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The meeting went very well.... and there was some good interaction. – James Wear, Scientific Enterprises, Inc.

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Cover picture of a brilliant cut diamond: The brilliance of the diamond relates to the Special Feature article, Commentary and Editorial which focus on Brilliance in healthcare and its many forms.

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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
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Asking the Question . . . Do You SEE Brilliance?

In 2010, through my affiliation with Griffith University, I was presented with an opportunity to engage Australian healthcare leaders and academics on a journey to introduce and extend the concept of brilliance in healthcare as a transformation leverage point. This editorial addresses this desire by encouraging a fresh approach. The article probes questions in a fanciful conversation about transformation to stimulate collective creativity by envisioning possibilities for healthcare.

If the emerging understanding of healthcare organisations and systems is of a living human system – an ecology of overlapping, interpenetrating relational spheres – then leadership in this world may be defined as shaping 'life enhancing' conditions. Such leadership is both deeply personal and inherently collective. It involves individuals tapping their sources of inspiration and imagination; and it involves collectives actualising emerging futures. It grows from individual and collective discipline, much of which we still grasp only dimly. [1] To tap the source of inspiration and imagination is to make the unconscious conscious, to create the space to let it percolate and emerge from the depths of individual and collective experience. How can this be achieved in organisations driven to improve quality and productivity? Complexity theorists argue that emergence of order from a system is not a magical phenomenon. It is guided: 'emergence does not simply happen by itself – it involves tending and encouragement from its component agents as well as from a higher level.' [2,p.6]

Healthcare is a very complex organic system built on and operated by a number of formal and informal networks. The real organisation that you work in is not the official organisation chart. Organisational charts are static images that imply rigid turf boundaries, whereas high performing organisations are as dynamic and fluid as the external environment around them. Fundamentally health system organisations are patterns of energy; a web of relationships, conversations and decisions among people. Relationship building in the white spaces between the black lines on the organisational chart is a key step for network growth.

To quote Margaret Wheatley: 'As networks grow and transform into active, working communities of practice, we discover how life truly changes, which is through emergence'. [3,p.1] According to Wheatley, and Freize:

> Networks are the only form of organisation on this planet used by living systems. These networks result from self-organisation that fosters emergence, where individuals recognize their interdependence and organize in ways to create solutions that support the diversity and viability of all. Networks create the conditions for emergence which is how life changes. They develop into communities of practice, then into systems. [4,p.2]

Building networks and learning communities requires basic shifts in how we think, reflect and interact. The journey involves an exercise in personal commitment to being open to learning. Without communities of people who are genuinely committed to learning together, there is no real chance of moving forward. [5]

Moving forward, we have all the gifts we need to improve the healthcare system. Every individual who is part of the system carries the seeds of success, skills, talents, potentialities and enthusiasm. Unfortunately the same seeds contain too many intellectual, emotional and systemic barriers. Leaders, all of us need to take action and nurture the growth of those seeds that will allow for a well connected network.

Permit me to take you outside the box and challenge your process of reflection and thinking. There are many formal and informal leaders at all levels of the healthcare system. I hope that many might accept an invitation to join me in a special place, a place of seeing. I call it the balcony of brilliance. Behind an outdated map of the healthcare system I found a secret staircase that leads to a place from which I can see the entire healthcare system.

Everyone can gain access to something similar. I walk up a long flight of stairs, pause to take a breath, say a quiet word of thanks for a rare time to reflect, open the door and step out. From here I look on the vista of the system from the perspective of my professional life. It is special. The air

is rarified. The will is keener here. Intent behind action is stronger. Knowledge is deeply accessed. Other leaders might interpret what they see from here differently, but we can share the same view. Here are the stairs now; the price of admission is a meaningful question. Questions about healthcare brilliance are most welcome.

If I am fortunate, I am joined on the balcony by a Healthcare Muse: an entity that inspires hope and confidence that the next stage in the evolution of a healing healthcare system can be achieved. It seems to study the collective source of thought and feeling. Its current assignment is to guide the regeneration of the core of the health system. This core is the 'place' where our collective psyche and spirit are preparing to meet in the process of creating a healing system that is itself healthy.

I ask the Muse questions about the brilliance of the system. The reply comes from the compassionate perspective of 'dynamic wholeness': a system that is cohesive; flexible; interconnected; cost-effective; orderly; vital; and that values the commitment of people above all else. This does not mean perfect. Dynamic wholeness means that error and waste still occur, but they arise from prudent risk and experimentation that lead to insight. This ultimately fuels renewal. We discuss sustainability from many perspectives, both ancient and modern. The Muse is highly intuitive. It sees where current trends are headed and comments about our choices. It suggests options and provides information.

Why does it dialogue with me? For many years I have studied leadership development and change management. My early dialogues were reflections on changing behaviour, especially in challenging areas of conflict management such as labour relations. What is the most important thing I did? I asked myself and others this question again and again: 'What do you see?'

The 'Healthcare Muse' is a collection of thought gained from both informal and formal leaders who provide me with many gifts. Imagine all the conversations and debates of many years boiled down into one radiant point of contact for reflection and insight.

It is not really a Muse, of course. Some might say, technically, that it is the 'illusory expression of a grandiose complex', or, simply and dismissively, a fantasy. The problem with such explanations is that they do not really contribute to understanding experience. My test for our conversation is its practical utility.

You might consider a conversation with your own Muse. If authentic, it will respect your unique role. It will present insights that honour your point of view and responsibilities. It will help you question: 'Is the search for universal "truth" about healing systems valid?' (this depends upon your assumptions about universality, truth, healing and validity). I try to keep an open mind. I try to be guided by the authority of knowledge from many cultures about systems that have stood the test of time, as well as by new research. But let's not be too academic. Come along and listen to the start of a conversation. Make up your own mind.

Good day, and welcome to you. I am 'The Healthcare Muse', my name is Bloggette. Please begin with your first question.

I want to learn how to stimulate learning across the healthcare system. How can we encourage formal and informal leaders at all levels to search for and talk about healthcare brilliance? Everyone is tired of the quick-fix that achieves no real effect. We want people to use questioning – to create the systemic conditions from which real solutions to today's challenges arise.

You also want people to learn, from their personal reflections, what will enable them to outgrow constraints in the current collective approach to healthcare, is that not so?

Yes. The connection between personal and professional growth is vital…Where do we begin?

It's leveraging brilliance. What I know for certain is that healthcare people are capable of brilliance. I know the answers to the questions we need to learn are within their hearts and minds.

Where do we access the brilliance?

The healthcare system embodies the highest order and purpose – to foster life, health and well-being through knowledge and service at each stage in the cycle of life. And we can go beyond merely thinking about and acting within structures and systems to actually connecting the system with life itself. We can align ourselves with the consciousness that enables the system to support life; the higher purpose of a healing system. Therefore, it is important to recognise that people bring gifts to work every day. The magic is the finding of the gifts. When you appreciate people for their gifts, they are pleased to reveal them more deeply and more frequently.

Can you comment on the leadership functions that enable human and organisational systems to grow and shine?

I believe leaders must; find, mind, grind and bind. Let me explain:

* **Find** – consciousness seeks itself through environmental scanning, often by searching for opportunity, sensing its relation to the world and what is needed to evolve. And finding takes courage. You can't find unless you stand reciprocally in light and shadow.

* **Mind** – integrating sensory mind, the intellect and self reflection principles into a field of conscious awareness. And mind must be mined. Once found you must dig into collective mind and honour its treasures.

* **Grind** – holding the tension created by polarities and conflict of opposites, so that the issue is worn smooth by its friction, like grinding a lens. This requires surrounding yourself with people who will keep you honest.

* **Bind** – as an organic principle of connection in depth, to create the 'glue' that holds the fabric of systems together. This manifests when there is great commitment to accountability and reliance upon the principle of truth, so central to risk management.

I get it. It is all about the choices you make.

Yes. Let me share a story with you. An elder from the Cherokee nation was teaching his grandchildren about life. He told them:

'A fight is going on inside me, it is a terrible fight between two wolves. One wolf represents fear, anger, arrogance, envy, sorrow, regret, greed, resentment and inferiority.

The other wolf represents hope, sharing, humility, relationships, benevolence, friendship, empathy, generosity, community and brilliance.

This same fight is going on inside you, and inside every other person, too.'

One child asked the elder: 'Which wolf will win?'

The elder simply replied: 'The one you feed.'

Let's begin a journey of feeding BRILLIANCE.

Hugh MacLeod MA
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IN THIS ISSUE

The photograph on the cover of this issue represents the content of the editorial, the feature article and the commentaries. The cover depicts the brilliance of a diamond and reflects the interests of a significant group of Australian health system and health management researchers undertaking collaborative research with a focus on what is brilliant in our healthcare system.

The editorial is provided by Hugh B MacLeod, the current Chief Executive of the Canadian Patient Safety Institute. Hugh was on a visit to Australia recently and inspired this group of researchers to focus on what is brilliant within health systems as a vehicle for reform and improvement as opposed to a focus on problems. In this issue he challenges readers to make a similar change in focus.

In this issue's feature article, Fulop and Campbell, as co-leads of the Brilliance Project, describe its history and development and where it might go from here. The authors challenge readers to describe 'what is your take on brilliance?'. Perhaps readers might want to respond with future articles and letters to the Editor about their experience of brilliance in healthcare.

There are more than twenty Australian and New Zealand academics on the Brilliance Project circulation list with a smaller core group actively involved. A few of these, Hayes, Dadich and Baber, have provided commentaries about their perspective on brilliance in healthcare. Perchance, David Hunter also provides a contribution on what might be considered a United Kingdom approach to brilliance in healthcare.

Dinesh Arya provides a welcomed contribution indicating his point of view about the national health reforms. Substantially written before the recent health reform announcements made in February, the Journal is pleased to provide a forum for continuing debate about the ongoing reform agenda.

Zhanming Liang and colleagues describe their research project about evidence-informed decision-making in the first of potentially two articles on this study. Their objective is to understand how health managers perceive evidence and their current practice in its use. The setting is the State of Victoria in Australia.

From Hong Kong, Lieu and Cho describe their research into 'perceptions, expectations and support for a community–wide eHR system' from the perspectives of Hong Kong residents. The Hong Kong Government has determined to introduce an electronic medical record, and through this, link care received from both the public and private sectors.

Canyon and colleagues provide their second article around crisis management by health organisations, describing top management support for the preparedness of health organisations in Australia to respond to crises. This is a timely contribution given the challenges health services have experienced recently in being affected by and responding to major natural disasters in New Zealand, Australia and most recently Japan. Following on from this article, it would be good to receive contributions from readers, particularly around the lessons learned by health organisations from these recent events.

Kruger and colleagues make a contribution in the area of policy and planning utilising multi-dimensional mathematical simulation for understanding key variables in attempts to make dental schools into more effective academic units. Given the systemic shortages of health professionals in our health workforce, contributions that might improve the training and availability of graduates from our education system are welcome.

We are pleased to profile the National President of the Australasian College of Health Management, Kate Copeland, in this issue. While Kate is well known to many College members, her description of career progression and the achievements made in that career are not only interesting but inspirational for those aspiring to management and leadership roles in our healthcare systems.

In this issue we also welcome Dr Mark Avery as an Assistant Editor (Australia) to our editorial team. Mark is well known from his career in the NSW and Queensland health systems and is currently an academic at Griffith University, Queensland. Now that the Journal is available online, we are attempting to develop and consolidate our systems and increase our exposure to availability through relevant databases during the next twelve months. We are a relatively small, part-time editorial team and are endeavouring to develop our systems to facilitate the contributor experience of publishing with the Journal. We appreciate the increasing contributions being received and continue to welcome that interest both from operational health professionals, academics and students.

The Brilliance Project: trying to understand great performance in the health service

L Fulop and S Campbell

Abstract

The motivation behind having brilliance as a focus for a project in healthcare is about trying to understand it, and from that, trying to find ways of spreading such understanding widely so that brilliance is more pervasive in health services. One member of the team commented that they had been referred to as running a brilliant team, and responded 'that if that was the case, how bad must the rest have been?' Sometimes it is not easy to see brilliance in what we do, let alone measure it, but on reflection we can remember times when the teamwork was just right, although we did not know it at the time, but now see it as having been a special time. Hugh B MacLeod of the Canadian Patient Safety Institute (CPSI) has been pivotal in inspiring this work, and some of his input is outlined. This paper describes more of the background and motivation behind the project as well as some of the potential ways in which the Health Management Research Alliance (HMRA) is investigating and going about this project.

Abbreviations: AI – Appreciative Inquiry; B – Based; CPSI – Canadian Patient Safety Institute; E-BM – Evidence-based Medicine; GBS – Griffith Business School; HMRA – Health Management Research Alliance; HRT – Health Results Team; JHHS – Johns Hopkins Health System; NHS– National Health Service; PGPI – Press Ganey Priority Index; QI – Quality Improvement; SHAPE – Society for Health Administration Programs in Education; UNE – University of New England; UTS – University of Technology Sydney.

Key Words: brilliance; brilliant performance; quality improvement; patient safety.

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Introduction

The Health Management Research Alliance (HMRA) was created in 2008 at Griffith University and in 2009 morphed into an entity sponsored by the Society for Health Administration Programs in Education (SHAPE). It is now co-hosted by Griffith University and the University of New England (UNE). [1] The initiative for the Alliance came from the Griffith Business School (GBS) and then developed into a partnership with health facilities at Griffith and then other universities. It was no mean feat to get this Alliance established and the challenge was to find a project that would kick-start the research program. It was through a lengthy consultation process that the Brilliance Project emerged. Yet its genesis was not really planned or anticipated. It came out of 'left field', because we resisted the temptation to decide too early on what might engage us as researchers in a new partnership arrangement that was cross-institutional and hard to nurture because of the professional silos and ranking pressures that drive research in Australia and New Zealand.

One of the very early initiatives taken by the GBS to support the HMRA was to appoint Hugh B MacLeod as a Visiting Professor towards the end of 2009. As stated above, he is currently the CEO of the Canadian Patient Safety Institute (CPSI). Prior to joining CPSI in February 2010, he held senior positions with the Government of Ontario as Associate Deputy Minister Climate Change Secretariat and Assistant Deputy Minister System Accountability and Performance for the Ontario Ministry of Health and Long Term Care. During his four years with the Ministry he also was the

Executive Lead of the Premier's Health Results Team (HRT) responsible for a provincial surgical wait time strategy, a provincial primary care strategy, and the creation of Local Health Integration Networks. He has many stories about the change reforms he was involved in but one in particular captured our imaginations.

He described how he entered the Health Ministry post-SARS with a reformist government and many challenges, one of which was to redress wait times in public hospitals in Ontario. The issue had risen to high priority in 2004 and a Wait Time Strategy was launched in that year through the leadership of the HRT. By 2006 Ontario had moved from being a laggard to a leader with respect to wait times. [2-3] What really struck us as being brilliant was Hugh's description of how they developed expert panels to address issues such as wait times, but then provided chairs of the panels with only a problem statement instead of the usual terms of reference. They also had other parameters but this one stands out as integral to tapping what he terms System Brilliance. [4] While SARS provided the 'burning platform' for reform, what Hugh and the HRT did was so left field to what most of us know about reform strategies. He always speaks about getting people to ask the right questions and makes constant reference to having to start new conversations in healthcare.

Hugh was subsequently able to visit Australia in April, 2010 and attend a workshop on April 27, at the University of Technology, Sydney, (UTS). It had been organised to review the research we had been doing on change and reform. [5] The idea for the Brilliance Project arose from this workshop at which by default, Hugh ended up the key facilitator and gave us inspiration to pursue this topic.

Brilliance emerges

Principally, Hugh spoke about the need to find 'pockets of excellence' or 'brilliance in the system' as exemplars for others and as levers for change. He described possible contenders as 'courageous units, innovative teams, groups offering creative solutions to intractable problems' and so on. He talked about how we can draw on such examples as part of creating a 'ripple effect' in healthcare and to start to focus on the positives and good stories as opposed to the endless negativities that pervade healthcare change and reform. He once again gave examples of his own experiences with the reforms in Ontario around waiting lists and other interventions. He talked about how they used Appreciative Inquiry (AI) [6] (see later for a brief discussion) in their approach to reform in Canada and some of the core values that drove the change initiatives. He kept coming back to

starting a conversation about healthcare in which we talk about brilliance and excellence and bring these to the forefront. He also said we should look across many areas, not just the hospital setting, to find our examples. Hugh also pointed out that almost everything that has to do with change and reform has to start with a focus on the relationships (the soft side) that have to be built and managed to achieve ongoing change or resilience. He went back to examples such as his expert panels and what they were able to achieve that others had failed at in the past. He also gave examples of experiments in primary care that forged new relationships and networks. [2-3] Hugh was inspirational, passionate and principled and he was worth listening to because he has had success as a reformer. He did not want to advocate a recipe book for others to follow but rather said that the reforms he helped to create were part of a transformational journey from which he has distilled lessons others can look at and learn from and then adapt to their own circumstances. At the finish of Hugh's presentation the group went into a discussion about a 'common project' around the idea of excellence and brilliance. It was evident very early on that everyone present had a different notion of what this might be and the issues it raised. The following attempts to summarise some of the key points:

- What stories would indicate that something is brilliant and/or excellent?
- How would we find them? How would we select them?
- Is it a project we could do on our own? Is it national and in what way?
- What grants would be needed to do this sort of research?
- How do we get a clear direction for what to do?
- How do we know when something has contributed 'brilliance' to the system?
- What do we mean by the 'soft side' – is it communication, culture, politics or leadership?
- What do we mean by relationships and relational?
- Should we start somewhere and see what happens?
- Do we need to understand what the difference is between change and transformation?
- Should we look at how we can explore new ideas, such as patient stories, combined with systematic/analytic discussions in order to identify good experiences?
- How are areas of excellence promoted in the system?
- Are there examples of good governance for the changes that are coming with the (then) Rudd reforms that might qualify?

- Is it to find a link between presenteeism, quality and safety and who is doing it well?

- Is it about resilience?

- Do we need a skills and toolbox approach?

- Is it about courage, discipline, leadership and the ability to deal with paradox as something that can't be resolved?

- Who are creating different conversations in healthcare?

- Is the adoption of AI a useful approach in the context of identification of brilliance or excellence?

The key questions that seemed to be raised in the 'wash-up' were: how do we define excellence and brilliance and how do we describe it? It was regretful that not everyone who is in the project had the opportunity to listen to Hugh because those of us who were present underwent a transformation of sorts and our journey started so differently to the rest of the group. It is still not a given that we will all arrive at the end with a common understanding of what brilliance means in healthcare and maybe that is as it should be. But at least some of us thought that it was worth thinking about what AI might mean for the project.

