROMs (Patient Reported Outcome Measures) is slow but has the potential to refocus what is considered to be important for health. [3] Local 'hospital' networks have been tried in many countries, but the consensus is this model does not work: not surprisingly, expensive inappropriate hospital care increases in these structures. The government should be focusing on population health and encouraging local 'health' networks that are accountable for making a

positive impact on the health of a community. The World Health Organization stresses the need for access to family- and community-oriented primary healthcare, supported by a flexible and responsive hospital system [4] (and not the other way around).

The goal of our system should not be to get more people into hospital, but to keep them out. The Commonwealth Government says that their pledge to take full policy and funding responsibility for GP and primary healthcare services in Australia will enable more care in the community. But we know that this will only work if there is equitable access. Maintenance of the current model with more than sufficient access to doctors and allied health practitioners in the cities, with long dusty kilometres between health professionals in the rest of the country, is not going to work. Perhaps instead of adding more health professionals educated and structured to meet the acute care demands of the past, the reform should focus on matching health professional skills with population health needs. [5]

I am concerned that despite the 'once in a lifetime' opportunity to make needed change, the Commonwealth Government is focused on ensuring a handful of trees survive, while the forests fall around them in chaos.

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6. Changes and challenges and reform: Australian National Health and Hospital Network

The Australian National Health and Hospital Network (ANHHN) proposes a fundamental redesign of funding and governance of the Australia's public hospitals. This shakeup promises to be the most significant undertaken of the Australian health system since the introduction of Medicare nearly 30 years ago.

The Federal Government's reform blueprint is based on a quantum shift in the current funding and administrative responsibility for public hospitals and primary healthcare that the Commonwealth and the states currently exercise. The reform package entails the conversion of the fragmented state-run health system to an integrated national system. The eventual aim is for closer Federal and state co-operation resulting in the creation of 150 local networks each running between one and five hospitals.

The reforms are designed to limit individual state control over policy and management of their respective health systems, which have increasingly been unable to meet the rising costs of healthcare delivery especially acute and sub-acute care. The reform proposals see a significant shift in Federal funding of health and hospital services. The ANHHN proposes that the Commonwealth claws back 30% of the GST payments, normally taken by the states. As a result of the reforms, it is proposed that the Commonwealth will assume 60% of the gross public hospital costs and out-patient services (up from the current 40%), and the states will each contribute the remaining 40%. In addition, the Commonwealth will continue to contribute mostly 100% of the costs of primary care and aged care services as they do at present.

A key element of the health reform is the establishment of Local Hospital Network (LHNs) groupings of up to five hospitals run by a chief executive and a governing council. LHNs will be responsible for the local needs and working collectively to address critical problems such as waiting lists and waiting times in emergency departments. However, this is an example of where 'the devil is in the detail.'

These LHNs will be obliged to work with local primary care providers. The funding arrangements and the integration between hospital and primary care services at a local level will be dependent upon the governance structure because in the past, resources have been largely directed to maintaining hospital services at the expense of primary care. The current outline of the networks is vague. This is particularly so in relation to how hospital networks will interact with local communities.

Under the reforms, the dependence on activity-based funding, or case-mix funding system, as adopted in Victoria and South Australia, will see a national roll out for all states. In terms of implementation, the reform proposals do not appear to be particularly well thought through but the reform affords the Labor party the opportunity to play to its strength and go to the polls with a health and hospital policy that purports to improve an ailing health system and has the aura of producing something radically different to what we have had in the past.

States and health professionals alike remain critical of the inadequate documentation and detail concerning how the health policy reforms will work in practice. With national elections to be held in the not too distant future, commentators have not been slow to suggest an underlying political agenda that is the driving force behind the reform proposals. In spite of these concerns, state Premiers are thought likely to sign up, albeit reluctantly, to the new health compact, not least of all by reason of the increasing difficulty of meeting spiralling health costs.

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7. Why the pressure is on to deliver on national health reform . . . .

My initial impression of the Rudd Government's plan, *A National Health and Hospitals Network for Australia's Future*, is that the Government has found itself in a political situation where it feels compelled to get 'runs on the board' in national health reform. The reasons are many and complex and they include the following considerations:

First, Prime Minister Rudd made a commitment prior to the 2007 election that he would 'end the blame game' and the shifting of costs and responsibilities between the states/territories and the Commonwealth Government. In fact he went so far as to promise a referendum if he could not get the states to agree to a significant health and hospitals reform.

Secondly, the need to achieve significant reform became even more urgent and important when Rudd's proposed emissions trading scheme was blocked by the Senate prior to the Copenhagen Summit on Climate Change, in December 2009. The Rudd Government did not want to appear unable to achieve its reform agenda.

Thirdly, the pressure on Prime Minister Rudd increased even further when President Obama achieved significant reform in health insurance legislation in the United States of America in March 2010. This is of historic significance, as it extended healthcare to tens of millions of uninsured Americans, and achieved near-universal coverage. This won President Obama significant credibility both externally and domestically. So, for domestic, party-political and external reasons the pressure was on to be seen to deliver on national health reform.

So, my overall response is that the Rudd Government was under considerable pressure to reform the national health system in 2010. And it was left with a very tight time frame, basically before the 2010 May budget, to achieve this. The breakthrough came at the Council of Australian Governments (COAG) Meeting held in Canberra in April 2010 at which all the Labor states and territories agreed to a set of healthcare proposals. At the time of writing the Western Australia Government was opposed to the plan.

I will now identify the major benefit in the adoption of the plan. The major benefit of the healthcare agreement is that the public hospitals now have a more secure source of funding (with funding for hospital activities sourced 60% from the Commonwealth and 40% from the states). The incentive for cost shifting between General Practitioners and outpatients, and between hospitals and aged care institutions, is also reduced, as the Commonwealth has taken responsibility for funding primary care and aged care as well.

So, what is the major challenge in the adoption of the plan? The major challenge is that the Commonwealth agreed to allow the states/territories to administer the 90 or so Local Hospital Networks (LHNs). This means that the states will choose which hospitals to group into networks and will choose the council members who will oversee the LHNs, and hold them to account. This means that the Commonwealth does not have the power to implement the efficiency drives it seeks to achieve with the implementation of activity-based funding. [1] This is the major challenge. The Commonwealth is the major funder, but the states and territories still have the power to oversee the administration of public hospitals in their respective states and territories. The Commonwealth failed to secure sufficient power over the public hospitals it funds. Rudd's hospital reform plan is unlikely to achieve the value for money we have been promised.

Professor Stephanie Short FCHSM
From the University of Sydney, is the co-author of *Healthcare and Public Policy: An Australian Analysis*, the fourth edition of which will be published by Palgrave Macmillan in June 2010.

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Health Declarations

DS Briggs, P Tejativaddhana and N Kitreerawutiwong

Abstract

The Thai–Australian Health Alliance was established in 2004. [1] The Alliance was primarily developed from a Memorandum of Understanding between Naresuan University, Phitsanulok, Thailand and the University of New England, Australia, with a primary objective of working to develop health management capacity and capability in health professionals working in rural-based health services in Thailand. The Alliance has demonstrated five years of sustained collaboration, the outcomes of which are described elsewhere. [2] The Alliance determined to celebrate those five years of successful collaboration and to further reinforce the importance of effectively trained health managers to the delivery of health services by conducting the First International Conference of Health Service Delivery Management in Phitsanulok, Thailand in October 2009.

A major outcome of the conference was the development and adoption by the conference of the Phitsanulok Declaration. This paper describes the process adopted at the conference to develop and adopt that Declaration.

Abbreviations: OR- Operations Research; PHC – Primary Health Care; R2R – Research to Routine; SHAPE – Society for Health Administration Programs in Education; WHO – World Health Organization.

Key Words: primary healthcare; health management; declarations.

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[5] The recent change in name from Prawit Taytiwat represents an honour bestowed by the King of Thailand, His Majesty King Bhumipol.

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Introduction

The Thai–Australian Health Alliance was established in 2004. [1] The Alliance was primarily developed from a Memorandum of Understanding between Naresuan University, Phitsanulok, Thailand and the University of New England, Australia, with a primary objective of working to develop health management capacity and capability in health professionals working in rural-based health services in Thailand. The Alliance has demonstrated five years of sustained collaboration, the outcomes of which are described elsewhere. [2] The Alliance determined to celebrate those five years of successful collaboration and to further reinforce the importance of effectively trained health managers to the delivery of health services by conducting the First International Conference of Health Service Delivery Management in Phitsanulok, Thailand in October 2009. A major outcome of the conference was the development and adoption of the Phitsanulok Declaration. This paper describes the process adopted at the conference to develop and adopt that Declaration.

Health declarations

Consistent with a more global response to health challenges, a number of declarations have been created and adopted in recent decades as a means to raise awareness of health issues and inequalities and to provide a more focussed and often global response to the challenges presented. Probably

the most recognised of these declarations was the signing of the Alma Ata Declaration in 1978, by 134 health ministries, focussed on primary healthcare, that set a deadline of 'health for all' by the year 2000. [3] This declaration is credited with 'bridging the gap between declarative/symbolic politics, on the one hand, and substantive policy development'. [4 p.190] There have been other intermediary declarations and then a focus on health promotion with the adoption of the Charter for Health Promotion at the first International Conference on Health Promotion in Ottawa in 1986. [5] A further important declaration for the Asia Pacific was the 1997 Jakarta Declaration on Health Promotion, a first to come from a developing country that attempted to re-examine determinants of health and to propose directions and strategies for promoting health in the 21st Century. [3] This was followed by a significant number of resolutions at national and global level including The Bangkok Charter for Health Promotion in a Globalised World. [6]

Declarations suggest 'high importance' and raise an issue beyond normal debate to 'create a universal and bold statement'. [7 p.1867] There are a variety of declarations developed for a range of issues or health challenges such as medical ethics, public health, mental health, health rights, and development, for nutrition, women and children. [8] With the exception of the SHAPE Declaration [9] few if any focus on the importance of effective health management in addressing health challenges and in improving universal access to health services. However, management is alluded to in some declarations in the sense of management of systems, a disease state, and governance [4] and in improving 'national and regional research capacity and the management capacity of public health systems'. [10 p.6] The lack of an emphasis on the importance of health management to effective healthcare delivery has occurred despite the World Health Organization (WHO) placing an emphasis on management and leadership capacity building so that health professionals can be effective, particularly in implementing primary healthcare reform. [11]

The First International Conference on Health Services Delivery Management

The conference had as its aim 'strengthening the management of primary healthcare and district health services in uncertain times'. [12] Papers presented over the four days addressed human resource management and health policy, health financing, social and behavioural aspects of health service management, and organisational behaviour, quality assurance, leadership and innovations for health services development. The conference attracted

450 delegates from 17 countries and 14 organisations. There were six keynote/invited speakers from Thailand, eight from Australia and one each from Bhutan, Hong Kong, Indonesia and Malaysia. More than 30 oral presentations were made in parallel sessions of peer reviewed submitted papers and a further 23 poster presentations were displayed. These parallel session papers were presented by speakers from Australia, Saudi Arabia, Nepal, Cambodia, India and Indonesia as well as Thailand. The cultures of all of these countries, including a delegation from Sudan, was also celebrated at the welcoming reception.

The conference organisers intended that an outcome of the conference would be a heightened awareness in the Asia Pacific of the importance of health management to effective health service delivery and the need to develop health management as a profession in its own right rather than it being seen as an 'add on' to an existing clinical role. This view is consistent with that of the WHO in its endeavours to strengthen primary healthcare generally. [11,13] To achieve this outcome it was proposed that a Declaration would be developed from the conference.

Methods

To achieve this outcome a background briefing paper [14] was prepared prior to the conference and included in the conference satchel distribution to all delegates. In addition, a draft declaration was developed prior to the conference that contained a preamble and some ten possible declaration points that the conference might consider. This draft was displayed in a prominent position in the main conference venue with a post-a-note board for delegates to make contributions. Speakers were encouraged to challenge delegates to reflect on and to consider what the potential outcomes of the conference might be. In addition, at the start of the first session of each day at the conference, a delegate was tasked with the responsibility of providing a reflection to conference delegates on the previous day's presentations.

In the final plenary session on the final day of the conference, the delegates were organised into four focus groups on the conference floor and asked to provide feedback and contributions to the proposed declaration. Each of these four focus groups provided feedback to the conference delegates and in front of an expert panel convened to help finalise a Declaration. The focus groups were asked to respond to three questions about the conference and the Declaration within a theme of 'how best to respond to the WHO challenge – developing health management capacity

– a response from the conference'. [12] While the conference was conducted using the English language, there was also translation of conference documents into Thai, the major language group at the conference. Simultaneous translation into Thai of presentations, questions and answers, focus group and panel discussion occurred on screens through PowerPoint slides to ensure effective participation and contribution of all delegates.

Results

The focus groups responses to the three questions are summarised for each question and group in Table 1 below. The three questions asked of the focus groups were:

What have we learnt from the conference?

What do we like about this Declaration?

What is missing from the Declaration?

Table 1. Focus group responses to the questions

GROUP 1	GROUP2	GROUP3	GROUP 4
What have we learnt from the conference?			
Importance of general practitioners The need for systems and processes The need for leadership Teamwork – advanced training in teamwork and community engagement Valued international learning and adapting it to our needs Innovation through new models	More investment in human resources Lower emphasis on infrastructure Learn new ways to do things Value of teamwork Collaborative across countries and respectful of culture Finding good people – recruitment	Need to support primary healthcare The importance of healthcare management Human resource development	Opportunity to share feelings, compare health systems Research and viewpoints in primary healthcare R2R Work as a network Work by heart Resource in shortage setting Hear the voices Develop HSM models Shifting focus to patients and community
What do we like about this Declaration?			
Leadership is a central tenant Political and community partnership Dot point 2 of the declaration around the importance of leadership, management, education and research are essential The need for networking and empowering managers	Difficult to understand the concept Need to move the agenda forward Missing – empowering researchers and greater emphasis on qualitative research Greater emphasis on partnerships Greater emphasis on high quality research Need to support and reinforce CPD Greater government support to move forward More emphasis on health volunteers Research across the breadth	New models of healthcare Support for health management Emphasis on research and OR priority setting Need for HM experience and knowledge	Come together at the conference and declare something Change allocation of resources and policy Align leaders and managers Change words in Thai version as the direct translation of some English words has no meaning.
What is missing from this Declaration?			
Greater emphasis on the future Opportunities to support and resource countries needed Invest more in young people, the future leaders Build all healthcare team More emphasis on valuing community competencies for health managers to engage communities Forum for research across countries Stronger on utilising research Research to routine R2R Include local government in point 4	Empowering communities Emphasise qualitative research partnerships Rigor and quality in research HS support CPD and life-long learning of HSM workers Support governments and WHO No. 2 should have qualitative research, not only action research More emphasis on health volunteers All research methods, both qualitative and quantitative are useful for translation to implementations in HSM	Deliver to all levels (health professionals and managers) Quality leadership for all levels	In-depth to primary healthcare level Focus on disciplinary, include education management and health management Added quality evaluation for leader in health system

In addition the panel, the membership of which is detailed in the conference program, were asked to comment about the presentations from the focus group and provide further input to the final Declaration. The responses from the panel included the Declaration being seen in a virtual web based context so there could be continuing contributions and dialogue; that delegates take the Declaration to their own country and translate into the national language and further disseminate; and increased emphasis on values and the building blocks of primary healthcare. The responses of the focus groups and the input from the panel were then incorporated into a revised Declaration that was distinct from the original draft circulated at the commencement of the conference and as far as possible incorporated the main themes arising from the focus groups and the panel. As a consequence of these deliberations a final Declaration was adopted and formally signed at the closing session of the conference. Space was allowed for individual delegates to insert their own signature to the document and for them to post the declaration to other relevant websites and to have the Declaration published in this Journal.

Discussion

Declarations have become a useful approach to highlighting specific health issues or objectives to a broader group of stakeholders and in galvanising those groups to take action often, in a global context and through an inter-sectoral approach. The Phitsanulok Declaration and the conference, although recent, have certainly provided an increased profile to health management both in Thailand and the sub region and it is anticipated that this profile will generate further interest in training, education and research in health management. The process of developing the Declaration throughout the conference and the engagement of delegates through post-a-note, daily reflections and the focus group and panel sessions produced a distinctive, concise and focussed Declaration to which the delegates can claim authorship and ownership. The Declaration is included as Figure 1.

In many Asian countries, public health and primary healthcare paradigms about approaches to health issues and service delivery predominate. These approaches have made significant, positive impact on population health status and there are now increased calls for a more systemised and devolved approach to healthcare delivery at a time when there are global health workforce shortages and a scarcity of resources. There are also calls for a renewed focus on primary healthcare [15] and a greater horizontal investment in strengthening primary healthcare by 2015. [16]

The conference and the Phitsanulok Declaration support these calls by suggesting a better investment in leadership, management and governance to strengthen health systems development; empowered leadership with appropriate positive personal and professional values and, being encouraged to engage with individuals and communities; the provision of high quality education and training and a research culture based on collaborative networks of research. The success of the Declaration will not be measured in the short term and to a great extent success will be dependent on the commitment of the signatories and the delegates to work towards longer-term goals. This will most likely require a continued emphasis on networking, capacity building, advocacy [8] and continued collaborative activity across national health systems.

Competing Interests

The authors declare that they have no competing interests.

Figure 1: The Phitsanulok Declaration.

The Phitsanulok Declaration on the importance of leadership and effective health management to the delivery of quality primary health care in local rural district health services: 1st International Conference on Health Service Delivery Management, Phitsanulok, Thailand, 2009.

This Conference[1] represented the first opportunity in the South East Asia and Asia Pacific Regions to emphasise the importance of leadership and health management as essential precursors to health systems working to achieve high quality health care for all. The 450 delegates from 17 countries and 14 health and education organizations recognise the importance of a revitalised primary health care system, particularly in rural areas and at the local district level. This requires well trained professional health managers to be effective.

More than thirty years have passed since the Alma Ata Declaration established a framework for primary health care to become an integral and central focus of each country's health systems. In more recent times there has been a call for the revitalisation of the central importance of primary health care, particularly in respect of achieving UN/WHO MDGs. Primary health care and public health care perspectives represent two dimensions of delivering effective health care. Capacity building, leadership and health management are central to this process.

The rapid development of a systems approach to health service delivery, the move to devolved and decentralised structures at the district level and the need for across sector engagement requires different skills and experiences as well as capability building in managing health systems as described by the WHO Leadership and Health System Strengthening Framework of 2007. Specifically this Conference declares that:

(1) Priority in resourcing and policy implementation should be given to developing leadership, management and governance as the means to strengthen health systems development;

(2) Successful management of health services requires leadership and teamwork from managers who have positive personal and professional values and self perceptions and are empowered to engage with individuals and communities and to respond to the needs of the poor and to marginalised groups;

(3) Leadership for health systems, public health and PHC requires that managers have access to high quality education, training and experiential health context and knowledge that equips them to operate effectively in health systems;

(4) A research culture is required that networks and engages in collaborative research to develop health management capacity and evidence as a basis for decisions, to guide policy development and that both challenges and aligns researchers and operational health systems professionals, citizens and communities;

(5) Outcomes identified from this conference for leadership and health management education training and research be conveyed to health organizations, professional bodies, local government, Ministry(s) of Health and Education and research funding bodies.

The delegates to this conference seek implementation of this declaration and pledge to continue to work together and expand the collaboration on which this Declaration was founded. It calls for delegates and organisations to reconvene in the future, at a time to be decided, to continue to implement the objectives and to enhance the profession of health management.

The Declaration was agreed and signed on 16th October, 2009 on behalf of all delegates and the organisations listed below.

Emeritus Prof. Khunying Khaisri Sriarun Chancellor, Naresuan University	*Dr. Preecha Ruangchan* Phitsanulok Governor	*Prof. Alan Pettigrew* Vice-Chancellor and CEO, University of New England	*Dr. Ilsa Nelwan* Regional Adviser, WHO SEARO	*Mr. Robert Grima* President, ACHSE

Dr. Phudit Tejativaddhana
Chair of the Conference

Mrs. Premruadee Charmpoonod
Mayoress, Phitsanulok Municipality

Signature ....
Name ....
Position/Organisation ....

Phitsanulok Province

Phitsanulok City

You are invited to sign your name and title to this declaration and to circulate widely and post to websites.

[1]This Conference held in Phitsanulok Thailand 14-16th October 2009 was co-organised by Naresuan University Thailand and the University of New England Australia and recognises five years of collaboration and achievement between the parties. The conference was delivered with the support of WHO SEARO, the National Health Security Office (NHSO), The Ministry of Public Health, Thailand, AusAID and Australian Education International (AEI), the Australian College of Health Service Executives (ACHSE) the Society of Health Administration Programs (SHAPE), Australia, the Cardiac Children Foundation of Thailand, the Faculty of Public Health, Mahidol University, Thailand, Network of WHO Collaborating Centres and Centres of Expertise in Thailand (NEW-CCET), the Bangkok Medical Services Group, Thailand and the Vamed Healthcare Services, Malaysia. http://www.health.nu.ac.th/hdm2009/index.php

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Invitation to submit an article or write to the Editor

The *Asia Pacific Journal of Health Management* invites researchers, policy makers and managers to submit original articles that increase understanding of issues confronting health leaders in countries throughout the region and strategies being used to address these issues. Articles from the private sector will be welcomed along with those addressing public sector issues.

Readers of the Journal are also invited to express their views by writing a letter to the Editor about possible themes for future issues or about articles that have appeared in the Journal.

ACHSM is now calling for papers for the 11th issue of the Journal. The deadline for receipt of papers is 30 July 2010.

Simulation of Clinical Work Environments using BIM and Computer Gaming Technology

J Mitchell and R Lowe

Abstract

Building Information Modelling (BIM) is gaining wider acceptance as a replacement CAD technology to design and document facility designs. In the context of project documentation, BIM leads to much reduced design errors, and the resultant model can be reused both in the construction phase, for example, for scheduling and costing, and at handover for asset management. Despite increasing adoption, most client groups and users associated with health facility development have no experience of the new opportunities that BIM facilitates.

