Health services under siege: the case for clinical process redesign

Tony J O'Connell, David I Ben-Tovim, Brian C McCaughan, Michael G Szwarcbord and Katherine M McGrath

ABSTRACT

- Public health services are struggling to cope with rising demand.
- Strain on health services manifests as longer waiting lists for surgery, queuing in the emergency departments, increased rates of adverse events, and delays in discharge, particularly for older patients.
- Traditional responses are not resolving these problems.
- Analysis shows that the day-to-day system processes underlying clinical care are poorly designed and do not produce a well planned, well coordinated patient journey.
- Numerous disconnections along the continuum of care have a cumulative effect in obstructing patient flow and causing frustration for patients and staff.
- Rigorous clinical process redesign methods can significantly improve performance, even in the face of rising demand.

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Health services across Australia are being challenged by rising demand caused by ageing populations, the high prevalence of chronic diseases and increasing patient expectations.[1] Our public health services show many symptoms of strain, with growing queues and longer waiting times for access to care in emergency departments and for elective surgery. Here, we describe the emergence of a new and effective response to this situation.

The global perspective

Throughout the 1990s, health service models employed both in Australia and overseas had predicted a decline in demand for inpatient beds and an increase in demand for day-only beds and outpatient procedures in public hospitals,[2] resulting in reductions in bed availability. However, in more recent years, the actual trend has been towards higher demand for inpatient beds. The number of older patients using inpatient hospital beds has increased to the extent that they now use about 50% of all inpatient bed-days (Tony Dunn, Director, Data Analysis and Performance Evaluation Branch, NSW Health, personal communication). In addition, the complex, chronic nature of many of the illnesses of older patients means that they stay in hospital longer (Tony Dunn, personal communication), increasing pressure on the availability of inpatient beds. Occupancy rates are over 95% in many hospital wards,[3] placing pressure on bed access for elective surgery, resulting in regular postponement of elective surgery and lengthening surgery waiting lists. This is particularly the case in winter months when demand for inpatient beds is at its highest (Tony Dunn, personal communication).

As well as delays in access to care, the challenges in ensuring safety and quality across the whole health care system are substantial. Worldwide, study after study has demonstrated that events compromising patient safety occur in around one in five to one in 10 of all hospital admissions.[4,5] This compares poorly with contemporary industrial quality standards of 3.6 errors per million parts produced.[6] The universally high incidence of events that compromise patient safety means that they cannot simply be attributable to individual failings or to the funding and structural characteristics of the health systems involved.

NSW Health and Flinders Medical Centre (FMC) in South Australia, the locations in which the redesign work that is the subject of this supplement is occurring, are not alone in facing these challenges. The same problems have been identified in other health services in Australia,[7] and overseas (eg, the United Kingdom, Ireland, the United States[8-10]). In the UK, the government has led a major program of reform to improve patient access to health services and to reduce adverse events. In 2001, it established the Modernisation Agency which developed approaches to redesigning health care delivery. Some of these approaches have been used in the programs developed by NSW Health and FMC. The Institute of Healthcare Improvement in the US[10] promotes similar approaches to redesigning patient journeys in hospitals across the country.

1 A patient's story

Edna was a reasonably active 78-year-old woman with diabetes, vascular disease and congestive cardiac failure. She presented to a large teaching hospital emergency department (ED) with confusion and mild fever that was eventually diagnosed as urinary tract sepsis. It took over 18 hours for her condition to be assessed and treatment commenced in the ED, and for an inpatient team to accept responsibility for her care. During Edna's time in the busy ED she had to stay on a bed in a corridor and was difficult to manage because she was confused and kept trying to get out of bed.

During her time in hospital Edna's diabetes became uncontrolled, and she developed a pressure ulcer. She ended up staying in hospital for over 6 weeks.