Appreciative inquiry

Hugh, in his presentations, praised the impact of AI as a new method of data collection and analysis. AI is 'an organisational development process or philosophy that engages individuals within an organisational system in its renewal, change and focused performance'. [6] AI is founded on a number of assumptions including that the way organisations change is about the way they inquire. AI's philosophy also asserts that if an organisation continues to inquire into problems or challenges, then it will keep finding them. However, an organisation that attempts to identify what is best about itself will uncover more that is good.

The basis of AI builds on the work of earlier action research theorists and practitioners but was embraced and established by Cooperrider of Case Western Reserve University and Suresh Srivastva in the 1980s. [6]   While difficult for some cultures to take on board, the appreciative approach takes its inspiration from 'the current state of "what is" and seeks a comprehensive understanding of the factors and forces of organising (ideological, techno-structural, cultural) that serve to heighten the total potential of an organisation in ideal-type human and social terms'. [7]   AI should have the following characteristics: appreciative, applicable, provocative and collaborative.

Grounding the brilliance discussion

As part of the UTS discussion, Paul Bate et al's book, *Organising for Quality*, [8] was also mentioned as it contains seven in-depth case studies from leading hospitals in the United States and Europe that have done exceptionally well (drawing on an evidence-based criteria such as peer assessment, quality awards and prizes) in their improvement journeys. Associate Professor Ros Sorensen from UTS had championed this book as a possible template for a project and it is worth outlining what it has to offer because it does show how to tap brilliance. The book focuses on cultural and organisational processes of Quality Improvement (QI) and produces a checklist of the most probable challenges that would be useful for practitioners to know about before embarking on a similar journey. The study used a team-based research approach that deliberately set out to cherry-pick organisations that were known to be successful and early adopters of QI. They did not capture all aspects of these organisations; only studying parts of them, namely the strategic (macro) and departmental or unit level (micro). The study adopted a qualitative, ethnographic case study approach (especially using narratives) to capture the complexity of the QI journey, utilising the journey metaphor as a powerful way to frame the presentation of their findings in much the same way that Hugh does. They did not set out to develop a model, given the unknown nature of what they were exploring and the complexity involved and therefore, never found a one best way to improve service quality but rather, to show that each organisation had its own template for change, again as Hugh advocates. What these entities all possessed were people in them who had the ability to identify the challenges they faced and then do something about them. Bate et al concluded that an enabling structure and culture were two of the most important things to sustain change associated with high performance, and this resonates with what Hugh had said of his experiences. [8] The mindset that sustained these successful journeys is one that is flexible and opportunistic because change, as they found, was dynamic (often unpredictable with lots of unplanned turns and roundabouts), processual and emergent. The case studies each brought a different perspective to the understanding of the QI journey in terms of their meta-narratives or key themes.

However, they argue that one of the biggest and most significant difference between their research and others on quality in healthcare, is that they have moved 'the spotlight away from the science of QI (the systematic, left brain aspects) to the social science of improvements (the messy,

right brain, human or people aspects). We see quality as not just method, technique, discipline or skill, but as a human and organisational accomplishment as a social process'. [8] They go on to describe how hard, left brain technical and operating systems factors (score-cards, metrics, measurement systems and technology, clinical pathways and evidence-based medicine (E-BM)) have dominated quality research while their research reveals how important it is to look at the right brain and the sociology, aesthetics and the organisation of improvement (organisation, culture, language and cognition, politics, value systems, identity, leadership, structure, strategy, citizenship etc). [8]

Bate et al's example of the San Diego Children's Hospital's complete revamp of components of its quality agenda shows how it moved away from the American Institute of Medicine's criteria, which focused almost entirely on left brain thinking, to developing their own that included such things as light, colour, texture, aroma and so on to frame their approach and really, to start a new conversation. The turning point in this case (ie, key decision point or defining moment) was when architects asked the hospital's Executive: 'What do you want this new facility to feel like?', effectively forcing a right brain focus that was nowhere on their quality radar. This case study is an example of what would qualify as brilliance because the hospital found that by changing their focus to the patient experience, as distinct from the journey, and using the lens of feelings, effectively gave them a significant competitive edge. [8] They would not have had the profound change in values and culture if they had stayed focused on a left brain quality mindset.

As a further way to move the project forward, both authors were invited to give a version of how they might approach brilliance in their own research. The point of doing this exercise was to show that by looking at the issue of brilliance or excellence, we do not have to be bound by any particular paradigm or approach (left brain only for example), and that we can select from any area of healthcare in which we have an interest and think we have seen brilliance. The real strength of the project could be the fact that we draw on a multidisciplinary approach and askew any tendency to silo our research. We could feasibly produce a book such as Bate et al's, but with a much greater richness in method and areas covered (eg, the inclusion of primary care or community-based healthcare initiatives and even Area Health Service governance). We could make sure that we pay particular attention to the relationship issue as Hugh had suggested. We could also look at how Bate et al framed their study and perhaps use their approach, if we want to start afresh. The fact is, we were engaged in a new conversation in which we

had to keep our options open. We also told colleagues of how we had had dinner at UNE when Hugh was visiting and that we had two people from the Hunter–New England Area Health Service present on whom we tested our assumption that people in health know when they see brilliance. We asked them if they could identify a pocket of brilliance or excellence and they did and got very animated about the example they gave us which, without prompting, did not involve a hospital. Anyway on to our examples.

Liz outlined how she had been looking at exemplary leadership since 2004 and in particular, how she had chosen her case studies. She argued that most studies of leadership point to the particularly intractable problem of engaging doctors as clinician managers or when engaged, their inability to provide the leadership needed to enact reform and change. However, she argued that failed, faulty or flawed engagement, especially on the part of doctors, dominates the discourse of leadership in healthcare and this means that we lose sight of the fact that 'successful', 'good' or 'exemplary' leadership does occur at the level of clinical units, which is where she focused her study. Her research seeks to make a contribution to the study of leadership in healthcare, and in the realm of the clinician manager as doctor by addressing the issue of exemplary leadership, a topic that is now mentioned in the recent United Kingdom National Health Service (NHS) review of leadership. [9] Her research involves discovering how clinician managers, namely doctors who were identified by their peers to be exemplary leaders, interpret and frame their leadership experiences and to what extent their co-workers produce confirming or disconfirming accounts so that different approaches can be developed for leadership programs. She is interested in those clinician managers who are at the level of a head of department or equivalent and who, as Bolden, Petrov and Gosling [10] would argue, are situated at the interface of the discipline, the profession, the institution and the academic realm and hence, are in the thick of leadership contradictions, paradoxes and conflicts. Her work has given her examples of what she says are 'WOW' moments when what clinicians are doing have left her feeling that this is brilliant. An example that she recounts is of a Head of Unit who, along with his team, have created a new governance structure in which, though he is the official head of the unit, he has a committee with a Chair to whom he reports and is held accountable for a range of matters. In short, this is a distributed model of leadership that would merit being used in many contexts not just health and is at the core of good governance, teamwork and ensuring professionals engagement. This was not the only example she gave.

Johns Hopkins Health System

Contrasting Bate et al's [8] approach, Steve was keen to make the point that some organisations are known to be brilliant, and have remained so. They have organisational development approaches that are useful, but these alone do not create brilliant performance. An example of such a health organisations is Johns Hopkins Health System (JHHS). [11]

JHHS has identified Service Excellence as a leading organisation-wide priority. 'Our objective is to achieve excellence in customer service equal to our excellence in education, research, and clinical care'. The surprise here is a separation of customer service from education, research and clinical care, where the customer/patient focus certainly remains central in education and clinical care, with the customer being clearly identifiable. Part of the justification is that health services in the United States are driven by the realisation that the way to keep their customer base remains excellence in clinical care, but also in the service mentality and presence of their staff.

Press Ganey Priority Index

A key part of the development work in excellence/brilliance is the use of the Press Ganey Priority Index (PGPI). [12] Press Ganey is a company that has been providing consultancy into a large range of health services in North America. One of the services they provide is PGPI. The method is commercially protected, but essentially it is a means by which priorities can be set for managerial intervention, when trying to achieve excellence in a service. Such a priority might be the identification of a key focus such as 'keeping people informed'. In this instance the notion of 'People' needs to be defined; such as patients, their relatives, employees, other service areas, visitors and doctors – the reality being all of the stakeholders that the departmental team communicates with. The next stage in the process is the identification of the nexuses of communications where improvements could be made. Similarly, the PGPI might identify 'involvement in decision-making', which could be argued to be a subset or a close relation to 'keeping people informed'. Developing systems that avoid the frustration felt by patients, employees, doctors and nurses, when these individuals have useful input to offer, but decisions are made without them. Even if the correct decision is made, teamwork and trust is affected by failing to involve key personnel in the decision-making process.

Johns Hopkins Health System – service excellence

One of the key themes of this paper is the ongoing question about how excellence/brilliance is judged. JHHS use a range of metrics based on different satisfaction results including patient satisfaction, referring doctor satisfaction, payer satisfaction (with an emphasis on the private health insurer's views on the service), and finally, employee satisfaction. [13] The latter is a move from the usual employee satisfaction about their own employment conditions, to their judgement about their satisfaction with the overall care package or service that they were part of and provided to the patient.

JHHS have other processes that are similarly engineered to ensure a systematically high standard. But JHHS was known to be a centre of excellence long before these systems were put in place. There must have been excellence and brilliance there already. The systems undoubtedly contribute to the quality of the service, but their existence does not create excellence or brilliance. They are merely systems for continuous quality improvement. However, some of the concepts and issues that they focus upon assist in creating an environment that can lead to excellence and brilliance. But that requires exploring the right brain issues involved because most of the above tells us about the left brain approach, whereas we need both to give us deep insight into brilliance at JHHS. Command and control seem to abound in JHHS, but this is not all the story, as recent developments include an excellence centre that focuses more on the soft side and a blog that is similarly designed. [11,14] Bate et al [8] show precisely this in their case of the San Diego Children's Hospital where clinical pathways are used in a mindful way and not as a mindless cook book approach. This is because there are certain things going on in the hospital and at the departmental level that are not only about measuring E-BM, and the like but also have to be described and captured in narratives and stories that make for great reading about the soft under belly of the quality journey and that is what brilliance should also be about.

The current situation with the Brilliance Project

Members of the HMRA were invited to a meeting in Sydney where it was agreed that everyone would have an opportunity to discuss what they thought might be a project that captures brilliance in healthcare. Members presented a variety of methods by which brilliance in healthcare might be uncovered or explained. All of the methods again had validity to colleagues present and it remains the challenge to find a method or methods to reach into the soft and undescribed aspects of brilliant performance in health

services. However, even with the different perspectives and methods you could still tag them around the left and right brain approach mentioned by Bate et al. [8] It is interesting that neither Bate et al nor MacLeod have focused on one domain alone and that is the challenge for us. We did come up with some things to ponder for the next meeting where we will have to decide upon some projects.

Conclusion

Hugh [15] recently wrote a paper that clearly identifies the need to balance the right and left brain approaches but even that requires a new conversation in various areas of healthcare that many might not see as necessary. Our own experiences with the Brilliance Project show that it is all too easy to slip back into the same old worn questions and answers about finding proof of brilliance in conventional ways and having to measure it and prove it quantitatively only so that slowly we end up back where we started. Each of us will have to think very hard about how our expertise, which in health is dominated by left brain thinking and methods, pushes us to see the world in a particular way, hence having a preferred take on brilliance that we might find hard to shake. If it was so easy for our colleagues at the dinner at UNE to tell us an anecdote about what they saw as an example of brilliance, why is it so hard for us to accept this as a starting point and go look at what they meant? Or for that matter, ask you our readers – what is your take on brilliance?

Competing Interests

The authors declare that they have no competing interests.

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COMMENTARY

How will we know brilliance in healthcare when we see it, be it say of a team, unit or individual? What sort of approach could we adopt to define and describe it?

1 Brilliance, often meaning excellence, is that indefinable quality that we can all sense, feel, even smell, on entering a healthcare facility irrespective of its purpose and location. What makes for brilliance is difficult to pin down and articulate because, like improving the quality of care, it is messy, complex and uncertain. The ingredients which go into the mix are not so hard to identify but their precise combination, and the synergy between them, which gives rise to a brilliance that is almost palpable when experienced, is less well understood.

High-achieving excellent healthcare organisations that are user-aware are those that attend to internal hygiene issues around staff engagement and development; enlightened management; and inspirational leadership. McKinsey's work with the London School of Economics points to a link between such key management practices and better healthcare and higher hospital productivity. [1] We know, too, that there is a relationship between staff health and well-being and performance on key issues like patient satisfaction. [2] Indeed, it is integral to efforts to meet the twin challenges of healthcare quality and productivity.

The problem is that while the rhetoric surrounding brilliance comes cheap, its sustained practice in each of the areas noted above comes far less easily. Too often healthcare organisations fall short of achieving the brilliance of which they are capable. Brilliance in healthcare occurs when there is an acknowledgement of the complexities with which clinicians and others wrestle daily and the adoption of a systems approach that embraces, rather than seeks to deny, that complexity and successfully manages it. As Seddon puts it, systems thinking offers 'a better way to make the work work'. [3]

Systems thinking involves those on the frontline who are closest to the user or customer taking control of the work and ending command and control management practices which are not only disempowering but often positively counterproductive leading to inappropriate behaviours and safety risks to patients.

Brilliance in healthcare does not emanate from 'big bang redisorganisations' launched by politicians on a whim whose understanding of complex organisations is negligible and which have proved so costly and dysfunctional in many healthcare systems. [4] Rather, it is the product of a whole series of transformational change interventions that carefully align a strategic vision with effective staff engagement (sometimes known as the compact or psychological contract between clinicians and managers) and a set of improvement methods.

All three elements are required to achieve brilliance and its attainment demands patience, consistency of purpose, constant communication between staff, and commitment to sustainable change. In the North East region of England, an ambitious transformational change initiative designed to do precisely this has been unfolding. [5] Its aim is to achieve brilliance not merely in individual hospital or community health settings but across an entire health system serving a population of 2.6 million people. Brilliance on such a scale may never be achieved in its entirety but the journey to get there is well underway.

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2 We all know brilliance when we see it. But how is 'brilliance' defined? Do we need to adapt the term and redefine it in terms of healthcare? Or do we need to consider brilliance as some form of measurement of adding value to healthcare? While any debate concerning what is meant by brilliance is bound to throw up any amount of challenges, there is nevertheless a number of striking exemplars of brilliance who can be seen in the field of healthcare. The late Fred Hollows is one individual example of brilliance. As the founding father of the Foundation named after him, he devoted his life to both restoring the eye sight of impoverished people in third world countries and training their doctors at the same time.

Decades of research guided by scientific endeavour and clinical trials by Australian researchers have been at the forefront of brilliance in healthcare. Brilliance of ideas may come from thinkers who dare to challenge outright the prevailing wisdom. At the Australian Walter and Eliza Hall Institute, Andreas Strasser and his team show an outstanding example of 'brilliance of ideas' in discovering that the absence of a particular gene may offer protection from cancer. [1]

Given that there are always limits to our knowledge, can we express brilliance as an added value in healthcare in a way that we can understand and measure? Can we consider the value of brilliance as opposed to the evidence-based methodological approach now considered universal? Do our own value systems shape our perception of individual brilliance, raising a further question: is measuring brilliance in fact possible?

Possible interpretations can be readily observed when asking two health professionals, a patient and one ethicist, about what they would consider to be brilliant in healthcare? A physiotherapist identified brilliance as being attainable in the event of management taking responsibility for ensuring an enduring positive culture throughout a healthcare organisation. A registered nurse responded by expressing the view that brilliance is achievable where there is respect by management for all staff, regardless of title and position. A patient modestly opined that brilliance for her simply meant a registered nurse inserting a cannula into her vein correctly the first time. A healthcare ethicist acknowledged that the meaning of brilliance largely depended upon what question was being asked. He questioned whether it is the process or the outcome that warrants the attribute of brilliance.

So there it is. Different people have different perspectives concerning brilliance in healthcare. Some people take the view that brilliance is reflected by individual values as to the way health services are managed. By contrast, a patient invariably values a professional outcome. An ethicist challenges the possibility of brilliance being measured or redefined to add value in a meaningful way. By any measure, brilliance in healthcare still needs to be considered against competing requirements for service quality and containment of spiralling healthcare costs. Perhaps this is not such a brilliant outcome, but a very much down-to-earth reality that we all need to face up to.

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3 Brilliant Experiences – Brilliant Job Satisfaction

Work can be a source of joy. It can engender feelings of total focus, loss of self-consciousness and transcendence of time, collectively known as 'flow'. [1] One measure of brilliant performance rests on peoples' experiences in their work organisations. Broadening psychology's focus from states of distress to mastery and peak work performance provides a valuable perspective on brilliance in healthcare. [2]

Clinicians often work in challenging circumstances, [3] but challenge is an essential element in attaining flow. Consciously modifying organisations to supply the conditions that promote individual and team flow experiences, promotes opportunities for brilliant performance.

This may sound like an appealing ideal, but how can it be achieved in the messy, compromise-ridden, real world? Let's review the conditions that promote flow and consider, (within the 500 word limit for commentary), some ways to support, not only brilliant outcomes, but also brilliant work experiences. Following Csikszentmihalyi's [1] roadmap to flow:

Clear goals support high performance and the experience of flow. Brilliant performance needs clear criteria, and by extension, accurate measurement.

Immediate feedback in response to actions lets people know if they are meeting performance targets, informs people of their task mastery and encourages flow states. Measurement needs to be both accurate and prompt.

Challenge must be balanced with skills as tasks that are too easy produce boredom; those that are too difficult create detrimental anxiety. Lifelong learning requires that we all constantly upgrade our skills. Incorporating flow experiences can provide effective and pleasant ways to do this. For example, using a board game to elicit positive feelings during learning improved third year medical students' perceptions of, and attitudes towards medical microbiology. [4] In flow states, *action and awareness are merged* and *distractions are excluded from consciousness*. Nurses wearing 'do-not-disturb' vests when dispensing medication illustrate a simple technique that improves both the quality of work performed and job satisfaction. [5]

Additionally, in flow there is *no worry of failure*. Wherever possible, for the sake of patients and healthcare workers, mistake-proof all possible tasks. For example, marking the diseased limb before surgery [6] removes a source of serious error.