The significant difference between hospital design and general commercial buildings is the large role of user briefing, and the design team's challenge to both integrate design requirements from a diverse set of special consultants and particularly coordinate increasingly more complex building services systems. This paper describes the application of these technologies to the developed design phase of parts of the new Gold Coast University Hospital Project, Queensland, to assess how they might contribute to improved understanding of the spatial arrangement, work flows and clinical and related processes.

The objective was to assess how these technologies might act as a new evaluation tool to confirm design robustness based on users' deeper understanding of designs. The two technologies show powerful and complementary benefits. The researchers have learnt that these viewers are hungry for information and for them accuracy is a high priority. The combination of BIM and computer gaming technology will open up opportunities to validate design proposals, benchmark current practices, and provide safe environments within which stakeholders can experiment with complex multidisciplinary new-technology procedures. Health professionals and health managers need to be aware of the value and use of these emerging technologies and approaches in health care facility design.

Abbreviations: BIM – Building Information Modelling; CAD – Computer Aided Drafting; GCUH – Gold Coast University Hospital; HFG – Health Facility Guidelines; QTVR – Quicktime Virtual Reality; 2D – Two-Dimensional; 3D – Three Dimensional; UT3 – Unreal Tournament 3.

Key Words: health planning; simulation; building information modelling; clinical service planning; gaming technology.

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Background

Today's most common method of design and documentation of built facilities is undertaken with Computer Aided Drafting (CAD) which transformed manual paper-based processes to computerised drawing of Two-Dimensional (2D) plans, sections, etc. CAD is more precise, more flexible and introduced an improved coordination through a concept called layering that allows each project discipline – architects and engineers for example – to visually compare their respective documents.

However, a key limitation of 2D documentation is that it is a collection of independent views of a building, and a change in one document needs to be manually checked and modified on all other documents. This limitation at present, is the most common source of on-site construction errors and a major source of risk and additional cost.

Building Information Modelling (BIM) is a technology for the representation of buildings that replaces conventional drawings with a digital Three-Dimensional (3D) object database. After 25 years of gestation, it is being adopted in all the leading international construction economies. BIM's key attribute is the use of 3D objects that: have meaning and rich properties, ie, a building element wall of material concrete and thickness 200mm; that are easily visualised; and are part of a single integrated model of the facility. Compare the two representations BIM and 2D CAD in Figure 1 below, both documenting the same room.

The pace of this adoption is gaining great momentum. In a recent United States survey, 62% of users indicated they would be using BIM on over 30% of their projects in 2009. [1] In Australia, the Built Environment Innovation and Industry Council [2] has formed a BIM Working Group to assess the benefits of the new technology in the Australian construction sector.

In the context of project documentation, BIM leads to much reduced design errors, and the resultant model can be reused both in the construction phase, eg, for scheduling and costing, and at handover for asset management. BIM redistributes resources to the design phases through more efficient multi-disciplinary design resolution, coordination and automated documentation. This resource transfer permits more design exploration and performance simulation before committing to a particular solution.

In summary, BIMs capacity for model-based collaboration is underpinning a new method of procurement called *integrated project delivery* where all the participants in a project, designers, builders, suppliers, fabricators and end users, work together from inception in a rich 3D virtual model environment, creating an optimised design, and appropriate and reliable information for the complete facility life-cycle. It is useful for health professionals and particularly health managers and project managers to have an understanding of this approach and the underpinning technologies.

Hospital design

The unique characteristic of hospital design is the large role of user briefing. The design team's challenge is to both integrate design requirements from a diverse set of special consultants and to particularly coordinate increasingly more complex building services systems. Added to this is the scale of recent hospital developments. In Australia, for example, Fiona Stanley in Perth, New Royal Adelaide in South Australia, New Children's Hospital in Melbourne, Royal North Shore in Sydney, and the Gold Coast University Hospital Project, are all over one billion dollars in cost.

All of these factors – political, program and cost – are often so demanding, particularly in a 2D documentation environment, that critical analysis of the functioning of the hospital is not undertaken. Because a single planning solution is established, the measured performance of multiple systems cannot be tested in depth without disruption

Figure 1: A rendered view of a Bariatric Room (ceiling removed) and the 2D documentation of the same room. The former is easily interpreted by a lay person; the latter is a technical document requiring specialised skills.
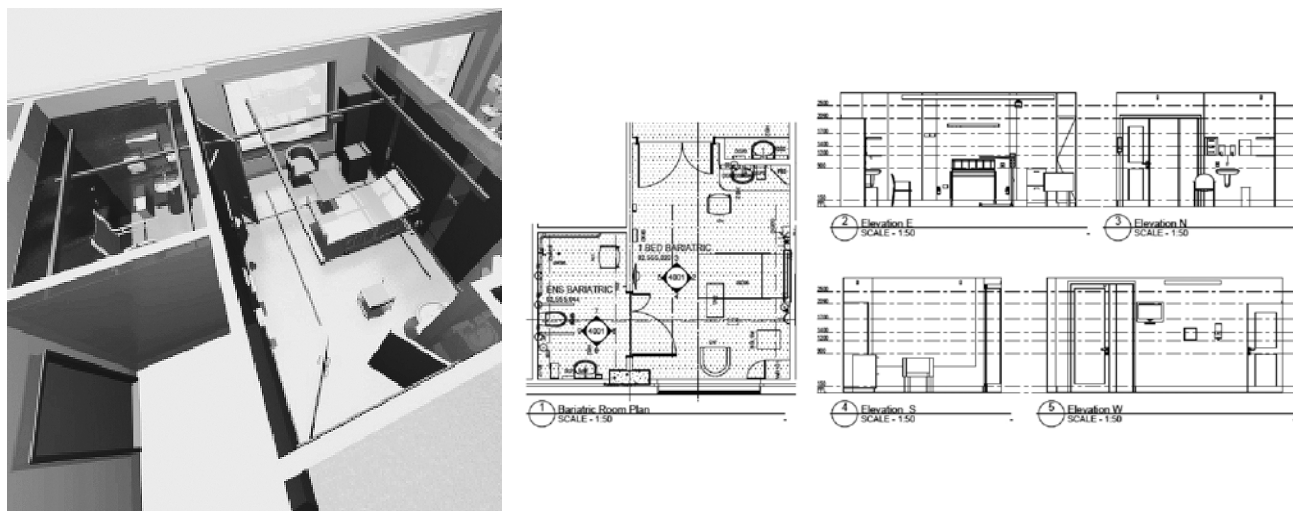
Figure 2: A still shot from the Quicktime Virtual Reality (QTVR) of the draft Bariatric Room. Viewers can rotate the scene through 360°, tilt up and down and move to other nodes in the scenes (here for example the ensuite, far right corner).

to the program or consultant's resources. This problem occurs over several levels ie, logistic systems for the whole of hospital; efficient circulation at a ward level; or detailed design in key clinical units such as operating theatres. Evaluation of the emerging detailed design is left to user groups representing the clinical specialities using 2D plans and elevations, a poor method today compared with the 3D model BIM approach as visualised in Figure 2.

With only modest adoption, and incomplete realisation of the full benefits, client groups and users associated with facility development have little awareness and consequently no experience of the new opportunities that BIM facilitates. An immediate opportunity for clients, users and lay persons is greatly improved with a more rigorous understanding of design proposals though 3D visualisation and more efficient methods of confirming design context though simple direct interfaces to brief and design data (object properties).

With BIM's automatic generation of 2D and 3D views and schedules, custom documentation of room layouts with briefing data and equipment lists is now possible. For example, some firms in the Australian health sector have integrated the Australasian Health Facility Guidelines (HFG) with BIM. [3] A direct outcome of these integrated models is that systems performance, such as building services, thermal behaviour [4] sustainability etc, can be measured and simulated with greater efficiency. This would offer a whole of industry benefit if HFG information could be made BIM compatible rather than the use of hardcopy documents at present or the transcription of the information into a format usable by individual users.

Whilst BIM offers a paradigm change for the facility development process (only an outline has been presented above, for more information see *Building Information Modeling: A Strategic Implementation Guide,* [5] the focus on performance measurement is related only to the building and its systems, and does not address the operational roles of users and staff delivering hospital services. The appropriate tool to simulate this appears to be Computer Game Engines through their capacity to have real time, user interactive, virtual environments of building proposals.

Computer games as advanced simulation tools

To understand why contemporary computer gaming technology might offer an appropriate tool for simulating operational roles of users and staff delivering hospital services, a brief explanation of the key qualities and developing sophistication of computer games is useful. *Unreal Tournament 3* (UT3) is a computer game developed by an American company. UT3 is what is known as a first person shooter game characterised by the use of an avatar, one or more ranged weapons, and a varying number of enemies. [6 p.291] Importantly, the primary point of view is in the first person. The use of the first person viewing position combined with an avatar (a representation of one's presence in the game) allows users to see and be seen as one would conventionally occupy a space ie, bound to one's own body. First person shooter games have existed since the mid 70s, with groundbreaking titles such as *Maze War* and *Spasim*. [7] The development of *Maze War* began at the National Aeronautics and Space Administration's Ames Research Centre and points to a long-standing relationship between research agencies and computer games. In his book *The Language of New Media*, Lev Manovich asserts that:

> navigable space . . . is now a common way to visualise and work with any data. From scientific visualisation to walk throughs of architectural designs, from models of stock market performance to statistical datasets, the 3-D virtual space combined with a camera model is the accepted way to visualise all information. It is as accepted in computer culture as charts and graphs were in print culture. [8 p.249]

It is reasonable to assume that the idea and scope of computer culture in 2010 is significantly different to Manovich's comprehension of it in 2000. One of the significant differences would be the pervasiveness of computer gaming technology across popular culture in general. Games such as Valve's *Half-Life 2*, Epic's *UT3*, Crytek's *Crysis* and Media Molecule's *Little Big Planet* [9] represent the current generation of computer games where avatars can interact and work with objects that have real-world mechanical behaviour such as weight, inertia, etc. Objects can be opened and closed, can be pushed, lifted and have actions triggered. In addition to this new sophistication in terms of interaction, the retail versions of *Half-Life 2*, *UT3* and *Crysis* come with world building software. In the case of *UT3* the world builder is called UnrealEd, which synthesises a range of third party modelling and texturing tools (Autodesk's 3dsMax and Adobe's Photoshop for example) with the games rendering and physics engines.

The resulting modified environments, or mods, can be loaded into the UT3 game and experienced as effectively as an environment made by Epic games themselves. The theme of a new environment is in no way dictated by the underlying mechanisms of the computer game. Mods can be made where none of the original visual content of the game remains. The opportunity presents itself to utilise the underlying capabilities of the computer game for a purpose beyond the scope of that intended by the game developer. In this sense UT3 might not be best understood as a game, but rather as an advanced simulation tool.

Increasingly the power of these games, rendering and physics engines, is being utilised for simulations outside of the entertainment industry. In 2006, Colin Price wrote a summary of the deployment of game engine technology in education and training. [10 p.4] In this summary, Price includes the *Unreal Tournament 2004* based simulation *Unreal Triage*, [11] described by its authors as a simulation (involving) multiple emergency response players at the scene of a small airplane crash with 30 casualties. [10 p.4] In their 2008 paper called *'A Prototype Virtual Emergency Operations Centre using a Collaborative Virtual Environment'*, [12 p.1] Wright et al note though realism and completeness vary from one virtual environment to the next, the use of computer simulated emergencies can be an efficient and expeditious means of training.

A key aspect of training is performance evaluation; both of the trainee and by implication the space and equipment they have been trained to use. The researchers propose that if simulations have been shown to provide an efficient and expeditious means of training then they might be used by well trained people to reveal weaknesses and opportunities in terms of a hospital's spaces and equipment.

Method

This project describes the application of these two technologies to the developed design phase of parts of the new Gold Coast University Hospital Project, Queensland, to assess how they might contribute to improved understanding of the spatial arrangement, work flows and clinical and related processes.

In the first phase, a BIM consultant built a BIM model based on the 2D documentation from the design team. From this, high quality visualisations were generated, using Quicktime Virtual Reality (QTVR) software, of four key units (Operating Theatre Suite, Intensive Care Unit, Neonatal ICU, and a Bariatric Special Care room). These areas were modelled with all equipment so that the bariatric room, for example,

could simulate the operation of a bariatric gantry/lift. (See Figures 1 and 2 respectively).

In parallel, the research team developed an environment in UT3, by converting the BIM model of the Operating Theatre suite, as a test, and then the Bariatric room. The Bariatric room has been presented to a University eHealth research seminar, a Project Directors group, the Hospital User Group Leaders and Design Architects. The critique and feedback from these four different types of users informed the development of a prototypical hospital simulation environment. This prototype will be the basis upon which to develop the three remaining units. After the completion of these a representative project user group will undertake a two-day workshop using the environment as a live, interdisciplinary, assessment of the approach and to validate its benefits to health facility design.

Findings

Presentation 1: University eHealth research seminar

An early draft prototype of an operating theatre room and associated spaces was presented to a Modeling and Simulation for eHealth seminar hosted by the Asia-Pacific Ubiquitous Healthcare Research Centre in December 2008. While the room spaces themselves were accurately portrayed, the equipment level was unrealistically sparse. Major elements such as the rotating theatre lights were included, as were static models of patient beds and figures representing surgeons and nurses etc (in an attempt to support an understanding of scale and team participation),

but many small elements such as trolleys and storage units were not modelled. Due to the limited development time interactivity was restricted to the opening and closing of doors. In this early presentation the avatar used to move through the various spaces was the standard UT3 character called Gnasher as seen below Figure 3 (a). A more appropriate choice would have been one of the Iron Guard series of characters which are at least humanoid; it was only when the presenter shifted to a third person point of view that the use of the Gnasher avatar was noticed. To say that the audience was surprised would be an understatement.

In a conversation following the presentation, Dr Catherine Bridge, Director of the Home Modifications Information Clearinghouse and Associate Professor within the Centre of Health Assets Australia, noted that the simulation showed huge potential and it seemed relatively easy to restructure the game; but one could still see remnants of the original game . . . the presence of a weapon and the alien avatar. In addition to the aesthetics of the alien avatar, [13] Dr Bridge highlighted the postures and movements as aggressive and that being bipedal with hands and able to carry and manipulate weapons made it more threatening. Dr Bridge observed that while the audience seemed to find this disturbing, their comments suggested that they could see opportunities for modelling and understanding disease spread (that the simulation could inform choice of materials and the positioning of vents and doors to limit the spread of infection).

Figure 3. Composite showing the stages of avatar development; a standard avatar Gnasher (a), the nurse using a custom skin with the standard character skeleton (b), and the staff nurse using a custom skin and a custom skeleton (c), note the relaxed pose in contrast to the weapon carrying pose of figure (b).

Presentation 2: Project directors group

The second presentation to the project directors team (consisting of project managers and nurse planners) focused on the Bariatric room and utilised a nurse custom character that combined a custom skin with the standard UT3 character skeleton. Due to the medium/low advanced level of skill required this is the most common way modellers create custom characters. The major drawback in this approach is the lack of character actions for conventional human behaviours. For example, the UT3 standing-idle action assumes one is carrying a large gun. While ensuring weapons aren't present in the environment is straight forward, the flow on effect for a custom character using the standard skeleton and actions can be seen in Figure 2(b). Clearly the unnatural pose resulting from this approach was not ideal.

Two types of responses were observed in the review - the first were from project managers whose concern was for fidelity of the visualisation environment so that their client team could ensure that the 3D models matched the 2D documentation. In this case the evaluation focused on the spatial arrangement and building fabric and was largely quantitative. The QTVR models were favoured by this group as they rapidly facilitated their objective. Comments were quickly generated as to the 'obvious' issues: the observation window had been deleted by a previous design review; the window sill was too deep and could be a place to store flowers and other objects; the location of chairs was wrong (as though they had a fixed correct location and would not be moved by staff and patients to suit); the patient locker did not go to the ceiling and would collect dust (or if it did it would hit the bariatric lift track and complicate the fixings); and the track detail at the en-suite door clashed and needed a review of the detailing to allow patient transfer to the en-suite. Subtle observations arose such as the relationship of equipment, whether there was enough space to access the bed etc.

The second type of observations in the review came from the nurse planners and user group leaders, who were more interested in the video clips showing the UT3 environment in action. The opportunity they recognised was to simulate operational processes and to check whether the design would lead to an environment that supported the intended clinical activities. The underlying consideration was to check that the documentation represented the client's requirements for a best practice design. Initially their comments were directed to the avatar and its movement. The hunched form was unacceptable as a representation of

a nurse; the fixed outstretched arms also had a strong and negative reaction. The speed of movement was unnatural. For them the avatars needed to represent the typical staff, a nurse (female in her 40s), an orderly (male, taller and strong), and an obese patient (ie, 150kg+) if they were to convey an accurate representation. Further reinforcing these comments Wright et al note that avatar limitations can directly constrain the collaboration experience . . . since avatars that are less realistic diminish the sense of immersion. [12 p.11]

This group also expressed a desire to control the avatar; wanting to prove that certain tasks could be carried out in the room. They asked how is the bariatric lift being controlled? (currently the control of the lift is through a game user-interface mechanism, with no corresponding action by the avatar). This question arose when the patient was being transferred to the en-suite using the lift. Their assessment was that there would not be enough space to do the transfer with the current layout. The conversation was ongoing; identifying problems with the operation of the space and equipment and proposing solutions.

Presentation 3: Hospital user group leaders and design architects

The third presentation was to User Group Leaders at the Gold Coast Hospital and following feedback from the previous presentation, utilised the same environment but presented a new avatar; the 'Staff Nurse' custom character (Figure 3c). This character uses both a custom skin and a full custom skeleton. As an indication of the complexity of development it took two research assistants with advanced modelling, skinning and animation skills three weeks to create this character.

A full custom skeleton requires the development of a custom set of player actions (there are 124 standard actions that need to be replaced). An advantage that this laborious task presents is that the actions that don't reflect conventional human behaviours can be replaced with ones that do; and further, some of those can deal with clinically specific actions. The Staff Nurse custom character uses seven context specific actions in addition to creating a conventional, arms at the side, standing-idle action. These include reaching across a bed or patient, reaching upwards at full stretch, washing one's hands and bending down to pick something up.

This audience was entirely User Group departmental heads and followed the responses from the previous meeting. This group saw the avatar as very close to normal behaviour with actions of washing, stretching up, crouching and lifting. One manager wanted to know if his unit was being modelled

Figure 4: The patient: subtleties of complexion and posture were picked up rapidly by the nurse planners and user groups. 4(a) shows the patient about to be lifted by the avatar controlled bariatric gantry (note the 3 axes of movement). 4(b) shows the patient on a hospital bed vehicle, a re-skinning of the UT3 scorpion attack buggy, and able to be driven by the Staff Nurse avatar. A wheelchair vehicle is in development. Note: Nurse Planners commented on the lack of a mattress on the bed.
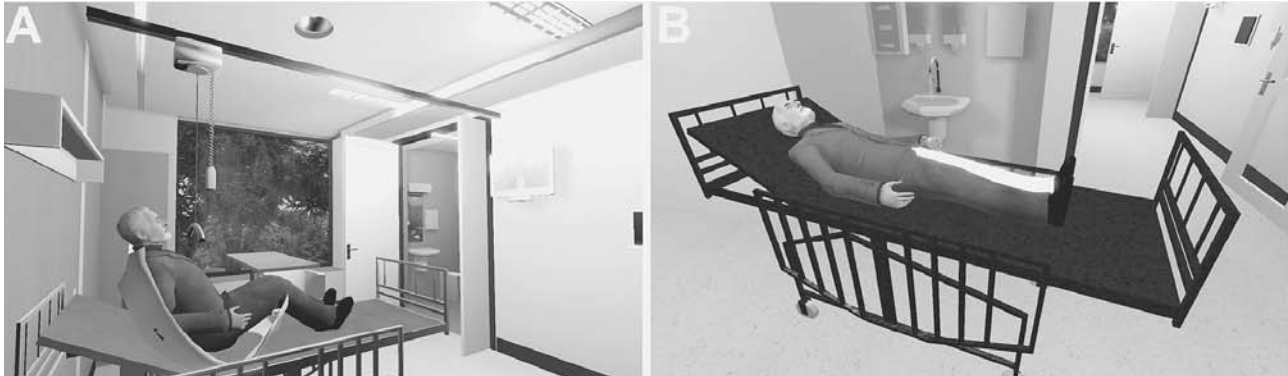
(a mental health unit) where consideration of the possibility of suicide was highly important. He wanted the same quality environment to assess it by a much more realistic method. Another manager expressed the view that the whole design review process would have been completely different using these two new modelling technologies. It was suggested that the approach could be instrumental in the commissioning phase by testing logistics and occupancy planning scenarios. This group seemed captivated by the environment.

At a final meeting with the design architects, a short sequence of the clip showed the Staff Nurse looking in the mirror and drew the comment 'my makeup is a mess'. In this case the viewer was speaking for the avatar, projecting on a level of everyday reality and highlighting the empathy the avatar can engender.

The patient, shown in Figure 4, drew the comment that it had the wrong clothing, and with a stiff/vacant expression, sallow face and stiff, raised knees seemed moribund. It's interesting to note the strong engagement with the subtleties of complexion and posture that human figures engender within this environment. This group seemed to project qualities of being alive or dead onto the human figures within the UT3 environment quite unselfconsciously.

Figure 5: Staff Nurse avatar with patient in the bariatric room.

