# Reorganisation of an ailing aged care service

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# Abstract

This paper evaluates the impact of reorganisation of geriatric and general medical services in a tertiary referral hospital. The patients involved were predominantly elderly with multiple medical problems. We used an iterative process of bed utilisation review, stakeholder consultation and service remodelling to improve bed management. Reduced length of stay and increased throughput allowed closure of between 22 and 30 beds and generated recurrent cost savings of \$900,000 annually. Even under pressure it is possible to describe and evaluate the process of change. Such description and evaluation may help to avoid expensive mistakes.

# Background

New ways of doing things in health care are usually introduced with little or no scientific evaluation. Health service management changes are not amenable to randomised, double-blind controlled clinical trials. Political and economic imperatives, often seeming to be based on little other than the whim of State or Commonwealth ministers, result in management directives to rationalise, reformulate and change tried and tested systems which superficially appear to meet the expectations of both staff and public.

Health system changes are always difficult to introduce and may be viewed by staff and the media as driven by the desire of managers to improve efficiency or obtain cost savings. Clinicians, who see themselves as the guardians of quality care for patients, may be seen by health managers as dinosaurs resisting innovation. The public may also perceive that they are being denied a service they have come to expect. Only recently has health systems research in Australia emerged from the twilight of opinion-led health care into the new dawn of evidence-based practice (Hillman 1998).

Hospitalisation of acutely ill older people (>70 years of age) may initiate a downward spiral of declining function, loss of independence and reduced quality of life, but care in specialised units may improve short-term outcomes and reduce costs (Covinsky et al 1998). We prospectively studied the effects of restructuring general medicine and geriatric services at John Hunter and Rankin Park hospitals, using historical control data. Casemix-adjusted length of stay for both units was substantially higher than national teaching hospital benchmarks. As part of a hospital-wide integrated bed management plan introduced in July 1997, the care of patients within the geriatric and general medicine services was streamlined. This was achieved by identifying those groups of patients occupying most of the bed-days and targeting them for a level of care appropriate to their acuity, and active case management.

## The existing service

Patients in the Division of Medicine are cared for either by specialist or general physicians. The admission policy preferentially refers patients with predominantly single organ disease to specialists whilst those with multiple medical problems are referred to general physicians. The majority of the latter group of patients are elderly. Therefore the geriatric service is more of a geriatric rehabilitation service than an acute geriatric service.

The differential admitting policy may lead to distortion in the distribution of length of stay of patients within one DRG when analysed by unit, with patients in the same DRG distributed between specialty and general units. This may appear as small number variation, because there are only a few patients in a particular DRG within general medicine and a larger number within a specialty, there may be more variability due to skewing of LOS by extreme outliers. There may also be systematic bias, as patients who are older tend to have more comorbidity (Flamer et al 1996) and be admitted under general medicine. As Rankin Park Hospital is deemed to be part of the Division of Medicine at John Hunter Hospital, patients are not discharged from the acute episode and readmitted for rehabilitation as happens in other teaching hospitals with remote geriatric rehabilitation units. For these reasons, it was difficult to compare casemix-adjusted data for the Division of Medicine at John Hunter Hospital with the teaching hospital benchmark.