Under the right conditions work becomes autotelic, that is, intrinsically enjoyable. When people enjoy the work they do, external rewards lose significance and brilliance can be unleashed. Elite sports and arts performers experience flow states and so do clinicians. Occupational therapists reported flow experiences an average of 5.24 times in a five-day work-week, most often when working with a client. [7]

There are many complementary ways of viewing brilliance in healthcare. I have provided one perspective based on individual experiences of work. But how can you tell if people are enjoying or enduring their employment? Some signs include a 'buzz' of excitement and eager engagement with patients and colleagues. Tangible measures include employee satisfaction surveys, staff retention and measures of absenteeism and sick leave. How much time is spent celebrating things that have been done well? How much time is spent deploring intractable organisational problems? These and other measures help us define, support and increase brilliance in healthcare.

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4 According to the *Macquarie Dictionary*, brilliance is 'remarkable excellence or distinction'. [1] Australian health and mental health services contain pockets of such excellence – pockets of such distinction. However, akin to beauty, brilliance is largely in the eye of the beholder. Defining it, recognising it, capturing it, and measuring it are no easy feats; but these tasks are doable. They are doable if we remember the key purpose of health and mental health services – namely, to meet the needs of communities. As such, revealing these pockets of brilliance requires bona fide consultation with these communities: that is, people who hold first-hand knowledge or local expertise. This includes (but is not limited to) service users, individuals who have limited (or no) access to the services, and the people who care for them. Bona fide consultation denotes authentic engagement. It requires researchers (and those who typically drive the use of research funds) to hand the research reins to individuals who are embedded in the context of interest.

Despite the array of methodologies that can help to examine brilliance, few hold and value a community focus: perhaps the most apparent example of one such approach is Community Based Participatory Research (CBPR). [2] Hailed as 'a potent approach to collaboratively studying and acting to address health disparities', [3] CBPR represents the methodical study of matters that matter to the people affected by them. In effect, it constitutes 'systematic inquiry, with the collaboration of those affected by the issue being studied, for purposes of education and taking action or effecting change'. [4] This approach is particularly germane to the study of brilliance – this is because its seven principles largely resonate with a focus on 'remarkable excellence or distinction'. [1] More specifically:

- CBPR recognises community as a unit of identity, which can encompass service users, potential service users, the people that support them, service providers, managers, funding bodies, as well as policymakers;

- CBPR builds on strengths and resources within the community, which lies in contrast to conventional medical models that focus on pathology;

- It facilitates collaborative partnerships in all phases of the research journey;

- It integrates knowledge and action for the mutual benefit of all partners;

- It promotes a co-learning and an empowering process that addresses social inequalities;

- It involves a cyclical and an iterative process; and

- It ensures that project findings and knowledge gained are effectively communicated to all partners, rather than merely to those who read refereed journal articles or attend costly conferences. [5]

Evidently, CBPR requires a lot of time and effort from project participants – in effect, they give much 'more than informed consent'. [6] As Minkler and colleagues note, 'they share their knowledge and experience in helping to identify key problems to be studied, formulate questions in culturally sensitive ways, and use study results to help support relevant program and policy development or social change'. [3] Although this implies much time and effort, it in fact can represent an investment. The high degree of participation required by CBPR can optimise the value of research about brilliance – it can help to ensure the concept is accurately defined, aptly recognised, appropriately captured, and measured both effectively and efficiently. Furthermore (and perhaps most importantly), CBPR (and similar approaches) can help to ensure that resultant findings, and the knowledge gained, have meaning to the people embedded in the context in which brilliance was examined.

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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 13th issue of the Journal. The deadline for receipt of papers is 30 June 2011.

Time to Salvage the National Health and Hospital Reform: at least some of it!

D K Arya

Abstract

The National Health and Hospital Reform Agreement in Australia presents an opportunity to achieve better integration of Commonwealth-funded primary care and State-funded public health services.

The changes to financial, pricing and governance arrangements (including the Commonwealth becoming the majority funder), the promotion of local decision-making, new pricing arrangements, restructuring of existing health services, etc may not be enough to achieve the expected health system integration or to end the cost and blame shifting within the sector.

The reform must focus on:

- incentives within the system to align primary and specialist healthcare;

- ensuring that the reform package gives appropriate weighting to service delivery, quality and cost, as well as clinical governance considerations; and

- ensuring that this primarily administrative and financial reform is adequately and appropriately scaffolded with necessary administrative support structures.

Abbreviations: LHN – Local Health Networks.

Key Words: fragmentation; implementation plan; integration; reform package.

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The agreement between the Australian (Commonwealth) and State Governments to proceed with national health and hospital reform [1] has generated considerable excitement. With the sudden realisation that the agreement has indeed been signed, [2] the sector now needs to progress from the stage of denial and anger to begin bargaining for a decent implementation plan. In the spirit of achieving incremental change, [3] it would be useful to consider how to get the best out of this reform package. Even though Western Australia continues to resist signing it [4] and the incoming Victorian government wants a 'detailed briefing' on the agreement with the possibility of renegotiating it, [5] some other States do appear to be keen to progress its implementation. New South Wales has taken the lead and on January 1, 2011 appointed Governance Councils and Chief Executive Officers for the new Local Health Networks (LHNs). [6]

Any change proposal invariably provokes an emotional response. One of these has been: *Had we known there was an extra fifteen billion in the kitty, something more and better could have been done*. True perhaps, but one has to be realistic about accepting that even if we had known additional funds were available, we may not have come up with anything better. Obviously, the smart colleagues who drafted this agreement knew that this amount (and possibly more) had been stashed away.

Admittedly, this may be a wrong patch for a laceration that is not getting any smaller anyway. Our recent history suggests that frequently we select a `patch' (or a reform package) that doesn't really resolve the rather chronic

problems within the healthcare system. [7] Moreover, each time we attempt to patch the problems, the cost appears to increase exponentially (at least $15 billion in this round). At times, one feels like saying, at least put the patch where it is needed!

One needs to question why the initial emphasis was on Local Hospital Networks when the whole world seems to have realised that we should be more worried about an integrated healthcare system to manage chronic diseases, population health, health promotion, prevention, health education, self management, etc. [8,9] In particular, why focus on hospitals when firstly delivery of healthcare has to be across all settings (rather than in hospitals) and chronic disease management, which is likely to be next big challenge, will require wider than hospital-specific interventions? Perhaps `hospital' may just be a slip of the pen and the policy makers meant 'healthcare' anyway. It is pleasing to see that States have decided to call the new organisational entities 'Local Health Networks'.

Politicians have a habit of describing everything they do as the biggest and the best. In their world, that is how it needs to be. They are told about a possible `injury' and thankfully, some have an inherent need to find a patch. They must think – `How difficult can it be to patch it up?'. Obviously, the clever ones don't do it themselves, in case they get blamed for offering the wrong patch! They give it to someone else to just slap on. Pricing authorities can decide about the price, funding authorities can manage funding, governing councils can monitor performance and be seen to be making decisions locally, and yes, the health bureaucrats can develop the implementation plan.

In any case, one must give them credit for at least realising that the situation is dire: the wound is infected, the immune system is down, our defences are weak, and too many bacteria are biting bits off and getting fatter and stronger. Put simply, they know we haven't got enough resources to meet the need and expectations of the citizenry; organisation and management systems are inefficient and disorganised; economic modelling is inaccurate; resources are being mismanaged; and service delivery systems are haphazard, wasteful and sometimes counter-productive.

Changing the boundaries of health services, tweaking the finance system, giving the patch to a newly established governing council and fancy pricing and funding authorities may end the blame game … or they may not. [10,11] The question is whether the situation can be salvaged. In any reform the health sector has endured, we never start with a blank slate anyway, so why can we not tidy this one up?

The bare bones are contained in the agreement signed by the Commonwealth and States. The opportunity for the sector is to consider changes that may set us up nicely for now, but also for the future (even though we know the next reform can not be too far away!).

One must look at the problems this reform package purports to solve and exploit flexibility within the reform proposals to develop a healthcare system that is fit to meet population needs and expectations. The key ones include:

1. Fragmentation of the sector results in duplication and waste

The reform plan suggests that a clever funding arrangement that gives the Commonwealth the majority funding burden will make Commonwealth and State funding systems more integrated. Quite clearly, someone believes that the problem is fragmentation of Commonwealth and State funding. The dilemma is in fact the fragmentation of primary care and the specialist public health system. The reform agreement may not necessarily offer a solution to the problem; however, in developing an implementation plan, there is an opportunity to do something about trying to integrate at least Commonwealth-funded primary care with the State-run public health system.

2. The Commonwealth Government will become the majority funder and the local governing councils will monitor performance

One may have to be excused for being amused that someone sincerely believes that having local governing councils rather than large health authorities will somehow make funding allocation and service delivery more equitable and healthcare delivery more appropriate. To believe that local politicians (and clinicians) are any less clever and committed than the State and the Commonwealth politicians, is frankly insulting. They will have no less pride in declaring that they are acting in their local interest as the Commonwealth politicians do when they declare that they are acting in the national interest.

3. The problem is financing and pricing arrangements

To hope that the uncapped primary care sector and `unable to be capped' specialist public health sector will somehow respond to payment of efficiency pricing, is akin to praying for the world to be a better place. Good luck! The trajectory of rising expenditure due to changes in population demographics, introduction of new technology and changing consumer and community expectations, has not distorted with any reform introduced in any democracy in the last two decades.

Clearly, there may be a lot more to the reform package than we know at this stage. For some reason, the Government's decision appears to be to allow bits of information about the package to trickle out. The less sceptical amongst us think the intention is for the sector to influence the reform agenda.

So, what may be important considerations for an 'implementation plan'?

To manage rising costs, there is a need to focus on disease prevention, health promotion and better management of chronic disease. For this to be achieved, the right incentives are needed within the system. A system that wants one of its parts to invest in prevention (eg, primary care) for benefits to be reaped in the other part (specialist public health system), when the two are disconnected, will never be able to overcome the moral hazard. These two systems have to be integrated fully in terms of governance, accountability and outcome expectation. The agreement has signalled the desire for boundaries of LHNs and Primary Healthcare Organisations or Medical Locals to overlap. In restructuring the health system, it should be considered necessary, not desirable.

A truly integrated system will require use of innovative technologies to facilitate integration across the sector. Consideration has to be given to e-Health being the bridge to ensure effective communication. The current scenario of antiquated information technology systems owned and managed by small fiefdoms within the broader health sector, which prevent effective communication and transfer of information across Commonwealth and State funded and private health sectors is unacceptable. Allowing such a situation to continue would be against the spirit of the reform agenda. Achieving patient-driven and owned single health records should be considered a prerequisite to implement the health reform agenda.

Governance Councils are proposed for both the LHNs and Medicare Locals, with an expectation to have overlapping membership of governance structures, where possible. The implementation plan should choose to have the same Governance Council for LHNs and Medicare Locals for a defined catchment population. Such a structural arrangement will not only prevent unnecessary duplication and be more efficient, it will also allow good local governance of an integrated healthcare system.

There has to be fairness in resource allocation. A pricing system that is based on a formula that cannot be applied universally is doomed to fail. Splitting the system so that one part pays 60% of efficient price (Commonwealth) and the other carries the burden of risk, (and with arrangements to side step pricing by making special deals and bulk funding arrangements for services outside metropolitan Australia), is not likely to succeed. Even though structurally it is intended that the system remains fragmented, at a functional level an attempt should be made to integrate planning and resource allocation, eg, perhaps via the single local governing council responsible for both LHNs and Medicare Locals.

Even though a funding authority is proposed, experience of funding reforms internationally has been quite informative about the benefits of maintaining integrated funding, planning and service provision decisions. It is important to consider ways and mechanisms for the funding authority to be a channel for distribution of funds, and not a distant funding decision maker that is outside the influence of planning and service provision structures.

It is extremely important to be careful about defining a Commonwealth Government-funded `primary healthcare equivalent outpatient service provided to public patients'. The definition will determine how fragmented the system becomes. At the point of care delivery, the intention has to be for care to be seamless. Any temptation to split the care that an individual receives, in or from two systems, is likely to be counter-productive. Instead, the system should focus on how not to split the healthcare provided in the hospital and in the community. The focus needs to remain on achieving integrated hospital and community care, not hospital care and community care. Fragmenting the system will be to the detriment of people receiving integrated care for chronic diseases, and there is a huge risk for substantial gains made in the last decade to be lost.

Population-based global budgets may be essential to align necessary incentives within the system. The proposed structural arrangements do make it difficult to achieve it, but the sector must consider whether it is still possible to achieve global budgetary arrangements at the local level, perhaps via the governing council. It is ludicrous to split hospital, community and other health related expenses. One important benefit of global budgets is that the person investing resources (ie, a clinician) then has the ability to make the decision about the most effective place of treatment. For a terminally ill person, it may be a hospital, a hospice, at home, or another place. There is then no unnecessary premature discharge or misaligned incentives to keep the patient in a facility for longer than necessary (depending upon what maximises revenue). A secondary advantage is that a clinical decision then does not need to be justified to non-clinical personnel in the central office.

For a system to operate efficiently, it has to be integrated and wholly self sufficient. Dividing up the system into small fiefdoms (ie, LHNs and Medicare Locals) that will be wholly or partially dependent upon other fiefdoms – eg, for core healthcare services including tertiary and quaternary services (which may be in a different LHN), support services like infrastructure, information technology, planning, etc, (which are likely to be within Clinical Support Clusters, at least in New South Wales) – is inviting unnecessary conflict. Battle lines will be drawn, cost shifting will continue (projected to become worse) and dissatisfaction is likely to increase.

It is essential that service delivery, quality, cost and clinical governance considerations are packaged together. A focus on financing arrangements to achieve efficient pricing, without understanding of appropriateness and efficacy considerations, is misguided. The health service management agenda must be designed to strike the right balance to focus on cost, quality, appropriateness and efficacy to improve access and performance. It must not be assumed that cost containment will not disturb quality or interfere with service delivery. Even if cost containment methods are not administratively expensive (which is very rarely the case), it is a recipe for diverting attention away from the core business for health system, which is delivering healthcare.

There is a plea within the agreement that there is no net increase in the number of ongoing health bureaucrats as a proportion of the health workforce. Perhaps the plea should be for health bureaucrats to not be perceived to be a burden. Instead, they may be the ones keeping the system going, despite bad decisions and fancy patchwork. The sector may greatly benefit from appreciating the need for the right skill for the right task, without a preoccupation with numbers. Despite its public appeal, to suggest that a system reform, which is essentially a structural, funding and pricing reform, will not require a technical health bureaucrat's expertise, is naïve, simplistic and inappropriate.

It is both important and necessary to make decisions about community health promotion, population health programs, drug and alcohol services, child and maternal health services, community palliative care and mental health now, rather than later. Ailments managed by these services are important determinants of health, and the services are necessary and significant components (in terms of morbidity, mortality and health burden) of an integrated health system. Decisions about funding, pricing, structuring and governance arrangements for these services can not be separated from such decisions about the rest of the sector.

It is quite clear that a possible casualty of the National Health and Hospital Reform will be further fragmentation of the healthcare system. It would be sensible for the sector to prepare itself for the next wave of reform in the not too distant future. Therefore, it would be prudent for the sector to create structural and functional arrangements in this current wave of reforms that can easily be modified to accommodate the next one, which one can only hope will integrate proposed Medicare Locals and LHNs into one entity.

If there is one initiative that has the potential to align the right incentives, it is an integrated system; of course, as long as we do make it possible for this integration to survive and last.

Competing interests

The author declares that he has no competing interests.

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RESEARCH ARTICLE

Evidence-Informed Managerial Decision-Making: what evidence counts? (Part One)

Z Liang, P Howard and J Rasa

Abstract

Objective: Using evidence to inform decision-making processes has the potential to overcome problems within health service sectors. Previous studies have argued that evidence should be viewed broadly to include both research and non-research evidence. However, overseas studies have confirmed a general lack of use of evidence in managerial decision-making. In order to encourage the practice of evidence-informed health service management among middle and senior health service managers in the Australian context, understanding of how managers perceive evidence as well as their current practice is the first step. This paper will report some of the relevant findings from recently completed research in the State of Victoria, Australia that will address these two questions.

Design and Setting: With Fellows and Associate Fellows of the Victorian branch of the Australasian College of Health Service Management as the study population, the methods consisted of three key elements: a questionnaire and two focus group discussions. The discussions before and after the survey were recorded and subjected to content analysis.

Main outcome measures: The main outcome measures were the rating of the usefulness of evidence types, the rating of importance of evidence types, the frequency of evidence use, the use of evidence types in the last three months and the ranking of evidence types used by participants for various management decision types.

Results: 116 out of 411 participants provided enough useful data to be included in the final analysis resulting in an effective response rate of 28.2%. Managers view evidence broadly and acknowledge its importance. They routinely use evidence to guide the managerial decision-making processes. However, both qualitative and quantitative research evidence is rarely used. In contrast, 'internal data' generated within their organisation was the form of evidence most preferred by managers, followed by examples of external practice and personal experience. Further investigation of the level of validity and reliability of 'internally developed data' to guide management decision-making is proposed.

Abbreviations: ACHSM – Australasian College of Health Service Management; EIDM – Evidence Informed Decision-Making.

Key Words: evidence-based management; evidence-informed health service management; evidence-based practice; healthcare managers; health service management.

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Introduction

Evidence-informed health services management is the systematic application of the best available evidence to the evaluation of managerial strategies. It is a process of gathering, assessing and using evidence to guide the decision-making processes in order to improve the performance of health service organisations. [1] Managers should learn how to search and critically appraise empirical evidence from management research and other sources as a basis for their decisions. [2,3] It is suggested that there will be little improvement in performance in areas such as patient safety and quality of care until evidence-informed medicine is complemented or facilitated by the practice of Evidence-Informed Decision-Making (EIDM) within health service organisations. [4,5] The use of an EIDM approach in health service management has the potential to overcome

problems within the health services sector. [6] However, similar to the clinical practice, 'overuse', 'underuse' and 'misuse' of management strategies do exist in health service management, which influence its effectiveness. The overuse of management strategies has been commonly seen and is heavily influenced by fads and fashion that have been proven to be limited in their effectiveness. On the other hand, management strategies that are proven effective are very slow to spread and underuse is observed. [6]

Despite its importance, research on the application of evidence-informed approaches to the management process is confined to a handful of studies conducted in Canada, the United States and the United Kingdom. There is limited understanding of the necessary organisational structures, processes and practices that consistently enable the provision of evidence-informed care. [5,7,8] Although studies have found that managers understood the importance of using evidence to improve management effectiveness [9] and most managers were motivated to use and apply evidence, [10] other studies have suggested that health managers make little use of evidence in their decision-making. [11-14] A systematic review of literature in the fields of management, education and medicine indicated a general lack of use of evidence in managerial decision-making, and decision-making amongst managers remained experience-based. [15] Much of the knowledge generated from management research is not presented in a language or format that appeals to practitioners/managers, hence may not have reached the intended audience sufficiently and been used appropriately. [16]

It is accepted that evidence should be viewed in a broad context. [1,10,12,17-19] Lomas et al [12] concluded that outside the research community, evidence is 'anything that establishes a fact or gives reason for believing in something'. However, researchers recognise evidence as 'knowledge that is explicit, systemic and replicable'. There are two major types of evidence: scientific evidence (the researchers' view) and colloquial evidence (the broader view outside the scientific community). Lomas et al define scientific evidence further, by referring to 'context-free' evidence and 'context-sensitive' evidence. However, how middle to senior level managers perceive evidence and its importance to the managerial decision-making process, particularly in the Australian context, remains unknown. Examples of scientific evidence include quantitative/empirical health, clinical or management research studies and qualitative health management research studies. Colloquial (non-scientific) evidence can be exampled by internally developed data

including reports, consultancies, evaluations of services and internally generated performance data; examples of external practice; reports including comparative, 'best practice' and auditor general reports; external consultant or expert opinion from an acknowledged leader in the fields of general management or health services management; and stakeholder/consumer preferences (experience-based or intuitive).

