Fast-tracking acute hospital care — from bed crisis to bed crisis

Brendon Rae, Wendy Busby and Peter H Millard

Abstract

We describe here the results of a continuous quality improvement (CQI) project, the Delayed Discharge Project, in a general medicine service in a New Zealand teaching hospital. Average length of stay (ALOS) dropped by 2.6 days (6.5 to 3.9), readmission rates did not rise, costs of service delivery dropped by $2.4 million, patient numbers increased by 145 (2445 to 2590), while bed numbers reduced from 56 to 32 and ward outliers all but disappeared, suggesting success. However, 2 years after the successful cost-saving measures were introduced the new system crashed as a result of additional bed closures and organisational restructures.

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What is known about the topic?

Little is known about the relationship between staff learnt behaviour and bed borrowing because current methods of reporting inpatient activity mask the day-to-day reality of care.

What does this paper add?

Using 12 years of data from a New Zealand acute medical service we reveal how comprehensive change in the process of medical care in a general medical and geriatric medical service solved a bed crisis by establishing a new constant style of discharge behaviour.

What are the implications for practitioners?

Under pressure to admit, staff behaviour does not change. Bed crises occur rapidly when the supply of home-ward beds is insufficient to meet the need (demand) for inpatient care. Fast-tracking home-ward acute medical care depends on establishing a new stable state of staff behaviour within and without acute medical care. Thereafter, changes made in bed allocation and use within or without the acute hospital can precipitate a bed crisis in acute medical care.

A RECENT COCHRANE REVIEW of eight selected randomised and controlled studies found some evidence that discharge planning reduced hospital length of stay, especially for elderly patients, but no evidence was found that it reduced costs.[1] The problem of basing policy changes on randomised controlled trials is that the methodology, by its very nature, is unsuitable for assessing the outcome of comprehensive change.

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In this paper we show how the Delayed Discharge Project solved a bed crisis, and controlled expenditure in a general medical department in a New Zealand teaching hospital. We then consider why subsequent closure of medical beds and relocation of geriatric medicine created a second bed crisis that still needs to be resolved.

In 1964, Feldstein[2] reported that medical staff with bed shortages, under pressure to admit, did not change discharge behaviour and created waiting lists. By analysing the distribution of length of stay during two bed crises, we show that bed borrowing by physicians is the modern equivalent of Feldstein's paradox and consider the implications of this for the planning of bed allocation and service delivery in general medical departments.

Downsizing and reengineering are facts of life in contemporary health care organisations,[3] and survival demands that leaders in institutions find innovative ways of reducing costs while maintaining quality of care.[4] To understand why some hospitals treat patients more quickly than others, we need to determine how staff, patients and resources inside and outside hospital interact to influence the flow of patients through health care systems.[5]

A recent review of the use of continuous quality improvement (CQI) techniques and reengineering in health services concluded that, "... it is likely that CQI will remain a predominate management philosophy in health services, while reengineering may not endure in its form of radical change".[6] Nevertheless, research suggests that the process of change may be as important as the method which is used.[7] If leadership, patient involvement and local ownership ensures sustainable change,[8] we need to know how sustainable change alters staff behaviour.

Many local approaches and initiatives have been taken to improve the process of inpatient medical care. Examples of introducing change, such as, physician of the week[9] and admission wards,[10] all reflect the desire of local consultants to improve performance. Often, the benefits gained from these initiatives fail to translate to other circumstances, possibly because a hidden factor — the leadership and commitment of the pioneer of change — is the missing ingredient of change.

Alternatively, the methods used to report the evidence of successful change mask the reality of the clinical situation. Before computers were available to produce instant answers, data had to be laboriously collated and then, by multiplying the bed allocation by the percentage bed occupancy and the days in the year and dividing by the number of annual discharges or deaths, an estimate of average length of stay in days was generated. Now, computers calculate these numbers as often as managers wish. Such readiness of information may be misinterpreted as giving a more useful indication of bed usage, yet this conclusion may not be correct.[11]

Statistically, the numerical distribution of length of stay at discharge is skewed. Medical, social and psychological factors influence length of stay,[12] and, as far as older people are concerned, a key explanatory factor determining their speed of treatment is the availability of alternative places for discharge of potential long-stay patients.[13]

To overcome these problems, we used the interquartile range and discharge destination to explain how process reengineering using CQI techniques in a New Zealand acute general medical service changed average length of stay, and conclude that the results support a behavioural theory of flow,[2,14] rather than theories based on pressure and force.[15]

Questions to be answered

- What changes were made in the general medicine service between 1992 and 2003? What is the evidence that bed closures precipitated bed crises?
- How was staff behaviour changed? What is the evidence that discharge behaviour changed from constant to constant?
- How does this study assist other departments to plan hospital care?