Goal	Justification	Strategies
<ol> <li>Efficient and effective treatment of acute medical condition.</li> </ol>	Self-evident, reason for hospital admission is to treat physiological derangement, inefficient management produces access problems and reduces capacity of unit to treat patients appropriately.	Disease-specific program, ie, COPD and CHF; case management.
2. Improve patient flow.	Bed utilisation review.	Streaming of care into rehabilitation, geriatric evaluation and management, awaiting placement.
3. Better use of scarce health resources and staff.	Budget crisis, limited number of geriatricians (some exhibiting signs of "burn out") need to change focus of care to community. Anxiety to staff about re-engineering process.	Nurse led care in some areas, investigate closure of beds and redeployment of staff and funds elsewhere in aged care. Communicate progress of re-engineering clearly to staff.
<ol> <li>Management of functional impairment.</li> </ol>	Treatment of acute illness in patients with multiple medical problems not sufficient to prevent decline and facilitate discharge with best possible quality of life.	Establishment of Geriatric Evaluation and Management (GEM) unit; case manager, staff education. Introduce formal assessment of functional performance as a routine measure of service quality.
5. Identification of cognitive impairment or depression.	Common, often unrecognised and hard to distinguish, associated with poor outcome.	Better use of liaison psychiatry services; psychogeriatrician involved in evaluation rounds in GEM unit. Encourage formal assessment of depression and dementia at an early stage in assessment.
6. Identification of social needs.	Hospitalisation often results in identification of unmet social needs, greater use of community-based service may prevent further admissions and enhance long-term independence.	Design patient needs assessment form, increase social work support, case management of high-risk cases identified by patient needs assessment (PNA).
7. Meeting family needs.	Families are essential to the care of older patients and their independence, helping families to work through issues related to the needs of the elderly may avoid future problems and enhance health maintenance.	Increase social support for families and improve communication about the process of care and care needs after discharge, provide one contact to assist families and staff with issues relating to placement of a patient in an aged care facility.

#### Table 1. Needs analysis

At the time that the service review commenced, in June 1997, John Hunter Hospital was in the throes of a particularly severe winter bed crisis. With an official number of 133 beds, we were caring for 220 patients in the Division of Medicine. The extra patients were mostly in respiratory and general medicine. An unprecedented number of these (64, equivalent to 27% of the official bed stock) were people waiting for nursing home placement. Although we had an appropriate number of nursing home beds according to the Commonwealth Department of Health and Aged Care formula (DHAC 1997), we had an unusually high number (about 120) who had been in a nursing home for more than 7 years. This restricted the turnover of beds. The problem was compounded by a shortage of hostel places and community care packages.

# **Process of Change**

#### Bed utilisation review

An external consultant conducted a review of the utilisation of beds at John Hunter Hospital by specialty. The Division of Medicine, (including Rankin Park) experienced a wide fluctuation in bed use of between 185 and 275 beds on a month-by-month basis. This difference of 90 beds accounted for 86.5% of the difference in bed utilisation of the hospital as a whole, and was largely due to fluctuation in demand for beds during winter by the general and respiratory medicine units.

The review also identified prolonged lengths of stay in both geriatric and general medical units compared to national teaching hospital benchmarks. This appeared to be a result of large numbers of patients spending long periods in acute hospital beds while awaiting placement in an aged care facility. Expressed as bed equivalents, geriatrics occupied on average 73 beds in winter compared to 45 for the benchmark NSW teaching hospitals, and in summer 67 beds compared to 42 beds for the benchmark hospitals. General medicine occupied 12 more beds than the benchmark requirement in winter (44 vs 32) and 6 more beds in summer (37 vs 31). This appeared to be due to an accumulated backlog of about 35 patients awaiting placement in residential care after completion of an acute episode of care for an average of 63 days. On average 11% of the acute medical beds were occupied by such patients, and in general medicine this was equivalent to about 11 beds. When the impact of these factors was taken into consideration, the performance of the general medical unit was equal to or better than the national teaching hospital benchmark.

#### Specialist team consultation with stakeholders

Following the initial data analysis, the consultant held meetings with the Division of Medicine and the geriatric, rehabilitation and general medical specialists. Two independent specialists in geriatrics from outside the area conducted interviews with staff and reviewed the data. They recommended substantial changes to the process of care for elderly patients. A team was appointed to manage the change process consisting of a senior clinician in general medicine, a medical manager, the external consultant and a senior nurse from Rankin Park. They conducted group and individual interviews with staff to obtain their opinions and consult them on the proposed changes. These interviews enabled a needs analysis to be completed.