A clear understanding of the current practice of EIDM within the Australian healthcare management context is essential, as the use of the various types of evidence in decision-making is unclear. This improved understanding is crucial to identifying gaps between current and best practice, and thus developing strategies to address these gaps and improve the practice of managerial EIDM. In late 2008, a project conducted in the State of Victoria, Australia, examined the use of evidence in managerial decision-making among middle level and senior healthcare managers. The project clarified not only how Victorian healthcare managers perceived evidence and what types of evidence they used frequently, but also factors that influenced the practice of EIDM. The findings and implications of the project have been developed in two parts. This article focuses on clarifying what constituted evidence from managers' perspectives, how managers perceived the importance of a range of evidence types and how often and for what types of decisions they used evidence. A second paper will discuss factors that may influence the uptake of evidence among healthcare managers in decision-making processes. The implications of the overall findings including specific recommendations to professional institutions such as The Australasian College of Health Service Management (the 'College') will also be discussed. For the purpose of the current study, 'evidence' was defined as the range of information types used in a variety of ways in management decision-making processes.

Methods

The methods used in the project consisted of two elements: a questionnaire and focus group discussions before and after the survey. The questionnaire was developed in three stages. Firstly, an extensive literature review was conducted to identify topics relevant to EIDM in the areas of public health, health policy development and health services/healthcare management. Through the above enquiry, key themes and questions to be explored by the questionnaire were identified. The 'research utilisation questionnaire' used by Rosenbaum et al's 1998 Canadian study was also used to guide the questionnaire development for the current

study. Secondly, a focus group discussion was held with healthcare manager volunteers. There were three purposes of the first focus group discussion: i) to gather participants' views on whether the themes to be addressed by this study adequately covered the different aspects of the practice of EIDM among mid-level and senior healthcare managers; ii) to gather participants' comments on whether the questions to be addressed by the study would be easily interpreted and answered by participants; and iii) to ensure the wording of the questions were appropriate and recommendations for changes were made.

The final phase of the questionnaire development involved the pilot testing of the questionnaire following conversion to an online version using an electronic questionnaire tool. The self-administered questionnaire containing twenty-eight closed questions and three open-ended questions was divided into five sections. Section two of the questionnaire is relevant to this article (types of evidence for various types of management decisions including their importance and the frequency of use in relation to the decision-making process).

After the preliminary analysis of the data generated from the questionnaire, a second focus group discussion was held with participants who agreed to discuss findings from the questionnaire survey. The main purpose of the second focus group was to clarify ambiguous responses from the questionnaire and make clear recommendations for improving practice. The discussion of key points from the focus group was recorded. The participants remained anonymous. Two independent facilitators managed both focus group discussions. A number of key findings were discussed and clarified by the participants. In addition, improvement strategies for EIDM amongst health service managers were considered during the dialogue.

Participants were selected from the 'College' Victorian membership database. The research team were provided with a list of 52 Fellows and 498 Associate Fellows with de-identified membership data including gender, job title and postcode of workplace. Participants were asked to identify their management level in the questionnaire based on participants' job titles. Cases with insufficient information were excluded (n=22). A random sample of 360 Associate Fellows was added to the remaining 51 Fellows to provide the final sample (n=411). The 'College' Victorian branch identified those selected and sent out an invitation to participate. During recruitment, the 'College' sent a further mail out and two email reminders. The second mail out included a paper version of the questionnaire for those who might prefer this format.

The data were retrieved from the electronic survey tool in spreadsheet format. Data from the completed paper questionnaires were manually entered into the spreadsheet and a single spreadsheet compiled. Data from the 133 responses were scrutinised for incomplete information. Seventeen (12.8%), which contained less than 50% of the answers on questions related to management EIDM were excluded from further analysis. The cleaned spreadsheet file was then imported into a statistical analysis program. For analytical purposes, variables were either descriptors of the respondents (demographic, work- or education-related) or the responses to the E-B management questions. All variables underwent univariate analysis to check missing values and distributions using the frequencies function and, where possible, corrected by referral to the originals. Where indicated, variables were recoded or transformed before further analysis. Following further univariate analysis, bivariate analyses were performed using cross-tabulation and chi-square tests of statistical significance for categorical variables, or *t-tests* and one-way analysis of variance for continuous variables. A p value of less than 0.05 was considered statistically significant.

Ethics approval was granted by La Trobe University's Human Ethics Committee before the commencement of the data collection.

Results

In total, 133 participants attempted the questionnaire, including 108 via the web-based questionnaire and 25 who returned the paper version. However, only 116 provided enough useful data to be included in the final analysis. From a sample of 411 (51 fellows and 360 associate fellows), the effective response rate was 28.2%.

Rating of importance of evidence type

At the first focus group discussion, a list of seven evidence types was finalised for participants to rate their importance. These included internally developed data, best practice, stakeholder/consumer preference, examples of external practice, expert opinions, quantitative research and qualitative research. All seven types of evidence were rated as important by more than 50% of participants. The three highest rated types were 'internally developed data' (92.2%), 'quantitative research' (87.9%) and 'best practice' (86.2%).

Rating of the usefulness of evidence types

Participants were asked to rate the usefulness of the seven types of evidence in the decision-making process. The three highest rated types were 'internally developed data' (76.8%), 'examples of external practice' (68.2%) and 'expert opinion' (67.6%).

Use of evidence types in last three months

Participants were asked to select the various types of evidence they had used in managerial decision-making during the last three months. 'Internally developed data' (97.4%), 'examples of external practice' (86.6%) and 'quantitative research' (80.7%) were the three highest-rated evidence types used during the last three months.

Frequency of evidence use

Participants were asked to select the various types of evidence that they used more than once per month. 'Experience' (81.7%), 'internally developed data' (67.5%) and 'stakeholder preference' (37.4%) were the three most frequently used evidence types used during the last three months. The least used was qualitative research (14.8%).

Forms of evidence used for specific decision-making processes

Participants were also asked to rank the various types of evidence that they used in six selected decision-making processes (see table 1).

Overall, 'internally developed data' or 'information within organisation' were considered the most useful evidence type and used most frequently. The latter was ranked first or second in two thirds of the decision-making processes.

'Best practice reports' were perceived as the third most important evidence type and frequently used as a primary source of evidence in five of the six decision-making processes. 'Own experience' was ranked as the most frequently used source of evidence and contributed as a primary source of data for two thirds of the decision-making processes. 'Examples of external practice' were frequently used during the last three months and rated as the third most useful for decision-making. However, it was not commonly used as a primary source of evidence in the six decision-making scenarios. In contrast, quantitative research did not contribute frequently to most of the six decision-making processes whilst 'stakeholder preference' was rated the least used as a primary source of evidence in five out of the six decision-making processes although it had been recognised as a moderately useful form of evidence and infrequently used in the last three months.

Discussion

The literature around the use of evidence in making management decisions suggests that there is a range of evidence types that can be consulted during the decision-making process. [10, 12, 17, 19] In particular, Nutley suggested that a broad definition of evidence for decision-making should be used. [19] Managers who attended the first focus

Table 1: Top three types of evidence used to guide various management decision types

	Types of Management Decisions	Ranking / Percentage chosen by participants					
		1st		2nd		3rd	
A	Determining the correct processes for reaching the goals of my organisation in the current environment.	Information within organisation	31%	Best practice reports	24%	Information from experts	16%
B	Determining how to best utilise the workforce and maximise their working potential using performance review and mentoring.	Information within organisation	22%	Best practice reports	22%	Own experience	17%
C	Providing leadership to and engaging with staff members.	Own experience	48%	Research studies	18%	Information from experts	18%
D	Determining how to best deliver specific programs and projects within an agreed budget, timeframe and level of staffing.	Information within organisation	31%	Best practice reports	21%	Own experience	18%
E	Determining how to monitor performance in relation to ongoing targets by establishing what needs to be measured and which measurements to use.	Best practice reports	31%	Information within organisation	26%	Research studies	15%
F	Determining how to create, maintain and develop key external partnerships with other sectors.	Own experience	39%	Stakeholder preferences	19%	Information from experts	16%

group discussion supported Nutley's broad view of what constitutes evidence for decision-making. This included:

- quantitative/empirical health, clinical or management research studies;

- qualitative health management research studies; internally developed data including reports; consultancies, evaluations of services;

- internally generated performance data;

- examples of external practice;

- reports including comparative studies, 'best practice' and auditor general reports;

- external consultant or expert opinion from an acknowledged leader in the fields of general management or health services management; and

- stakeholder/consumer preferences (experience-based or intuitive).

More than half of the managers in the current study acknowledged the importance of all of the above types of evidence in guiding managerial decision-making processes.

The study also indicated that managers routinely use evidence in decision-making processes. At least half the managers in the current study reported having used some forms of evidence to guide their decision-making in the three months before completing the questionnaire. However, the types did not include scientific evidence as published in scholarly books or journals. Managers showed a distinct preference for internal data in the questionnaire survey, with research evidence being reported as only moderately valuable to health service managers. This finding is similar to Birdsell et al's study which found that decision-makers' preferred source of knowledge was documents produced within the organisation. [20] Expert opinion was also considered a valuable form of evidence. Overall, information developed within the organisation was the type of evidence rated amongst the most important and most frequently used type of evidence. Managers believed their reliance on the use of information developed within their organisation could be explained by cautiousness about the quality of external data and the types of questions that required answers by healthcare managers, which usually facilitated the conduct of internal research. Internally developed data, which was context sensitive, was viewed by managers in this study as easier to use in management decision-making because the findings are immediately applicable to the management situation.

However, the results pose the question whether 'internally developed data' is sufficiently valid and reliable to guide management decision-making processes. The reliability and usefulness of internally developed data has been questioned. [21-23] Good data should be easy to interpret, error-free, up-to-date and from a reliable source. [22] They should provide clear implications on performance ranging from delivery, quality and finance to allow management actions and benchmarking. [21] However, Leggat et al's exploratory study on how Victorian Chief Exectuive Officers monitor strategic and operational performance in their organisations concluded that there was little evidence that processes are in place within organisations to allow good performance data to be generated, collected and interpreted. [21] They suggest that the healthcare sector requires technical expertise and support in data reporting, benchmarking and quality improvement in order to improve performance monitoring and ensure its relevance to strategic control. In addition, individuals within an organisation may not understand the data collected by other individuals or departments, may not know where to locate data, how to appraise or question the quality of the data and how to identify and interpret good data to assist managers making necessary decisions for the organisation. [22] Courtney et al pointed out that current data collection/information systems do not allow meaningful data to be generated for comparisons and subsequently do not provide adequate evidence for decision-making. [23] This type of data is more relevant in reviewing administrative performance rather than clinical outcomes, is not usable by external agencies for comparisons, is unreliable, and is neither responsive to change nor easy to administer. In conclusion, it is reasonable to say that 'internally developed data is usually of unknown validity and reliability'.

Managers in this study also indicated 'personal experience' has a significant impact on their decision-making. 'Personal experience' was the most commonly used form of evidence by managers in the month before completing the questionnaire. Although the types of decisions that 'personal experience' influenced was unclear, managers at the second focus group discussion confirmed the findings of the questionnaire. They suggested that when the timeframe for the decision was short, it was easier for managers to base decisions on their previous experience, or consult colleagues who had faced similar situations in the past. Walsh and Rundall suggest that the high number of managers reporting the use 'personal experience' over other forms of evidence can be explained by these forms of

evidence being highly valued in the management sphere. [6] Pfeffer and Sutton support this conclusion with the finding that seasoned practitioners sometimes neglect to seek out new research because they trust their own experience more than the findings of research studies. [24] Managers in the current study further indicated that they needed to apply judgement in areas when the literature lacked clear findings to be implemented. These findings may go some way to explaining the high number of participants who reported 'personal experience' as an influence on their decision-making in the month before the current study.

Although the importance of quantitative research was highly recognised in both previous studies [9,10] and in this study, its usefulness was not appreciated. Research evidence was not viewed as the primary form of evidence used by participants at any stage of the management decision-making process. Furthermore, both quantitative and qualitative research evidence was used by less than a quarter of participating managers during the month before the survey. These findings clearly indicate that a gap exists between the perception of the use of research evidence in management decision-making and actual practice. A number of factors that affected the use of scientific evidence among healthcare managers have been identified by the study, which will be discussed in a subsequent article. However, the above findings pose some important questions:

- Are internally developed data reliable and sufficient in making effective managerial decisions?

- To what extent have these internally generated data within healthcare settings contributed to positive managerial outcomes?

- What are the processes that current managers have put in place to use internal data to guide managerial decision-making? What is the scope for improvement and its implication for continuous professional development?

The study has a number of limitations. Although the questionnaire did not undergo formal validation, the participants contributed to its local relevance, it was pilot tested (and modified) and its format was informed by a similar questionnaire used by Canadian researchers. Thus, its internal validity is likely to be high. The effective response rate was 28.2%. This may limit the external validity of the study. However, the demographic, education and job characteristics of those who did not participate were similar to those who did and so this study may be generalisable to healthcare managers in Victoria.

Conclusion

This paper discusses some of the findings from a research project examining the practice of EIDM amongst middle to senior health service managers in Victoria. It focuses on clarifying what constitutes evidence from managers' perspectives, how managers perceived the importance of a range of evidence types and how often and for what types of decisions they used evidence. Middle level and senior health service managers who were Fellows or Associate Fellows of ACHSM Victorian Branch held broad views of evidence and acknowledged the importance of both research and non-research evidence. However, research evidence was rarely used by managers and viewed not as useful as non-research evidence. The most commonly used forms of evidence are internally developed, generated within the organisations and examples of external practice because it is perceived as having higher context relevance. Furthermore, personal experiences and best practice reports have a significant impact on their decision-making. Although much has been invested in improving and standardising the internal data collection tools and processes among health service organisations, the question of whether internally developed data are reliable and sufficient in making effective managerial decisions is yet to be answered. We conclude that rigorous evidence has not been widely or sufficiently used to guide managerial decision-making among middle and senior health service managers in Victoria. Greater effort is needed to bridge the gap between research evidence and its uptake, and to enable available research and non-research evidence to benefit managerial decision-making and possible decision outcomes. The second part of the project, to be published subsequently, will discuss factors that may influence the uptake of evidence among healthcare managers in decision-making processes and suggest strategies to improve managerial EIDM practice in health services.

Competing Interests

The authors declare that they have no competing interests.

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Perceptions, Expectations and Support for a Community-Wide eHR System Among Hong Kong Residents

G Lieu and V Cho

Abstract

Objective: This study aims to identify and evaluate the Hong Kong public's views, expectations, concerns and awareness of a proposed electronic health record (eHR) as well as to inform policy formulation regarding its community-wide implementation. The following questions are addressed:

- To what extent is the public aware, supportive and willing to accept eHR?

- What are the public's attitudes and access concerns towards eHR?

- What cost per year will the public be willing to bear for eHR?

- How are Hong Kong residents' perceptions and expectations similar or different from those in other health systems such as the United States, the United Kingdom and Canada?

Methods: We randomly interviewed 888 pedestrians on selected street locations and neighbourhoods to ensure a meaningful representation of the community.

Key outcome measures: Our study sought to measure the public's awareness of eHR; the perceived eHR impact on healthcare services; the likely impact of eHR on the individual; the facilitating conditions for eHR acceptance; and the level of public acceptance of eHR, including suggestions of an annual personal financial contribution to the community-wide eHR system.

Results: Our findings showed that most Hong Kong residents support the new initiative and are willing to pay around HK$195 per year as their share for a community-wide eHR. Our results are generally similar to responses to most surveys in Western countries.

Conclusions: The Hong Kong Government's determination to implement a community-wide eHR is very much in line with dominant health systems' development and has favourable support from the general public.

Abbreviations: eHR – Electronic Health Record; WTP – Willingness to Pay.

Key Words: electronic health record; general perception; survey.

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Introduction

As information and communication technology advances, countries are increasingly bringing their healthcare systems into the digital age. Innovations such as electronic health records (eHR) are transforming healthcare today. Even major Web players such as Microsoft and Google have introduced web-based systems for individuals to set up and share their health records with providers on-line. [2]

Internationally, many studies [3,4] have been implemented to identify the factors that may affect the adoption of eHR. Unfortunately, there is no universally agreed arrangement on how best to handle eHR. For instance, In Australia, providers

with a patient's consent, would selectively send data to a centralised record within HealthConnect, which is a push system. [5–7] In contrast, the United States health system is pulling patient safety-related data from local providers. [8]

In Hong Kong, eHR is described as 'an electronic record which will be continuously updated and maintained by the medical practitioners in both the private and public sectors, with the consent from a patient, according to the medical health conditions of the patient'. Before this system was developed, there was no transfer of information between the public and private sectors. A main purpose of Hong Kong's eHR system is to bridge the gap between these two sectors.

Numerous studies have been dedicated to learning about physicians' perceptions of clinical computerisation. [13–20] While consumer awareness and support for eHR are strong and on the rise, [9-10] the adoption of eHR among providers has been reported to remain low. In the United States for example, a 2008 survey of 2,758 physicians showed that only four percent had a fully functional eHR system and 13 percent had a basic one. [11] Some physicians seem to still have doubts on the return-on-investment of current-generation eHRs. [12]

As eHR is built to ultimately serve patients, it is important to understand the public's acceptance and concerns. Studies on consumers' views of eHR, however, seem non-existent or superficial. While other health systems such as those in Canada, the United Kingdom and the United States have conducted some such studies, [10,21,22] very little seems to have been done in Hong Kong. We conducted this study with the view that it would be advantageous for policymakers to have an in-depth understanding of the public's expectations and the extent to which Hong Kong residents' views are similar to or different from those of their counterparts in other health systems.