We believe Edna is indicative of the type of patients who are increasingly becoming the core work of our EDs and hospitals. Her story is typical of the delays and the adverse events which arise from the poorly designed systems which underpin the delivery of clinical care. ◆

The situation in New South Wales

NSW Health is the largest health service in Australia. It comprises eight Area Health Services (AHSs) across the state. In the 2004–05 financial year, it serviced a population of 6.9 million with an annual expense budget of over $11 billion, and with a full-time equivalent staff of about 93 000. In that same period, the service recorded 1.4 million public hospital admissions and two million visits to public hospital emergency departments (EDs).[3]

The public health system in New South Wales was showing clear signs of strain (Box 1). Before the introduction of the Clinical Services Redesign Program in NSW in 2005,[11] congestion in hospital EDs had been growing, with resultant delays and difficulties for patients in accessing care. Many patients each day were being kept waiting on stretchers outside the ED for over an hour.[12]

Triage times for patients in the Australasian Triage Scale categories 3 and 4 are the best indicators of the efficiency of EDs, as

2 Overcrowding stemming from the emergency department

In a typical teaching hospital in New South Wales, average occupancy rates were 98% before redesign began. Patients requiring admission from the emergency department were frequently sent to the next available bed despite it not being "owned" by the appropriate specialty team. On average, 30% of the patients in the surgery ward had non-surgical complaints (ie, were "outliers") and not only acted as a barrier to the admission of elective surgical patients, but, as outliers, had a 36-hour longer stay than if they had been in the appropriate ward. ◆

patients in these triage categories account for the bulk of emergency presentations at EDs. The targets for these two categories had not been met before clinical process redesign initiatives in NSW public hospitals.[12]

In the years 2002–2005, ED patients who needed to be admitted to hospital experienced access block of 40%–50%, and reaching 60% in some hospitals — NSW Health's target was less than 20%. An access block of 50% on an average winter afternoon in NSW public hospitals means that about 400 people are being kept waiting in EDs for admission. Patients were often admitted to inappropriate wards (ie, they were "outliers", who are empirically observed to have a longer length of stay), which exacerbated access block in other parts of the hospital (Box 2). Patients in need of elective surgery procedures were often waiting longer than 12 months (10 000 patients in 2004), while those with cases classified as urgent by their surgeons were waiting longer than 30 days (4000 patients in 2004).

Underlying all this has been the relentless pressure resulting from an ageing population. The proportion of people aged 65 years and older in NSW will increase from 13.6% to about 20% between 2006 and 2026,[13] and demand for health services will increase accordingly. Although people aged 70 years and over represent only 9.7% of the population, they account for 41.6% of all public hospital use (Tony Dunn, Director, Data Analysis and Performance Evaluation Branch, NSW Health, personal communication). In conjunction with the ageing of the population, there will be future increases in the number of people with chronic diseases such as diabetes. For instance, the proportion of Australians with diabetes is expected to more than treble between 2000 and 2051.[14]

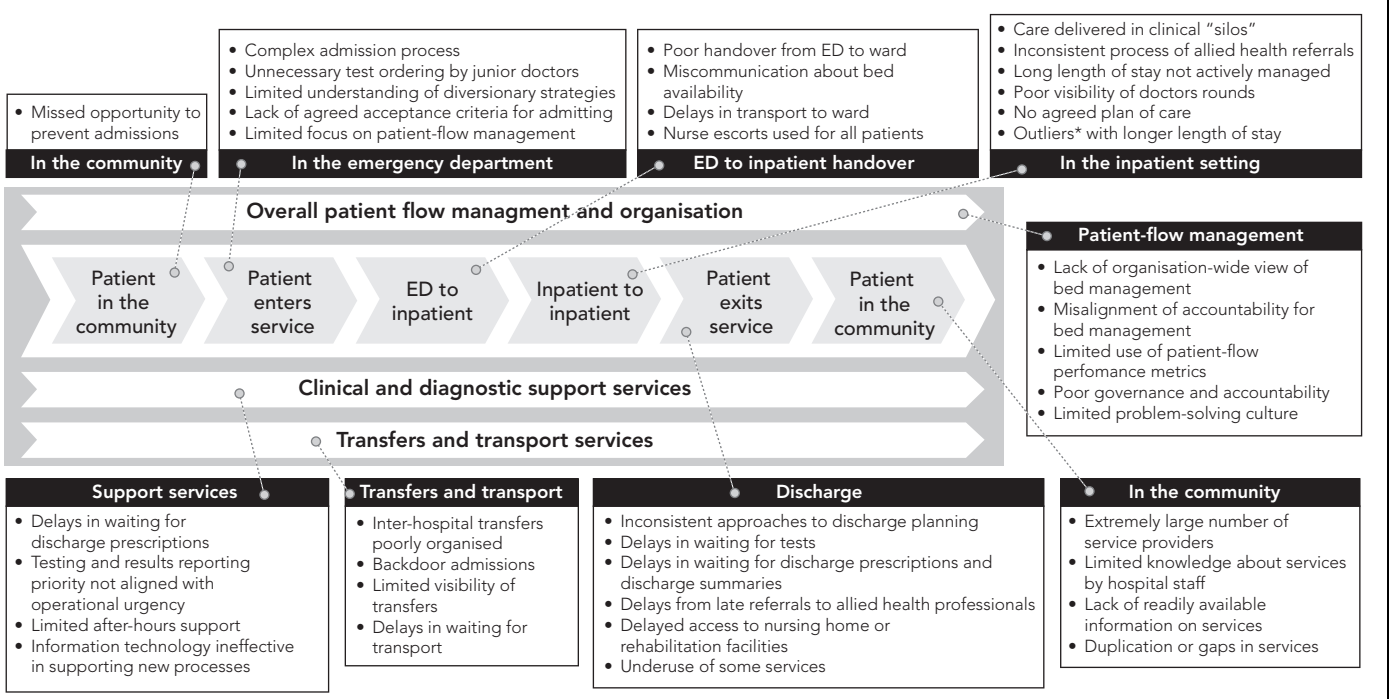
The situation at Flinders Medical Centre