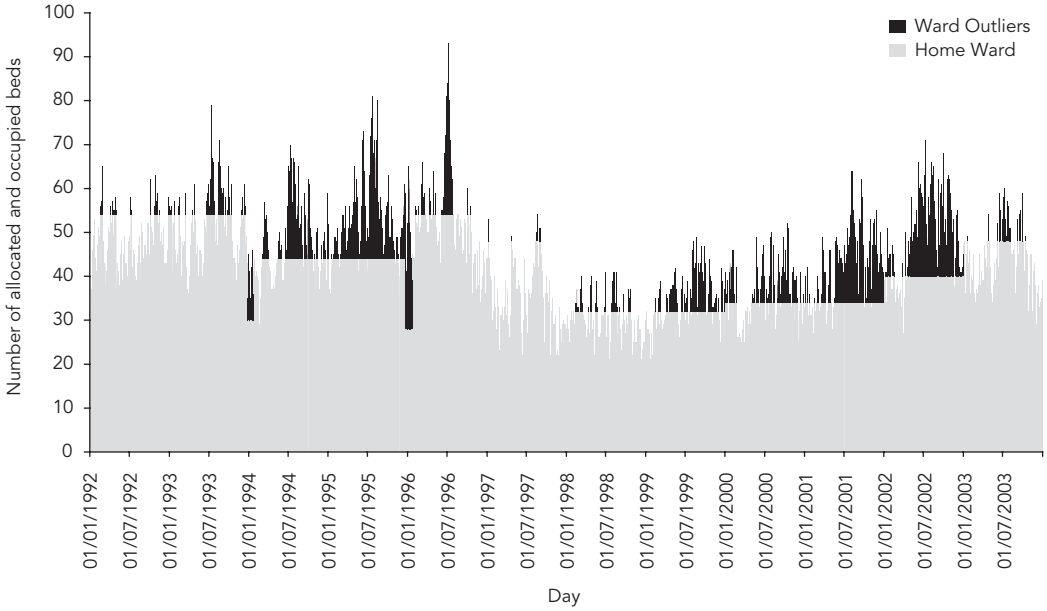
Dunedin Hospital

Dunedin hospital is the only tertiary hospital in the Otago region, serving a population of about 180 000 people. During the 1990s, changing health funding policies in New Zealand meant that the hospital was experiencing annual real reductions in revenue. The analysis only concerns the changes made in general medicine between 1992 and 2003: acute medical admissions are streamed, 61% go to general medicine, 13% to respiratory medicine and 26% to cardiology.

Data and methods

The retrospective cohort data downloaded from the hospital electronic database include the

1 Daily bed occupancy and bed allocation by acute general medicine inpatients between January 1992 and December 2003



The black bars represent those patients housed outside the contiguous home wards, the outliers. The two vertical black bars descending into the grey reflect patients housed as outliers as a result of planned medical ward closures during the Christmas of 1993 and 1995.

length of stay, age and discharge destination of 20 034 patients treated by the acute general medicine service between 1 January 1992 and the 31 December 2003. Data analysis was undertaken in New Zealand.

We used Microsoft Excel (Microsoft Corporation, Redmond, Wash, USA) to compute and plot the daily pattern of bed allocation and bed use. The 25th, 50th (median), 75th and 95th percentiles of length of stay at discharge were calculated for each year to determine whether comprehensive change in clinical practice established a new stable state of discharge practice.[14] Cost data were obtained from a patient-level resource utilisation casemix system used between 1995 and 1998. During this time the patient casemix and case weighted price did not change. Subsequent analysis of costs beyond this period was not possible as management abandoned the collection of this information.