Figure 6. User-interface demonstration.
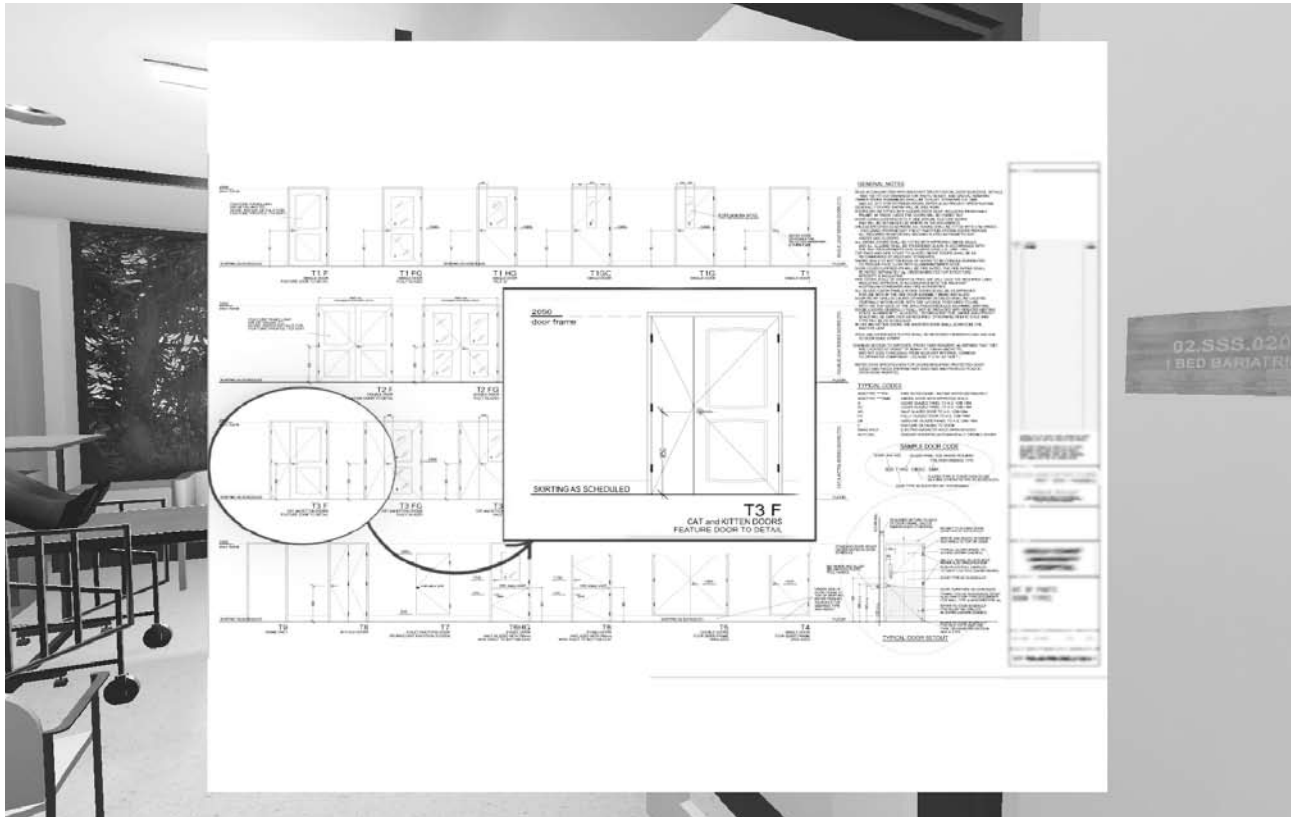
Figure 5 demonstrates a full custom skeleton. The research team will be able to create avatars that are significantly taller or shorter than the Staff Nurse and to represent children etc. In Figure 6 the user interface application is demonstrated showing the overlay that appears on the user's screen when they click on the room label to the right of the image. The potential here is to more fully integrate the real time interactive environment with BIM; more than simply drawing information in one direction.

Conclusion

The objective was to assess how these technologies might act as a new evaluation tool to confirm design robustness based on users' deeper understanding of designs. The two technologies show powerful and complementary benefits.

The BIM/QTVR/UT3 navigable model environments show a level of fidelity and realism impossible with traditional 2D documentation. Materials, lighting effects, and quasi-animation transform the process of understanding design intent. The ease of generating QTVRs for example, make it an indispensable tool for detailed evaluation of room design alone. The feedback shows that all types of project participants much more rapidly understand the design intent from the QTVR's, leading to better evaluation and design outcomes.

The UT3 environment extends this potential to understand process and behaviour through avatars and accurate physical models of the proposed design. The avatar's presence and interaction is a key component/contribution of computer gaming technology, but its poor representation (in look and in action) can be critically distracting. In Presentation Two, the nurse character also ran through the corridors and around the rooms. In Presentation Three a solution to slow down the avatar's motion was implemented, but a side effect was a slight slippage between steps. Sliding across the floor implies a lack of accuracy in terms of ergonomics and the nature of the floor surface (its coefficient of friction). This was criticised by the review team. The representation should not only be human but be specific to the hospital context and act appropriately within it.

The researchers have learnt that these viewers expect a convincing and reliable representation of the hospital environment. Accuracy means not only dimensional rigour, but visual, material and dynamic qualities that simulate the real world context. Whilst 2D documentation could be accurate, but rarely is, it still remains fundamentally incomplete. The BIM model provides a more complete representation but is still insufficient for these viewers. The addition of material, finishes and lighting definitions goes

a long way towards supporting their understanding of the space and the presence and location of equipment. The rapid generation of QTVR's supports this.

The dynamic inter-relationship between people, space and equipment is still missing; for example, a nurse lifting a patient out of a bed using a bariatric gantry. The effectiveness of computer gaming technology to represent dynamic inter-relationships between people, space and equipment is precisely why they have become so pervasive in popular culture. This technology allows hospital stakeholders to exploit the advantages of the BIM model in an immersive and highly engaging experience. The McGraw-Hill United States survey [1] shows the adoption of BIM is accelerating and will rapidly become an industry standard. Soon we will be able to assume that a BIM model is at the heart of every major project. If accuracy of the spatial environment with its equipment and services is of critical concern (as our research emphasises with respect to hospitals) for visualisations and simulations to be credible they must extend from the source BIM model.

The combination of BIM and computer gaming technology will open up opportunities to validate design proposals, benchmark current practices, and provide safer environments within which stakeholders can experiment with complex multi-disciplinary new technology procedures. Health managers and health professionals involved in physical planning of facilities need to be aware of the emerging use and value of these technologies and approaches.

Competing Interests

The authors declare that they have no competing interests.

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Rural Public Dental Clinic Distribution in Three States of Australia: using spatial analysis to inform management and planning of services

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Abstract

Objective: To test the hypothesis: the distribution of rural fixed adult public dental clinics of the states of Western Australia, Queensland and Victoria reflected the population characteristics and burden of oral disease by making use of geo-coding.

Design: A cross-sectional study design was used integrating data from open access sources. The longitudes and latitudes of each clinic were obtained through a free access geo-coding website. Population data were obtained from the Australian Census of Population and Housing 2006, divided by collection districts defined by geographic boundaries. Socio-economic data by the Index of Relative Socio-Economic Disadvantage (IRSD) aggregated to census collection districts were also obtained from the Australian Bureau of Statistics. ArcGIS9 software was used to generate individual and overlay maps incorporating all data bases as mentioned before.

Setting: The study included data from three states of Australia: Western Australia, Queensland and Victoria.

Main outcome measures: We used a normative 200 kilometres radius from a fixed adult public dental clinic as the cut off limit to operationalise the accessibility.

Findings: Distinct disparities were evident in access to rural fixed adult public dental clinics in the three states. The Victorian population enjoyed the highest level of access. On the contrary, Western Australians appeared to be the worst affected and Queenslanders were placed in between. The same pattern was emulated in terms of socio-economic gradient in the three states as the greatest proportion of people outside the 200 kilometre radius were those who in the lower half of the IRSD deciles.

Conclusions: The distribution of fixed public dental clinics did not reflect the population characteristics and burden of oral disease. The spatial approach provides a useful tool in planning public dental clinics in Australia.

Abbreviations: ABS – Australian Bureau of Statistics; CD – Collection District; GIS – Geographic Information Systems; IRSD - Index of Relative Socio-Economic Disadvantage; LGA – Local Government Area.

Key Words: rural fixed adult public dental clinics; oral disease burden; spatial analysis; geo-coding.

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Introduction

Australia is the sixth largest country in the world with a total area of more than seven million square kilometres, but with a population of 21 million. It is one of the most sparsely populated countries in the world, with only two people per square kilometre, and the majority (86%) concentrated in urban areas (defined as cities consisting of populations of 250,000 or more). Only 14% of the Australian population live in the vast non-urban areas. [1] Australia is divided into seven states and territories, with very contrasting pictures of population density and geographic area. In this context, Western Australia is the largest geographic area, followed closely by Queensland, and both have very sparsely

distributed population bases. In contrast, Victoria, which is one of the smaller geographic areas, records the highest population density.

Australians are one of the healthiest populations in the world, but there is well-documented evidence of inequalities and inequities in access to services, and oral healthcare services are no exception. [2,3] Such inequities stem not only from prevailing models of provision of dental healthcare services, but also from the costly nature of treating oral diseases; for example, dental caries is the second most costly diet-related disease in Australia bearing an economic impact comparable with that of heart disease and diabetes. [4] Australia's National Oral Health Plan 2004-2013: 'Healthy Mouths Healthy Lives' focuses strongly on reducing inequalities/inequities in oral health and access to oral healthcare. [5]

Adult dental care in Australia is fundamentally a private practice-driven model. [6] Some 85% of dentists work in the private sector and it is estimated that about 80% of adult dental care is provided in this way. [7] Overall, national shortages of health professionals (dentists and dental auxiliaries) magnify inequalities in health. [8] Recent projections (based on a comparison of projected supply for medium scenario total aggregate dental visits) estimated an approximate shortfall of 800 to 900 dental providers by the year 2020. [9] Such shortages are more keenly felt in rural and remote areas of Australia and in the public sector where government salaried dentists are focused on providing care for the poorer members of society. [10] Public dental services have developed and evolved over the last 50 years in all states of Australia. Although having slightly different access models in each state, they are uniformly limited to people who have government healthcare cards. These are allocated mainly to lower socioeconomic groups of the community. Most public dental services are structurally predominated by a fixed network of dental clinics and in all states are augmented to different extents by mobile services. School dental clinics also exist in all states.

Moreover, access to oral healthcare in Australia is intimately linked to its special geographic and demographic features. [6] Furthermore, patients who attend public dental care attract a public health focus due to their socio-economic disadvantage, despite being a minority compared to private patients. [11] Against this backdrop, this study aims to investigate the distribution of the fixed network of rural adult public dental clinics in three states of Australia by making use of geo-coding as an innovative and evidence-based approach. The hypothesis tested is that the distribution of

rural fixed dental clinics reflects the population characteristics and burden of oral disease.

Methods

Design: a cross-sectional study design was used, integrating data from open access sources.

Data Sources: data were obtained from the following open access sources:

1. Fixed public dental clinic locations
The address for each adult fixed public dental clinic was obtained from government websites and cross checked against the Yellow Pages ™ (phone directory) as at June 2009 for the states of Western Australia, Queensland and Victoria. All addresses were entered into a database and the longitude and latitude of each practice obtained through a free access geo-coding website. The public dental clinics mapped in this study were adult services clinics. No School Dental Services clinics were included in the study. Personal communications with various contacts in each state were used as an additional cross-check of the data.

2. Population statistics
All population data were obtained from the *Australian Census of Population and Housing 2006*, divided by Collection Districts (CDs) defined by geographic boundaries. These web based data were released by the Australian Bureau of Statistics (ABS) (http://www.abs.gov.au). CDs have been designed for use in the Census of Population and Housing as the smallest unit for collection and processing, as well as a basis of output for most data. It is represented by a unique seven digit code. For the 2006 Census, there was an average of about 225 dwellings allocated for each CD, however, in rural areas, the number of dwellings per CD generally declined due to lower population density. [12]

3. Socio economic status
The Index of Relative Socio-Economic Disadvantage (IRSD) aggregated to Census District level, formed the basis of the measure of socio-economic disadvantage. The IRSD is a composite measure compiled by ABS, from multiple weighted socio-economic variables collected in the 2001 Australian Census. This index includes all variables that either reflect or measure disadvantage. IRSD values were ranked into deciles. Deciles divide a distribution into ten equal groups. The lowest scoring ten percent of areas are given a decile number of one, the second-lowest ten percent of areas are given a decile number of two and so on, up to the highest ten percent of areas which are given a decile number of ten.

Main outcome measures:

The centroid of a polygonal shape (in this case the geographic boundaries of a census districts (CD) is the 'centre' of the region adjusted for the unevenness of the shape. It is a complex geometric calculation that uses the location of each boundary intersect as its basis.

Using the ArcGIS9 software, census districts with a centroid outside of the 200 kilometres radius from a fixed public dental clinic, were identified and subjected to further analysis by population age distribution and socio-economic status (assessed by IRSD deciles for Western Australia, Queensland and Victoria). Accordingly, a radius of 200 kilometres away from fixed public dental clinic was identified as the cut-off limit to operationalise accessibility to a fixed adult public dental clinic.

Geo-coding:

Geographic Information Systems (GIS) consists of a computer based system for the input, storage, maintenance, management, retrieval, analysis and output of geographic or location based information. [13] It allows simultaneous display/overlay of a variety of data on multiple maps to determine possible spatial relationships. [14] In this context, *geo-coding* (street address matching or assignment of latitude and longitude) offers a spatial approach towards planning of oral healthcare services based on equity, and is identified as the basis for data linkage and analysis in the 21st century. [14]

Analysis:

Geographic boundary data for each CD were integrated to the population, and socio-economic data and was geo-coded using ArcGIS (version 9). [15] That was subsequently overlayed with the fixed public dental clinic geo-coded dataset.

Results

A total of 187 rural fixed public dental clinics were geo-coded in Western Australia, Queensland and Victoria (Figure 1). The three states had a total of 18,050 census districts covering areas of 2.5, 1.7 and 0.22 million square kilometres respectively which represents just over 58% of Australia's total land mass. The total population of Western Australia was 2.1 million; Queensland was 4.2 million; and Victoria 5.2 million which in total represented approximately 52% of Australia's total population.

Each clinic formed the centre of various diameter circles to examine the minimum distance (straight line) that patients would need to travel to access one of the service centres (Figure 1).

Figure 1. Fixed adult public dental clinics distribution over the three states of Australia: Western Australia (left) Queensland (top right) and Victoria (bottom right).

IRSD deciles:
1 = most disadvantaged
10 = least disadvantaged

1,2
3,4,5
6,7,8
9,10
N/A

Fixed Public Dental Clinic
Inner circle: 100 kilometres radius
Outer circle: 200 kilometres radius
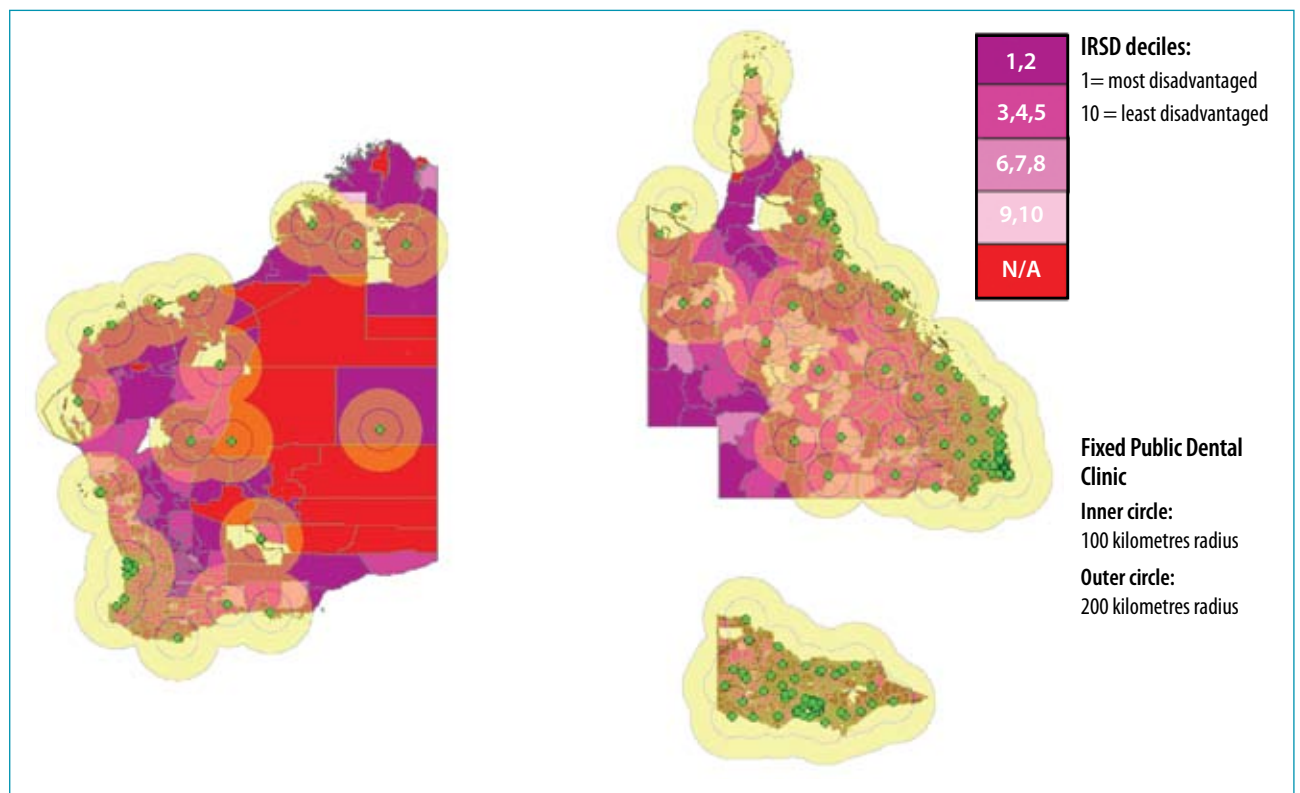
It is noted that not all clinics may be operational at any given time. Nominal circle diameters of 200 kilometres were used as this represented a journey time of approximately 2-3 hours; for most Australians this is not an unreasonable travel time in rural and remote areas. Further analysis of city-based services will be part of a future study.

Census Districts and population residing 200 kilometre radius away from a fixed public dental clinic

In Victoria none of the CDs had a centroid that was outside the 200 kilometres radius away from a fixed public dental clinic. However, in Western Australia there were 145 and in Queensland there were 33 CDs respectively where the centroid was outside the 200 kilometres radius away from a fixed public dental clinic. This equated to 0%, 3.3% and 0.75% of each state's total census districts respectively. In Victoria an inner 100 kilometres zone analysis found that almost no Victorian lived more than 100 kilometres (straight line distance) from a public dental clinic.

In population terms 28,535 people in Western Australia lived more than a 200 kilometres radius away from a public dental clinic (21,571 of these were over the age of 15 years). However, in Queensland only 5,500 people resided 200 kilometres away from a public dental clinic (4,134 of whom were over the age of 15 years).

Socio-economic gradient

Analysis of the distribution of people by IRSD found the greatest numbers of people outside the 200 kilometres radius were people in the lower half of the IRSD deciles (Figure 2). In Western Australia 13,198 adults (over the age of 15 years) from the IRSD deciles 0-4 were outside the inclusion zone, whereas this was only 3,695 adults in Queensland and zero in Victoria.

Age Distribution

No Victorian adults lived outside the 200 kilometres radius. There were no significant differences between Western Australia and Queensland. Of those (between 15 and 40 years old) living outside the 200 kilometres radius, 50.6% were from Queensland and 47.7% were from Western Australia. Of those aged 65 years and above, and living more than 200 kilometres away from a fixed public dental clinic, 10.3% were from Western Australia and 8.0% were from Queensland (Figure 3).