FMC is a 500-bed teaching general hospital in the southern suburbs of Adelaide. It provides the whole range of acute services required by a population of about 300 000 people. Smaller community hospitals and the private health care system also service that population. Within this de-facto consortium of care providers, the primary role played by FMC is the provision of time-urgent, complex care. Over 70% of patients who require an overnight stay are admitted as emergency cases, and over 40% of patients presenting at FMC's ED are subsequently admitted.[15]

Before the launch of the Redesigning Care program in 2003,[16] FMC was showing similar signs of strain and stress to those described above. However, the congestion within its ED was so severe that there was increasing evidence of a major problem with the provision of safe care within that department and elsewhere in the hospital. This provided a particularly powerful impetus for developing an improvement program.

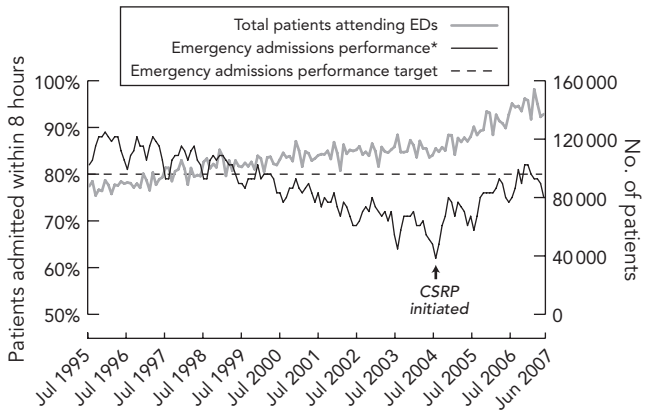
There are many repercussions for staff in a health system under this kind of strain. They struggle to maintain morale; they have high workloads; they often feel that they have limited or no control over their working conditions, and they lack the ability to make decisions.

3 Problems and disconnections identified along a patient journey



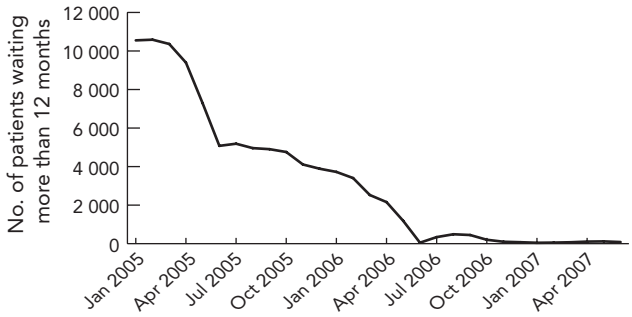
ED = emergency department. * Patients admitted to an available bed in a ward that is not the designated ward for their condition. ◆

4 Emergency admission performance* in New South Wales hospitals, 1995–2007



ED = emergency department. CSRP = Clinical Services Redesign Program.
* Percentage of patients admitted through the ED who egress from the ED within 8 hours. ◆

5 Number of patients waiting > 365 days for surgery in New South Wales hospitals, January 2005 to June 2007



Root causes of these problems

The growing demand for health care outlined above is external to health services, and is therefore beyond their control. Concentrating solely on the difficulty of external forces can simply induce a sense of helplessness that is unwarranted. Within health services, there are substantial opportunities to improve the safety, quality and accessibility of the care provided. Box 3 illustrates a typical patient journey through a hospital and shows the kinds of problems and disconnections between the components of care that interfere with the provision of an effective, well coordinated patient journey through the health system.