Background

In 2008, the Hong Kong Government announced that the public hospital system would be extended to enable private sector healthcare providers, with informed consent from a patient and proper access authorisation, to have immediate reference to the patient's health record: an electronic 'records to follow patients' system. At present, the public hospital and clinical sector represents 90 percent of all hospital services or nearly 60 percent of all healthcare services in Hong Kong. In parallel, the private sector provides around ten percent of hospital services and 40 percent of all healthcare services.

It was envisaged that the linkage of the private and public eHR system would enhance quality of care through better access by healthcare providers to health information and by reductions in medication errors; increased efficiency and effectiveness in the use of diagnostic tests; elimination of repeated tests or information requests from patients; and improvements in clinical decision support for patients. In both the public and private sectors, clinicians would benefit from improved availability and transparency of information shared amongst them. They would also enjoy cost savings resulting from not having to store and transfer paper records. The planned eHR sharing system was estimated to bring about HK$860 million per annum in efficiency gains for the health sector. [23]

For the daily operation of handling eHR, a physician with a patient's consent, would access the patient's health history and update the record by inputting the diagnoses and prescriptions during a consultation, either in the public or private sector. For access to eHR system and patient records, there is password control from both the practitioner and patient. If there are laboratory tests, the corresponding data will also be stored in the eHR. Afterwards, selected data elements without personal identifiers are automatically forwarded to a larger population data set maintained by the health organisation in which the physician works. The organisation can use the data to compare outcomes for its patients to regional or national benchmarks. For example, a hospital may learn that its post-surgery infection rate is higher than the national trend and then compare its practices to those used by other organisations with lower infection rates.

On a broader scale, university researchers can access population data when conducting clinical research. Pooling data from the database will enable more comprehensive and efficient research on the effectiveness of treatments and clinical processes. Public health professionals can use the data to monitor health trends across various populations. Further, selected eHR data elements may flow into bio-surveillance systems so that analysts can detect whether new outbreaks of disease are due to natural infections.

While the conceptual benefits of a system-wide eHR system are compelling, the support by Hong Kong's healthcare consumers of this initiative and its implementation strategy do not seem to have been fully studied or reported. As consumers are the ultimate beneficiaries, the extent to which their awareness, perceptions of eHR impacts and the personal health concerns that may influence the acceptance of a community-wide eHR, should be well understood

and fully addressed early on. This study aims to identify and evaluate the Hong Kong public's views, expectations, concerns and awareness of the eHR as well as to inform policy formulation regarding the implementation of a community-wide eHR by addressing the following questions:

- *What are the public's awareness, attitude and access concerns towards eHR?*

- *Will the public support and accept the eHR?*

- *How much cost per year are Hong Kong residents willing to bear for eHR?*

- *How are these respondents' perceptions and expectations similar to or different from comparable economies such as the United States, the United Kingdom and Canada?*

Methods

Instrument development

In formulating the survey framework, we reviewed relevant literature. [9, 10,21,22,24,25] A 2003 National Health Service survey conducted in the United Kingdom [21] utilised a framework that covered public needs and expectations from eHR. In their findings, public concern about the benefits of eHR related to its security and access. In Canada, three waves of surveys were conducted by Canada Health Infoway, Health Canada, and the Office of the Privacy Commissioner in 2003, 2004 and 2007 respectively. [10] The first survey concerned public attitudes, while the second and the third related to privacy and confidentiality in accessing eHR. The Markle Foundation in America also publicly surveyed the opinions of 800 adults on personal health records in 2005. [22] Hence, the survey framework as shown in Table 1, with reference to the above studies, also touched on general awareness, perception of impact, facilitating conditions and acceptance of eHR. Based on time and available resources, we decided that a self-administered questionnaire would be used. We also applied for ethics approval from the university concerned and data confidentiality was stressed to respondents.

The development of the survey questionnaire was based on EKOS Research Associates, [10] DesRoches et al, [11] and the INN Archive. [26] We also had information and guidance from a panel of six local experts comprising two health information professors, two healthcare physicians and two patient group representatives from the community. Based on our framework in Table 1, those items in our question-naire, with reference to past research, are presented as follows:

- With respect to the awareness of the eHR as shown in Table 1, a yes/no question on whether the respondent knows about the eHR system in Hong Kong was included. Perceptions of respondents were also tested by including statements from other studies such as – 'Doctors and other providers will give higher quality care because of timely and easy access to patients' health records and the "records to follow patients" system will reduce prescription errors'. [15,19,22]

Table 1: Areas of Concerns

Awareness
Awareness of the Hong Kong Government's intent to develop a community-wide eHR system
General perception of eHR
Familiarity with computers
Impacts
Impact of eHR on the health system
Impact of eHR on the individual patient
Facilitating conditions
Control over record content and access
Safeguards for data privacy and security breaches
Administration of the system
Use of aggregate data and information
Cost of enrolling in the system
Acceptance
Will the respondent support the eHR system
How much they are willing to pay for the eHR system

- A question was also included on respondents' computer usage to check whether computer familiarity affects the awareness of eHR. The impact of eHR on individuals was assessed with items like – 'The "records to follow patients system" will help me understand better my health condition and needs'. [18]

- In terms of the facilitating conditions for eHR acceptance, which is the third important aspect described in Table 1, most studies found that risks of privacy invasion would bring anxiety to potential users. [18,22,27] In this regard, items like – 'I can decide what information will be kept confidential', were included. [18, 27]

- For the acceptance of eHR, which is the last important concern in Table 1, items on whether the respondents will support the eHR system as initiated by the Hong Kong Government were included. A question for respondents to suggest an annual monetary contribution to the eHR based on the Willingness To Pay (WTP), described by Marra et al [28] as an estimate that helps measure the value of intangible benefits, was included.

All of the aforementioned items, except the objective-based measures, were assessed by a seven-point scale from one (strongly agree) to seven (strongly disagree) with four being neutral.

Survey sample

The survey was conducted in December 2008 in Hong Kong. It was administered to pedestrians on selected street locations and neighborhoods to ensure a representative sample of the Hong Kong population. The locations that we included are within 1) Hong Kong's densely populated area such as Mongkok and Causeway Bay where people like to do shopping; 2) train stations where working groups transit places; and 3) large public or private residential estates where housewives and the elderly gather. Different time slots in the morning, during the lunch period and in the evening were utilised. For shopping districts like Mongkok and Causeway Bay, data were collected during the weekends, at lunch time and in the afternoon. The response rate was around 11.0 percent; that is, one person in nine was willing to answer the questionnaire when approached by research assistants.

The research assistants were trained to select one person for every five persons passing by. This was regarded as a random sample. The respondents were given a basic explanation of the eHR before being asked a series of questions about their general perception and acceptance of the eHR system, its impact, etc. In cases the respondents had difficulty reading

or completing the questionnaire, research assistants were trained to clarify the questions. Through this arrangement, the respective responses were deemed to be reliable. Nevertheless, many of the middle-aged people, who were usually rushing toward their workplaces, were too busy to fill in the questionnaire and the sample was biased towards younger people who were more willing to do the survey. In terms of income, our sample is quite representative of the Hong Kong population, as the median monthly income of an individual, according to statistics from the Hong Kong Government, is HK$10,000.

To encourage participation in our study, a small gift of around HK$5 (eg, a pen, a calendar, etc), which was limited by our budget, was given for every completed questionnaire. This amount was too small to attract most busy working people, usually middle-aged, to spend time filling out a questionnaire. For those respondents who were willing to help, the purpose of the survey was explained to motivate them to complete the questionnaires on the spot. Confidentiality of the results was stressed. To minimise data entry errors, all the inputted data were cross-checked by a research assistant who was not responsible for the input. Responses with more than ten missing values were removed. In total, 11 questionnaires were voided. As a result, 877 valid responses were collected. The profile of the respondents is shown in Table 2.

Findings

Awareness of Government intent: Around 41.0 percent of the respondents (see Table 2) were aware of the Government's proposed 'record to follow the patients'. Among the different age groups, both the younger (around 33 percent of respondents aged between age 18 and 25) and older (around 21 percent of respondents aged 66 or above) age groups were less aware of the government's intent when compared to those in the middle age group (around 53 percent aged between 26 and 45 and around 45 percent aged between 46 and 65).

In terms of job nature or profession, clinical workers had the highest level of awareness (around 80 percent), followed by housewives (around 58 percent) and non-clinical workers (around 42 percent, which is close to the statistical norm of this study). In comparison, students (around 34 percent) and the jobless (around 19 percent) were less aware of the program.

The relatively high levels of awareness might have been a result of the publicity surrounding the Government's release of a consultation paper on healthcare financing

Table 2: Descriptive statistics of the respondents

CHARACTERISTICS	RESPONDENTS	AWARENESS OF eHR	AWARENESS % WITH RESPECT TO THE CORRESPONDING RESPONDENTS
Gender			
Male	475 (54.2%)	185 (51.5%)	39.0%
Female	397 (45.3%)	173 (48.2%)	43.6%
Missing data	5 (0.6%)	1 (0.3%)	
Age			
18 – 25	433 (49.4%)	143 (39.8%)	33.0%
26 – 45	290 (33.1%)	152 (42.3%)	52.4%
46 – 65	132 (15.1%)	59 (16.4%)	44.7%
66 or above	19 (2.2%)	4 (1.1%)	21.1%
Missing data	3 (0.3%)	1 (0.3%)	
Education			
Secondary School	263 (30.0%)	103 (28.7%)	39.2%
Diploma/High Diploma	90 (10.3%)	43 (12.3%)	47.8%
Graduate	262 (29.9%)	86 (24.0%)	32.8%
Postgraduate	248 (28.3%)	121 (33.7%)	48.8%
Missing data	14 (1.6%)	6 (1.7%)	
Marital status			
Single	628 (71.6%)	236 (65.7%)	37.6%
Married	219 (25.0%)	110 (30.6%)	50.2%
Divorced	17 (1.9%)	8 (2.2%)	47.1%
Widow	8 (0.9%)	4 (1.1%)	50.0%
Missing data	5 (0.6%)	1 (0.3%)	
Job nature			
Clinical	75 (8.6%)	60 (16.7%)	80.0%
Non-clinical	331 (37.7%)	137 (38.2%)	41.4%
Student	378 (43.1%)	127 (35.4%)	33.6%
Housewife	45 (5.1%)	26 (7.2%)	59.1%
Unemployed	44 (5.0%)	8 (2.2%)	18.2%
Missing data	4 (0.5%)	1 (0.3%)	
Income (HK$)			
<10,000	545 (62.1%)	188 (52.4%)	34.5%
10,001 – 30,000	238 (27.1%)	110 (30.6%)	46.2%
30,001 – 50,000	65 (7.4%)	45 (12.5%)	69.2%
>50,001	20 (2.4%)	12 (3.3%)	60.0%
Missing data	9 (1.0%)	4 (1.1%)	
Computer usage			
Almost daily	719 (82.0%)	298 (83.0%)	41.4%
About once a week	52 (5.9%)	21 (5.8%)	40.4%
Rarely	56 (6.4%)	26 (7.2%)	46.4%
Never	47 (5.4%)	14 (3.9%)	29.8%
Missing data	3 (0.3%)	0 (0.0%)	
Healthcare seeking			
Private sector	363 (41.4%)	151 (42.1%)	41.6%
Public sector	214 (24.4%)	84 (23.4%)	39.3%
Both	293 (33.4%)	123 (34.3%)	42.0%
Missing data	7 (0.8%)	1 (0.3%)	

reform that also described the introduction of eHR as part of the agenda. Particularly noteworthy is the relatively high level of awareness, as shown in Table 2, among housewives and those high income groups (for those respondents with monthly incomes greater than HK$30,000).

General awareness of eHR: As shown in Table 3, more than 84% of respondents believed that doctors and other providers would give higher quality care because of timely access to patients' health records. Most respondents also agreed with the idea that each person should have a lifelong electronic personal health record. Relative to the above two items, fewer respondents (66.6 percent) thought that the eHR would be less costly than paper-based systems; only about 50 percent were satisfied with the Government's

progress in introducing eHR; and around 60 percent agreed that public and private sector providers were supportive of the eHR. Lastly, most respondents thought that participation should be voluntary.

In a similar survey in the United States, [22] most Americans believed that doctors keeping patients' electronic medical records would improve healthcare quality (80 percent); 84 percent of the Americans said it would be important for them to have electronic copies of their medical records that they could keep and control, [22,26] and that eHR would decrease healthcare costs (66 percent). In another Canadian survey, [10] 87 percent of Canadians agreed that timely and easy access to personal health information was integral to the provision of quality healthcare.

Table 3: General awareness of the eHR system

	AGREE#	NEUTRAL	DISAGREE
Doctors and other providers will give higher quality care because of timely and easy access to patients' health records.	84.1%	9.9%	6.0%
Each person should have a lifelong electronic personal health record.	85.5%	9.7%	4.8%
The electronic 'records to follow the patients' system should be less costly than paper-based systems.	66.6%	19.4%	14.0%
The Government is progressing in a good manner in the introduction of the electronic 'records to follow the patients' system.	49.5%	33.3%	17.2%
Public and private sector providers are supportive of the sharing of patients' medical information.	59.7%	29.1%	11.2%
Participation in the electronic 'records to follow the patients' system should be voluntary.	77.9%	10.9%	11.2%

agree stands for the percentage of respondents who check (3, fairly agree), (2, agree) or (1, strongly agree);
neutral stands for the percentage of respondents who check (4, neutral);
disagree stands for the percentage of respondents who check (5, fairly disagree), (6, disagree) or (7, strongly disagree).

Benefits to the health system: Concerning the impact of eHR on healthcare services, our statistics (see Table 4) show that most respondents agreed or perceived that eHR would:

- reduce waiting time;

- minimise prescription errors;

- expedite the making of accurate diagnoses;

- result in safer and higher quality care; and

- generate significant savings in existing health systems.

Similar consumer expectations were found in Canada. It was felt that the benefits of eHR would include enhancing the overall effectiveness of healthcare delivery; avoiding unnecessary investigations or delayed referrals; reducing prescription errors; reducing costs from redundancies; and providing access to a health status summary. [10]

Benefits to individuals: As shown in Table 5, up to around 77 percent of the respondents believed that eHR would enable one to:

- attain better understanding of one's health condition;

- enhance communication with the doctor;

- become more conscious of healthcare costs; and

- make better decisions about the use of healthcare.

It seems clear in respondents' minds that the availability of medical records would not only help attending service providers, but also the patient themselves. Indeed, Bender et al, [13] have argued that eHR would improve the communication between the public and private sectors, eliminating redundant treatments, as well as textual and digital information.

Similar to those outside of Hong Kong, United Kingdom citizens felt that with permission to access one's own medical records, patients could help identify errors that might have occurred through problems with manual data transcription or data entry. [25] In a survey conducted by the Markle Foundation, [22] 69 percent of the Americans said they would use an online personal health record service to check for mistakes in their medical record and 96 percent thought it was important for individuals to be able to access all of their own medical records to manage their own health. [26] American consumers said gaining access to the eHR could ensure accuracy, and could be used to improve doctor-patient communications and to help prevent medical error. [26]

Facilitating conditions for eHR acceptance: This study referred to the literature that describes 1) control and access to the eHR content; 2) safeguards for data privacy and security; 3) administration of the eHR; 4) use of the aggregated data; and 5) the cost of enrolling in the eHR system, which would be essential to the acceptance of the eHR by the public. [10,21,22,24,25,26, 27] Results in respect to these issues are as follows:

Table 4: The impact of eHR system on healthcare services

	AGREE#	NEUTRAL	DISAGREE
Reduce waiting times.	64.0%	19.0%	17.0%
Reduce prescription errors.	75.1%	14.2%	10.7%
Expedite the making of accurate diagnoses.	79.4%	13.6%	7.0%
Result in safer and higher quality care.	77.9%	14.8%	7.3%
Result in significant savings in our healthcare system.	65.9%	21.9%	12.2%
Enhance the overall effectiveness of healthcare delivery.	74.7%	19.2%	6.1%

agree stands for the percentage of respondents who check (3, fairly agree), (2, agree) or (1, strongly agree);
neutral stands for the percentage of respondents who check (4, neutral);
disagree stands for the percentage of respondents who check (5, fairly disagree), (6, disagree) or (7, strongly disagree).

Table 5: The impact of the eHR system on an individual

	AGREE#	NEUTRAL	DISAGREE
Understand better my health condition and needs.	77.0%	13.1%	9.9%
Enhance the communication with my provider.	68.2%	19.2%	12.6%
Become more conscious of healthcare costs.	56.8%	26.8%	16.2%
Make better decisions about the use of healthcare.	70.0%	20.7%	9.3%

agree stands for the percentage of respondents who check (3, fairly agree), (2, agree) or (1, strongly agree);
neutral stands for the percentage of respondents who check (4, neutral);
disagree stands for the percentage of respondents who check (5, fairly disagree), (6, disagree) or (7, strongly disagree).

Control and access over eHR content: As may be discerned from Table 6, many respondents thought that they should have complete control over who could access their personal health records and that they should decide what information should be kept confidential. On the other hand, they also agreed that they should be able to access their personal health records online at any time. Only explicit consent and strong authentication would give the users peace of mind.

In a United Kingdom survey, [27] over 60 percent of British people were worried that their data could get into the 'wrong hands' and that privacy and confidentiality could become compromised; 62 percent believed patients should be able to decide who could access their electronic record. Similarly in the United States, [22] 72 percent of Americans said that medical information could only be shared with an individual's permission. Half of the respondents to that survey also agreed that it is important to be able to control what information from their medical records is made available through the health information exchange network. In a preliminary study by Powell et al, [25] items that patients did not want shared on the national record related to matters of pregnancy, contraception, sexual health and mental health.

Safeguards for data privacy and security breaches: Most respondents agreed that personal health data should be protected under privacy laws and that there should be safeguards in place to protect the privacy of personal health information. Many also thought that strong penalties for unauthorised access to any personal health information should be imposed and that there should be procedures in place regarding the safety and security of personal health information. The respondents also agreed that once there are breaches of safety and security of personal information system, users should be informed.

Administration of the system: According to the results of this study, more than 79 percent of respondents agreed that the government should be the body administering the eHR system.