From a bed crisis to a bed crisis

The pattern of daily bed allocation and bed occupancy in Box 1 show two serious outlier bed crises interspersed with a transition period when bed borrowing ceased. The bed allocation and bed occupancy data in Box 2 show that over 100% annual bed occupancy occurred during both crises, and that care process reengineering created 67% bed occupancy with six fewer beds. Thereafter, admissions began to increase and a further closure of 16 beds meant there were insufficient to meet the need for inpatient care.

The numerical values of the interquartile range in Box 3 support the interpretation that the Delayed Discharge Project established a new stable state of discharge practice. Also, the change in the 95th percentile and the maximum stay that occurred in 1997 indicated that alternative policies for the management of longer term patients may have been introduced. Box 4 confirms that

2 General medicine bed allocation, occupancy and use, 1992–2003

Year	Bed allocation	Annual occupancy	Admissions	ALOS
1992	54	83%	1975	7.3
1993	54	89%	2101	7.2
1994	44	102%	2078	6.8
1995	44	113%	2379	6.5
1996	54	93%	2355	6.5
1997	48	67%	2287	4.0
1998	32	85%	2056	3.8
1999	32	97%	2391	3.8
2000	34	96%	2526	3.7
2001	34	113%	2944	3.8
2002	40	110%	3198	4.0
2003	48	81%	2744	4.1

ALOS = average length of stay (days).

the internal transfer of patients to geriatric medicine was part of the solution to the successful "fast-tracking" of acute medical care.

The following section considers the historical sequence of events.

Bed closure: bed crisis

Bed closure precipitated the first bed crisis. In 1992 and in the summer months of 1993 there were sufficient beds to meet demand. Following the Christmas 1993 (New Zealand summer) bed closure, ten beds were permanently closed (Box 2). Thereafter, the interquartile range and median (Box 3) confirm that the admitting medical teams were borrowing beds rather than changing discharge behaviour. In 1995 the bed crisis worsened because admissions increased by 10% (201 patients) (Box 2).

In 1995, general medicine had monthly budget deficits, high occupancy rates, delayed discharges, and the "outliers" spilling over into general surgical wards were causing friction and operative delays. Furthermore, clinicians were concerned about the adverse events experienced by acute medical patients in other wards. So changes had to be made.

The decision to restructure acute medical care services followed an executive decision that created financially accountable clinical practice groups, run by pairs of managers and clinical leaders (usually doctors), and made a substantial investment to introduce CQI to improve hospital performance and reduce waste due to non-produc-

3 Annual admissions, average stay (days) and length of stay distribution of general medical patients, 1992–2003

			Percentiles				
Year	Admissions	ALOS	25%	Median	75%	95%	Maximum stay
1992	1975	7.3	2	5	9	22	104
1993	2101	7.2	2	5	9	22	106
1994	2078	6.8	2	4	9	21	92
1995	2379	6.5	2	4	9	20	88
1996	2355	6.5	2	4	8	20	157
1997	2287	4.0	1	3	6	11	46
1998	2056	3.8	1	3	5	10	49
1999	2391	3.8	1	3	5	10	39
2000	2526	3.7	1	3	5	10	42
2001	2944	3.8	1	3	5	11	51
2002	3198	4.0	1	3	5	11	61
2003	2744	4.1	2	3	6	10	35

ALOS = average length of stay (days).

4 Annual general medicine admissions, transfers and discharges of patients aged over 64 years, 1992–2003

			Destination (%)		
Year	Admissions	ALOS	Home	Transfer	Death
1992	1149	9.0	68.8	19.3	11.8
1997	1240	8.7	68.4	22.0	9.6
1997	1204	8.2	67.5	23.2	9.3
1995	1324	8.1	72.2	19.7	8.1
1996	1392	7.9	77.2	13.8	9.0
1997	1367	4.9	68.4	23.0	8.6
1998	1329	4.5	66.7	27.0	6.3
1999	1595	4.4	64.4	29.7	5.9
2000	1745	4.1	59.0	35.0	6.1
2001	2050	4.2	55.8	37.6	6.6
2002	2339	4.5	60.0	34.6	5.4
2003	2051	4.6	58.1	35.8	6.1

ALOS = average length of stay (days).