Typical examples of the problems and disconnections follow.

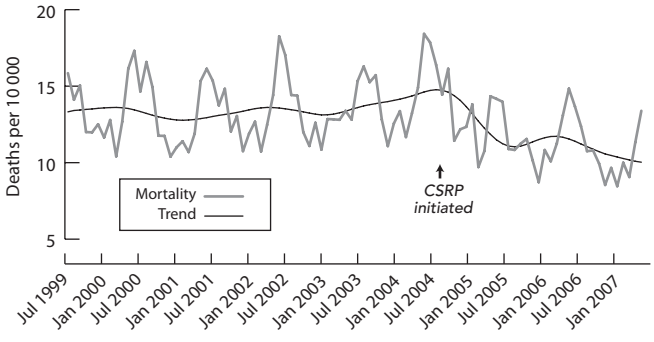
- Poor communication, with care delivered in clinical "silos", and miscommunication and adverse events usually occurring at the interfaces of these silos. Decisionmakers are often not able to be contacted as needed; for example, decision making for surgical patients in ED can often be delayed because surgical staff are busy in theatre.
- Poor alignment of activities; for example, delivery of a meal, a physiotherapist visit and an investigation all happening simultaneously.
- Imperfect alignment of laboratory and imaging services with patient requirements, and lack of a robust prioritised approach to laboratory workload to optimise overall hospital patient flow.
- Poor interface between specialist teams and ED staff.
- Staff not being rostered according to the requirements of patients. A typical example is the "9 to 5" rostering which still dominates for various staff in service areas such as ED, even when patient arrivals and the business of the ED peak in late afternoon to early evening. This mismatch of patient demand and staff supply results in minimal staff having to deal with maximal activity. This causes further frustration for staff, worsening of patient queues and increases the risk of adverse events.
- ED staff needing to "shop around" for an inpatient team to take responsibility for a patient (often older) who is difficult to "sell".
- Lack of a common understanding by both staff and patients of the expected patient pathway and date of discharge, which inhibits better planning of preparatory work before discharge. Particularly problematic is the poor compliance with documenting an estimated date of discharge. This is compounded by senior nurses and registrars not being empowered to discharge patients. Processes for smooth discharge, such as preparation of discharge prescriptions, are often not well planned. For example, a junior doctor is called at late notice to write prescriptions for a patient ready for departure, but the doctor is busy with other tasks and does not complete the prescriptions until after the pharmacy has closed, thus resulting in a delay in the patient's departure.
- Decision making in wards tends to happen only "9 to 5" Monday to Friday.
- Suboptimal processes for accessing services delivered in the community. Only certain professions, rather than the multi-skilled team, are authorised to perform the tasks required to "move the patient along". All of these factors result in unnecessary delays in discharging patients from acute facilities into the community, causing a damming of patient flow "downstream" that exacerbates the "upstream" congestion in the ED.

Traditional response to these problems

A common strategy for relieving the pressure on the health system generally focuses on creating new infrastructure (eg, more staff and more beds). However, this approach only provides temporary relief, and is unaffordable in the long term.