## Development of service model

With the help of a number of creative suggestions from staff, a new service model was developed and tested against bed utilisation data to evaluate its performance. This suggested that 24 beds occupied by patients waiting for placement in an aged care facility could be removed from Rankin Park, and a similar number of beds taken out of the acute system at John Hunter Hospital by improved case management of patients who needed less acute medical care. This would permit closure of 50 geriatric and 16 acute medical beds and their replacement with lower cost nursing home type beds (transitional care). This would create the physical space for services provided through the Day Hospital located on another campus to be relocated within Rankin Park hospital, allowing better use of staff time. Cost savings generated would permit the appointment of extra geriatricians and allied health staff to meet the need for increased community services and reduce staff "burnout".

## The restructured service

The restructured service, while recognising the unique features of the admission system, aimed to utilise its strengths in management of acute medical problems while streamlining access to rehabilitation or institutional care where appropriate. Implicit in this was recognition that across the hospital there were patients with the potential for slow physical or cognitive recovery following resolution of an acute medical or surgical episode. These fell into two groups, those who needed longer to recover from an acute episode but would ultimately be able to go home, and those who as a result of deterioration in their function could only be safely discharged to residential care. Review of bed needs by specialist medical and nursing staff identified opportunities to improve the care of such patients and optimise bed use. The model of the restructured aged care and general medical services is shown in Figure 1. The key element was the transitional care unit for patients who no longer need acute medical care but who are unable to go home to await placement in residential care. Such patients were staying in hospital for 120 days, more than ten times as long as the average patient of the same age and case type.

## The transitional care unit

The consultation process had already identified a substantial cohort of patients for whom no alternative care strategy other than placement in an aged care facility existed. Patients in transition between acute care and institutional care would already have met eligibility criteria for placement in an aged care facility. Such patients were scattered across the acute and rehabilitation care wards. Co-location in an area focussed on a functional model of care rather than a disease process should not only improve the patient's quality of life and the satisfaction of staff and carers, but also free resources for much needed community intervention programmes.



Figure 1. Model of integrated acute medical and aged care in Greater Newcastle Sector

This would result from care in such an area being nurse-directed rather than physician-directed, and by using a different mix of nursing staff who had skills in improving functional outcomes rather than skills in acute medical and surgical nursing assessment. It was anticipated that while there would be some continuing need for social welfare support of the family/carer/patient, there would be a lower need for the services of other allied health staff.

Such a transitional care unit would help family/carer/patient to handle the grieving process associated with the decision to place an elder in an aged care facility. It would also enable the acute medical services to manage the process more efficiently by providing a central point of contact for all those involved in the process, including the proprietors of aged care facilities.

## Geriatric Evaluation and Management (GEM) Unit

For some patients, additional short-term nursing or therapy input, combined with identification of previously unmet needs for community care, would be sufficient to allow reasonably swift discharge home without risk of rapid readmission. This would require co-ordination of multi-agency health and social welfare short-term discharge arrangements, and liaison with general practitioners (GPs) in the transfer of care. While the average length of stay (LOS) for both acute medical and surgical patients was less than 7 days, it was anticipated that this group of patients would remain in hospital for 8-15 days. Provisional DRG-adjusted LOS data from the bed utilisation review suggested that about 12-16 beds were being used for this purpose across the hospital. By co-locating these patients in a ward with interdisciplinary care it was expected that their continuing health needs would be better met and this would result in potential improvements in LOS. This ward was not to be a formal rehabilitation ward, but rather an extended acute care ward where continuing treatment of the acute illness would cocur within the context of reversing functional decline. Formal rehabilitation programmes would continue to be provided within the geriatric and rehabilitation wards at Rankin Park.

In October 1998, with additional funding from the Area (available as a result of the bed closures that had taken place), the Geriatric Evaluation and Management (GEM) Unit was opened – taking over 12 beds from the acute medical service. This is an enabling unit for patients who after the acute phase of their admission require further care to help with their discharge to home due to ongoing disabilities that are related to their age and current admission diagnosis. Because these patients may need a variety of investigations and specialist consultations these services are best located in an acute facility.