Use of aggregate data and information: More than 79 percent of respondents felt that the government should be the authority to mine the data for purposes of protecting or enhancing people's health and for anticipating health crises.

Table 6: Facilitating conditions for the acceptance of the eHR system

	AGREE#	NEUTRAL	DISAGREE
I can decide what information will be kept confidential.	79.8%	12.5%	7.7%
I have total control over who can access my personal health records.	81.4%	10.6%	8.0%
I should be able to easily access at any time my personal health records online.	72.5%	13.9%	13.6%
All personal health data will be protected under privacy laws.	87.9%	8.0%	4.1%
There is necessity for safeguards to be in place to protect the privacy of personal health information.	86.5%	9.4%	4.1%
There should be strong penalties for unauthorised access to any personal health information.	86.6%	9.0%	4.4%
There should be procedures in place to respond to breaches of the safety and security of personal health information.	89.4%	8.0%	2.6%
Users should be informed of breaches of the safety and security of personal health information.	90.5%	5.8%	3.7%
The Government should be the body administering the electronic 'records to follow the patients' system.	79.6%	14.8%	5.6%
The Government should be able to mine the data in the electronic 'records to follow the patients' system for purposes of protecting or enhancing people's health.	81.4%	12.8%	5.8%
Information in the 'records to follow the patients' system should be used to anticipate health crises.	79.2%	12.0%	8.8%
Information in the electronic 'records to follow the patients' system should be used to monitor, evaluate or prevent improper uses of the healthcare system.	78.2%	15.1%	6.7%

agree stands for the percentage of respondents who check (3, fairly agree), (2, agree) or (1, strongly agree);

neutral stands for the percentage of respondents who check (4, neutral);

disagree stands for the percentage of respondents who check (5, fairly disagree), (6, disagree) or (7, strongly disagree).

Acceptance of eHR: Table 7 below indicates that the majority, more than 85 percent of the respondents, were supportive of the development of an electronic database of patient records. They agreed that when they seek healthcare from either the public or private sector, the healthcare provider should have immediate reference to their full health record with their consent, making diagnosis and treatment more timely, accurate and reliable. There was no significant difference among respondents in terms of gender, age or education.

Table 7: Support of the eHR system

	AGREE#	NEUTRAL	DISAGREE
I support the development of an electronic database of patient records to enable 'records to follow the patients' so that wherever [I] seek healthcare from the public or private sector, the healthcare provider can have immediate reference to [my] full health record with [my] consent, making diagnosis and treatment more timely, accurate and reliable.	85.7%	9.6%	4.7%
Endorsement of professional bodies other than the Government would increase my feelings of comfort with the 'records to follow the patients' system.	77.3%	14.9%	7.8%
I am willing to pay a nominal amount for the upkeep of the electronic 'records to follow patients' system.	55.3%	22.3%	22.4%
An e-health card (something like the Octopus[1]), containing basic information about my health and healthcare encounters, should be introduced in addition to 'records to follow the patients'.	69.1%	17.7%	13.2%

*1 – strongly agree and 7 – strongly disagree.

agree stands for the percentage of respondents who check (3, fairly agree), (2, agree) or (1, strongly agree);
neutral stands for the percentage of respondents who check (4, neutral);
disagree stands for the percentage of respondents who check (5, fairly disagree), (6, disagree) or (7, strongly disagree).

[1] Octopus is a prepaid smart card used to pay for public transport and some retail purchases in Hong Kong.

The majority, or 77.3 percent of respondents, would feel more comfortable with the proposed eHR system if it had the endorsement of professional bodies other than the Government. No significant differences were found between genders, age groups or education levels. In Canada, the idea that the entire system would be evaluated or audited after a period of time would make 54 percent of the Canadians 'more comfortable' with eHRs. [10]

Cost of enrolling in the system: The annual cost of the eHR system respondents were willing to bear, averages HK$194.90. There were no significant differences among respondents of different genders, profession, education, or marital status. However, there were significant differences among those in different age groups. Those aged between 18 and 25 stated they could afford HK$192.60 and those between 26 and 45 could afford HK$174.40. The cost dropped to HK$149 for those aged between 46 and 65. Nevertheless, it was surprising that elderly respondents (aged 66 or above) were willing to pay around HK$865.4. In reference to the living standard of Hong Kong with other countries, the price of a hamburger is around HK$20, so HK$195 is quite affordable by most people.

Discussion

Respondents seemed to favour the concept of a community-wide eHR system. About 86 percent of respondents in the study expressed support for this initiative. Most of the respondents were willing to pay HK$195 (or slightly more than US$25) per year to bear the cost of the eHR system. Along with this support, Hong Kong residents expected that the system-wide connectivity of personal health records would have many merits. They felt that costs, access, quality and overall effectiveness of the existing Hong Kong health sector could be improved with an electronic 'records to follow patients' system. At the personal level, most respondents also thought that the system could contribute to helping them improve communication with their providers, better understand their health conditions and become more cost conscious.

There were no significant differences in support between users of public or private healthcare according to gender, marital status, income and education levels, occupational backgrounds and familiarity with computers. What seemed to be the key determinants, according to the correlations of item 1 in Table 7 with the other items in the Tables 3 to 6, is the extent to which the proposed system has demonstrated value in practice; and that healthcare consumers' psychosocial concerns were taken into consideration and fully addressed. That is, how the system and the information

therein will actually benefit them as individual consumers of healthcare and how the privacy and security of personal health information will be used and properly safeguarded, are the key buy-in factors and tipping points. Whatever reservations or lack of total support for the proposed eHR initiative exist relate to the discomfort with not knowing how these issues will be addressed.

As similar predisposing factors were also found in studies by McGraw et al [29] and Wang et al [30] and practical measures then introduced in other systems, [24] the Hong Kong government should communicate well with the public on the following issues:

- Clarify the cost-benefit of adopting the eHR system and how the resultant savings, if any, will be used.

- Set standards for what, when and how medical information is collected, stored, exchanged and protected.

- Stipulate access control, authentication and data release measures, including who else has access to what information and when, as well as the penalties for unauthorised access to any personal health information.

- Clarify whether or not the government will be the body administering the system and mining the data to protect or enhance people's health.

- Ensure that any out-of-pocket payment placed on individual residents who have a personal eHR will be acceptable and affordable.

Addressing these issues would ensure that the high-held perceptions on the impacts of the eHR, as shown in Tables 4 and 5, are fulfilled and that the facilitating factors, as shown in Table 6, are accelerated. These would in sum mean stronger support for the eHR.

This study also found that Hong Kong residents aged 18 to 25 years were less supportive of the proposed eHR system as compared to other age groups. In addition, they were less willing to pay for enrolling in the system. While they may be a relatively healthy segment of the population and not significant users of eHR, they may be the most economically productive and politically influential group for the next twenty to thirty years. Therefore, attention should be given to the following potentially important policy and implementation issues:

- Why was this age group the least supportive of the government's proposal?

- What can and should be done to bring these residents on board?

Hong Kong's determination to implement a community-wide eHR is very much in line with dominant thinking by

proponents of health systems development. In this study, it is clear that respondents are in favour of the proposed eHR system. Yet, like all large-scale health infrastructure developments, support can be elusive, particularly when the change underlies the need for a new learning culture [31] and when the promised benefits and potential savings are not realised. Hence, there is need for ongoing government commitment and oversight to ensure that the proposed eHR system and its operational features are responsive to both consumer and provider needs and able to address their current and emerging concerns.

It is important to point out that while 86 percent of respondents expressed support for the proposed eHR system, 14 percent were doubtful about the initiative. Among them, more belong to younger age groups. It was not possible in this study to discern the reasons for these dissenting views. But it will be incumbent upon policy and decision makers to have an in-depth understanding and to positively address the contributing reasons or factors that lead to such different views. After all, dissenting views can be the seeds of future change and may prove too costly a price to pay if ignored.

Limitation and future studies

As is the case with all empirical research, this investigation also has several limitations. A notable weakness lies in the cross-sectional research design, where all measurement items are collected at the same time. Given that the investigated issues are not supposed to remain unchanged over time, this research method may not fully capture the dynamics of the acceptance of eHR. To address the above issues, future research should consider employing multi-methods and longitudinal research designs. A longitudinal study combining qualitative and quantitative data would enable a process-oriented perspective that cannot be achieved using a descriptive-based approach such as the one employed in this study.

Although all efforts have been made to ensure the representative nature of the sample for the general public in Hong Kong, and with a limited budget for rewarding the respondents, it was not possible to obtain a fair distribution of samples for Hong Kong residents for reasons described earlier. The sample in this study is somewhat biased towards younger people who are more willing to help in filling out questionnaires. In this regard, interpretations of results, especially on the comparison with the surveys in other countries, should be taken with care because of factors that relate to the sampling biases, different cultures and eHR arrangements. Moreover, future studies, with a more generous budget for rewarding respondents, should be conducted in order to have a good distribution in the sampling of the Hong Kong's population and to keep track of the dynamics in eHR acceptance.

Conclusion

In conclusion, the findings show most respondents were aware of the eHR. They perceived that eHR would have a positive impact on healthcare services and on themselves as individuals. They were willing to pay around HK$195 (or around US$25) for the use of eHR. However, there were concerns that the eHR should be kept confidential and be accessed under consent from the patient. The Government should administer the system and the health records which should be used to enhance people's health. Lastly, our findings were similar to the surveys in Western countries like the United States, the United Kingdom and Canada.

Acknowledgement

Competing Interests

The authors declare that they have no competing interests.

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Top Management Support for Preparedness in Australian Health Organisations

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Abstract

Introduction: The capacity of an organisation to become prepared, to contain crises and to efficiently recover with minimal disturbance and loss relates directly to the degree of support from top management and consequent budget allocations. Health organisations are often in the media due to a multitude of different types of crises so this study ascertained the degree of current support for crisis management.

Method: A cross-sectional survey was conducted to assess the current and desired levels of support for crisis management, the degree of change in top management support over the past five years and the impact of support on crisis containment and recovery. Participants were drawn from decision-making executives in hospitals, nursing homes, pharmacies, medical and dental clinics, and physiotherapy, chiropractic and podiatry practices. Survey questions were drawn from Professor Mitroff's Crisis Management Audit.

Results: Hospitals, medical centres and aged care devoted 5.5 – 7.8% of their budget to crisis management as compared to 0.68 – 3.2% for other organisations. They believed this should be 10.3 – 13.5% to address current threats. Top management support was higher in the same organisations (5.39-5.55/7%). They contained and recovered from crises better than they did three years ago and displayed improved support for planning for major systems disasters. Health organisations out-performed allied health organisations in almost all areas.

Conclusions: Higher support from top management improves budgets for crisis management, facilitates crisis containment and recovery and promotes planning for major disasters.

Abbreviations: ANOVA – Analysis of Variance Test.

Key Words: support; top management; preparedness; hospital crises; allied health crises.

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Introduction

A crisis is an uncertain situation possessing latent risks and opportunities that must be resolved within a given timeframe. Crisis management involves recognising uncertain situations that possess latent risks and opportunities, ensuring systematic preparedness, discerning necessary direction, making critical decisions, influencing subordinates and successfully constraining or eliminating negative impacts while taking full advantage of positive aspects within a given timeframe. Reactive leaders risk grossly ineffective responses, escalation of crises and damage to the legitimacy of their institutions. [1] Proactive leaders find that even minor investments in preparedness and mitigation have a significant beneficial effect on losses resulting from catastrophic events. [2] Regardless of mortality and morbidity, a crisis-resilient community

experiences other cost benefits such as increased earnings, export opportunities and political stability. [3]

The capacity of an organisation to become prepared, to contain crises and to efficiently recover with minimal disturbance and loss relates directly to the degree of support from top management and financial commitment. Health organisations are quick to respond to and learn from crises, [4] but typically tend to prepare for experienced events as opposed to a range of possibilities. [5] Consequently, inadequate support in the form of resource allocation may occur which results in loss of life, lack of public confidence and thus diminished legitimacy. The latter two outcomes are exacerbated by the frequency of unflattering media portrayals of Australian health organisation responses to a multitude of different types of crises.

Therefore, this study aims to ascertain the degree of current support for crisis management. We present a cross-sectional national survey of Australian health organisations that assesses the current and desired levels of support for crisis management, the degree of change in top management support over the past five years and the impact of support on crisis containment and recovery.

Materials and method

A sample of organisations was drawn from the public directories of health services in Australia. Participants included nineteen hospitals, five aged care facilities, eleven medical centres, six dental practices, eighteen pharmacies, five chiropractic practices, eight physiotherapy practices and five podiatry practices that were surveyed between

2007 and 2008. The participation rate of 40% was affected by availability, lack of time, confidentiality fears and legal restrictions. Attempts were made to contact Chief Executive Officers for telephone or face-to-face interviews, but if unavailable, interviewees were sought from the organisation's crisis management team, if it existed, or other key decision makers. Interviewees were assured anonymity and interviewers followed a set protocol to improve standardisation. Ethics approval H2522 was granted by James Cook University.

The questionnaire items were drawn from a Crisis Management Audit published by Mitroff et al [5] to collect data on the degree of support afforded crisis management in 77 institutions from eight different health professions. The data were analysed with SPSS for Windows version 18 using one-way ANOVA variance followed by Duncan post-hoc tests where appropriate.

Results

Analysis results of current and desired budgetary allocations for crisis management are shown in Figure 1. Despite interviewees being senior decision-making executives, 26% were unsure of the current or desired budget for crisis management and declined to respond. While a one-way Analysis of Variance Test (ANOVA) revealed no significant differences between organisations for current budget allocations ($p>0.05$), there were significant differences in desired budget allocations ($p<0.01$). There were no significant differences between responses for current and desired crisis management budgets for all organisations combined and for each type of health organisation independently.

Table 1: Responses to two questions on management support and two questions on the rate of improvements over time.
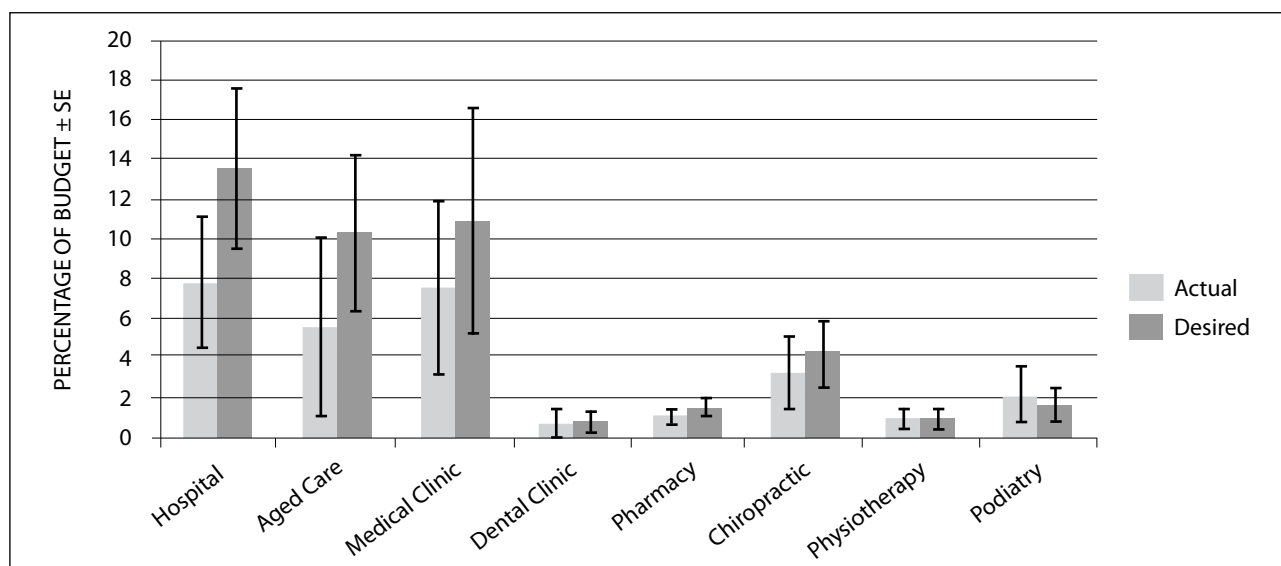
Table 1: Responses to two questions on management support and two questions on the rate of improvements over time.

Type of Health Organisation	Current degree of Top Management Support for CM	Change in Top Management Support for CM over past 5 yrs	Improvement in Recovery over past 3 yrs	Improvement in Support for Planning for Large Systems Crises over past 3 yrs
Hospital	5.39 (3.27)	6.00 (0.20)	5.47 (0.33)	5.75 (0.28)
Aged Care	5.40 (4.50)	3.80 (0.49)	4.80 (0.58)	5.20 (0.58)
Medical Clinic	5.55 (4.40)	4.09 (0.39)	4.73 (0.51)	4.90 (0.53)
Dental Clinic	3.40 (0.66)	4.60 (0.40)	4.33 (0.21)	4.00 (0.00)
Pharmacy	3.56 (0.36)	4.24 (0.14)	4.59 (0.21)	4.18 (0.10)
Chiropractic	4.60 (1.83)	4.40 (0.40)	3.80 (0.20)	4.40 (0.40)
Physiotherapy	3.88 (0.52)	4.63 (0.42)	4.57 (0.37)	4.71 (0.47)
Podiatry	3.75 (1.53)	3.80 (0.20)	4.40 (0.25)	4.40 (0.25)

Key: <3 = significantly less/worse; 3-5 = no change; and >5 = significantly more/better

Responses for the next four questions may be found in Table 1. They were entered using a seven-point Likert scale, where a score of less than three indicates 'significantly less or worse'; a score of three to five indicates 'no change'; and a score of greater than five indicates 'significantly more or better'. Differences between the organisations were tested using a one-way ANOVA.

For the first question on the current degree of top management support for crisis management, analysis showed no significant differences between organisations (p=0.055). However, the trend showed that top management in hospitals, aged care and medical clinics was more supportive and top managers in dental practices were the least supportive. In the second question, interviewees were queried about the degree of change in top management support for crisis management over the past five years. The model was significant and hospitals were shown to experience a greater degree of change in support for crisis management (p<0.001).

Responses to the third question showed no significant differences between organisations in whether the speed of crisis containment and recovery has improved over the past three years (p>0.05), however the disparity between hospital and chiropractic is considerable. In response to the fourth question on whether organisational support for planning for large systems disasters has changed in the last three years, there were clear significant differences with hospitals again proving superior (p<0.01).