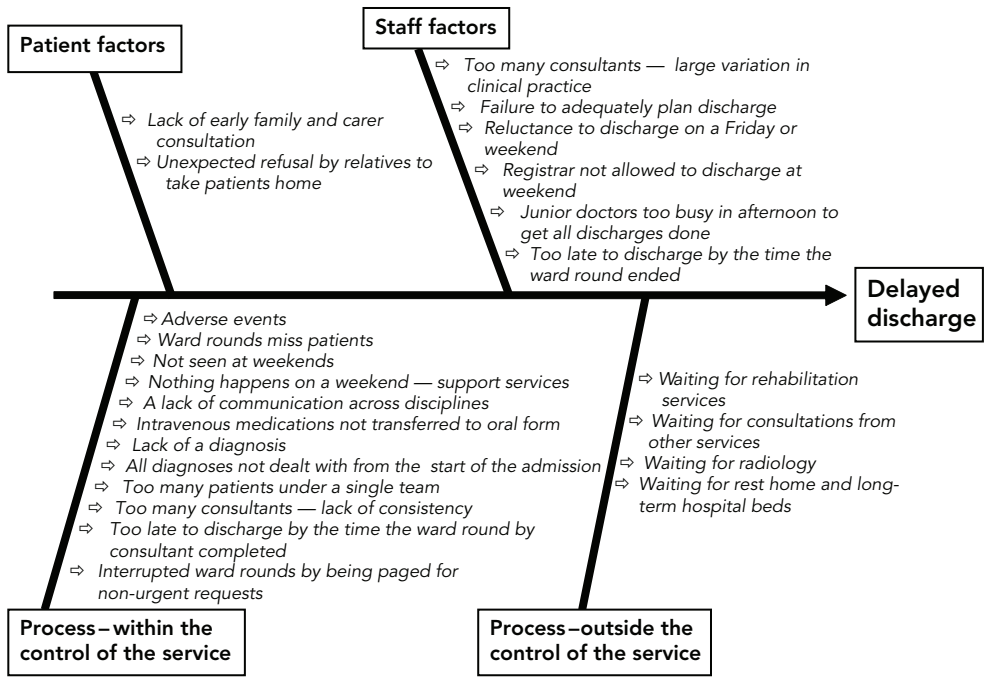
tive (or counter-productive) activities. Measures of success for the service were reduction of "outliers" and balanced budgets.

The Delayed Discharge Project

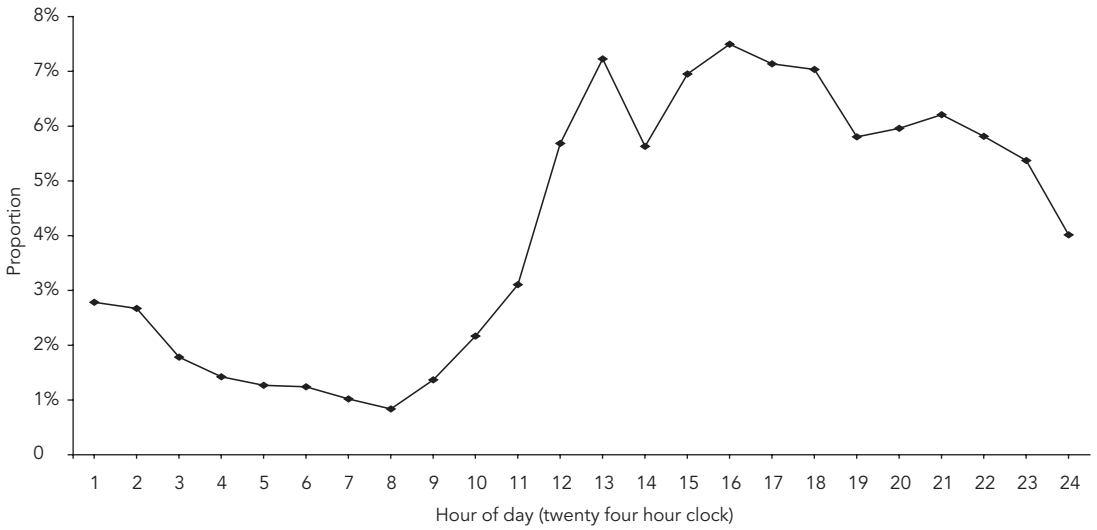
The project team had two registered nurses, a charge nurse, a physiotherapist, an occupational therapist, a senior registrar, a geriatrician (WB), a physician (BR), and a facilitator. Early in the project, problems associated with too many consultants, afternoon ward rounds, inconsistent policies, lack of clarity of decisions and poor communication between medical staff, allied health staff and nurses were recognised to be major causes of decision-making delay.