Figure 2. The total number of people from each IRSD decile* who lived in census districts outside the 200 kilometre radius of a fixed public dental clinic.
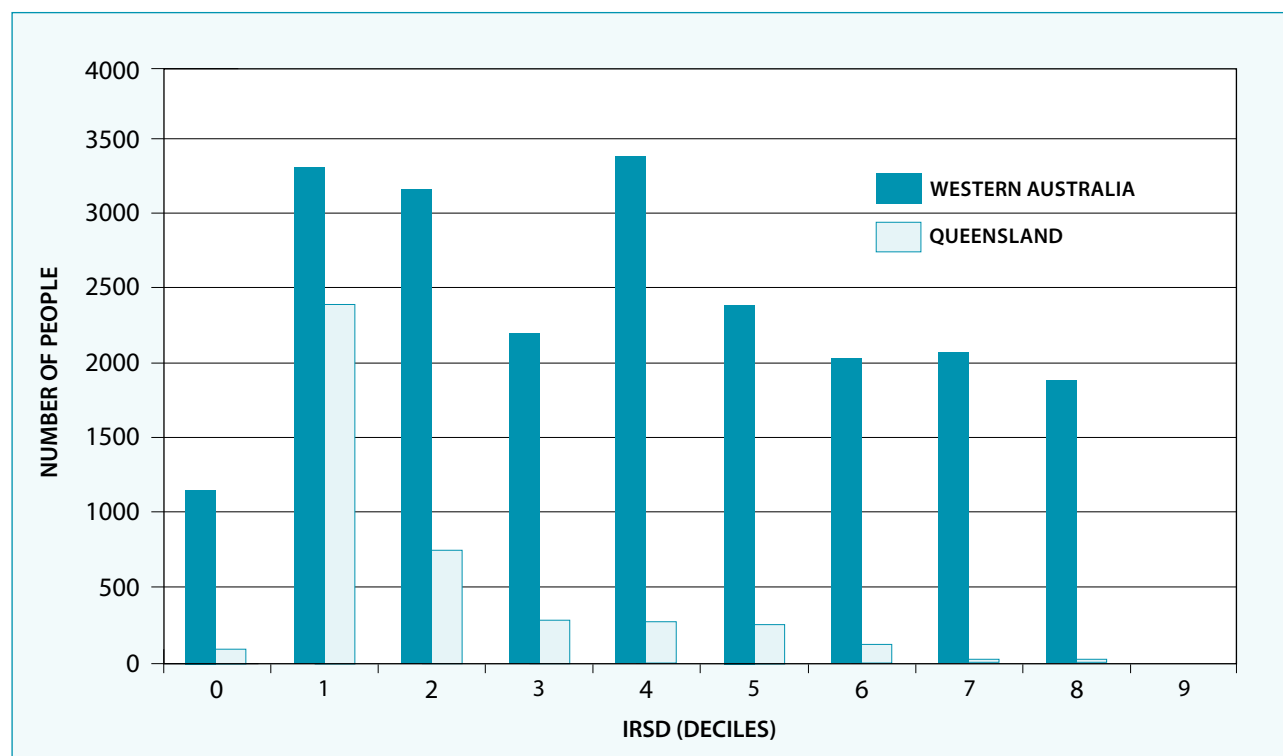
*IRSD Deciles: 1 = Most disadvantaged   10 = Least disadvantaged

Figure 3. The cumulative percentage by age group living outside the 200 kilometre zone around each fixed government dental clinic.
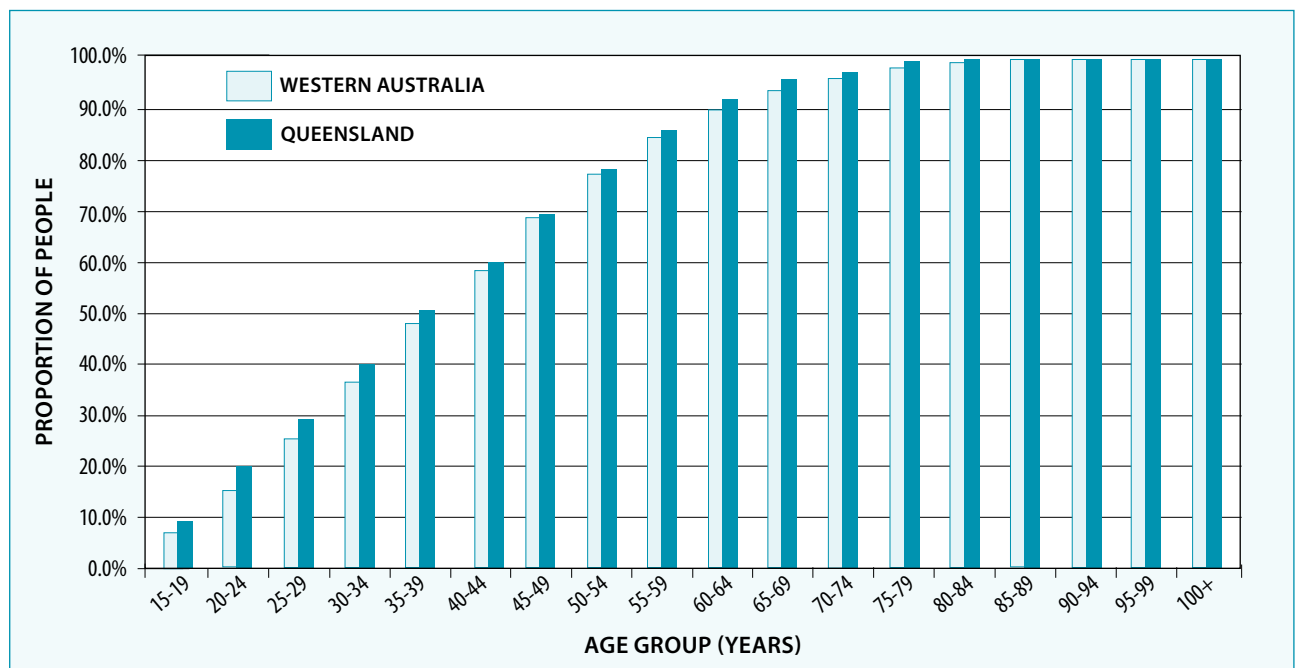
Discussion

The present study demonstrates an innovative application of spatial analysis (GIS/geo-coding) to explore whether the distribution of rural fixed dental clinics reflected the population characteristics and burden of oral disease in the Australian context. The versatility of this approach as a tool in healthcare planning by analysing important spatial relationships, patterns and trends has been well-documented. [12,16] The pioneering work of prototype spatial analysis (without computer based software) was conducted by Taylor and Carmichael in the 1980s for community school dental services in Newcastle in the United Kingdom. [17] Consequently, further research on the application of GIS/spatial analysis using software to map the distribution of dentists, was conducted in Ohio at county and zip code levels. [18] Moreover, the use of spatial analysis to explore the access to community based oral healthcare services had been reported for older adults aged 65 years and above in Manhattan and the Bronx. [19] Similarly, location based accessibility to dental services was assessed using the spatial approach, again in the state of Ohio. [20] Against this backdrop, the present findings add to the expanding body of similar research, with the potential strength of wider databases covering larger geographical areas and populations by including three states of Australia. However, comparisons between studies should be done cautiously due to the wide variation in population characteristics, indices and definitions involved.

Overall, present findings suggest distinct disparities in access to fixed government dental clinics in three states of Australia: Victoria, Western Australia and Queensland (Figure 1). The Victorian population enjoyed the highest level of access to a fixed public dental clinic, as no Victorian in each CD lived more than a 200 kilometres radius away from a fixed public dental clinic. The Victorian population also seem to be even more fortunate (compared to their Western Australia and Queensland counterparts) as almost none of them lived more than a 100 kilometres radius away from a fixed public dental clinic (Figure 1). On the contrary, Western Australians appeared to be worst affected (both in absolute and relative numbers) with regards to access to fixed public dental clinics, and Queenslanders were placed in between.

Not surprisingly the same pattern was emulated in terms of socio-economic gradient in Queensland and Western Australia with regards to accessibility to fixed public dental clinics. The greatest numbers of those who resided more than a 200 kilometres radius away from a given fixed public dental clinic were from lower socio-economic backgrounds and belonged to the lower half of IRSD deciles (Figure 2). Poor Western Australians seem to be more affected compared to Queenslanders in this regard, as their numbers were discernibly higher than the Queenslanders. This finding confirms the unfortunate state of affairs for those from lower socio-economic backgrounds as they carry a higher burden of oral disease and have more access problems to

dental care, compared to their affluent counterparts and this contributes to widening oral health inequalities among Australians. [2,3,5,21] As oral health is a part of general health, these outcomes are consistent with poorer general health outcomes for this group. Similar socio-economic disparities have been reported in previous studies. For example, according to Borell et al, a higher proportion of older adults aged 65 years and above lived below the official poverty line in northern Manhattan and the south Bronx than in other areas of boroughs. [19]

Of the adult population aged 15-40 years who resided outside the normative 200 kilometres radius, Queensland adults reported to be the worst affected as more than half (50.6%) resided further away from a fixed public dental clinic closely followed by Western Australian adults (Figure 3). When older adults aged 65 years and above were considered, about ten percent of Western Australians and eight percent of Queenslanders were affected in terms of distance to travel to a fixed public dental clinic. Such a state of affairs has implications for public oral healthcare provision for the adult population in Australia, due to the substantial percentages of population being affected. Although the percentages are less for older adults, the distance from a fixed public dental clinic could be a cause of concern as the eligible population groups for public dental care primarily consist of holders of government entitlement cards. [22] Thus, if distance is a predictor of poorer oral health outcomes, then these groups are more disadvantaged. In addition to the distance issue, public dental care seekers get further disadvantaged typically being placed on long waiting lists before receiving treatment. [4] Once again Victorian adults and older adults were less disadvantaged in terms of distance to clinics, as none of them lived outside the 200 kilometres or 100 kilometres radius away from a fixed public dental clinic.

Nevertheless, these findings need to be interpreted cautiously due to some factors which could have potentially influenced the results. Firstly, mobile public dental services may offset these gaps in access to an unknown extent and the utilisation rates of such services could vary in different states. In addition, availability of private dental care facilities in given locales could also have confounded the present results, as private dental care is the predominant mode of oral healthcare delivery in all states of Australia. Secondly, the present analysis was not exclusively confined to population groups who are eligible for public dental care in each state. Thirdly, states are grappling with workforce shortages (ie, dentists and dental auxiliaries), resulting in

unutilised/underutilised fixed public dental clinics in some locales despite being included in the present analysis. The number of dental clinicians and waiting times for appointments were not investigated in this study and are obviously contributing factors to the utilisation of dental services.

Fourthly, we used normative 200 kilometres radius as the cut-off limit to operationalise the accessibility in the absence of distance optimisation specifications for access to oral healthcare for Australian states. Obviously such a cut-off limit varies in different studies based on the objectives and feasibility, some people reside in centres without public transport and travel represents a cost both in time off work and fuel/fare costs. For example, in a 2006 Dental Health Survey conducted by the Rural Action Dental Group in New South Wales, 50 kilometres was chosen as a 'reasonable' distance to travel to dental services. [23] However, the ideal would have been defining social catchments for metropolitan and non-metropolitan Australia, premised upon Central Place Theory, which was originally developed by Walter. [24] This theory argues that there is a particular pattern of ordering in the location based on range which indicates the distance people are willing to travel to obtain a particular good or service. Against this backdrop, spatial analysis has much to offer in deriving normative models as a tool for healthcare planning. [16]

Conclusion

This paper tested the hypothesis that the distribution of rural fixed adult public clinics in three states of Australia – Western Australia, Queensland and Victoria – reflected the population needs and their oral disease burden using a rigorous design of spatial analysis. We believe that our approach provides new data (by integrating many accessible data sources) to contribute to health managers', policy makers' and academics' understanding of this important issue. However, the hypothesis tested in the present study was proved otherwise as the distribution of fixed dental clinics did not reflect the population characteristics and burden of oral disease. Poorer segments of the society in all states who carry the higher burden of oral disease, and have less amenities and transport options compared to their richer counterparts, may be further disadvantaged by the distribution of fixed public dental clinics in terms of distance to travel.

Findings of the present study have many implications for healthcare managers and policy makers as they demonstrate the emerging importance of spatial analysis in exploring and addressing the disparities in access to public

dental care. Importantly, the findings highlight the potential application of this evidence based approach for the 21st century in planning and locating fixed public dental clinics in Australian states, reflecting the population characteristics and the burden of oral disease. Such planning will be the corner stone in narrowing down inequalities in oral health and access to dental care services among Australians.

However, as aforementioned there are some unanswered questions such as the optimal cut-off limit to operationalise accessibility to a given fixed public dental clinic which merit further investigation. Moreover, future research should be focussed on spatial analysis of other health and aged care services in states of Australia to explore whether they are distributed according to socio-demographic characteristics and needs of their target populations.

Competing Interests

The authors declare that they have no competing interests.

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The Implications of E-ordering for the Communication Environment of Hospital Laboratory Services

A Georgiou and J I Westbrook

Abstract

Objective: To examine the impact of a new Computerised Provider Order Entry (CPOE) system on the organisational communication environment of the Central Specimen Reception (CSR) area of a large hospital pathology service.

Design: A formative study using iterative feedback channels for the collection of qualitative data from focus groups (n=5), interviews (n=67) and ethnographic observation sessions (n=22). Theoretical sampling techniques were used to extend the sampling base and to develop and test emerging hypotheses and ideas.

Setting: This study was carried out during the implementation of the new system between November 2005 and October 2007. It concentrated on the CSR department of a pathology service based at a major tertiary referral and teaching hospital in Sydney, Australia.

Main outcome measures: The study utilised Huber and Daft's communication environment framework of information load (quantity and variety), complexity (diversity and interdependence of the information) and turbulence (the degrees of instability and randomness) as a lens through which to analyse, evaluate and present its findings.

Results: Pathology services are information intensive units that rely on the timely communication of information to contribute to the delivery of patient care. The new CPOE system impacted on the organisational informational load of the CSR department requiring it to assume greater responsibility for monitoring requests. The introduction of new tasks associated with greater levels of CSR accountability for rescheduled or cancelled test requests, in turn, increased the complexity of the communication environment. The findings also demonstrated increased turbulence in the communication environment exemplified by the initial period of instability created by changes in work routines and modifications of the ordering process.

Conclusion: The communication and processing of information are key facets of how organisations function. Investigation of the organisational communication environment should be an integral part of the challenging task of implementing CPOE systems in healthcare settings.

Abbreviations: CPOE – Computerised Provider Order Entry; CSR – Central Specimen Reception; ICT – Information and Communication Technologies; MRN – Medical Record Number.

Key Words: evaluation studies; communications; computerised provider order entry; hospital information systems; laboratories; organisations; pathology.

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1. Introduction

In the past, computing within healthcare settings consisted primarily of small and functionally limited applications [1] that were generally part of the 'background' of medicine, often located in financial offices or research facilities. [2] Things have changed dramatically in recent decades. Information and Communication Technologies (ICT) have infiltrated virtually all parts of the healthcare system to the point that they are no longer just tools for carrying out tasks but form the very environment in which healthcare is performed. [3]

Whilst there is enthusiasm for the implementation of ICT, its diffusion and adoption within the health sector has been difficult. [4] System implementation involves significant risks and dangers, [5] and the organisational impacts are too often ignored or poorly understood. [6] Every new ICT system, upgrade or modification means a corresponding set of new challenges to existing organisational communication processes. This is particularly relevant for the diffusion of Computerised Provider Order Entry (CPOE) systems, which allow clinicians to place orders directly into computers linked to databases containing patient specific clinical information and error-prevention software. [7] CPOE systems are viewed as an essential component of the future electronic medical record [8] and have been widely promoted for their potential to improve healthcare delivery. [9,10]

Communication processes can be described as the social glue that fastens organisations together. [11] They have an essential role in helping people to make decisions, comprehend, coordinate and control their environment. [12] These processes can be severely affected by the introduction of a new ICT system whose functions often intrude on the way information processing, communication, decision-making and control occur within the organisation. [13] Investigating organisational communications can shed light on the ways in which an organisation meets these challenges and contribute to a better understanding of the impact of ICT systems. Huber and Daft provide a valuable framework through which to examine the organisational communication environment using three factors:

1. Communication and information load (eg, the quantity, ambiguity and variety of information to be communicated);

2. Complexity (eg, the number of relevant factors or components, their diversity and interdependence); and

3. Turbulence and the degrees of instability and randomness experienced. [14]

The aim of this study was to utilise this framework as a means of examining the impact of a CPOE system on the organisational communication environment of the Central Specimen Reception (CSR) department of a hospital pathology service.

2. Methods

2.1 Research setting
This research was carried out at a pathology service based at a metropolitan tertiary referral and teaching hospital in Sydney, Australia. The pathology service employs over 300 staff serving an Area Health Service made up

of seven hospitals. The research was conducted during the changeover and implementation of the new system between November 2005 and October 2007. The Cerner Millenium Pathnet (a proprietary pathology order reporting system) was introduced into the hospital in November 2005 followed by the implementation of a pathology ordering system in January 2006. Ethical approval for the evaluation study was provided by the relevant Area Health Service ethics committee.

2.2 Design
A formative approach was adopted for the study. This allowed the examination of issues and questions as they arose, alongside consideration of their implications. The research was iterative and interactive incorporating feedback channels and input from senior pathology management staff. Qualitative data were generated using focus groups, interviews and observation sessions.

In total there were five focus groups involving 19 participants, and 67 interviews with 34 participants all carried out by one researcher (AG). Four of the focus groups and ten interview sessions were transcribed. One focus group was not able to be transcribed because of the poor quality of the recording. There were also 22 observation sessions of varying lengths that amounted to 21 hours in total. Theoretical sampling techniques were used during the course of the study to extend the sampling base and as a means of developing and challenging emerging hypotheses and ideas. [15]

2.3 Data collection and analysis
Each of the initial focus group and interview sessions carried out before CPOE implementation, used a semi-structured set of questions designed to investigate participant expectations about how the department carries out its work, the potential benefits of the system and how it may affect the way that staff work and interact with each other. Participants were also asked what they thought would constitute a successful implementation of the new system. The resulting data were then used for follow up with observation sessions using formal and informal interview techniques. Additional sessions were carried out as a way of clarifying issues (particularly those relating to the scientific processes and contextual nature of the pathology department's work), examining the validity and relevance of emerging themes, and to consider any changes or developments. NVivo 2.0 software was used for data analysis. [16] Data triangulation occurred through the comparison of data from different professional groups (technicians, scientists, managers and clinicians).

Figure 1: The role of Central Specimen Reception in the pathology test process
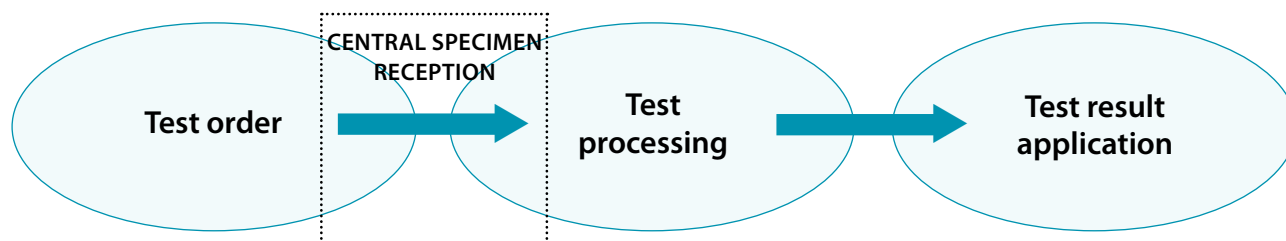
3. Results

The pathology test process can be depicted according to the stages of: 1) test ordering (clinician issues an order); 2) test processing (the order is received and processed in the laboratory); and 3) test results (a verified result is made available by the laboratory) (see Figure 1). [17] The CSR department straddles the test order and test processing stages. Its role is that of a receiving dock for test requests and samples. It is the gatekeeper of the laboratory process whereby test orders and their accompanying specimens are received and forwarded to the appropriate laboratories. The department is also responsible for organising the collection of blood from patients throughout the hospital. This involves the twice daily dispatch of a team of blood collectors to wards to undertake blood collections requested by clinicians. This accounts for the majority of blood sample collections for inpatients across the hospital. Other blood sample collections are taken directly by clinicians or in outpatient settings. The department is therefore central for efficient and effective organisational communication across the pathology laboratory and hospital-ward interface.

3.1 Request and specimen congruence

Prior to the implementation of CPOE, CSR was responsible for checking that the handwritten request form which accompanied the test specimen contained relevant information, such as the patient's Medical Record Number (MRN), test order request and the correct specimen. This checking process was undertaken before the information on the request form could be typed into the laboratory information system. CSR blood collection personnel were also involved in identifying any duplicate handwritten requests. Duplicates can often happen in busy wards or in those frequented by a number of clinicians. They occur when two or more doctors order the same tests because they are unaware that the tests have been ordered previously. This aspect of the laboratory process can be described as part of the laboratory's information load.

3.2 Introduction of the new CPOE system

The hospital adopted a two-stage implementation strategy which firstly involved the replacement of its previous reporting system and then followed by the introduction of a new ordering system. In the initial two-months of the system changeover, the complexity of the organisational communication environment increased when the laboratories were confronted with a transitional period where handwritten requests and electronic orders were performed in unequal and varying proportions across the hospital. During this time requests were required to be handwritten by clinicians and then electronically entered by data entry clerks in the laboratory. This 'interregnum' brought with it a period of organisational and communication turbulence and uncertainty about who was responsible for identifying and stopping unintended duplicate orders. This was because the changeover had blurred the previous lines of responsibility, partly because handwritten requests were being whisked away from the ward to be electronically entered elsewhere. Previously doctors could check the paper forms in the laboratory order box to see if a test for a patient had been ordered prior to a collection round. But this simple checking and accountability procedure ceased and led to the situation described as follows:

> Now, of course the doctors don't remember what they've written out, and they also want to make sure that they get things into the collection run, so they seem to be writing out more forms and they're writing out ones for a number of days in advance. *(CSR participant)*

CSR study participants also reported on a number of improvements in the efficiency and accuracy of collection procedures following the CPOE system introduction:

> I like the system because when you collect, what you do is stick the sticker on straight away, whereas with [the] old system we have to write everything, the surname, the name, and their MRN, and sometimes we make a mistake writing the surname, especially with long surnames and middle names, and sometimes with the numbers, as well.

We're just human beings who make mistakes, but with this new system it's really, really good. *(CSR participant)*

3.3 Accountability

Some of the important areas of uncertainty were soon replaced by the introduction of new levels of accountability directly related to the new system. In the past a blood specimen was always connected with a handwritten request. If a blood collector returned a request with a notation such as 'patient discharged' or 'patient unavailable' written on it, the request did not get recorded in the laboratory system. These unfulfilled requests would be kept for a period (sometimes a few months) and then discarded. But with the new system, CSR staff was now required to electronically record what happened to every test request. A major reason for the introduction of the new procedure was to provide a level of accountability between the laboratory and the ward about the status of each test:

> **Researcher:** So you need to be able to record what was happening in case a doctor asks what happened to it?

> **CSR participant:** . . . that's exactly right, to find a reason why they cancelled . . . At least they see a reason, if we re-schedule they don't see it. They just see that there's an order still pending, but they don't see that we've re-scheduled. That's more of a problem. And then they ring up and ask what's happened to it.

4. Discussion

CSR can be described as a *de facto* 'guardian' of the test ordering process charged with the responsibility of ensuring accuracy, efficiency and integrity of the specimen/ order process. This forms an important part of the contextual background of the department with important implications for its mode of operation and performance. [18] The department is the first point of call for clinicians inquiring about the status of test orders. This channel of communication between the reception area, the other processing laboratories and the ward demonstrates that the ordering process is part of a collaborative effort involving multidisciplinary groups across the healthcare setting. [19] The use of Huber and Daft's organisational communication framework (information load, complexity and turbulence) to investigate the impact of the new CPOE system on the way that the department works and communicates provided a valuable means of identifying and exploring how changes in communication processes can impact on aspects of the department's work.

4.1 Information load

The introduction of the new CPOE system involved changes to the communications environment of the CSR affecting the information load and complexity of their work processes as summarised in Table 1. The most basic indicator of the information load of an organisation is the quantity of information received (eg, number of messages required). Increased information load has the potential to introduce levels of ambiguity, particularly if there are potentially multiple interpretations of a message. [14] This can trigger unintended shifts in authority, decision making, or role interactions. [20-21] The findings from this study revealed that on the one hand, CSR participants reported that the new system minimised data entry and enhanced the efficiency of their work processes leading to greater levels of accuracy.

Table 1: The impact and outcome of CPOE on information load, complexity and turbulence of the Central Specimen Reception department

	IMPACT	OUTCOME
INFORMATION LOAD	Reduction of data entry tasks New data recording requirements	Efficiency gains Areas of increased work load Improved levels of accountability
COMPLEXITY	Explicit reasons for rescheduling/canceling Electronic accountability Error reduction	Increased accuracy New communication channels
TURBULENCE	Altered work processes Areas of initial ambiguity	Responsibility shifts

However, in doing so it had also introduced its own new data gathering requirements associated with the recording of all instances where blood collection was unable to be performed. This had improved the level of accountability for unfulfilled tests and also enhanced the ability of clinicians to monitor the test order process.