Discussion

In the budgetary component of this study, it is clear that hospitals, medical centres and aged care facilities devoted a higher proportion of their budget (5.5 – 7.8%) to crisis management activities compared to other organisations (0.68 – 3.2%). They believed that this level of support was inadequate and that it needed to be raised to 10.25 – 13.52% in order to be effective in addressing current and future threats and risks. In contrast, responses from top management in dental clinics averaged only 0.68 and 0.75 for current and desired levels of support. This observation is important because dental clinics experience a comparatively high number of crises compared to organisations that have more support from top management. [6]

The number of executive interviewees who stated that they were unsure of the level of budgetary support (26%) suggests that this is not a well-discussed agenda topic for many organisations. The importance of budgetary commitment and awareness cannot be understated. In a study of nearly 100 chief executive and company officers in a wide range of mid-sized companies in the United States, 61% consider security to provide value for the firm and a positive return on investment, while 39% regard it as a cost that requires tight control. [7] In the disaster preparedness realm, mitigation is well accepted as a major strategy for limiting losses. In contrast, most governments provide limited support for mitigation in comparison to response. For instance, the Office of Foreign Disaster Assistance in the United States devotes only 11% of its budget to future

disaster mitigation. [3] Notably, developing countries are increasingly requesting funds to develop programs on disaster preparedness, prevention and mitigation. [8] In 2000, the World Bank assigned 15% of its emergency relief grants to the reduction of vulnerability to future disasters. [8] This should be emulated by other donors and by health organisations.

Hospitals rated themselves as 'significantly more/better' in each of the four areas of assessment shown in Table 1. However, the amount of variation in the 'current degree of top management support' indicates that some organisations provide a lot of support while others do not. There was far less variation for the other three questions which indicates less temporal disparity between organisational approaches.

The degree of crisis management support was higher in top management from aged care, hospitals and medical clinics (5.39-5.55/7%) and lowest in dental clinics (3.40/7%). This may be correlated to budgetary allocations and provides evidence that top management support is required to ensure adequate levels of funding. Over the assessed five-year period, most organisations registered 'no change' to the level of top management support with the exception of hospitals. While high profile hospital crises in Australia, such as the Jayant Patel case in Bundaberg, Queensland, continue to cause considerable damage to the reputation of the state health system, there is no shortage of crisis events. Increasing public awareness and the need for transparency are key drivers for improving preparedness in hospitals. These factors undoubtedly influenced the executives in this study who scored hospitals, medical centres and aged care facilities higher in response to the question on whether or not organisations contain and recover from crises better than they did three years ago. Of note, a Google search on 'Australian hospital crisis 2009' yielded 736,000 hits while a search on the same terms for 2010 yielded 4,710,000 hits. No doubt improved Google search algorithms and increasing media attention on crises in the health sector are responsible for this increase, however, it can only raise awareness and ultimately contribute to improvements in top management attitude and commitment.

Hospitals scored significantly higher than other audited organisations on the final question relating to improved support for planning for major systems disasters while dental clinics again scored the lowest for both questions. This may be explained by the types of crises that these organisations experience [6] and organisational differences in resources, size, staffing and infrastructure requirements.

There is a growing awareness of the need to invest in preparedness and mitigation appears broadly understood in the literature. But reservations are common when it comes to implementation due to perceptions of the associated difficulties. Part of the solution to these concerns is provided by the data gathered in this study. The results show that higher levels of support from top management create an environment in which organisations improve budgetary allocations for crisis management, which has direct outcomes in terms of improvements in crisis containment and recovery, and more adequate planning for major crises. Organisations that demonstrate more support for crisis management are hospitals, medical clinics and aged care facilities. During an organisational crisis, allied health organisations, which scored lowest for most survey items, could reasonably be expected to experience worse outcomes than their better-prepared counterparts in health.

Competing Interests

The authors declare that they have no competing interests.

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Dental School Operations: a multi-dimensional mathematical simulation for understanding key variables

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Abstract

Aim: Dental schools are complex academic units to operate, fund and manage. The next decade is expected to bring significant pressures for rapid evolutionary change for dental schools to remain relevant, academically strong, financially self-sustaining and competitive. This will necessitate the implementation of novel operational ideas. However, there are significant risks in undertaking change in business models that are complex, multidimensional and often finely tuned. In many areas of modern innovation, mathematical models are used to simulate the new environment. In this study the authors document the development of a mathematical simulation for an integrated dental education-service environment.

Methods: Using a number of existing and new dental schools, the authors identified the key drivers in school operations.

Results: Distillation of these experiential materials resulted in the development of a network interaction model for dental schools with a four-dimensional network at its core. The four dimensions being: Academic, Patients, Labour and Operations. This study then developed a simulated environment to test the network.

Conclusion: The development of a mathematically simulated environment allows the pre-testing of various innovations before implementation to ensure their success prior to deployment.

Abbreviations: FTE – Full Time Equivalent.

Key Words: dental schools; mathematical simulations.

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Introduction

It is acknowledged throughout the world that dental schools are complex and difficult university academic units to fund, operate and manage. [1-3] Over the last two decades, universities in Australia with dental schools have experienced very significant operational and financial pressures from these units, and at times have investigated the possibility of closing their dental schools because of such pressures. [4-6] With Australia facing growing shortages of dental professionals, the discussion of school closures has led to a number of innovative developments in an attempt to restructure existing dental schools into more efficient and effective academic units. [5-10] Recent data have shown that some amelioration of the shortage is predicted from these changes implemented (by 2020) however a shortage will remain. [11] It is evident however that these innovations have, at times, been implemented on the basis of empirical business plans that have suffered from a non-evidence based risk profile.

With the recent opening of a number of new dental schools (Griffith University, La Trobe University, Charles Sturt University and James Cook University), greater pressures are being felt in the sector to be more innovative to keep pace with the new operational models that have emanated from the new schools. These schools will see a near doubling in the total number of graduating dentists to just over 500 by 2015. [11] The next ten years will see even greater pressures for rapid evolutionary change in dental schools in order for them to remain financially sustainable, relevant,

academically strong and competitive. This will lead to the implementation of more novel ideas. However, there are significant risks in undertaking change in business models that are complex, multidimensional and often finely tuned.

In many areas of modern innovation, mathematical models are used to simulate an environment: this is especially so in modern hospital design and operation. [12] Such models then allow the testing of innovation without risk by school managers and university leadership teams. Variables can be tested and the sensitivity of business to change can be assessed without endangering existing operational arrangements.

It is against this background that the authors in this study have documented the development of a mathematical simulation model for an integrated dental education-service environment.

Methods

A four dimensional network model

Most organisations can be seen as relatively linear models. For example, the manufacturing of a car requires a series of inputs (engine, body, wheels etc) and the application of labour to construct the vehicle. This is a linear model and can be documented as a series of dimensions (inputs,

labour etc). To document a model for dental schools is more complex. Using unstructured interviews with management and executive staff of new and established dental schools, as well as personal experience over a decade, the key drivers in an integrated dental service-education were identified. Distillation of these experiential materials resulted in dental schools existing (at their core) as four-dimensional networks of inter-relationships. The four key dimensions being: Academic, Patients, Labour (ie, clinical tutors) and Operations. Each of these dimensions has its own complex internal and external network of interactions however, together they appear to be the fundamental drivers of a dental school's operation.

Academic dimension: This includes everything related to the academic programs of a school. Most importantly it involves the development and maintenance of a curriculum, the setting and maintenance of student clinical benchmarks, both quantitative and qualitative, and the provision of feedback to participants (students and staff/tutors). A critical component of this dimension is the need to continuously review the patient treatment provided. These data allow the academic dimension to give adequate feedback and to refine the goals and objectives of the students' benchmarks (Figure 1).

Figure 1. Interactions and relations within the four dimensional management model of dental schools.

Patient dimension: This includes all the required input of patients to a student's clinical learning. It is well known that dental students undertake direct clinical care of patients. This care must be tailored to the educational demands of each student while ensuring that the patient receives the highest quality care. This requires a complex internal administration of patients with a projective model of students' needs. To-date this has, in many schools, remained the element of experience (ie, the knowledge of this has resided in the corporate memory of some key individuals).

Clinical tutor dimension: In Australia, most dental schools are reliant on a pool of dedicated local general and specialist practitioners who are prepared to provide their time in the provision of clinical education. In some schools this constitutes a significant component of the total staff profile and is a key dimension in the management model proposed. The effective utilisation of these clinical personnel in the pursuit of the educational objectives of a dental school is paramount to its good management.

Operation dimension: This includes factors such as service course details and needs (ie, the components of the dental curriculum not provided by the school but outsourced to various groups), laboratory support, clinical rostering and timetabling.

Summary of model

The four dimensional model of dental school management is presented in Figure 1. It details the interactions between each dimension and the complex network of communication links required to effectively provide quality education. This model does not detail all the intra-dimensional factors and interactions, nor does it detail all the external factors that influence each dimension (eg, accreditation bodies). However, they may be factored into each dimension separately.

Based on the model, it is evident that for the effective delivery of a dental education program each of the dimensions must be continuously monitored and reviewed. The number of arrows that emanate from the element can gauge the relative importance of each element within each dimension. Similarly, the number of arrows that terminate at an element can measure the amount of information required to make effective decisions at each element. Based on this systematic analysis of the model it is clear that the two key elements are: 'Clinical Roster Build' and 'Refine Student Benchmarks'. Intuitively these two elements are what most experienced academic administrators would consider reasonable.

The clinical rosters determine the extent of clinical exposure a student has and are vitally important in influencing the extent of physical and human resources required to meet the teaching need. They also determine the quantitative benchmarks achievable by students. The refinement of student benchmarks is the key to the qualitative and quantitative outcomes of student clinical learning. Most dental schools set these achievement benchmarks to ensure that students receive essential broad clinical experience prior to graduation. It is an obvious element of the multidimensional model that is important in the determination of the extent of resource utilisation (it will also influence income in some schools).

Databases underpinning the mathematical simulation model

Empirical data were collected from a number of existing dental educational operations. These data were used to form mathematical relations based on the data collated in Figure 1 that could be translated in to the simulation. These data included student productivity, student rosters and school timetables, salary and casual staff costs, laboratory usage, patient activity and phone usage. The datasets were tested for consistency, against data from several schools across almost a decade (2000 – 2009).

All the mathematical relationships were translated into a multi-dimensional Excel spreadsheet, which was used to run the simulations. Key driver variables as defined by the network model were allowed to remain fluid (ie, user-defined), thus the simulation could be used to test changes in the variables. For example, one of the key drivers of the curriculum is 'total clinical hours per student'; in the simulation this variable remained at the user's discretion. However, changing the variable then influenced all the linked mathematical relationships.

Discussion

Example simulations

To show the power of the simulation a number of runs of the simulation against a hypothetical dental school are presented (Figures 2-4). The difference between each run is detailed and the variables affected by the differences highlighted.

Simulation 1: the base model (Figure 2): The basic assumptions of the hypothetical dental school is that it provides both dentistry and oral health therapy programs, with 50 and 20 students respectively in each year of the program (with no student wastage). It is also assumed that

Figure 2. The base simulation of a hypothetical dental school.

Basic Curriculum Assumptions					
	Base Data Sessions	Percent of Base Data	Estimated Sessions	Number of Students n	Patients per Session n
Dent Y1	115	110%	126.5	50	1.2
Dent Y2	156	110%	171.6	50	1.6
Hyg Y1	50	110%	55	20	1
Hyg Y2	110	110%	121	20	2

Chairs	
Number of seats	93
Available hours	30
Down Time	10%
Weeks	32
Days per week	5
Sessions per day	2
Hours per session	3

Value of Care ($000)

Chair Hours

Value of Care ($000)	
Percent of DVA	100%
Dent Y1	471
Dent Y2	1289
Total	1760
Alt Method Calc#1	1600

Visits per patient	
Dental Students	93
Hygene Students	4

Clinic Utilisation	
Available hours	56160
Required hours	55275
Difference	885

Clinic Utilisation	
Visits per annum	26400
Visits per session	83
Patients per annum	4408

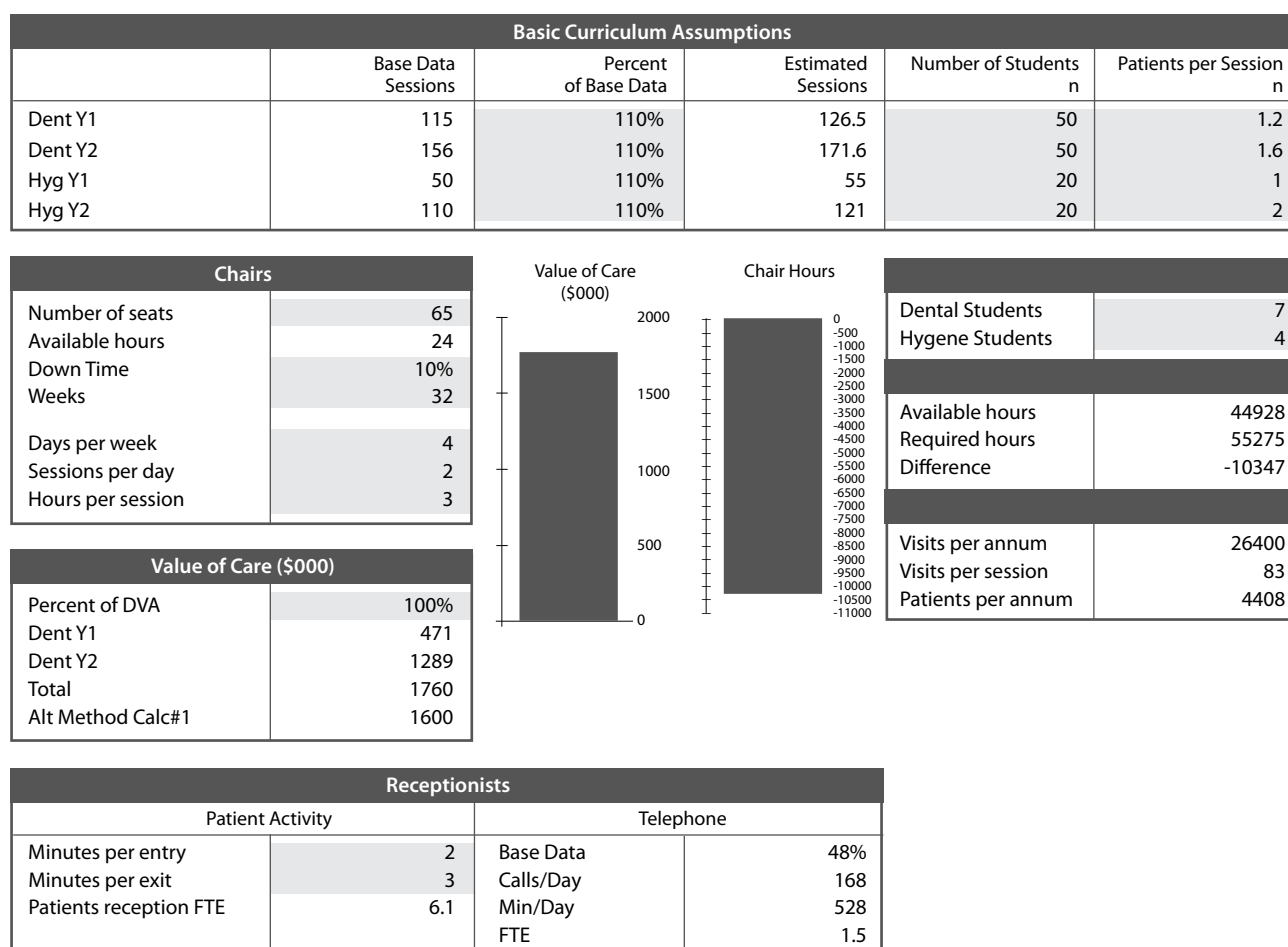| Receptionists			
Patient Activity		Telephone	
Minutes per entry	2	Base Data	48%
Minutes per exit	3	Calls/Day	168
Patients reception FTE	6.1	Min/Day	528
		FTE	1.5

Notes:
- All grey shaded variables are modified by the user to test different scenarios.
- Reception data are included as they are a driver of building design that is important in the development of new dental school (and redevelopment of older ones).
- Definitions of variables:
  Dent Y1, Dent Y2, Hyg Y1, Hyg Y2 = The two clinical years for dentistry and dental auxiliary training (hygiene, therapy or oral health therapy).
  Number of seats = Number of dental chairs available for students.
  Available Hours = number of hours per week each chair is available.
  Down time = proportion of available hours lost to maintenance.
  Weeks = number of weeks per year chairs are available.
  Visits per patient = Number of visits each patient makes to a student dentist or student auxiliary.
  DVA = department of veterans affairs schedule of fees.
  Alt Method Calc #1 = using an experimental alternative method of calculating value of care (not used in this study).

there are 65 dental chairs and they are able to be utilised 30 hours a week each, with 10% downtime for maintenance. It is also assumed that the majority of clinical activity happens in the last two years of each program. The relationships that determine the number of patients per student for each year, and the mix of care provided by students in (each program and each year) are set with empirical data distilled from a number of settings. The same applies to the level of phone calls and the rate patients are seen at reception (including the length of time spent at reception). These empirical data are used in the calculations that underpin the summary outputs, as presented (Figure 2). The simulation reveals that approximately 56,000 hours of total clinical seat time is required. Also, using the dental chairs as per the assumption would result in about 900 hours of empty chair time. In addition the total value of care provided by students (Department of Veterans Affairs dollars at 2004) would be somewhere between $1.6 million and $1.75 million. In addition there would be a need for about six receptionists with 1.5 Full Time Equivalent (FTE) of time spent answering the telephone.

Figure 3. The simulation (with all variables remaining the same as the base simulation except reduction in access to dental chair from five days to four).

Basic Curriculum Assumptions					
	Base Data Sessions	Percent of Base Data	Estimated Sessions	Number of Students n	Patients per Session n
Dent Y1	115	110%	126.5	50	1.2
Dent Y2	156	110%	171.6	50	1.6
Hyg Y1	50	110%	55	20	1
Hyg Y2	110	110%	121	20	2

Chairs	
Number of seats	65
Available hours	24
Down Time	10%
Weeks	32
Days per week	4
Sessions per day	2
Hours per session	3

Value of Care ($000)	
Percent of DVA	100%
Dent Y1	471
Dent Y2	1289
Total	1760
Alt Method Calc#1	1600

Value of Care ($000)

Chair Hours

Dental Students	7
Hygene Students	4

Available hours	44928
Required hours	55275
Difference	-10347

Visits per annum	26400
Visits per session	83
Patients per annum	4408

Receptionists			
Patient Activity		Telephone	
Minutes per entry	2	Base Data	48%
Minutes per exit	3	Calls/Day	168
Patients reception FTE	6.1	Min/Day	528
		FTE	1.5

Simulation 2: Changing dental chair access (Figure 3): The only difference between this simulation and the former is that access to dental chairs has been reduced from five days per week to four days (a reduction of 20%). The consequences are clearly seen; the simulation shows that there would be a total of 10,000 hours of clinical seat time short to achieve the goals outlined. This critical failure stops the simulation immediately and thus it is evident by the 'warning' signal below the bar graph in the centre of Figure 3.