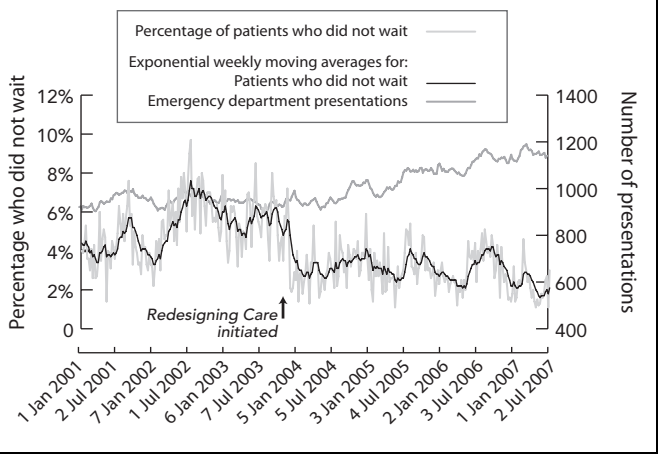
Providing more beds will not remedy the disconnections described above, which have been exposed in the analysis of the patient journey during clinical redesign. Designing a process that ensures the essential steps in this journey come together like clockwork, and are simple for staff to follow, results in a significant increase in capacity in health systems. The "more beds" approach locks in the traditional service delivery models, which are often not appropriate given the changing nature of the population and its health problems. For example, inpatient care is often less appropriate for older people than well delivered community-based care. Optimal patient experiences are not solely dependent on bed availability. In NSW, the redesign program was introduced together with additional bed capacity as well as strong performance management to ensure improved outcomes, and this combination has worked well. At FMC there was no capacity added, but major improvements were still seen.

6 Number of deaths per 10 000 attendances in New South Wales public hospital emergency departments, July 1999 to June 2007



CSRP = Clinical Services Redesign Program. ◆

7 Patients who presented, and those who did not wait for treatment at Flinders Medical Centre emergency department, January 2001 to April 2007



Clinical process redesign

A fresh view of the changing nature of the demand for health care services is clearly required. There needs to be a rethink of the best models of providing care to meet that demand, and to ensure that care is safe, effective, well coordinated and easy to deliver. Clinical process redesign is the approach used across the whole health system in NSW (through the Clinical Services Redesign Program, with implementation of its pilot solutions commencing in August 2004) and at FMC (through the Redesigning Care program, commencing in November 2003), resulting in major improvements to patient access and safety.

Outcomes

The application of clinical process redesign in NSW Health and at FMC has greatly improved the delivery of care in the face of significantly increased demand. In NSW, emergency admission performance (Box 4) and the number of patients waiting more than 12 months for surgery (Box 5) have greatly improved, while death rates in EDs have fallen (Box 6). At FMC, there have been similar improvements in access to emergency care (Box 7).

Conclusion

This supplement on clinical process redesign is being published to promote the effectiveness of this approach. The application of process redesign is continuing in NSW and at FMC because the task is not yet finished. However, we believe there is sufficient evidence that large-scale changes can be made in areas of service delivery that have been resistant to improvement for some time. In our view, continuous improvement through redesign has to be fundamental to the way we do business from now on. If management engage and work together with frontline staff, taking ownership of their processes and work environments, they can improve the way the system works for patients, as well as for staff. They can create well coordinated, efficient patient journeys, and make it easy for staff to provide safe and effective clinical care. The efficiencies they introduce and the adverse events they prevent will release funds for further investment in health care. New capacity will be needed over time, but it should be introduced to meet the needs of new models of care.

In our experience, the most difficult phase of redesign is not identifying issues or designing new solutions; it is implementing those solutions and embedding the redesigned model into core business processes. It is not simply a matter of finding a new way, but of making that new way "the way we do things around here".

Subsequent articles in this supplement outline the methods of clinical process redesign, its application to both unplanned and planned arrivals at NSW hospitals, the use of an approach known as "lean thinking" in the redesign process at FMC,[15] and important aspects of implementing and sustaining change in health care.

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Competing interests

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Author details

Tony J O'Connell, MB BS, FANZCA, FJFICM, Director, Health Services Performance Improvement[1]
David I Ben-Tovim, PhD, MRCPsych, FRANZCP, Director, Clinical Epidemiology and Redesigning Care Units,[2] and Professor, Faculty of Health Sciences[3]
Brian C McCaughan, FRACS, Co-Chair[4]
Michael G Szwarcbord, BSc, BSocAdmin, FAIM, Executive Director,[5] and General Manager[2]
Katherine M McGrath, FRCPA, RCPA, MRACMA, Deputy Director-General[1]

1 NSW Health, Sydney, NSW.
2 Flinders Medical Centre, Adelaide, SA.
3 Flinders University, Adelaide, SA.
4 Sustainable Access Performance Taskforce, Department of Surgery, Royal Prince Alfred Hospital, Sydney, NSW.
5 Acute Services, Southern Adelaide Health Service, Adelaide, SA.
Correspondence: kamcg@doh.health.nsw.gov.au

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