4.2 Complexity

The expanded information load is closely associated with an increase in levels of complexity. Complexity can be monitored according to factors such as numerosity (number of components involved); the diversity of these components; and their interdependence. [14] In this study we found that not only had the CPOE system introduced a new level of responsibility (ie, the need to explicitly record the reasons for unfulfilled requests) leading to increased levels of numerosity and accuracy, it had also increased the diversity and interdependency of relations, particularly through opening up a new electronic mode of communication with clinicians which enhanced their ability to monitor test orders. [22]

4.3 Turbulence

Finally, this study detected an initial period of turbulence whereby the new system led to changes in work responsibilities resulting in an increase in levels of unpredictability. This occurred during the interregnum period where handwritten and electronic ordering occurred in parallel and led to: 1) levels of ambiguity about test order status, and 2) an increase in the number of duplicate orders. What resulted was the adoption of new mediated areas of responsibility.

Limitations

This study used qualitative methods to examine the impact of CPOE systems on the organisational communication environment of the CSR department. Although there are limits to the generalisability of a study carried out in one site, the research findings do nevertheless contribute to the explication of issues that are likely to be confronted by other (smaller or larger) laboratory services. This study employed an existing theoretical perspective to consider the organisational communication environment. One of the potential criticisms of the use of theoretical frameworks is that it runs the risk of oversimplifying or even predetermining the findings of complex phenomena. However, the judicious use of theory that is subjected to rigorous and constant testing, critique and possible refutation can provide a valuable evidence resource for dealing with the challenges of information technology.

Conclusion

The widespread introduction of CPOE systems is being planned for hospitals across Australia and Asia. There is significant potential for CPOE to contribute to enhanced patient care and increased healthcare efficiency. However the implementation of these systems remains complex and potentially very costly. [7,23] These challenges need to be met with a continuing focus and ongoing research attention to real-life questions about what works, for whom and in what circumstances. [18] Huber and Daft's emphasis on the communication environment of an organisation provides us with a valuable lens through which to address these questions. It is underpinned by recognition of the key roles that communication and information processing play as part of all organisational activities. [12] This is particularly so for pathology laboratories which are information intense units reliant on the efficient management and timely communication of relevant information to maximise the quality of patient care. [24] Investigation of the organisational communication environment should therefore be an important component of understanding how organisations plan and carry out their business in preparation for meeting the challenges involved with CPOE systems. [25]

Acknowledgements

Competing Interests

The authors declare that they have no competing interests.

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Who Are Your Lean Health Customers? Identifying Influential Lean Customers in Health Services: current practice and insights from stakeholder analysis

K Hayes, N Reed and J Fitzgerald

Abstract

Objective: Lean process thinking has successfully increased customer value through the elimination of wastes in manufacturing processes and increasingly is applied to health settings. The core of Lean manufacturing philosophy is to make value (as perceived by the customer) the key concern of all employees. While the paying customer is easily located in product manufacturing processes, in public health services a variety of funding groups exist and co-payments are common. Furthermore, the health consumer, in the role of patient, is relatively passive and often excluded from process and purchase decisions. This paper compares the Lean manufacturing literature's focus upon customers with that of Lean health literature. It then proposes and demonstrates the use of stakeholder analysis to identify and manage the fluctuating salience of multiple health customers.

Design: Systematic reviews of Lean manufacturing and Lean health literature in Business Source Complete, Cinahl Plus, Academic Search Complete, Health Business Fulltext Elite and Medline databases measured the frequency of customer reference. Articles containing specified search terms in their abstract were selected. Chi^2 tests were used to test the significance of the findings.

Setting: English language articles from newspapers, health industry and scholarly journals were analysed.

Results: The results show the Lean health literature displays a reduced focus on process customers compared to the Lean manufacturing literature, and routinely names patients as the only customer type.

Conclusions: The range of customers revealed through stakeholder analysis exposes a requirement to assess the needs and influences of many health customers, including but not limited to patients. The multiplicity of health customers has practical and theoretical implications; the outcomes of Lean health initiatives may be jeopardised if inappropriate customers are selected as the focus of Lean health projects. Directions for future research are also considered.

Abbreviations: RQ – Research Question; TPS – Toyota Production System.

Key Words: Lean process improvement; stakeholder analysis; health management; customer orientation systematic review.

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Introduction

Adaptations of Lean manufacturing process techniques [1] appear more frequently in health services than any other public service context. [2] Over the last 20 years the number of Lean public health projects has rapidly increased. The pace and spread of Lean techniques in public health services is likely to continue accelerating as governments either mandate or encourage their adoption as part of quality-improvement and cost-reduction programs. However, effective application of Lean manufacturing techniques to public health settings requires an answer to a foundational question: how can Lean manufacturing's customer primacy best be translated to public health services environments? The Lean health literature to date, largely ignores the vital question of who are Lean health process customers.

This paper reviews the prominence of the paying customer in Lean systems thinking, and the corresponding importance of customer identification in Lean health. It empirically compares the frequencies of customer identification in Lean manufacturing and Lean health literatures, continues to provide an example of stakeholder theory as a tool to identify influential customers in an Australian emergency department, and concludes with a template for adapting Lean's customer focus to complex health services environments.

What is Lean?

Lean (systems, thinking or philosophy) is the name commonly given to the manufacturing methodologies developed by Toyota as the Toyota Production System (TPS). TPS developed into a system of workplace organisation, built upon Toyota's Managing Director's observations of the fundamentals of mass production during a tour of the Ford Motor Company's Rouge River plant in the 1950s. Toyota adapted the efficient mass production techniques present at Ford to application in an environment with shorter and more varied production runs. Focusing on customer value is central to the success of the TPS. [1] The TPS satisfies customer needs by using high value-add processes optimised to meet customer needs, and reducing the time elapsed and costs incurred between paying for raw materials and being paid. [3] Lean achieves this by enlisting the knowledge and skills of people who perform the process in identifying and removing eight types of process waste, through the use of continuous improvement methods. [3]

Within a manufacturing environment, the customer is relatively visible and value is defined as that for which a customer is willing to pay. [1,3] In environments such as public health services, the use of manufacturing-based improvement methods is sometimes viewed as inappropriate because not only is identification of the customer more difficult, but the work performed can be less linear. However, within the TPS, acceptance of multiple customers and a level of tension and compromise between possible customers are normal. For example, when the Toyota Motor Company was created, goals for concurrent shareholder and societal benefits were explicit. [4] Balancing corporate and societal goals continues to be part of the Lean ethos at Toyota, [5] for example, senior Toyota executives are 'donated' for periods to Japanese public sector organisations.

Relationships between payment and service consumption in public health services are complex, and without accurate identification of process customers, the value they receive can be neither assessed nor maximised. In an environment with multiple process customers, selecting the 'wrong' customer can prevent Lean projects from realising valuable process improvements because customer value has not been accurately assessed. However, recent Lean health publications [6,7] pay scant attention to the notion of multiple health services customers, and appear to regard patients as the only customer. There is a real danger that inadequate customer focus or an unwillingness to consider multiple process customers can produce Lean health project failures. The following research questions investigate customer focus in Lean health and Lean manufacturing literatures.

Research Question (RQ) 1: Has the primacy and privileged position of the paying customer in Lean manufacturing literature been consistently applied in the Lean health services literature? This is tested through the following null hypothesis: Ho[1]: There is no difference in the frequency with which 'customer' or synonymous terms appear in the abstracts of published Lean health and Lean manufacturing articles.

Research Question (RQ) 2: The related, secondary research question is: If the two literatures do differ, is 'patient' used instead of 'customer' in the health literature? Ho[2]: There is no difference in the frequency with which 'customer' or synonyms combined with 'patient' appear in the abstracts of published articles concerning Lean health and Lean manufacturing.

Table 1: On-line databases searched and publication contents

NAME OF ON-LINE DATABASE	CONTENT: TYPE AND NUMBER OF PUBLICATIONS
Academic Search Complete	Multi-disciplinary; more than 16,000 periodicals and more than 10,000 books
Business Source Complete	Business scholarship; more than 1,200 specialised journals
Cinahl Plus	Nursing and health journals; more than 750 specialised journals
Health Business Fulltext Elite	Healthcare administration and health institution management; more than 480 specialised journals
Medline	Medical, nursing, healthcare system; more than 4,800 current biomedical journals

Source: EBSCOhost ®[9]

Methods

This paper measures Lean customer focus through empirical comparison of the frequency with which the term 'customer' and synonyms, and 'patient' and synonyms, appear in the abstracts of Lean manufacturing and Lean health literatures. This is an imperfect measure of customer focus, but provides the advantages of permitting analysis of large volumes of literature, and producing findings robust enough to guide future practice and research. Elkhuizen et al's [8] systematic literature search method is adapted to the research questions.

Pilot studies led to the selection of Business Source Complete, Cinahl Plus, Academic Search Complete, Health Business Fulltext Elite and Medline databases due to the breadth of indexed material, the specificity of EBSCO® Information Services' search algorithms and the ability to export a large number of abstracts to a file for further analysis.

The pilot also led to refined inclusion criteria and a structured approach to combining search terms. The EBSCO® thesaurus and 'Suggest Subject Terms' function in each database were used to find productive search keywords. Based on the researchers' knowledge of Lean manufacturing and health services, combined with the *Oxford English Dictionary*, other search terms were created and tested in retrieving relevant titles and abstracts. Search terms were discarded if the abstracts retrieved were irrelevant, and truncation (eg searching on the term 'medic*' to retrieve articles containing medical and medicine) was used to capture articles relevant to the enquiry. Articles were retrieved from January 1988 to January 2009 to capture the application of Lean techniques in manufacturing and public and private health settings in the last two decades.

The following terms collected the abstracts of articles related to Lean process improvement techniques: Lean AND think*, Toyota, Kaizen, 5S, system*, philosop*, process*. The following terms then excluded abstracts unrelated to process improvement: Lean NOT nutrit*, fat*, pork*, mass*, mean*, media*, weight*, diet*, obes*, diabet*. The resulting list of Lean articles was searched for manufact* or product* to create a Lean manufacturing list and then the words customer*, client* or consumer to isolate Lean manufacturing articles that make reference to customer related concepts in their abstracts.

The list of Lean process improvement articles was searched for any of the terms health, hospit* or medic* to create a Lean health list and searches on the terms customer*, client* or consumer were then used to isolate Lean health articles that make reference to customer related concepts in their abstracts. The Lean health list had another search performed on it, using the terms patient* or case* to find Lean health articles making reference to patient or case in their abstracts.

Combining the search terms in the five databases provides a measure of the total Lean process articles in manufacturing and health services literatures, and the proportion of each containing 'customer' or synonym in either title or abstract. A graphic representation of the search strategy appears in Figure 1 on the next page.

Figure 1: Schematic of literature search strategy to test if the proportion of articles with 'customer' or synonym in the Abstract is the same for Lean manufacturing and Lean health.
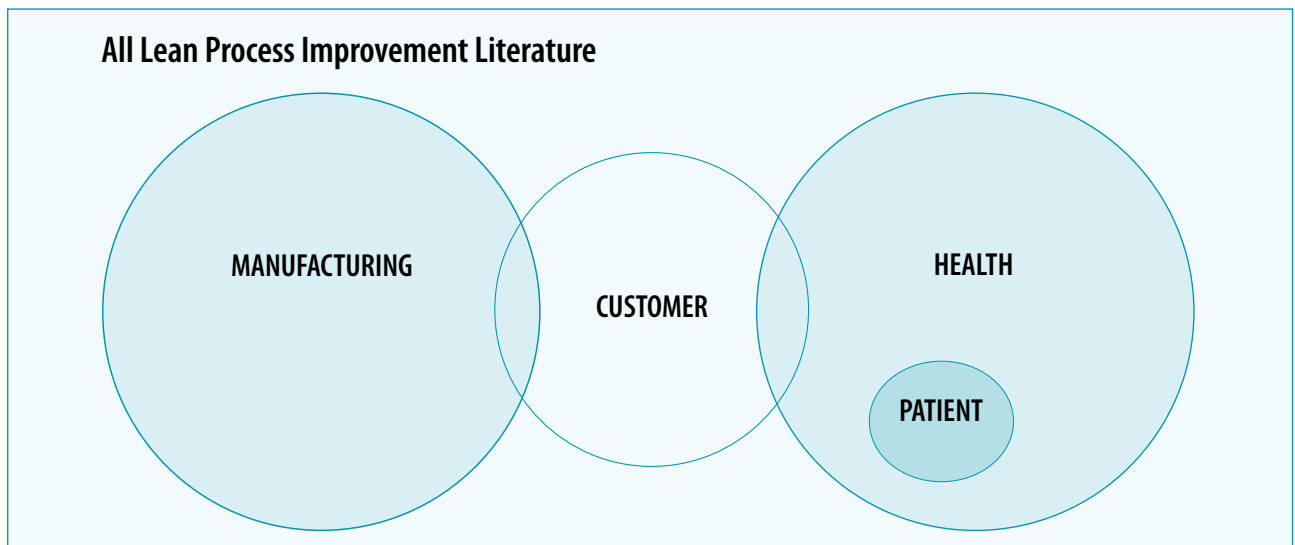
Chi^2 tests were used to compare the proportion of abstracts containing the search terms to the proportions expected if there were no differences between Lean health and Lean manufacturing literatures. Chi^2 tests were selected because they provide a statistical method of comparing categorical attribute data [10] and determining the probability that the observed result could have occurred by chance. Comparison of the number of abstracts containing 'customer' in Lean manufacturing and in Lean health was used to answer RQ1. Comparison of the number of abstracts containing 'customer' in Lean manufacturing and abstracts containing 'patient' or 'customer' in Lean health was used to answer RQ2.

Articles were exported to EndNote® software [11] and duplicate articles eliminated. One researcher read the title and abstract and decided if it was necessary to obtain the full text of the article to determine whether to include it.

Results

Empirical analyses of existing Lean manufacturing and Lean health literatures show customers are referred to with statistically significantly different frequencies in the two literatures.

Search Results from the five databases

Searches were conducted on Feb 17, 2009. Combining results from the five databases produced 4,016 Lean articles. Of these 1,907 related to manufacturing and 938 of these were retained after eliminating public relations announcements and articles less than a page in length. Of the 983 relevant Lean manufacturing abstracts, 129 referred to customer or synonyms. There were 158 Lean health abstracts, reduced to 77 using the quality check process described above. Of these 77, four referred to customer or synonym and 30 referred to patient or synonym.

Table 2: Summary of Lean health and Lean manufacturing literature with customer or patient (including synonyms) in the Abstract.

LEAN ARTICLES	HEALTH SERVICES	MANUFACTURING
Number of articles	77	983
Number referring to customer or synonym (%)	4 (5%)	129 (13%)
Number referring to patient (%)	30 (39%)	–
Publication date 1988 - 1998	3	48
Publication date 1999 - 2008	74	935

Table 3: Chi² test results for research questions 1 and 2.

Lean manufacturing articles:	
Number of Lean articles NOT mentioning customer in the Abstract:	854
Number of Lean articles mentioning customer in the Abstract:	129
Lean health articles:	
Number of Lean articles NOT mentioning customer in the Abstract:	73
Number of Lean Articles mentioning customer in Abstract:	4
Number of Lean articles mentioning patient in the Abstract:	30

Analysis: Non-parametric, therefore use Chi² comparison of proportions.
(RQ) 1: Compare occurrence of 'customer' in 'LEAN' Articles from manufacturing and health.

Table 4: RQ1 Chi² Test: customer, no customer

	CUSTOMER	NO CUSTOMER	TOTAL
Health	4	73	77
Expected count	9.66	67.34	
Chi² contribution	3.317	0.476	
Manufacturing	129	854	983
Expected count	123.34	859.66	
Chi² contribution	0.26	0.037	
Total	133	927	1060

Chi² = 4.091, DF = 1, P-Value = 0.043

Conclusion: Applying a criterion of $p<0.05$ for significance leads to rejection of the first null-hypothesis. Therefore, the two proportions are statistically different and the increased occurrence of 'customer' in Lean manufacturing abstracts is unlikely to result from chance.

Table 5: RQ2 test results compare occurence of 'Patient' or 'Customer' in Lean Health abstracts to occurence of 'Customer' in Lean manufacturing abstracts

	CUSTOMER OR PATIENT	NO CUSTOMER OR PATIENT	TOTAL
Health	34	43	77
Expected count	11.84	65.16	
Chi² contribution	41.471	7.536	
Manufacturing	129	854	983
Expected count	151.16	831.84	
Chi² contribution	3.248	0.590	
Total	163	897	1060

Chi² = 52.846, DF = 1, P-Value = 0.000

Conclusion: Applying a criterion of $p<0.05$ for significance leads to rejection of the second null-hypothesis. Therefore, the two proportions are statistically different.

Applying a criterion of $p<0.05$ for significance leads to rejection of both null-hypotheses and supports the existence of statistically significant differences in the two Lean literatures. The Lean health literature makes significantly less mention of 'customer' in abstracts (5% of total). However, when combined with 'patient', the Lean health literature makes significantly more reference to this combination (39% of total) than the Lean manufacturing literature does to 'customer' alone.

Chi² tests were calculated using Minitab® version 14, [12] (see Tables 3,4,5). The tests compared the number of Lean manufacturing and Lean health services abstracts mentioning 'customer' (RQ1), and then the Lean manufacturing literature mentioning 'customer' in abstracts to the Lean health services literature mentioning 'customer' or 'patient' in abstracts (RQ2).

Applying a criterion of p<0.05 for significance leads to rejection of both null-hypotheses and supports the existence of statistically significant differences in the two Lean literatures. The Lean health literature makes significantly less mention of 'customer' in abstracts (5% of total). However, when combined with 'patient', the Lean health literature makes significantly more reference to this combination (39% of total) than the Lean manufacturing literature does to 'customer' alone.

Tracking the use of the words 'customer' or 'patient' in article abstracts provides a crude measure of customer focus in Lean projects. However, the results suggest that adaptations of Lean techniques to health services automatically substitute 'patient' for customer. The literature search results are supported by reading the full text of Lean health articles, which frequently identify only patients as process customers [6,7] even though the processes analysed do not directly touch patients.

The results may appear self-evident, after all health services exist to care for patients. However, the results suggest that practitioners and scholars are experiencing difficulty in translating the notion of customer to health services. The results also highlight two important weaknesses in Lean health studies to date; first, selecting one rather than several process customers, and second, assuming patients are always the health customer although 'internal' process customers clearly exist. The results suggest that Lean health projects automatically substitute 'patient' for 'customer' even if patients play no active part in processes, such as deciding which health services are to be used. Wanting to improve processes so patients benefit does not mean that patients are the only customers deserving consideration. The following section further develops these points.

Discussion

Statement of principal findings
This section reviews the implications of making 'patient' the default customer in the Lean health literature to date, and then applies stakeholder theory to demonstrate how multiple, influential (or salient) customers can be included in Lean health projects.

The results show Lean health articles make significantly less reference to customers in their abstracts and repeatedly substitute patient for customer. The apparent reflex to identify patients as customers in the literature is doubly surprising as most Lean health projects to date have been conducted in non-patient contact areas. [2] Patient focus is admirable and essential in health settings, but a myopic focus on patients as the only customers may risk alienating other process customers and fail to produce desired health services improvements. There is a need to incorporate multiple customers in many health services projects, while retaining an awareness of the crucial importance of patient outcomes and patient satisfaction.

The results lead us to ask, 'Do Lean health projects risk failure due to inadequate customer identification or assumptions that only patients are process customers?'. Furthermore, can Lean health projects improve healthcare services for patients, employees, funding groups and all stakeholders, or a subset of highly influential stakeholders predicated by the context of the Lean health services project?

Meaning of the study
Semantics are important, and 'patient' does not have the identical meaning to 'customer'. A customer acts and is 'a person who buys goods or services from a shop or business', [13] while in-patients and out-patients are people who receive 'treatment, examination, or observation'. [14] Using these definitions health departments and health insurance companies fit the definition of customer and can therefore neither be ignored, nor be the exclusive focus of Lean health. While the semantic differences are important they are beyond the scope of this paper, but illustrate the importance of considering multiple customers given the complexity of health services processes and funding arrangements. As a practical step to identifying and prioritising multiple customers, the authors recommend using management stakeholder theory as a tool to assist in identifying the most influential groups in a Lean health project.

Stakeholder analysis is a management tool used for over twenty years in marketing, and more recently in Corporate Social Responsibility applications. [15,16] Stakeholder theory has been applied to public health services settings [17,18] identifying doctors, hospitals, pharmaceutical firms, home care providers and many others as stakeholders, but has not been previously reported in Lean health settings.

Stakeholders include 'groups and individuals who benefit from or are harmed by, and whose rights are violated or respected by, corporate actions'. [19] Figure 2 shows some stakeholder groups relevant to both corporate and health services settings.