Facilitated brainstorming sessions resulted in a large list of contributing causes of delayed discharge. These influences were displayed in a cause and effect (fishbone/Ishikawa) diagram (Box 5) which shows two "patient factors", twelve "processes — within our control", six

5 Causes of delayed discharge: cause – effect (Ishikawa) diagram



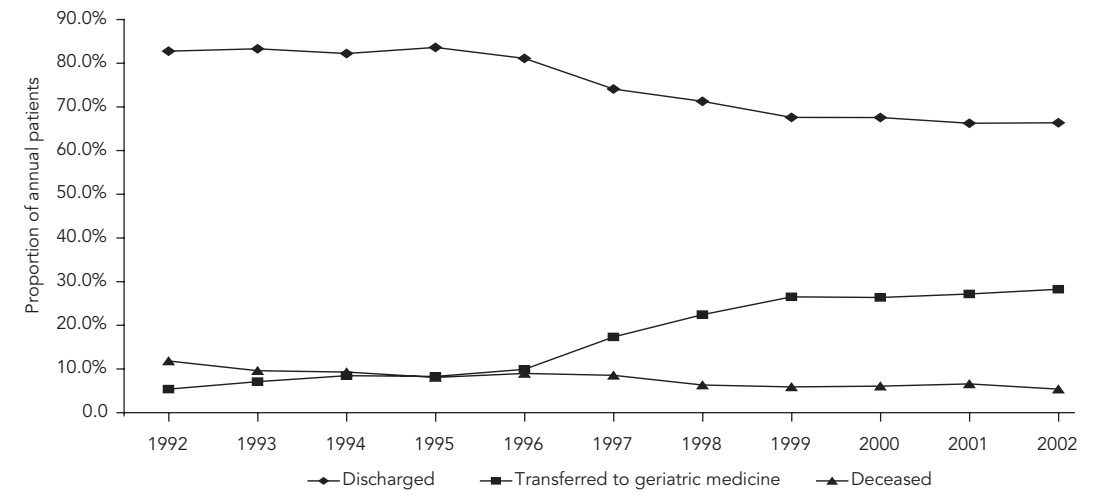
6 Average daily admissions per hour



"staff factors" and four "processes — outside our control". The appendix lists the problems identified and the solutions implemented.

Reorganisation of senior and junior medical staff work practices, greater availability and sharing of information and closer cooperation with the off-site Department of Geriatric Medicine were the main outcomes of the CQI initiative. Box 6 shows the number of admissions per hour during the average day. This provided a visual verification of what was already known, if not acted upon. There was a "window of opportunity" in acute admission activity early in the working day, when admission volumes were lower. Once this information was displayed graphically it was a simple matter to get clinical

7 Annual discharge destinations for patients aged over 64 years



staff to move much of the discretionary work to the early part of the day.

Consultant-led service

After extensive review, four senior medical staff posts, which contributed 0.5 out of a total of 1.8 full-time equivalent positions, were removed. Thereafter, afternoon ward rounds ceased and consultant-led ward rounds commenced at 8.30 am seven days a week. Junior doctors started work at 8.00 am and completed the handover with the night staff before the morning ward rounds. Closer consultant supervision, by a smaller number of admitting consultants, meant that consistent policies were easier to introduce, and junior staff always had clear guidance. Moreover, the time taken for rounds was decreased and junior medical staff gained time to liaise with therapists and nurses and to follow up requests for other consultant teams to visit.

Although a discharge-planning sheet was originally thought to be essential, the sheet the team created is no longer used because discharge planning is now an integral part of day-to-day care. Where reasonable, patients and families are now told at the time of admission when they might be ready for discharge. By including them early in the discharge planning process, complicating social issues are now aired earlier in the admission. With better discharge planning, the proportion of patients discharged on a Saturday is similar (8.2% then, 8.6% now), but on a Sunday rose from 4.9% to 7.4%. More people were going home when they were ready to go, with home care supports in place, rather than waiting an extra day until the working week began.