Co-location of acute geriatric and medical patients is essential if multidisciplinary teamwork is to occur. This is particularly the case for frail and at-risk patients. It is appropriate for a single ward unit to undertake both acute geriatrics and acute general medicine. It was anticipated that this would help to increase

- collaboration with other clinicians to strengthen service provision to the elderly
- interaction of geriatric and medical services
- integration of services in the same clinical stream
- the participation of geriatricians in acute medical intake.

It is important to have a sub-acute unit easily accessible to the acute campus to provide a rapid transit of acute geriatric patients who will require a longer stay (up to 15 days or so). Reasons for this include additional time to regain ability to function independently, diagnostic and holistic assessment whilst commencing early rehabilitation and/or functional maintenance, and planning complex discharge strategy.

## Discharge planning

In addition to these groups of patients with specific functional needs, the Division of Medicine also identified the need to improve care strategies for patients in certain unstable or chronic disease categories, particularly COPD and CHF using the model of existing successful programmes for patients with unstable asthma and diabetes. Disease specific models were developed to cater for the special needs of this group of patients. A form was developed to improve the discharge planning for other medical patients with complex care needs. This patient needs assessment (PNA) tool was trialed in a number of areas before being finalised.

The consultation team identified two crucial interfaces of care where potential barriers to discharge planning could occur. The first was between the acute care of patients with complex medical problems, transfer to the geriatric evaluation and management unit or rehabilitation and discharge to the community; while the second was the process of placement of patients from transitional care, to the aged care facility of their choice. It was feared that without advocates for discharge planning to coordinate and drive these processes the two new units would become little more than "holding pens" for the functionally impaired, with staff focused on providing discrete components of care rather than a coherent process. The need to provide such service coordination has been described as "business process re-engineering" (Hammer and Champy 1993, p51).

The crucial rate-limiting step in bed management was the rate of placement of elders from acute care into residential care. Improving the nursing home placement process has previously been shown to result in timelier placement of patients in nursing homes (Presnell 1997). Following changes by the Federal Government to the aged care placement process, there was a need for a common point of contact to liaise between aged care providers in the community, families and carers of people awaiting placement from the transitional care unit. The appointment of a "transitional care co-ordinator" to smooth the passage of patients from hospital to an aged care facility met both needs.

The second interface between acute and sub-acute care needed someone with experience of both hospital and community care to develop alternative care strategies for patients with slow physical or cognitive recovery after acute illness. Family, carers and patients also needed help to identify and manage existing and new care needs following discharge. This position would include the coordination of multi-agency health and social care needs after discharge. Because of the need for understanding and identification of both clinical and functional management issues, a nurse was appointed as case manager. Case management attempts to utilise available resources and services to enhance the lives of patients, providing quality care (Smith & Flarey 1996). Both positions were focused on providing a coherent process of treatment and care.

#### Outcomes and performance indicators

As the drive to change the system was the bed crisis, the major outcomes assessed were measures of improved bed management, which are shown in Tables 2 and 3.

	Pre-intervention	Post-intervention Period 1	Post-intervention Period 2
	(12/7/96 to 4/12/96)	(16/2/98 to 30/6/98)	(1/7/98 to 24/9/98)
Number of patients (notes found)	106 (88)	29 (26)	59 (58)
LOS patients awaiting placement in	(Total in acute and	Average 56 days	Average 35 days
transitional care	transitional care)	Median 49 days	Median 23 days
		Range 6-188	Range 2-174
LOS in acute care prior to transitional care	Average120 days	Average 57 days	Average 51 days
	Median 59 days	Median 37 days	Median 36 days
	Range 10-295	Range 10-225	Range 1-396
Total ALOS	120	113	86
DRG adjusted ALOS	10.01	9.09	10.08
Excess bed-days	11519	3013	4479
Acute bed-day savings in transitional care	Not available	1653	3009
N (%) discharged home	7 (8%)	0	3 (5%)
N (%) discharged to hostel	8 (12%)	2 (8%)	0
N (%) discharged to nursing home	73 (84%)	22 (85%)	49 (84%)
N falls	48	11	21
N complaints	0	2	0
Readmissions to hospital within 6/12 of discharge	11 (12%)	0	0
Deaths awaiting placement	0	2	6
RCS/functional assessment			
Unchanged		6 (50%)	10 (59%)
Better	Not available	5 (42%)	3 (18%)
Worse		1 ( 8%)	4 (23%)