Figure 2: A stakeholder model of health services
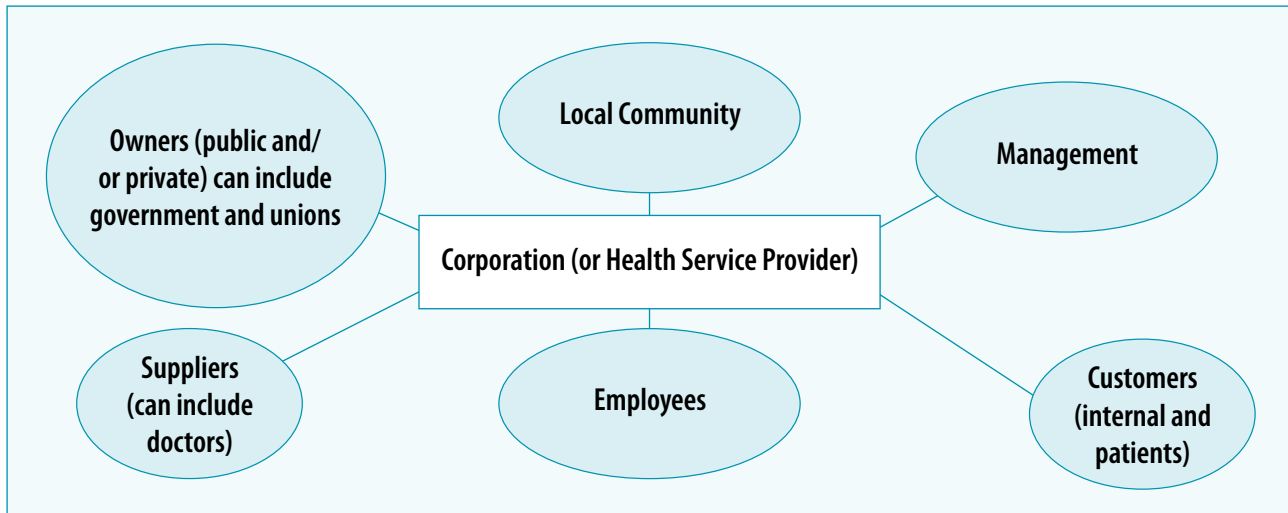
Adapted from Freeman, [19 p.261]

No one customer, or customer set may be dominant in all public health services processes: stakeholder analysis provides a practical and proven management tool to assess the relative influence of different customer sets at different times and in differing health settings. A stakeholder analysis method that comprehensively but quickly identifies stakeholders and assigns a priority to them uses urgency, legitimacy and power to classify the strength of the claim an individual or group stakeholder has on an organisation at that time. [16]

Urgency is related to the degree to which stakeholders can claim immediate attention (timely response) from management. Legitimacy refers to a perception that the actions of an entity are desirable, proper or appropriate, and power refers to relationships between social actors which allow one to influence another to act in a desired way.

This 'weighting' system combined with analysis of three types of stakeholders, primary (such as employees and shareholders), secondary (such as government) and public (such as the media) [20] expands the view of possible customers beyond the notion of either the purchaser, or the consumer of the health service. Table 6 shows a partial list of process stakeholders holding varying degrees of influence, or salience in a recent NSW Public Hospital Emergency Department research project. Salience is 'the priority given to stakeholders claims for urgency, legitimacy and power to influence managerial decision'. [16]

Management scholars often mistake the dominant stakeholder type to be the 'only' stakeholder, as this stakeholder group receives most of management attention.

Dormant, discretionary and demanding stakeholders are known as 'latent stakeholders' with low saliency. Dominant, dependent and dangerous stakeholders are referred to as 'expectant stakeholders' and their salience is moderate as a combination of two attributes leads a stakeholder to a more active stance. As such, the likelihood of engagement between managers and stakeholders is higher. Definitive stakeholder salience is high as managers (should) give priority to this class of stakeholder. Whilst the literature on Lean thinking in health services seems to treat patients as definitive stakeholders, the claim is debatable as according to stakeholder theory, patients can not impose their will on managerial decision-making in hospitals. Many managerial decisions are made *about* patients, not *with* patients, and orienting Lean projects towards highly influential stakeholders may reduce unsatisfactory outcomes resulting from inadequate or inaccurate customer focus or neglect of salient stakeholders.

Strengths and weaknesses of study

This study addresses a foundational question not previously considered in Lean adaptations to public health services environments, and makes explicit the need to consider multiple stakeholders in health process improvements. Limitations are that only published Lean initiatives were included, providing a partial view of Lean health and manufacturing outcomes and these may be biased toward reporting successes. Searching abstracts rather than full text and only using English language articles means some Lean health publications will be missing from the analysis. However, the study has value as the first comparison of customer focus in Lean health and manufacturing settings

Table 6: Example of stakeholder analysis applied to sonography services in a New South Wales public hospital emergency department

STAKEHOLDER TYPES	ATTRIBUTES	ACTIONS	STAKEHOLDER EXAMPLES IN SONOGRAPHY SERVICES
Dormant stakeholder	Possesses power to impose will, but do not have an immediate legitimate relationship or urgent claim	Regulation, standards	State or Commonwealth Government
Discretionary stakeholder	Possesses legitimacy, but has little immediate power or urgency claims	Important for quality and safety	Community representatives, advocacy groups *and* patients
Demanding stakeholder	Possesses urgency claim, but no power or legitimacy	Reinforcing entitlements	Union representatives, media *and* patients
Dominant stakeholder	Possesses power and legitimacy, but has little urgency claim	Required reporting on business outcomes	NSW Health, Area Health Services, hospital GM, director of imaging and imaging department manager
Dependent stakeholder	Possesses urgent and legitimate claims, but has no power	Depends on other stakeholders who have common interests	Ward orderlies, administrative staff, cleaning staff, sonographers *and* patients
Dangerous stakeholder	Possesses urgency and power, but not legitimately	Coercion to influence relationships	Eg, 'terrorists', demanding patients and their families
Definitive stakeholder	Possesses urgency claim, legitimate relationship and the power to impose will	Most important stakeholder to satisfy	All areas the imaging department services, eg ED doctors and nurses, out patients departments *and* patients

and through advocating and providing an example of the application of stakeholder theory to Lean health services customer identification.

Unanswered questions and future research

The research would benefit from extension through searching on the full text of Lean health and manufacturing articles to provide a complete and nuanced view of how customers are identified in the existing literature. Other important questions that may be answered by a full text review are: 'Have Lean health projects substituted identification of a problem for identification of a customer (measured by articles that don't identify customers or patients anywhere in the text, but lead with a focus on overcrowding or other problem)?'; 'Have Lean health projects started with the identification of a problem and then executed management' directions to fix what they believe to be the cause of the problem rather than adopting Lean manufacturing philosophy in its entirety?'; and, 'Have Lean health projects adopted a subset of Lean tools but not the entire methodology?' Given the difficulty in identifying Lean health customers evident in the literature to date, the above questions deserve investigation.

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Competing Interests

The authors declare that they have no competing interests.

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Visiting at Rural Australian Residential Aged Care Facilities: a review of the literature

G Parmenter and M Cruickshank

Abstract

Objective: This review of the literature was undertaken to assess the evidence regarding the social lives of the residents of rural Australian aged care facilities with a particular focus on the frequency of the visits that they receive.

Design: A systematic review of the literature relevant to the social lives of residents of rural aged care facilities was conducted.

Results: Social contact is important to the elderly and is particularly important to the frail elderly who reside in aged care facilities. However, there is evidence to suggest that the social networks of the elderly are contracting and that this contraction is particularly severe in rural areas. In addition, social contact, in the form of visiting, can be inhibited when an elderly person enters an aged care facility. While much of the literature asserts that the residents of aged care facilities have robust social lives, there is some evidence to suggest that, over the past two decades, these people have become increasingly at risk of becoming isolated from their social networks.

Conclusions: Social isolation may have serious consequences for the quality of life of residents of rural aged care facilities and there is a dearth of recent research regarding the factors that determine the frequency of the visits that they receive.

Abbreviations: APAIS – Australian Public Affairs Information Service; FAMILY – Australian Family and Society Abstracts; MEDLINE – Medical Literature Analysis and Retrieval System Online.

Key Words: residential aged care; rural; visiting; family; social networks.

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Introduction

The significance of social ties to the physical, emotional and psychological health and wellbeing of older people has been well-documented. [1-6] Such ties are particularly important to the frail aged who may come to rely on their family and friends for vital assistance and support. However, over the past 50 years the extended family has declined and family members have become more geographically dispersed. This decline in the availability of family members has reduced the social support that is available to older people. [7] Such decline may have serious consequences for the residents of rural aged care facilities where factors such as the exodus of younger people from rural areas, [8-9] the greater distances to travel to reach facilities [10] and the lack of suitable public transport in rural areas [11-12] contribute to the effects of the decline of the resident's family network. These factors combine to reduce the number of people who are available to visit the residents of rural aged care facilities and may put them at risk of social isolation.

A further consideration is the changes that have taken place in aged care facilities that have made the maintenance of contact with family and friends more crucial than ever to the wellbeing and quality of life of aged care facility residents. [8] In Australia, there has been a significant increase in both the average age and the degree of infirmity and

dependence among residents of aged care institutions. [13] This in turn has increased the pressure on aged care facility staff who now care for a client group with a higher physical dependence and cognitive impairment. [13] In addition, there is a shortage of nursing staff in the sector [14-15] and consequently an increased focus on organisational efficiency and the physical and technical aspects of care. [8,16-17] The implication of this is that aged care facility staff do not have enough time to attend to the social and interpersonal needs of residents and their families. This may have a negative impact on residents' quality of life as it reduces the opportunity for communication between residents and staff and between family members and staff. [18]

It has been shown that effective communication with family enables the staff members to gain a more comprehensive insight into the previous life and personality of the resident which allows for more personalised care. [19-21] Therefore the maintenance or increase of family involvement within these facilities is an important consideration.

The aim of this paper is to present a critical review of the literature concerning the social lives of the residents of rural aged care facilities and the factors that influence the frequency of the visits they receive from their family and friends. This paper also aims to draw attention to the potential for social isolation among residents of rural Australian aged care facilities and to stimulate contemporary research that investigates this important but neglected topic.

Methods

A comprehensive search of the research literature on families and the residents of aged care facilities published in peer reviewed journals of gerontology, nursing and the social sciences from 1980 to the present was undertaken. Electronic data bases searched were; Proquest, Current Contents, Emerald Fulltext, Australian Bureau of Statistics, Expanded Academic (Infotrac), Health and Medicine Complete, Social Science Plus, Psych Litt, APAIS (Australian Public Affairs Information Service), FAMILY (Australian Family and Society Abstracts), CINAHL (Cumulative Index of Nursing and Allied Health Literature), MEDLINE (Medical Literature Analysis and Retrieval System Online), Family and Society Plus (Informit) and Sociological Abstracts. Key search terms employed were: rural areas, rural ageing, older people, family, family relationships, social networks, social support, nursing homes, institutionalisation, visiting, carers, caregiving, residential aged care, and aged care. Further articles were identified from the reference lists of key journal articles. Inclusion criteria were English language articles published in peer reviewed journals and government publications

that were concerned with the social lives of the rural elderly and of visiting to residential aged care facilities. Of the 276 articles reviewed, this paper presents the findings of those directly concerned with the social lives of the residents of rural aged care facilities and the determinants of visiting at these facilities.

For the purposes of this review the term rural describes those towns whose small population base and geographic location or distance from a metropolitan centre is such that they are considered to be rural by the Rural, Remote and Metropolitan Areas Classification Method. [22]

Frequency of visiting: Australian and international perspectives

Research in overseas and urban Australian locations has found a generally high frequency of visiting to aged care facility residents. [8,23-25] The reported frequency with which aged care facility residents receive visits varies, with a range of 60% to 76% of residents receiving at least weekly visits. [23,26] A review of the literature conducted by Naleppa [27] reveals that 'almost two thirds of the residents of aged care facilities receive at least weekly visitors'. The frequency with which family members are reported to visit also varies, with 31 to 80% of social network members visiting at least weekly. [8,24] Much research shows that family and friends maintain contact with aged care facility residents and the myth of the abandonment of elderly relatives once they have moved into aged care facilities is widely reported to have been dispelled. [8,23,25,28–30]

However, there is a substantial range in the reported frequency of visiting and there is also debate among other authors regarding a level of social isolation within aged care facilities that appears to be increasing. An earlier study reported that up to 40% of residents receive visits less than weekly. [31] In a large quantitative study of relatively well and cognitively intact aged care facility residents in the United States, Bitzan and Kruzich [32] found that 45% were dissatisfied with the frequency of contact with their family and friends. According to these authors social contact is often restricted to the visits of a small number of people with the majority of the visiting being done by only one or two individuals. Additionally, it has been found that a small minority of residents receive no visitors at all. [24,32,33] More recently, Moyle, Edwards and Clinton [34] found that many of the residents in an Australian dementia care unit 'did not receive visitors or any indication of people expressing an interest in them'. Further, it has more recently been shown that while 90% of older Australians living in their own homes have weekly contact with their family and friends, there is no

such data on the social contact received by the residents of aged care facilities. [35]

In an Australian study that employed both quantitative and qualitative methods, Minichiello [36] investigated the social lives of 90 residents of eight urban aged care facilities. This author found that, in contrast to 16% of social network members who were seen daily by the older person prior to moving to an aged care facility, only one percent of social network members visited daily following aged care facility placement. According to Minichiello, [36] this finding might be due to the older person being unable to initiate contact once they have moved into an aged care facility, thereby reducing the contacts to those initiated by the visitor.

While Minichiello's [36] research sheds valuable light on the previously unresearched Australian aged care facility setting, the sampling method employed in the investigation excludes those who were unable to hear, comprehend the questions asked or communicate responses. This discounts the experiences of the more debilitated or demented residents and the literature shows that the presence of dementia is associated with a reduced frequency of visiting. [25,37] Excluding these people from the study may have biased the findings toward those receiving the highest frequency of visiting. Furthermore, the survey was conducted in 1982, when the population of aged care facility residents was much less debilitated than is the case in recent times. [13]

In a more recent, quantitative study of the influences on the amount of social contact received by aged care facility residents in a range of rural and urban aged care facilities in the United States, Port et al [37] found that while there was a significant positive correlation between pre- and post-admission contact, there was also a significant decrease in the amount of contact older people have with their social network members following aged care facility placement. That is, those people who were the most frequent visitors prior to aged care facility placement continued to be those who visited most frequently but they did not visit as frequently as they had done when the older person resided in the community. [37] Some of these residents had resided with a family member prior to placement and therefore saw this person daily and this may have accounted for the sharp decline in visiting frequency. However, the number of telephone calls and letters received by residents also declined at the same rate and the authors interpret this finding as an indication that admission to an aged care facility is in itself a deterrent to frequent visiting.

While Port et al utilised a large representative sample, the scope of their study was limited to those more recently admitted residents. Thus the results may reflect visiting patterns that occur in the early stages of residency. As other authors have found that the longer the period of institutionalisation the less frequent the visiting, [25,31,38,39] a study that examines the determinants of frequency of visiting over a wider range of residency periods is required. Further, data gathered by Port et al [37] on the number of telephone calls and letters received by residents after admission was taken from the reports of the aged care facility staff and, given their large workloads, may not be an accurate measure of this form of contact.

Factors that may determine frequency of visiting

The factors that motivate family and friends to visit the residents of aged care facilities may be varied and complex and derive from a number of sources. While much research has focussed on the frequency of visiting at aged care facilities, other authors have described facility, resident and social network factors that may have a direct influence on frequency of visiting by their singular or combined affects. The following is a discussion of these factors.

Geographical distance

The increasing geographical distance between the family member and the aged care facility has been associated with decreasing frequency of visits. [8,30,31,36,38,39] The greater geographical distance between facilities located in rural areas means that residents are less likely to be placed in a facility that is near to the members of their family. Thus, there will be greater distances for family members to travel to visit the resident. In a national study of the visiting patterns at Canadian nursing homes, Keefe and Fancey [8] found that physical distance was the most common reason for not visiting an elderly parent as often as desired and such distance is more common in rural areas.

Facility policy and practice

The policy and practice of the aged care facility regarding visitors and the support that visitors receive has been shown to have an influence on the frequency of visiting. [36,40] Facilities that include family members in activities and who acknowledge them as active members of the care team have more frequent visits. Such active involvement also provides family members with the opportunity to communicate and interact with staff and other visitors and encourages a sense of community within the facility. [36,40-43] In addition, family involvement can have positive effects for residents, family members and facility staff. A randomised control study of 12 residents with dementia and their family members conducted in the mid-western United States, found that family-staff interventions to facilitate communication

resulted in improved relationships between the resident and family members and a reduction in the use of medication for the resident. [43] A further United States study, designed to establish partnerships and cooperative roles between facility staff and family members of cognitively impaired residents, found that family involvement in the care of the resident increased while their feelings of loss decreased. The strength of the partnership between family members and staff was also rated as strengthened. [44] While these studies did not examine frequency of visiting, such improvement in relationships and communication may serve to increase visitors' feelings of being valued and their level of comfort and satisfaction within the facility leading to more frequent and/or longer visits.

In Australia, the introduction of formalised accreditation processes in residential aged care has moved the focus to measurable standards of care. Recent data from the Aged Care Standards and Accreditation Agency [45] has demonstrated a low level of non-compliance with Accreditation Standard 3: Resident Lifestyle, which includes Expected Outcomes related to the roles of family and significant others. Although these Expected Outcomes are not directly related to frequency of visiting or social isolation, they do offer some indication of the emotional support that residents receive and the quality of their cultural and spiritual lives. However, regulatory compliance does not necessarily guarantee quality outcomes for residents and measures of resident experience and clinical outcomes are required to provide a more direct indication of the quality of the social lives of these residents. [46,47]

The physical and cognitive status of the resident

A resident's declining physical and mental health can have an impact on visits to nursing homes. Some studies have concluded that cognitive impairment in a resident is associated with shorter visits [48] or a decline in the frequency of visiting. [25,37] In contrast, others have found cognitive impairment to be associated with either no change [49] or an increase in the frequency of visits. [28,50] However, most researchers agree that family members report feelings of dissatisfaction, discomfort and stress associated with visiting a family member who has a cognitive impairment. [24,51,52]

In a study involving both quantitative and qualitative methods, Keefe and Fancey [8] interviewed the most involved family members of 214 residents of Canadian aged care facilities. They found that family members felt a decreased responsibility for the care of a resident as the physical and cognitive condition of the resident declined.

The authors also found that this change was related to a decrease in both the frequency and duration of visits and conclude that as a resident's ability to engage in activities and in conversation declined, visits became shorter and less frequent. [8] While this study took into account a range of rural and urban nursing homes, it obtained information from one family member, that is, the person considered most involved with the resident. Also, those who participated in the study were self-selecting so its findings may be biased as a result of this sampling strategy. To address this potential for bias, research that obtains information regarding all the members of the resident's social network is required.

The attributes of family and friends

A further variable that may determine the frequency of visiting is the attributes of the visitors themselves. According to several authors, the kinship distance between the resident and the visitor has a significant influence on the frequency of visiting with close kinship ties associated with more frequent visiting. [23,28,30-32,37,39,42,50]

In a three-month retrospective audit of the files of an urban nursing home in the United States, Campbell and Linc [28] found that spouses, children and sisters accounted for 49% of the visits received by male residents and 53% of the visits received by female residents. The remainder of visits were made by other relatives, including in-laws, and by friends. While this research provides a profile of these visitors, its focus was not on frequency of visiting but rather an investigation of the support needs of visitors. Also, the findings of this research are based on a single urban aged care facility and the results cannot be generalised to the general population of facility visitors or to the rural context.

The quality of the relationship between family members has been linked to the amount of contact they have with each other and with their enjoyment of that contact. [30,41] Kelley et al [41] found that the frequency of family visiting in rural and urban dementia units in the United States is modified by the quality of the interpersonal relationships between the resident and family members. Poor past relationships with the resident were associated with decreased feelings of duty toward the resident and less frequent visiting. Minichiello's [36] research in Australian urban aged care facilities also found a strong relationship between a resident's perceived quality of the relationship with a social network member and the frequency of visiting by that person. A resident's own assessment of the quality of the relationships was used in this study and it was concluded that visiting did not necessarily depend on kin relationships or feelings of duty but on a mutual enjoyment of the visit itself. [36] This

variable needs to be taken into account in future studies with a particular focus on the quality of the relationship between the resident and those social network members who are infrequent visitors.

Conclusion and recommendations

This review of the literature has shown that there is disagreement among researchers regarding the frequency of visits received by the residents of aged care facilities and that there may be scope to increase the number of these visits that are so important to residents' quality of life. This is of particular consequence for residents of rural aged care facilities as other factors such as social network dispersal and the distances to travel to reach facilities may serve to further decrease the opportunity for visiting.

Over the past 30 years, relatively few studies have focused on the determinants of frequent visiting at residential aged care facilities. Of the studies that have been conducted, the majority have investigated the urban context and only one has examined visiting in Australian facilities. None has examined frequency of visiting at facilities situated in the rural Australian context. Further, while a number of variables that are potential determinants of frequent visiting have been investigated, a comprehensive range of possible variables has not been explored to identify those that are most significant in determining frequency of visiting at rural aged care facilities.

The research literature has also focussed on those family members who are involved in visiting. However, research that also takes into account the attributes of those social network members who visit infrequently or not at all would be useful and informative. This information would provide an insight into those factors that form barriers to visiting by reducing the person's opportunity to visit or that deter the person from visiting.

In addition, previous research has suffered methodological limitations with regard to sampling strategies. This has involved excluding the most debilitated residents [36] and those who have lived at the facility for more than three years. [37] Previous research has also relied on the reports of staff, [37] been based on data gathered from one self-selected family member [8] and gathered data from a single urban aged care facility. [28] Therefore, research that addresses these limitations and which provides a more comprehensive and contemporary understanding of the frequency and determinants of visiting at rural Australian aged care facilities is urgently required.

Two topics that require further investigation are the determinants of frequent visiting in the Australian rural setting and the identification of the barriers to such visiting. Such research should take into account social networks, resident and aged care facility variables in order to fill the gap in our understanding of the complexity of the determinants of frequent visiting. The factors that present barriers to social contact must be identified so that managers, policy makers and planners are able to institute measures to maximise the social contact residents receive. Such investigation will provide an insight into how to engage residents' family and friends in a greater presence within the aged care facility. This will benefit the resident by providing greater contact with family and friends and with the outside world and it will also provide facility staff with greater support for the care of the resident through the important involvement of family members.

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Competing Interests

The authors declare that they have no competing interests.

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Sixth Health Services and Policy Research Conference: viewpoint of an emerging medical health services researcher

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Introduction

As a recent College Fellow, and graduate of a Masters program with a research component, this author has attempted in the last few years to embrace the three pillars of medical professionalism: excellence in clinical practice (or 'medical expert'), teaching and research. There have been clear avenues for enhancement of the medical expert domain since Fellowship, and an initially timid but burgeoning teaching career by undertaking tutorials and teaching for Registrars. However, compared to peers in other medical specialties whose research careers have all blossomed exponentially since achieving Fellowship, developing as an emerging researcher in a chosen specialty – medical administration – and more broadly in health services research, has proved more challenging with only minimal published research avenues in the field. Previous publications have highlighted the need for strengthening the potential for health services and policy research within Australia. [1,2] It was therefore invigorating and eye opening to attend the recent sixth biennial Health Services and Policy Research Conference in Brisbane both as an attendee and as a presenter.