All junior doctors now are expected to be able to answer three questions about all of their patients.

- Has this patient a management plan?
- Does this patient still need to be in hospital?
- If not, are suitable and adequate arrangements in place for discharge?

These underpin the philosophy of active discharge planning from the moment of admission.

Parallel processes in geriatric medicine

During the first bed crisis, until December 1998, the admission office and beds of the Department of Geriatric Medicine were located in a separate hospital in the city. When the Delayed Discharge Project began, geriatric medicine had two admission wards and two slow stream rehabilitation wards. The evidence that these wards were functionally different was unclear. To improve bed availability, during 1997, the two slow stream wards were gradually changed into standard assessment, treatment and rehabilitation wards. Also, closer collaboration meant that the geriatric medical teams could influence management in the general medical wards, so extra investigation could be done as part of the index admission, and some delays in transfer could be overcome.

Success

During 1997, the targets for the CQI initiative were met and the "outlier" bed crisis was solved. Box 3 shows that the changes introduced established a new stable state of discharge practice. Noticeably, the 95th percentile of length of stay at discharge and the maximum duration of stay decreased. Box 7 shows that transfers to geriatric medicine increased from 9.9% of admissions in 1989 to 26.5% in 1996.

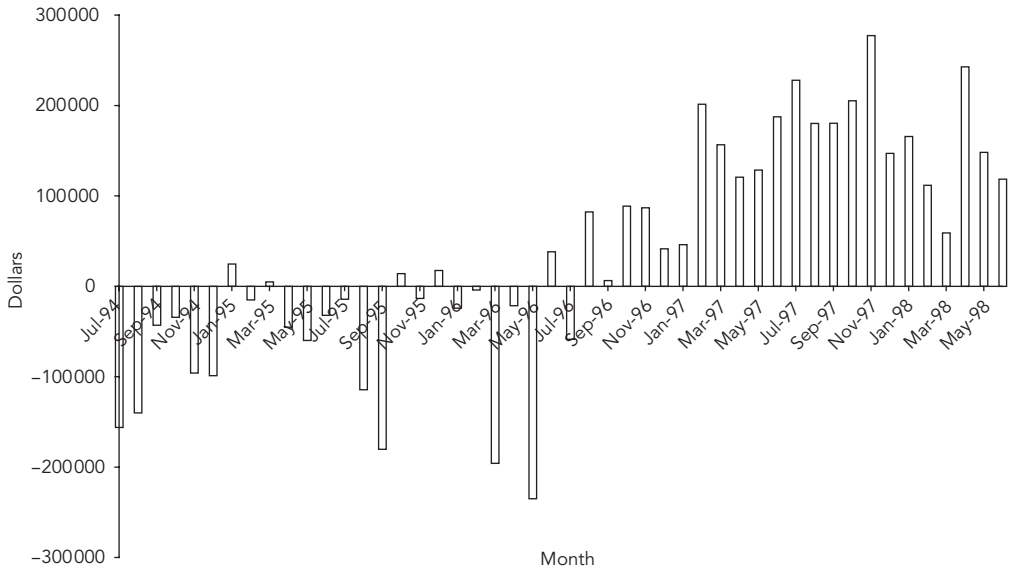
The time plot in Box 8 shows the beneficial impact of the new policies on the monthly cost of general medical care. In 1995 the annual cost of the general medical service was $1.1 million in excess of revenue. Seventy-two per cent of the cost reduction was achieved by reducing "fixed" costs like nursing salaries (by attrition); closer consultant supervision also meant that the laboratory costs per patient treated decreased by 27%, pharmacy by 53% and radiology by 31%.

Then, a combination of bed closures in general medicine, relocation of geriatric medicine to the teaching hospital, and subsequent change of admission policies "crashed" the new system.

Second bed crisis

Several factors intertwined to cause the second bed crisis. In January 1998, sixteen general medical beds were closed: Box 1 shows that "outliers" returned during the winter of 1998. That year, at

8 Net monthly revenue deficit/surplus July 1994 to June 1998



the peak of demand, 41 beds were needed but only 32 were allocated. Furthermore, pressure was placed on the general medical service, when, at the end of 1998, the geriatric medical service was relocated to the teaching hospital and became a secondary receiver service. Between 1998 and 2002 a 56% increase in general medical admissions occurred, and the second bed crisis only came under control after the bed allocation to general medicine was increased from 32 beds to 48 beds.