Simulation 3: Changing the number of students (Figure 4): This simulation left all variables as they were in the base simulation but changed the number of dental students to 65. The consequences are clearly seen. There is a shortage of 12,500 clinical seat hours (thus triggering the warning signal as in Simulation 2). However, in this case the simulation is allowed to continue to look at the outcomes of this arrangement. The total generated patient income rises to $2.0 million – $2.3 million; total patient visits increases from 26,000 to 32,500; and reception FTE rises to 7.5, which is approximately consistent with the 30% increase in student numbers (from 50 to 65) but obviously not achievable as there are not the dental chairs available to complete the care.
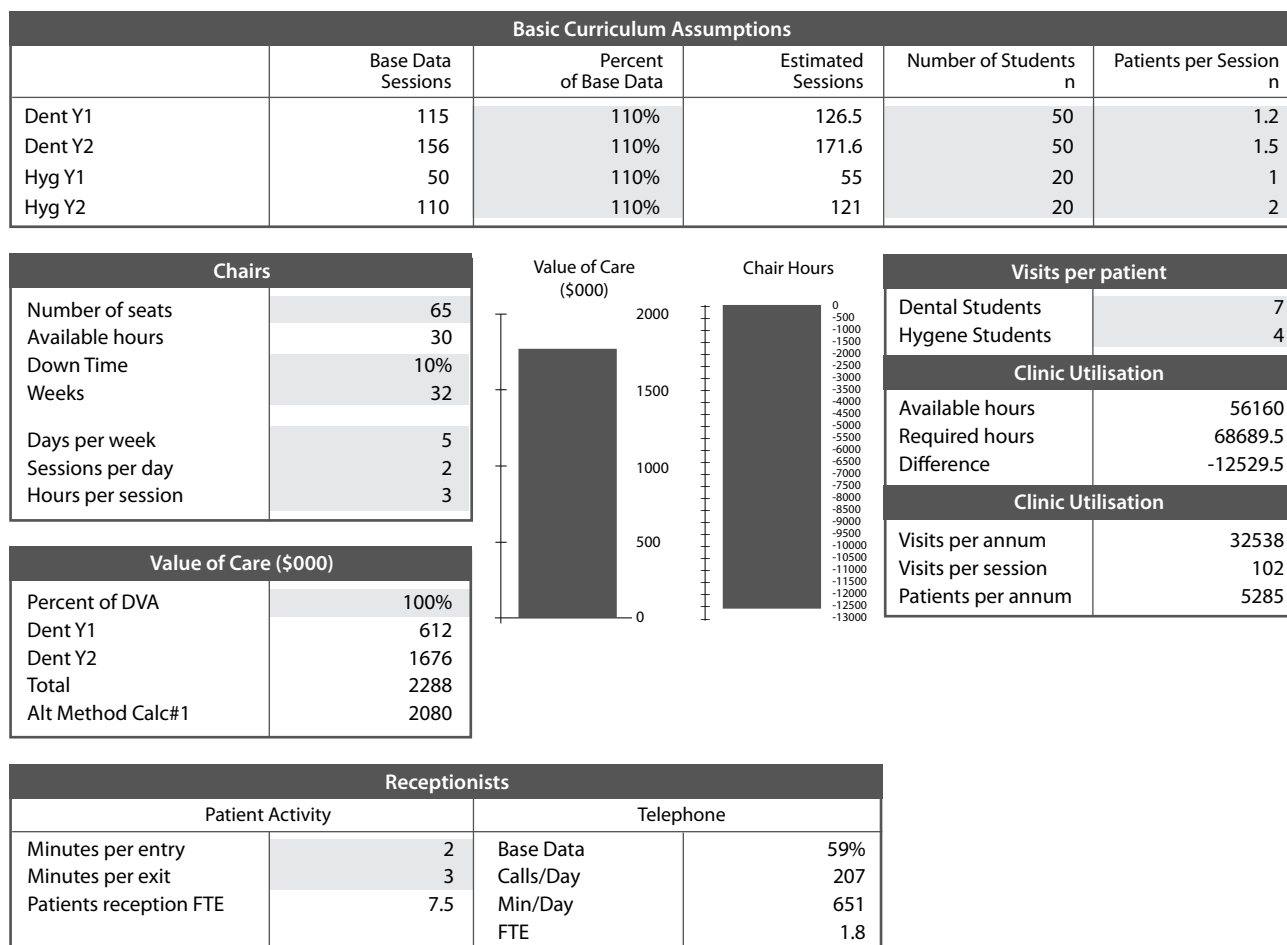
Conclusion

Dental Schools are complex educational units within universities. They rely on a number of finely tuned variables that have highly networked interactions. The development of a mathematically simulated environment allows the pre-testing of various innovations before implementation, to ensure their success prior to implementation. Further development of the simulated environment to include further finer granulation within the network will provide a more rigorous testing tool for dental schools to use, in order to reduce the risk of implementing innovative changes.

Acknowledgments

Figure 4. The simulation with all variables remaining the same as the base simulation except dental student numbers was raised from 50 to 65.

Basic Curriculum Assumptions					
	Base Data Sessions	Percent of Base Data	Estimated Sessions	Number of Students n	Patients per Session n
Dent Y1	115	110%	126.5	50	1.2
Dent Y2	156	110%	171.6	50	1.5
Hyg Y1	50	110%	55	20	1
Hyg Y2	110	110%	121	20	2

Chairs	
Number of seats	65
Available hours	30
Down Time	10%
Weeks	32
Days per week	5
Sessions per day	2
Hours per session	3

Value of Care ($000)	
Percent of DVA	100%
Dent Y1	612
Dent Y2	1676
Total	2288
Alt Method Calc#1	2080

Value of Care
($000)

Chair Hours

Visits per patient	
Dental Students	7
Hygene Students	4

Clinic Utilisation	
Available hours	56160
Required hours	68689.5
Difference	-12529.5

Clinic Utilisation	
Visits per annum	32538
Visits per session	102
Patients per annum	5285

Receptionists			
Patient Activity		Telephone	
Minutes per entry	2	Base Data	59%
Minutes per exit	3	Calls/Day	207
Patients reception FTE	7.5	Min/Day	651
		FTE	1.8

Competing Interests

The authors declare that they have no competing interests.

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Kate Copeland

Kate is currently the President of the Australasian College of Health Service Management (ACHSM), an organisation which includes branches in Australia, New Zealand, Hong Kong and Thailand. This position builds on a decade of commitment to the College through the Board of Management, and a previous role as Branch President in Queensland.

In her working life, Kate is also the Program Director, Capital Delivery Program North for Queensland Health, with specific responsibilities for all the healthcare projects undertaken in the northern half of the state. Kate has tertiary qualifications in Physiotherapy, Business (majoring in Health Administration), and Health Economics.

Her current workload includes the $454 million redevelopment of Cairns Base Hospital, $437 million redevelopment of the Townsville Hospital, $408 million redevelopment of Mackay Base Hospital, $234 million redevelopment of Rockhampton Hospital and $65 million redevelopment of Mt Isa Hospital, together with multiple health facility projects across the large geographical area which is North and Far North Queensland.

In 2006/7, Kate led the establishment of project teams for the $1.7 billion Gold Coast University Hospital, the $1.4 billion Queensland Children's Hospital and the $1.9 billion Sunshine Coast University Hospital.

Prior roles with Queensland Health include Director of State-wide Health Services Planning (2004 to 2005), Development Director for the Queensland Health Skills Development Centre (2003), and Capital Works Manager for the major hospital redevelopments at Royal Children's Hospital, Royal Brisbane/Royal Women's Hospital, Princess Alexandra Hospital and Queen Elizabeth II Hospital (1996 to 2002).

Kate started her professional life as a physiotherapist and worked in this capacity in Victoria, South Australia, Tasmania and Queensland.

Kate Copeland

What made you venture into health management?

I began my career as a physiotherapist and my first appointment was to a Victorian country hospital which was undergoing a redevelopment. I was offered the opportunity to participate in discussions and decisions about expanding the hospital's services and designing a new rehabilitation centre. It was a great experience for a new graduate and one that I never forgot as I changed jobs, roles and states.

In 1990 I was appointed to the position of Deputy Director of Physiotherapy at a major Brisbane hospital, a role which combined both clinical practice and health management. During this period I completed my degree in Business majoring in Health Management, and later a Graduate Certificate in Health Economics.

In 1996 I had the opportunity to participate in the hospital rebuilding program in Queensland, which has led me to my current role as Program Director, Capital Delivery Program – North, for Queensland Health.

What have been the most rewarding and enjoyable aspects of your career?

I have loved all aspects of my career. Over a decade working as an allied health professional in four states provided me with rewards from the one-on-one involvement with individuals requiring healthcare. This was followed by a period as a clinical manager, which provided opportunities to balance interaction with individuals with a growing understanding of the healthcare system and management issues.

At a time when the private sector is still coming to grips with the need for more women to be active on Boards, I have had the opportunity to participate and contribute to several Boards including Australian Physiotherapy Association (1988-91), Physiotherapy Research Foundation of Australia (1989-91), School of Health and Rehabilitation Sciences, University of Queensland (1994-97), Mercy Disability Services for Women with Intellectual Disabilities, Queensland (2001-04), and Australasian College of Health Service Management (2001-11).

Since 1996 I have had ongoing opportunities to provide improved and expanded facilities to support the efficient delivery of healthcare, together with involvement in health service planning. One of the rewarding aspects has been the ability to continue to learn. I believe in the concept of lifelong learning and have participated actively in both formal and informal education. In 1999 I was sponsored to participate in the Australian and New Zealand Health Leadership Program which provided new insights into the health system in both countries, together with new friendships. I have been a visiting lecturer at the University of Queensland, Queensland Institute of Technology and Griffith University at various times over the past two decades and for various programs including Women's Health, Town Planning, and Project Management, as well as Health Management.

I look back over my working life and feel that I have been able to make a contribution; both to the healthcare of individuals, and also to improvements to the delivery of healthcare more generally. The combination of learning, service delivery and teaching is a recurring theme.

What are the greatest challenges facing health managers?

There are many challenges facing health managers today. In Australia and New Zealand these include the increasing pressures of chronic disease in an ageing population; the rapid growth and change of medical technologies; the difficulties recruiting and retaining health professionals; the requirement to balance the desire to ensure that healthcare is accessible and available with the need for high quality, safe service delivery; the need to balance the centralisation of technology against the decentralisation of services including our rural and remote populations; and the ever-challenging cost of delivering healthcare.

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

There is under-recognition of the skills of health service managers and their contribution to current high quality and cost-effective health services in Australia. I would like people to acknowledge the dedication and commitment of health service managers in coping with challenging and changing environments, with a clear focus on improving the healthcare system for the benefit of our population and the continual improvement of health service delivery.

What has been your career highlight?

I don't think I can really decide on any one moment. I have worked in the public healthcare system in Australia for over thirty years and each day brings new challenges and opportunities. One thing that does give me pleasure is that when I drive through Brisbane and we pass some of the hospitals that I have worked on, my kids say 'my mum built that hospital'. Together with hundreds of dedicated clinicians, managers, designers and constructors, I believe we have improved the delivery of health services through our new hospitals.

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

Within the physiotherapy profession I had several great mentors and I thoroughly enjoyed working with inspiring senior physiotherapists in several states. Since taking on the challenge of working in hospital planning and redevelopment, I have appreciated the dedication and commitment of many key clinical and management leaders with whom I have worked.

What word of advice would you give to emerging leaders?

Take very opportunity that is offered, for every challenge recognise that there is an opportunity, and always remember that healthcare is about improving the health of our population.

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This joint publication brings together practical recommendations from focus groups with seven specialty medical societies and royal colleges, each of which were asked to suggest ways that clinicians in their own specialties can release NHS resources while maintaining or enhancing quality.
http://www.nhsconfed.org/Publications/reports/Pages/Clinical-responses-to-downturn.aspx

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Health at a Glance: Europe 2010
OECD December 2010
This report gives a better understanding of the factors that affect the health of populations and the performance of health systems in these countries.
Http://www.oecd-ilibrary.org/social-issues-migration-health/health-at-a-glance-europe-2010_health_glance-2010-en

Healthcare in Focus: How NSW Compares Internationally Bureau of Health Information, December 2010
A comprehensive look at how the NSW health system compares to the rest of Australia and 10 other countries, using some 90 performance measures.
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Nelson, William A
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Greenhalgh, Trisha and Russell, Jill
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Health care employers can be leaders in creating healthy, humanly sustainable organisations. Doing so will benefit patients, employees and physicians, and society.
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Evidence: What's Leadership Got to Do with It? Exploring Links between Quality Improvement and Leadership in the NHS

Health Foundation, January 2011
This report contains insights into how leadership development can support QI in the NHS. The findings contribute to what is known about the links between leadership and improvement in the NHS, and provide new ways of understanding the nature of this improvement work.
http://www.health.org.uk/publications/what-s-leadership-got-to-do-with-it/

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Are You a Good Boss – Or a Great One?

Hill, Linda A and Lineback, Kent
Harvard Business Review
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Hospital-specific management practices are strongly related to a hospital's quality of patient care and productivity outcomes.
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The NHS Federation, January 2011
Understanding and improving how patients experience their care is a key component to successfully delivering high-quality services that are based on their needs. A greater focus should be placed on the design of the healthcare environment.
http://www.nhsconfed.org/Publications/reports/Pages/
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Performance Audit Handbook: Routes to Effective Evaluation

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Primary Health Care Research, Evaluation and Development Strategy Phase Three: 2010 – 2014
Australian Government Department of Health and Ageing, 2010
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QUALITY

A&E Clinical Quality Indicators: Implementation Guidance and Data Definitions
UK Department of Health, December 2010
These measures will be introduced in April 2011, replacing the 4-hour standard. The measures will provide a comprehensive view of the quality of care across the A&E departments in England, including outcomes, clinical effectiveness, safety, experience and timeliness.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_122868

Choosing a High-quality Hospital: The Role of Nudges, Scorecard Design and Information
Boyce, Tammy, Dixon, Anna and others, King's Fund, November 2010
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Rising to the Challenge: Creating Momentum through QIPP in the New NHS
Amnis White Paper, September 2010
A practical resource for healthcare professionals to help them prepare for and, most importantly, deliver the improvements in efficiency and performance required by all UK healthcare organisations.
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Windows into Safety and Quality in Health Care 2010
Australian Commission on Safety and Quality in Health Care, December 2010
This report provides perspectives on aspects of the safety and quality of health care in 2010.
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RURAL AND REMOTE HEALTH

An Evaluation of Access to Health Care Services along the Rural-urban Continuum in Canada
Sibley, Lyn M and Weiner, Jonathan P
BMC Health Services Research
Vol 11 January 2011
Understanding the relationship between rural-urban and other determinants will help policy makers to target interventions appropriately: to specific demographic, provincial, community, or rural categories. This study assesses the equity of access to health care services across the rural-urban continuum in Canada before and after taking other determinants of access into account.
http://www.biomedcentral.com/1472-6963/11/20

RESOURCE ALLOCATION

Health Resource Allocation: A Briefing for the House of Commons Health Select Committee
National Audit office, December 2010
This briefing focuses on health resource allocation under the current system.
http://www.nao.org.uk/publications/1011/health_resource_allocation.aspx

Reorienting Programme Budgeting and Marginal Analysis (PBMA) towards Disinvestment
Mortimer, Duncan
BMC Health Services Research
Vol 10, October 2010
Attention is now turning towards development of mechanisms for decommissioning, disinvesting or redeploying resources from currently funded interventions. While PBMA would seem well-suited to this purpose, past applications include both successes and failures in achieving disinvestment and resource release.
http://www.biomedcentral.com/1472-6963/10/288/abstract

READING LISTS

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

- Australian Health Reform
- Change Management
- Commissioning
- Emotional Intelligence
- Health Planning
- Mental Health Services
- Models of Care

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

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.

Chapters published in books

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.

Journal articles

4. North N. Reforming New Zealand's health care system. Intl J Public Admin. 1999; 22:525-558.

5. Turrell G, Mathers C. Socioeconomic inequalities in all-cause and specific-cause mortality in Australia: 1985-1987 and 1995-1997. Int J Epidemiol. 2001;30(2):231-239.

References from the World Wide Web

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)

2. Doherty M, Smith R. The case for structuring the discussion of scientific papers. BMJ. 1999;318:1224-1225.

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4. International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. ICMJE. 2006. Available: <http://www.icmje.org/> (Accessed 28/02/06).

Other references consulted in preparing these Guidelines Evans MG. Information for contributors. Acad Manage J. Available: <http://aom.pace.edu/amjnew/contributor_information.html> (Accessed 28/02/06)

Health Administration Press. Journal of Health care Management submission guidelines. Available: <http://www.ache.org/pubs/submisjo.cfm> (Accessed 28/02/06)

International Journal for Quality in Health Care. Instructions to authors, 2005. Available: <http://www.oxfordjournals.org/intqhc/for_authors/general.html> (Accessed 28/02/06)

The Medical Journal of Australia. Advice to authors submitting manuscripts. Available: <http://www.mja.com.au/public/information.instruc.html> (Accessed 28/02/06)

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

About the Australasian College of Health Service Management

ACHSM (formerly Australian College of Health Service
Executives) was established in 1945 to represent the interests
of health service managers and to develop their expertise
and professionalism. Today, the college is the leadership
and learning network for health professionals in management
across the full range of health and aged care service
delivery systems in Australia and New Zealand
and the Asia Pacific with some 3,000 members from both
public and private sector organisations and non-government
and not-for-profit organisations.

ACHSM aims to develop and foster excellence
in health service management through the promotion
of networking, the publication of research,
and through its educational and ongoing professional
development activities, including accreditation
of tertiary programs in health service management,
mentoring and learning sets.

ACHSM has Branches in all Australian States and Territories,
New Zealand and Hong Kong. Memoranda of Understanding
link ACHSM with other health management bodies
in the Asia Pacific. As an international organisation,
ACHSM is able to draw upon the experiences of researchers
and managers in Australia, New Zealand, Hong Kong
and other countries within the region
to give readers valuable insights into management issues
and approaches in a range of cultures and jurisdictions.

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