Background

The sixth biennial Health Services and Policy Research Conference was held in Brisbane, Australia on November 25-27 2009. The conference showcased Australian and New Zealand research with some international examples of health services research to improve the performance of the health system. The theme: 'Health Services Research – Reforming, Responding, Rewarding' provided a broad opportunity for active discussion and debate of health policy and health service reform initiatives and their potential impact on the Australian health system, in the context of recent governmental change both in Australia and the United States of America. Of note, the conference illustrated a cross-professional viewpoint of health services research, within clinical based professions (medical, nursing and allied health) and non-clinical based professions (health economists, and health policy researchers).

This author's focus for the conference was to experience health services research within the context of major teaching hospitals as opposed to the health policy aspects (only briefly summarised below).

Major health policy and health services research themes

Health policy and health system-level research in the current health reform climate

Politics and healthcare reform was the focus of the opening plenary speakers, both within Dr Sharon Willcox's (Director, Health Policy Solutions) exploration of the National Health and Hospital Reform Commission's recent report and the impact for Australia, and Professor James Morone's (Professor of Political Science, Brown University) plenary outlining the healthcare reform potential in the United States under an Obama Presidency. Evaluating health policy was illustrated by Dr Jackie Cumming's (Health Services Research Centre, School of Government, Victoria University, Wellington) plenary case examples of the primary healthcare strategy in New Zealand. Ms Kees van Gool (Centre for Health Economics Research and Evaluation, University of Technology Sydney), illustrated the Medicare Safety Net's example of evidence-based policy and politics.

Indigenous health system-level improvements were explored by Professor Cindy Shannon (Indigenous Health Research Centre, University of Queensland), with a panel of Indigenous health experts from Australia, New Zealand, and Canada. Further international examples of improving and measuring health system level performance were shared via the plenaries of Professor Gert Westert (Tilburg University, Netherlands) and Ms Deborah Roche (Ministry of Health, New Zealand). The final plenary by Dr Andrew Bazemore (Robert Graham Centre, Washington), Professor Louisa Jorm (The SAX Institute) and Associate Professor Terri Jackson (University of Queensland), highlighted the vast expanse of accessible routine administrative healthcare data and the potential for utilising such data to not only inform policy and health financing decisions, but also to drive patient safety programs.

Organisation-level health services research: potential benefits for health services

A broad variety of topics and areas of interest highlighted the excellent research initiatives currently occurring within our health services and health research institutions. The sub-themes included:

- Examples of improving clinical practice: lessons learnt in knowledge translation to improve clinical practice; clinical practice guidelines: research, development, adaptation and implementation; and testing approaches to improve the uptake of evidence.

- Specific health group issues: mental health initiatives; reforming, rewarding and responding; Indigenous health services research; understanding cancer need and cancer services; reform of primary care; and issues in gynaecological cancer.

- Health economics and health system utilisation: complex, costly and entrenched technologies: approaches to research and reform; pharmaceuticals; health technology assessment; understanding health services utilisation; hospital performance and redevelopments; health economics; and health insurance.

- Clinical governance/quality initiatives: quality monitoring; and analysis of health data.

- Health workforce; nursing and health services research.

- Complementary medicine; consumer representation.

- International health services research.

Three key areas with important relevance for medical administration and broader influence on medical staff were apparent:

(1) Reducing unwarranted clinical practice variations (medical scope of practice)

Robin Gauld (Department of Preventative and Social Medicine, University of Otago Medical School, New Zealand) outlined *Strategies to reduce unwarranted clinical practice variations in United States hospitals*. This described experience of a United States Harkness Fellowship (NHMRC funded project to the United States), of 12 months exploring five in-depth case studies of high performing Massachusetts hospitals with high quality ratings. The results of 39 in-depth qualitative interviews with key management and clinical staff illustrated the need for robust benchmarking of medical staff peer performance, clinical practice guidelines, and strong medical staff clinical privileging (scope of practice) processes. Successful programs required involvement of the medical staff organisation/society, appropriate resourcing, and strong leadership.

(2) Medical workforce research

Anthony Scott (University of Melbourne) outlined the baseline cohort of the 'Medicine in Australia: balancing employment and life (MABEL)' longitudinal study, including 10,503 Australian doctors, representing 19% of the total population of medical clinicians. Analysis of baseline data revealed that the MABEL study has a large and representative sample of Australian doctors who are being tracked prospectively, providing a new evidence base for policy makers about Australian doctors' workforce participation decisions.

(3) Specific research relating to the introduction of new technologies by medical staff

Gisselle Gallego (Centre for Health Economics Research and Evaluation) poster and presentation; *Introduction and uptake of new medical technologies in the Australian healthcare system – hesitant, uneven or ill-informed?* This presentation outlined views and perceptions of the current Medical Services Advisory Committee (MSAC) through 12 in-depth semi-structured interviews with key stakeholders (including medical staff and surgeons). It was identified that MSAC was a facilitator of uptake of new technologies, but not a primary driver of the uptake of such technologies. However, better patient care and the drive to innovate and become leaders in their field, were the main drivers for medical staff to develop and embrace new technologies.

Experience as an emerging health services researcher presenter

This author presented a poster and presentation; *Evidence-based clinical governance: introduction of new technologies and clinical practice into a major tertiary health service*, outlining a two-year evaluation of the organisation's current governance framework for introducing new technologies. The poster presentation provided an opportunity to showcase the significant work undertaken by individuals within the author's organisation, that necessitated a thoughtful, concise and articulate recollection of the key issues tackled throughout the research, and consideration of lessons learned for other health service researchers.

There has been limited research in the area of organisational governance frameworks for introducing new technologies, with one key published work by Gallego et al. [3] Comparisons of Gallego's presentation with the health service's governance structure highlighted the organisation's need for improvements within administrative supports and the potential benefit of a health economist on the committee. Both of these recommendations arose as a result of attending the conference.

Reflections on the medical profession's role in health services research

It was apparent from the conference that the predominant clinicians and professional groups driving and leading health services research were nursing, allied health or non-clinical, usually affiliated with University faculties devoted to components of health services or policy research. The Surgical Outcomes Research Centre and the Centre for Health Economics Research and Evaluation in Australia, and the Health Services Research Centre from New Zealand, were well represented. The level and rigor of the research presented was impressive and inspirational in terms of the projects themselves, as well as the researcher's general enthusiasm for their subject matter. There were a moderate number of medical clinicians and medical health services researchers involved (either collaboratively or as primary leads), however medical professionals did not dominate the conference.

The current and recent medical courses provide all new medical graduates with a solid grounding in research capabilities that would be ideal to undertake health services research. It may be that medical professionals are undertaking health services research but presenting/publishing in other avenues, or are focusing on basic sciences, translational or clinical research in preference to health services research. Increased widespread engagement, collaboration and ideally leadership of health services research by medical professionals could only be beneficial for patients, our health services, and the health system in general.

Conclusion

It was evident that there is significant potential within health services and the health system for evidence-based research to benefit patient care; and the broader community through ensuring efficient, cost-effective health policy decisions. The experience gained from not only attending but actively participating in the Sixth Health Services and Policy Research Conference in Brisbane has increased this author's enthusiasm to ensure evidence-based health services research is a fundamental aspect of a future career that will also enhance teaching and clinical/medical expertise endeavours.

References

1. Gillespie J, Essue B, Leeder SR, Thow AMT. Grasping the initiative in health policy research and reform. Med J Aust. 2009;191(10): 528-529.

2. Hall JP, Viney RC. National health reform needs strategic investment in health services research. Med J Aust. 2008;188(1):33-35.

3. Gallego G, Fowler S, van Gool K. Decision makers' perceptions of health technology decision making and priority setting at the institutional level. Aust Health Rev. 2008;32(3):520-527.

Daryl Sadgrove

In this issue we bring you an interview with the new Chief Executive Officer (CEO) of the Australasian College of Health Service Management (ACHSM), Daryl Sadgrove.

Daryl has come to ACHSM with a successful history of transforming healthcare organisations and developing strategic relationships with government and industry. Daryl has been involved in lobbying for and implementing over two billion dollars of initiatives in the Australian healthcare sector and is a previous recipient of the Young Australian Business Person of the Year award.

In his last role, Daryl was integral in growing an allied health association which had a declining membership base of only 600 members, to being a federally appointed self-regulating authority with 3000 members, 12 new staff and over one million dollars in long term investments. Prior to this, Daryl has held executive level health management positions in both the public and private sector, and has owned and managed a chronic disease management service in a primary care setting.

Daryl is a leader with an exceptional track record, and will surely be a great asset to ACHSM.

We hope you enjoy this opportunity to get to know our new CEO.

Daryl Sadgrove

Why did you come to ACHSM?

I feel that ACHSM is the ideal organisation for me to be able to combine my passion for health with my experience in business. But the choice to accept the appointment at ACHSM was actually based on the opportunity to work with a team that has its eyes set well on the horizon. ACHSM has an extraordinary history to be proud of, a strong membership base, and a network of people who have the potential to make a real difference in the Australian healthcare sector. I am very excited and optimistic about the future of the organisation.

What do you think will be the most rewarding and enjoyable aspects of your position?

I get great pleasure from enhancing the collective potential of people - and at ACHSM this potential has never been greater. In the coming years there may be more health reforms implemented than we might ever experience again in the course of our lifetimes. I believe the skills of our members are critical to provide the leadership and management to make it all work. But as we venture into unchartered territory as individuals, I hope to work with members and the wider industry to show the true value of being part of an organisation like ACHSM by working together for a common purpose.

What is the greatest challenge you face?

Inspiring people to believe in a new vision for the College in a challenging healthcare climate. We are in a time of significant unrest, tight budgets, and memberships are declining in many organisations. My challenge is to demonstrate that this is actually the most important time to be part of the association. I have absolutely no doubt that our organisation is well positioned to take advantage of significant opportunities in the market and I hope that I can encourage others to share this vision and contribute to making it happen.

What do you see as the benefits of being part of ACHSM?

I believe it is fundamentally important to remember the reason ACHSM exists. Essentially, the purpose of ACHSM is to bring likeminded people together so we can achieve more as a group than we can on our own. Through being a member of the organisation you become part of a powerful collective of people that provides the opportunity to learn, share ideas, and support each other in our careers for the benefit of achieving better health and more satisfying lives for everyone. But to realise the value of ACHSM membership, you need to actively participate. People who pay their membership fees and don't engage with the opportunities provided by the organisation tend to not understand the value of such a membership. You need to meet people, network, ask questions, attend events, and experience the joys of sharing your experience or wisdom with a colleague or a new member. Organisations like ours, primarily rely on good will and members putting up their hand to help someone else. By investing just a little bit of time, energy and money you will enhance your membership experience, progress your professional career, and ensure that the association is able to maintain our legacy of promoting health leadership into the future.

What is the one thing you would like to see changed?

The negative government and public perception of health managers resulting from recent government policies. I would like people to better understand and appreciate the enormous contribution of health leaders and the challenging environments in which they operate.

What is your career highlight?

Being the first healthcare professional to win the Young Australian Business Person of the Year Award.

Who or what has been the biggest influence on your career?

I have been fortunate to have had many great mentors in my career. My dad Ross, who showed me the value of hard work, my university Professor, Owen Curtis, who shared with me his passion for health, and an accomplished business person by the name of Rod Allen who has mentored me in business and hopefully imparted to me just a smidgen of his wisdom.

Where do you see the organisation heading in ten years time?

I see the organisation getting back to the roots of its existence, but with an evolutionary range of new services. I see us taking advantage of new technology for communication and learning, playing a more significant role in lobbying government and offering more informal and fun ways to network. I hope that we can harness the significant knowledge and wisdom of our valued 'baby boomer' members to develop and mentor the leaders of the future.

What word of advice would you give to emerging health leaders?

To remember that we are extremely privileged to have what is one of the best healthcare systems in the world.

This Library Bulletin is part of a service offered by the Health Management and Planning Library of ACHSM. The Library provides information on topics such as health services management, organisational change, corporate culture, human resources and leadership. The Bulletin highlights some of the most up to date articles, books, features and literature on health management from both Australia and internationally. Copies of these articles are available at a small charge. The first article costs $11.00 then $5.50 for each additional article. All prices are inclusive of GST.

To obtain copies of articles, please contact Sue Brockway, Librarian, by phone (02) 9805 0125 or fax (02) 9889 3099, by mail PO Box 341 North Ryde NSW 1670 or email to: library@achsmnsw.org.au

ABORIGINAL HEALTH SERVICES

Closing the Gap: 10 Years of Housing for Health in NSW: An Evaluation of a Healthy Housing Intervention
NSW Health, Aboriginal Environmental Health Unit, 2010
This landmark report provides evidences that the population exposed to the Housing for Health program were 40% less likely to be hospitalised with infectious diseases compared to the rest of the rural NSW Aboriginal population.
http://www.health.nsw.gov.au/pubs/2010/housing_health.html

National Best Practice Guidelines for Collecting Indigenous Status in Health Data Sets
Australian Institute of Health and Welfare, April 2010
http://www.aihw.gov.au/publications/index.cfm/title/11052

Talking It Up! Project Report: 'Aboriginal Voices in the Formulation of Health Policy that Works'
Melbourne, Wesley Mission, 2009
Health promotion strategies that work for non-Indigenous populations are not necessarily effective for Aboriginal and Torres Strait Islander people, and efficacy of strategies and policies is also impacted by poverty.
http://www.wesley.org.au/uploads/content_para_docs/Talking%20it%20up_final.pdf

AGED CARE SERVICES

Benchmarking Clinical Indicators of Quality for Australian Residential Aged Care Facilities
Courtney, Mary and others
Australian Health Review
Vol 34(1) 2010 pp 93-100

Small-scale, Homelike Facilities Versus Regular Psychogeriatric Nursing Home Wards: A Cross-sectional Study into Resident's Characteristics
Verbeek, Hilde and others
BMC Health Services Research
Vol 10, 2010
http://www.biomedcentral.com/1472-6963/10/30/abstract

Top Management Turnover and Quality in Nursing Homes
Castle, Nicholas G and Lin, Michael
Health Care Management Review
Vol 35(2) April-June 2010 pp 161-174
Understanding the relationship between top management turnover and quality of care is important because turnover among top management is generally high.

ALLIED HEALTH SERVICES

Why Did They Leave and What Can They Tell Us? Allied Health Professionals Leaving Rural Settings
O'Toole, Kevin, Schoo, Adrian and Hernan, Andrea
Australian Health Review
Vol 34(1) 2010 pp 66-72

AUSTRALIAN HEALTH SYSTEM

Council of Australian Governments Meeting – Communiqué 19-20 April 2010
http://www.coag.gov.au/

A National Health and Hospitals Network: Further Investments in Australia's Health
Gives further information on the broad areas of reform such as aged and primary care with detail on specific programs planned to better manage chronic disease, train record numbers of doctors, and reduce elective surgery and emergency department waiting times. Final details of the National Health and Hospital Network plan are also provided.
More information:
http://www.yourhealth.gov.au/internet/yourhealth/publishing.nsf/content/home
The Report:
http://www.health.gov.au/internet/main/publishing.nsf/Content/nhhn-report-2/$File/NHHN%20Report%20two.pdf

Super Size Me: Is a Big Australia Good for our Health?

Pelser, Deborah

eMJA - Rapid Online Publication 12 April 2010

Australia faces a federally instigated migration drive aimed at increasing its population to 35 million by 2049. Health professionals must engage with governments to ensure that appropriate plans are put in place to accommodate the increased burden of disease that will accompany a more populous Australia.

http://www.mja.com.au/public/issues/192_09_030510/pel11311_fm.html

COMPETENCIES

Competencies Required by Senior Health Executives in New South Wales, 1990–1999

Liang, Zhanming and Howard, Peter F

Australian Health Review

Vol 34(1) March 2010 pp 52-58

The competencies required by health care managers are affected by distinct management levels, diverse health care sectors and different contexts in which health care systems operate.

ELCTRONIC HEALTH RECORD

Evaluating the Value and Impact of an Electronic Health Record in a Complex Health System

Mayes, Damon C and Mador, David

Electronic Healthcare

Vol 8(4) 2010 pp e3-e14

HEALTH CARE

Delivering Enhanced Recovery: Helping Patients to Get Better Sooner after Surgery

UK Department of Health, March 2010

Enhanced recovery is transforming NHS elective and cancer care pathways by using a number of evidence based interventions as a model of care enabling patients to recover sooner following surgery. This guide provides a starting point to support implementation of enhanced recovery.

http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_115155

Fixing Health Care on the Front Lines

Bohmer, Richard MJ

Harvard Business Review

Vol 88(4) April 2010 pp 62-69

Most grand solutions for improving health care delivery are fantasies. Organisations must redesign themselves – and some are already doing so.

Models for Health Care

Jones, Andrew M

Centre for Health Econometrics and Data Group, University of York, HEDG Working paper No. 10/01, January 2010

Reviews the econometric methods that are used by health economists to model health care costs.

http://www.york.ac.uk/res/herc/documents/wp/10_01.pdf

Towards a Collaborative Model of Care

Campbell, Brad and others

Healthcare Management Forum

Vol 22(3) Autumn 2009 pp 27-31

This is not a new concept but it has only recently been implemented in a Canadian acute care hospital.

HEALTH FACILITIES PLANNING AND DESIGN

Flexibility and Adaptability Report: An International Review for the NSW Context

Carthey, Jane, Chow, Vivien, Jung, Yong-Moon and Mills, Susan

Centre for Health Assets Australasia, UNSW, December 2009

Rapidly changing demands are being placed upon healthcare infrastructure and the difficulties in accommodating this in the current approaches to design and construction of many contemporary health buildings. This lack of flexibility and adaptability often leads to early obsolescence and the need for expensive replacement or upgrade of facilities.

http://www.fbe.unsw.edu.au/chaa/resources/publishedworks/2009_Carthey,Chow,Jung,Mills_FlexibilityReport.pdf

Flexibility and Adaptability Report: An International Review for the NSW Context: Annotated Bibliography

Carthey, Jane, Chow, Vivien, Jung, Yong-Moon and Mills, Susan

Centre for Health Assets Australasia, UNSW, December 2009

http://www.fbe.unsw.edu.au/chaa/resources/publishedworks/2009_Carthey,Chow,Jung,Mills_FlexibilityReport_AnnotatedBibliography.pdf

An Integrated Approach to Infrastructure

Hayes, Stewart

Health Estate Journal

Vol 64(2) February 2010 pp 23-26

A more integrated, strategic approach to procuring and providing essential hospital services is needed for present and future needs.

Measuring the Structure of Visual Fields in Nursing Units

Lu, Yi

HERD Health Environments Research & Design Journal

Vol 3(2) Winter 2010 pp 48-59

The literature suggests that the layout of nursing units affects nurses' behaviours as well as patients' perceived quality of care.

Operationalising Lean Health Assets

Price, I, Pinder, James and Wyton, Paul G

HERD Health Environments Research & Design Journal

Vol 3(2) Winter 2010 pp13-29

Despite a growing interest in lean approaches in healthcare, this has not yet been extended to the estate. This study demonstrates that alternative benchmarks are possible.

Smoothing the Path to the Theatre

Millay, Keith

Health Estate Journal

Vol 64(2) February 2010 pp 33-37

How operating theatres have changed and the considerable differences in approach taken in the UK, mainland Europe and North America in the last 5-10 years.

HEALTH REFORM

Effective Ways to Realise Policy Reform in Health Systems

Hurst, Jeremy

OECD Health Working Papers No. 51, March 2010

This paper is based on evidence from the countries which have seen their health systems reviewed by the OECD in recent years, and on a selected review of the literature.

http://www.olis.oecd.org/olis/2010doc.nsf/LinkTo/ NT00000F96/$FILE/JT03280896.pdf

Health Reform

Smith, Stewart

NSW Parliamentary Research Library, Briefing Paper No. 1, March 2010

The Federal Government proposes fundamental changes to the governance and financing of health, including the establishment of Local Hospital Networks and governing councils. This paper focuses on those issues most relevant to the major reforms proposed by the Commonwealth, namely governance and funding of the health system.

http://www.parliament.nsw.gov.au/prod/parlment/ publications.nsf/key/HealthReform

Less Talk More Action on Health Reform

Wardle, Jon

ABC The Drum Unleashed, 29 March 2010

Throwing more doctors, hospitals and nurses at an already failing system is not health reform – it is merely the expansion of a failing health system.

http://www.abc.net.au/unleashed/stories/s2858608.html

Public Hospitals – Reform Overseas, ABC Radio National Podcast

Public hospitals are the centrepiece of Australia's health system, yet there seems to be something deeply wrong with them. What can we learn from attempts at reform overseas? This ABC Radio National podcast of the Rear Vision program broadcast Wednesday 10 March 2010 questions 'how should we manage the tension between the demand for the best health care and the need to control costs?

http://www.abc.net.au/rn/rearvision/stories/2010/2834416. html

Securing Good Care for More People: Options for Reform

Humphries, Richard, Forder, Julien and Fernandez, Luis

King's Fund, March 2010

The report recommends a staged approach to funding reform: a fundamental review of spending to produce a new settlement for older people; delivering more personalised care and support; and political consensus through an all-party road map for reform.

http://www.kingsfund.org.uk/publications/securing_good_ care.html

HEALTH SERVICES RESEARCH

A Historical Reflection on Research Evaluation Studies, Their Recurrent Themes and Challenges

Marjanovic, Sonya, Hanney, Stephen and Wooding, Steven

RAND Europe, 2009

This report presents a historical reflection on research evaluation studies, their recurrent themes and challenges, and their implications. It critically examines studies of how scientific research drives innovation and socioeconomic benefits.

http://www.rand.org/pubs/technical_reports/TR789/

Systematic Review of Methods for Evaluating Healthcare Research Economic Impact

Yazdizadeh, B and others

Health Research Policy and Systems

Vol 8 March 2010

http://www.health-policy-systems.com/content/8/1/6

LEADERSHIP

Leadership in Healthcare: A Review of the Literature for Healthcare Professionals, Managers and Researchers

Hartley, Jean, Martin, Jane and Benington, John

National Institute for Health Research Service Delivery and Organisation, July 2008

http://www.sdo.nihr.ac.uk/projdetails.php?ref=08-1601-148

Turning Doctors into Leaders

Lee, Thomas H

Harvard Business Review

Vol 884 April 2010 pp. 50-58

Health care's new leaders must organise doctors into teams; measure their performance not by how much they do but how their patients fare; improve processes and dismantle dysfunctional cultures.