Table 2. The impact of introduction of transitional care

Over a two year period the unadjusted length of stay for general medicine and geriatrics fell by 22%, eliminating the overflow of general medicine patients. Sixty-six acute medical and geriatric rehabilitation beds were closed and replaced by between 24 and 32 transitional care (nursing home type) beds and 12 geriatric evaluation and management beds. This generated \$900,000 in recurrent savings that financed the geriatric evaluation and management beds and enhancement of staff at the day hospital to provide additional care for the frail elderly in the community. The service review identified the need for routine measures of service quality such as client satisfaction and changes in functional, emotional and cognitive performance by patients as a result of care. These were introduced as part of the quality improvement activities of the ward areas involved. However as these measures were not in place prior to the service redevelopment, objective assessment of quality of patient care was not possible.

Goals identified in needs analysis	Outcome Measures	Results
<ol> <li>Efficient and effective treatment of acute medical conditions.</li> </ol>	DRG specific outcomes improved	DRG adjusted bed utilisation for general medicine improved from an average overflow of 8.4 beds from July to Dec 1996, to an average overflow of 3.8 beds during July to Dec 1997, and spare capacity of 1.8 beds by July to Dec 1998.
2. Improved patient flow.	Decreased LOS, exit block, vacant positions filled.	LOS July to Dec 1996         LOS July to Dec 1997         LOS July to Dec 1998           Gen. Med.         11.85         11.33         9.2           Geriatrics         36.47         31.17         28.52
3. Better use of scarce health resources.	Enhanced funding to community based services.	Funding for additional allied health positions and CMO at Day Hospital provided from \$900,000 savings in recurrent costs from bed closures. All staff appropriately redeployed.
4. Management of functional impairment.	Improved measures of function, decreased falls.	Case manager; transitional care coordinator, PNA form. Appointment of half time social worker to GEM and Day Hospital.
<ol> <li>Identification of cognitive impairment/depression.</li> </ol>	Improved functional outcomes.	GEM unit opened in Oct 98 with psychogeriatrician attending ward rounds.
6. Social needs.	Carer satisfaction.	Formal assessment measures introduced. Unable to assess changes
/. Family needs.	Carer satistaction.	as measures not available prior to service restructuring.
8. Information needs.	Increased brochures available, improved disease specific knowledge.	Carousel with brochures available in ward areas, disease specific information programs in heart failure and COPD commenced during 1998.

#### Table 3. Outcomes

## Discussion

The service re-engineering described here achieved the major outcomes required by management with substantial savings in both recurrent costs and bed-days. These could be measured as routine systems for capturing such data are in place. Unfortunately, development of systems for routine collection of quality data has lagged behind those for routine financial and operational data. Some investment to establish these would repay itself rapidly by allowing proper rapid evaluation of the impact on the quality of care of changes in clinical service delivery.

This service redevelopment was painful for all the staff involved. The iterative process of internal and external consultation with comparison of our achievements with those of our peers enabled us to manage the change process without industrial strife. This paper describes our results to the third quarter of 1998, but this is an arbitrary and artificial closing date as not all changes to service profile mature at the same rate. The staff needs time to develop the new service model to its full potential. At this stage in the process of change it is as important for managers to know when to stop and allow staff to settle in as it is to know when to intervene and demand change.

The process described here illustrates why it is often difficult to assess complex interventions of this type using the randomised controlled trial (RCT) "gold standard". As was the case here, such changes are often introduced hurriedly in response to a crisis, and constraints of both time and money preclude use of an RCT. Nevertheless, it is important to describe the reasoning, processes and outcomes to our learning from them, or we shall be doomed to repeat the mistakes of the past sooner rather than later.

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