MANAGEMENT

Envy at Work

Menon, Tanya and Thompson, Leigh

Harvard Business Review

Vol 88(4) April 2010 pp 74-79

Comparing yourself with successful co-workers can be motivating but it can also trigger envy. Research suggests such feelings may cause real damage, to your career and to your organisation's success.

How to Bounce Back from Adversity
Margolis, Joshua D and Stolz, Paul G
Harvard Business Review
Vol 88(1) January-February 2010 pp 86-92
Here's a way to understand - and redirect – your instinctive reaction to crises.

The Skills Gap in Hospital Management: A Comparative Analysis of Hospital Managers in the Public and Private Sectors in South Africa
Pillay, Rubin
Health Services Management Research
Vol 23(1) February 2010 pp 30-36

MENTAL HEALTH SERVICES

In-patient Alternatives to Traditional Mental Health In-Patient Care (The Alternatives Study)
Slade, Mike and others
National Institute for Health Research Service Delivery and Organisation, January 2010
The Alternatives Study aims were to survey residential alternatives to standard acute admission within England, and then evaluate in more detail six alternatives, representing different service models. Their effectiveness, cost and acceptability were compared with local acute wards.
http://www.sdo.nihr.ac.uk/projdetails.php?ref=08-1304-075

PATIENT FLOW

From a Project to Transformation: How "Going Against the Flow" Led to Improved Access and Patient Flow in an Academic Hospital
Alikhan, M and others
Healthcare Management Forum
Vol 22(3) Autumn 2009 pp 20-26

Improving Patient Flow and Reducing Emergency Department Crowding
Robert Wood Johnson Foundation, Urgent Matters Learning Network II, Issues Brief, February 2010
http://www.rwjf.org/qualityequality/product.jsp?id=56708

POLICY

Strengthening Evidence-based Policy in the Australian Federation: Roundtable Proceedings, Canberra, 17-18 August 2009
Productivity Commission, 2010
The roundtable discussed the principles of the evidence-based policy movement and reviewed how well Australian use of evidence conformed to best practice. It then considered how to improve the availability of quality evidence, and reviewed possible institutional developments to embed good use of evidence more firmly into policy-making.
http://www.pc.gov.au/research/confproc/strengthening-evidence

PRIMARY CARE

Access to Primary Health Care Services
ACT Legislative Assembly, Standing Committee on Health, Community and Social Services, 2010
http://www.parliament.act.gov.au/downloads/reports/7th%20HCCS%2002%20access%20health.pdf

Primary Care and Emergency Departments: Report from the Primary Care Foundation
Carson, David, Clay, Henry and Stern, Rick
UK Department of Health, March 2010
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_113694

PUBLIC ADMINISTRATION

Ahead of the Game: Blueprint for the Reform of the Australian Government Administration
Australian Government Department of the Prime Minister and Cabinet, March 2010
The Blueprint outlines an ambitious agenda to equip the APS and the nation for the challenges of the future. It identifies four broad areas where performance can be improved. Nine interdependent reforms, supported by twenty-eight specific recommendations, provide a comprehensive strategy to deliver these outcomes.
http://www.dpmc.gov.au/publications/aga_reform/aga_reform_blueprint/index.cfm

QUALITY

Accounting for Quality to the Local Community: Findings from Focus Group Research
Foot, Catherine and Ross, S
King's Fund, April 2010
http://www.kingsfund.org.uk/document.rm?id=8653

Getting the Measure of Quality: Opportunities and Challenges
Raleigh, Veena S and Foot, Catherine
The King's Fund, January 2010
This report offers information about how quality is defined and how quality measures can be used – and misused. It sets out the main debates and choices faced by those involved in measuring and using data on quality and outlines some practical issues to be considered in choosing and using quality measures.
http://www.kingsfund.org.uk/document.rm?id=8550

International Benchmarking of Healthcare Quality: A Review of the Literature
Nolte, Ellen
RAND Europe, 2010
This report reviews recent developments in the field of international benchmarking of healthcare quality to inform the use of international comparisons for quality improvement in the NHS.
http://www.rand.org/pubs/technical_reports/2010/RAND_TR738.pdf

Organising Quality and Effective Spinal Services for Patients: A Report for Local Health Communities by the Spinal Taskforce

UK Department of Health, Spinal Taskforce, March 2010
This report is intended to assist the NHS in developing and delivering effective spinal services, creating a set of productive services that deliver quality, timely and clinically appropriate care that meets patients' needs and expectations.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_114528

RURAL HEALTH SERVICES

Emergency Department Demographics at a Small Australian Rural Hospital

Chen, Tony and Tescher, Paul
Rural and Remote Health
Vol 10, March 19, 2010
The emergency departments of Australian rural hospitals are under stress due to a lack of specialty staff and government funding, and the need to serve large geographic catchment areas. Knowledge of the demographics and other details of patients presenting to these EDs provides a way for rural hospitals to tailor their emergency services. This study aimed to establish patient numbers and demographics for those presenting to the ED of Cobram District Hospital, a rural hospital in Victoria.
http://www.rrh.org.au/publishedarticles/article_print_1318.pdf

SAFETY

Comparing Safety Climate in Naval Aviation and Hospitals: Implications for Improving Patient Safety

Singer, Sara J and others
Health Care Management Review
Vol 35(2) April-June 2010 pp 134-146
Comparison of hospitals with analogous industries may provide a broader perspective in the safety status of hospitals.

Lean Six Sigma and Patient Safety: A Recipe for Success

Buell, John M
Healthcare Executive
Vol 25(2) March/April 2010 pp 26-28, 30,32, 34-35

Patient Safety at Ten: Unmistakable Progress, Troubling Gaps

Wachter, Robert M
Health Affairs
Vol 29(2) February 2010 pp 165-173
December 2009 was the 10th anniversary of the Institute of Medicine report on medical errors: *To Err is Human*.

Transparency and Public Reporting Are Essential for a Safe Health Care System

The Commonwealth Fund
Perspectives on Health Reform Brief, March 2010
Of the three major approaches to improving patient safety – regulation/accreditation, financial incentives, and public reporting – the most promising is public reporting of performance information and feedback to providers.
http://www.commonwealthfund.org/Publications/View-All.aspx?publicationtype=Perspectives+on+Health+Reform+Brief

WORKFORCE PLANNING

An Ageing Nursing Workforce

Graham, Elizabeth M and Duffield, Christine
Australian Health Review
Vol 34(1) March 2010 pp 44-48
This paper outlines the necessity for the employment of retention strategies for older nurses in the workforce. It dispels myths about the functional capabilities of ageing nurses.

International Migration of Health Workers: Improving International Cooperation to Address the Global Health Workforce Crisis

OECD/WHO Policy Brief, February 2010
http://www.oecd.org/dataoecd/8/1/44783473.pdf

Revision of Professional Roles and Quality Improvement: A Review of the Evidence

Laurant, Miranda and others
The Health Foundation, February 2010
An increasingly common response to the challenges facing healthcare has been to extend the role of non-medical clinicians into areas that were previously the domain of doctors. The rising demand for healthcare, variations in access and quality, pressure to contain costs and medical workforce shortages have led to increasingly prominent roles for other professionals in the provision of patient care. The expectation is that such revision of roles will improve the effectiveness and efficiency of healthcare. But does it?
http://www.health.org.uk/publications/research_reports/prof_roles_and_qi.html

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READING LISTS

The Health Planning Library has put together Reading Lists on the following topics:

- Ambulatory Care
- Community Health Services
- Emergency Services
- Leadership
- Lean Thinking
- Managerial Skills
- Performance Indicators
- Primary Health Services
- Radiology Services
- Resource Management
- Sick Leave
- Wayfinding

Please contact the Library on library@achsmnsw.org.au if you would like a copy of a Reading List.

Croakey by Crikey and Champ: media and debating health issues

For those of us interested in the health system, health policy and health reform, the website described as an electronic news bulletin, called Crikey is a must. For the uninitiated you need to go to http: www.crikey.com.au and click on blogs and scroll down to Croakey, the health blog. There you will find very contemporary articles by leading academics, policy analysts and health professionals and the 'general community' about the burning issue of the day, some serious and some taking an irreverent or critical view. Best of all you can post a comment and you can remain anonymous, helpful if you have always wanted to have a say but can't offend those who employ you too much.

In addition to some lively commentary, the site has considerable links to a large number of relevant health websites and publications including the APJHM. The readership of this site is said to extend to around 30,000. So after you have skimmed the media papers and television news and current affairs to ensure you are on top of it all, go to Croakey on Crikey and get some perspectives that probably do not make the mainstream news.

In addition to Croakey on Crikey the proponents of the site have also established CHAMP- the Crikey Health and Medical Panel, and members are encouraged to contribute articles to the Croakey blog. The membership of CHAMP now exceeds 120 and includes the full range of health professionals, consumers, bureaucrats and the media to name a few. In addition to contributing to the blog, membership promotes a network of diverse people with some interest in health care and our health systems. Further details about this site are the subject of a previous article in the *Medical Journal of Australia*. [1]

DS Briggs
Editor

1. Sweet MA, Chapman S, Moyniham RN, Green JH. CHAMP: a novel collaboration between public health and the media. Med J Aust. 2009; 190(4):206-207

Manuscript Preparation and Submission

General Requirements

Language and format

Manuscripts must be typed in English, on one side of the paper, in Arial 11 font, double spaced, with reasonably wide margins using Microsoft Word.

All pages should be numbered consecutively at the centre bottom of the page starting with the Title Page, followed by the Abstract, Abbreviations and Key Words Page, the body of the text, and the References Page(s).

Title page and word count

The title page should contain:

1. **Title**. This should be short (maximum of 15 words) but informative and include information that will facilitate electronic retrieval of the article.

2. **Word count**. A word count of both the abstract and the body of the manuscript should be provided. The latter should include the text only (ie, exclude title page, abstract, tables, figures and illustrations, and references). For information about word limits see *Types of Manuscript: some general guidelines* below.

Information about authorship should not appear on the title page. It should appear in the covering letter.

Abstract, key words and abbreviations page

1. **Abstract** – this may vary in length and format (ie structured or unstructured) according to the type of manuscript being submitted. For example, for a research or review article a structured abstract of not more than 300 words is requested, while for a management analysis a shorter (200 word) abstract is requested. (For further details, see below - Types of Manuscript – some general guidelines.)

2. **Key words** – three to seven key words should be provided that capture the main topics of the article.

3. **Abbreviations** – these should be kept to a minimum and any essential abbreviations should be defined (eg PHO – Primary Health Organisation).

Main manuscript

The structure of the body of the manuscript will vary according to the type of manuscript (eg a research article or note would typically be expected to contain Introduction, Methods, Results and Discussion – IMRAD, while a commentary on current management practice may use a less structured approach). In all instances consideration should be given to assisting the reader to quickly grasp the flow and content of the article.

For further details about the expected structure of the body of the manuscript, see below - Types of Manuscript – some general guidelines.

Major and secondary headings

Major and secondary headings should be left justified in lower case and in bold.

Figures, tables and illustrations

Figures, tables and illustrations should be:

- of high quality;
- meet the 'stand-alone' test;
- inserted in the preferred location;
- numbered consecutively; and
- appropriately titled.

Copyright

For any figures, tables, illustrations that are subject to copyright, a letter of permission from the copyright holder for use of the image needs to be supplied by the author when submitting the manuscript.

Ethical approval

All submitted articles reporting studies involving human/or animal subjects should indicate in the text whether the procedures covered were in accordance with National Health and Medical Research Council ethical standards or other appropriate institutional or national ethics committee. Where approval has been obtained from a relevant research ethics committee, the name of the ethics committee must be stated in the Methods section. Participant anonymity must be preserved and any identifying information should not be published. If, for example, an author wishes to publish a photograph, a signed statement from the participant(s) giving his/her/their approval for publication should be provided.

References

References should be typed on a separate page and be accurate and complete.

The Vancouver style of referencing is the style recommended for publication in the APJHM. References should be numbered within the text sequentially using Arabic numbers in square brackets. [1] These numbers should appear after the punctuation and correspond with the number given to a respective reference in your list of references at the end of your article.

Journal titles should be abbreviated according to the abbreviations used by PubMed. These can be found at: http://www.ncbi.nih.gov/entrez/query.fcgi. Once you have accessed this site, click on 'Journals database' and then enter the full journal title to view its abbreviation (eg the abbreviation for the 'Australian Health Review' is 'Aust Health Rev'). Examples of how to list your references are provided below:

Books and Monographs

1. Australia Institute of Health and Welfare (AIHW). Australia's health 2004. Canberra: AIHW; 2004.

2. New B, Le Grand J. Rationing in the NHS. London: King's Fund; 1996.

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3. Mickan SM, Boyce RA. Organisational change and adaptation in health care. In: Harris MG and Associates. Managing health services: concepts and practice. Sydney: Elsevier; 2006.

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6. Perneger TV, Hudelson PM. Writing a research article: advice to beginners. Int Journal for Quality in Health Care. 2004;191-192. Available: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191>(Accessed 1/03/06)

Further information about the Vancouver referencing style can be found at http://www.bma.org.uk/ap.nsf/content/LIBReferenceStyles#Vancouver

Types of Manuscript - some general guidelines

1. Analysis of management practice (eg, case study)

Content

Management practice papers are practitioner oriented with a view to reporting lessons from current management practice.

Abstract

Structured appropriately and include aim, approach, context, main findings, conclusions.

Word count: 200 words.

Main text

Structured appropriately. A suitable structure would include:

- Introduction (statement of problem/issue);
- Approach to analysing problem/issue;
- Management interventions/approaches to address problem/issue;
- Discussion of outcomes including implications for management practice and strengths and weaknesses of the findings; and
- Conclusions.

Word count: general guide - 2,000 words.

References: maximum 25.

2. Research article (empirical and/or theoretical)

Content

An article reporting original quantitative or qualitative research relevant to the advancement of the management of health and aged care services organisations.

Abstract

Structured (Objective, Design, Setting, Main Outcome Measures, Results, Conclusions).

Word count: maximum of 300 words.

Main text

Structured (Introduction, Methods, Results, Discussion and Conclusions).

The discussion section should address the issues listed below:

- Statement of principal findings;
- Strengths and weaknesses of the study in relation to other studies, discussing particularly any differences in findings;
- Meaning of the study (eg implications for health and aged care services managers or policy makers); and
- Unanswered questions and future research.
  Two experienced reviewers of research papers (viz, Doherty and Smith 1999) proposed the above structure for the discussion section of research articles. [2]

Word count: general guide 3,000 words.

References: maximum of 30.

NB: Authors of research articles submitted to the APJHM are advised to consult 'Writing a research article: advice to beginners' by Perneger and Hudelson (2004) and available at: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191> This article contains two very useful tables: 1) 'Typical structure of a research paper' and 2) 'Common mistakes seen in manuscripts submitted to this journal'. [3]

3. Research note
Content
Shorter than a research article, a research note may report the outcomes of a pilot study or the first stages of a large complex study or address a theoretical or methodological issue etc. In all instances it is expected to make a substantive contribution to health management knowledge.

Abstract
Structured (Objective, Design, Setting, Main Outcome Measures, Results, Conclusions).

Word count: maximum 200 words.

Main text
Structured (Introduction, Methods, Findings, Discussion and Conclusions).

Word count: general guide 2,000 words.

As with a longer research article the discussion section should address:

- A brief statement of principal findings;
- Strengths and weaknesses of the study in relation to other studies, discussing particularly any differences in findings;
- Meaning of the study (eg implications for health and aged care services managers or policy makers); and
- Unanswered questions and future research.

References: maximum of 25.

NB: Authors of research notes submitted to the APJHM are advised to consult 'Writing a research article: advice to beginners' by Perneger and Hudelson (2004) and available at: <http://intqhc.oxfordjournals.org/cgi/content/full/16/3/191> This article contains two very useful tables: 1) 'Typical structure of a research paper' and 2) 'Common mistakes seen in manuscripts submitted to this journal'. [3]

4. Review article (eg policy review, trends, meta-analysis of management research)
Content
A careful analysis of a management or policy issue of current interest to managers of health and aged care service organisations.

Abstract
Structured appropriately.

Word count: maximum of 300 words.

Main text
Structured appropriately and include information about data sources, inclusion criteria, and data synthesis.

Word count: general guide 3,000 words.

References: maximum of 50

5. Viewpoints, interviews, commentaries
Content
A practitioner oriented viewpoint/commentary about a topical and/or controversial health management issue with a view to encouraging discussion and debate among readers.

Abstract
Structured appropriately.

Word count: maximum of 200 words.

Main text
Structured appropriately.

Word count: general guide 2,000 words.

References: maximum of 20.

6. Book review
Book reviews are organised by the Book Review editors. Please send books for review to: Book Review Editors, APJHM, ACHSM, PO Box 341, NORTH RYDE, NSW 1670. Australia.

Covering Letter and Declarations
The following documents should be submitted separately from your main manuscript:

Covering letter
All submitted manuscripts should have a covering letter with the following information:
- Author/s information, Name(s), Title(s), full contact details and institutional affiliation(s) of each author;
- Reasons for choosing to publish your manuscript in the APJHM;
- Confirmation that the content of the manuscript is original. That is, it has not been published elsewhere or submitted concurrently to another/other journal(s).

Declarations

1. Authorship responsibility statement

Authors are asked to sign an 'Authorship responsibility statement'. This document will be forwarded to the corresponding author by ACHSM on acceptance of the manuscript for publication in the APJHM. This document should be completed and signed by all listed authors and then faxed to: The Editor, APJHM, ACHSM (02 9878 2272).

Criteria for authorship include substantial participation in the conception, design and execution of the work, the contribution of methodological expertise and the analysis and interpretation of the data. All listed authors should approve the final version of the paper, including the order in which multiple authors' names will appear. [4]

2. Acknowledgements

Acknowledgements should be brief (ie not more than 70 words) and include funding sources and individuals who have made a valuable contribution to the project but who do not meet the criteria for authorship as outlined above. The principal author is responsible for obtaining permission to acknowledge individuals.

Acknowledgement should be made if an article has been posted on a Website (eg, author's Website) prior to submission to the Asia Pacific Journal of Health Management.

3. Conflicts of interest

Contributing authors to the APJHM (of all types of manuscripts) are responsible for disclosing any financial or personal relationships that might have biased their work. The corresponding author of an accepted manuscript is requested to sign a 'Conflict of interest disclosure statement'. This document will be forwarded to the corresponding author by ACHSM on acceptance of the manuscript for publication in the APJHM. This document should be completed and signed and then faxed to: The Editor, APJHM, ACHSM (02 9878 2272).

The International Committee of Medical Journal Editors (2006) maintains that the credibility of a journal and its peer review process may be seriously damaged unless 'conflict of interest' is managed well during writing, peer review and editorial decision making. This committee also states:

'A conflict of interest exists when an author (or author's institution), reviewer, or editor has a financial or personal relationships that inappropriately influence (bias) his or her actions (such relationships are also known as dual commitments, competing interests, or competing loyalties).

... The potential for conflict of interest can exist whether or not an individual believes that the relationship affects his or scientific judgment.

Financial relationships (such as employment, consultancies, stock ownership, honoraria, paid expenses and testimony) are the most easily identifiable conflicts of interest and those most likely to undermine the credibility of the journal, authors, and science itself...' [4]

Criteria for Acceptance of Manuscript

The APJHM invites the submission of research and conceptual manuscripts that are consistent with the mission of the APJHM and that facilitate communication and discussion of topical issues among practicing managers, academics and policy makers.

Of particular interest are research and review papers that are rigorous in design, and provide new data to contribute to the health manager's understanding of an issue or management problem. Practice papers that aim to enhance the conceptual and/or coalface skills of managers will also be preferred.

Only original contributions are accepted (ie the manuscript has not been simultaneously submitted or accepted for publication by another peer reviewed journal – including an E-journal).

Decisions on publishing or otherwise rest with the Editor following the APJHM peer review process. The Editor is supported by an Editorial Advisory Board and an Editorial Committee.

Peer Review Process

All submitted research articles and notes, review articles, viewpoints and analysis of management practice articles go through the standard APJHM peer review process.

The process involves:

1. Manuscript received and read by Editor APJHM;

2. Editor with the assistance of the Editorial Committee assigns at least two reviewers. All submitted articles are blind reviewed (ie the review process is independent). Reviewers are requested by the Editor to provide quick, specific and constructive feedback that identifies strengths and weaknesses of the article;

3. Upon receipt of reports from the reviewers, the Editor provides feedback to the author(s) indicating the reviewers' recommendations as to whether it should be published in the Journal and any suggested changes to improve its quality.

For further information about the peer review process see Guidelines for Reviewers available from the ACHSM website at www.achse.org.au.

Submission Process

All contributions should include a covering letter (see above for details) addressed to the Editor APJHM and be submitted either:

(Preferred approach)

1) Email soft copy (Microsoft word compatible) to journal@achse.org.au

    Or

2) in hard copy with an electronic version (Microsoft Word compatible) enclosed and addressed to: The Editor, ACHSM APJHM, PO Box 341, North Ryde NSW 1670;

All submitted manuscripts are acknowledged by email.

NB

All contributors are requested to comply with the above guidelines. Manuscripts that do not meet the APJHM guidelines for manuscript preparation (eg word limit, structure of abstract and main body of the article) and require extensive editorial work will be returned for modification.

References

1. Hayles, J. Citing references: medicine and dentistry, 2003;3-4. Available: <http://www.library.qmul.ac.uk/leaflets/june/citmed.doc> (Accessed 28/02/06)

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Further information about the Asia Pacific Journal of Health Management can be accessed at: www.achse.org.au.