No doubt, relocation of geriatric medicine was a catalyst for change. Before moving to the base hospital, four to five acute patients a week were admitted to geriatric medicine. After moving, these patients were admitted to general medicine. A new policy of admitting older people with fractures from accident and emergency to general medicine instead of orthopaedic surgery in order to prevent their later referral with more complex problems (two to three a week) was also introduced. However, these changes do not come close to explaining why admissions increased by 56%. Whether increasing management pressure to save money or ease of access to the new service forced behavioural change by other admitting specialties, we are unable to determine.

Discussion

Two changes — consultant-led ward rounds first thing every morning, and increased transfers to geriatric medicine — stand out as being pivotal to the early success of the project. It is noted that if these successes were to become universal, the whole working pattern of support services and managers would have to change as well. Furthermore, it is unlikely that a smaller number of working consultants could keep up the pace. Another issue, raised by this study, is "What is the benefit to clinicians of restructuring their working pattern if bed closure is their reward?" Clearly, the changes made by the Delayed Discharge Project "shocked" clinical care into a new stable state and solved the first bed crisis. However, unforeseen general medical bed closures and the relocation of geriatric medicine to the teaching hospital site created a new problem, which still needs to be resolved.

It would be wrong to conclude that the improved performance of the general medicine service was solely as a result of the ability of the geriatric medicine service to accept increased numbers of transfers. The changes that occurred in general medicine affected all age groups, and temporally led the changes within the geriatric medicine service by more than a year. No doubt, decreasing the number of admitting consultants and introducing daily, consultant-led, ward rounds increased the efficiency of the acute medical service. However, it is also clear that the fast tracking of the acute medical service depended on the ability of the geriatric medical service to accept a quarter of the patients admitted each year.

Whether the changes made in general and geriatric medicine would have been sustainable if the geriatric medical service was not relocated onto the teaching hospital site is unknown. Only a simulation model could answer that question: using simulation, Bagust et al showed that bed crises occur when bed occupancy in a general medical service exceeds 85%.[16] Noticeably, only on three occasions, 1992, 1997–98 and 2001, did the acute medical service have less than 85% occupancy. What is clear (from Box 2) is that a system crashes whenever there are insufficient acute care medical beds to meet the need for acute patient care.

It is difficult to determine why admissions increased by 56%. What is clear from the data is that increased admissions occurred in all age groups. Perhaps the decision to admit acute medical admissions for general and geriatric medicine to the one service made it easier to refer.

The bed crisis at Dunedin Hospital still needs to be resolved. Factors within or without the hospital, which caused the unexpected increase in admissions, have yet to be determined. What is clear, however, is that part of the solution to the current ongoing bed crisis includes increasing the number of allocated beds.

The increase in acute admissions was not reflected in data for the whole hospital, and the demand for acute care beds in the whole hospital, particularly for older patients, did not change over this time. However, the increase in admissions to general medicine was matched by a similar reduction in admissions to other acute care areas, both medical and surgical. This was apparent clinically as patients were increasingly refused admission to subspecialty services. So the likely explanation for increased admissions is a behavioural change by other services in the hospital.

Accepting that bed occupancy is a thoroughly bad measure, because it combines and confuses occupancy and use, Yates recommended that managers focus discussion on bed "emptiness" instead.[17] Yet, bed emptiness has problems peculiar to itself,[18] for unlike incontinence pads and sheets, beds that are not used on a warm summer's night are not available on a cold winter's day. In queuing systems only a small increase in arrivals (admissions), service time (discharges) or decrease in the number of server units (beds) can cause systems to rapidly go out of control. Indeed, hypothetically, using a simulation model, the UK post-Christmas bed crises were found to be due to delayed discharges not to increased admissions.[19]

A recent paper in the *British Medical Journal* compared and unfavourably contrasted the successful fast-tracking of acute medical care by an insurance-based service run by Kaiser Permanente in California with the slower pace of Medicare and NHS patients.[20] A key conclusion was that better use of scarce resources and economic benefit could be gained in NHS hospitals by fast-tracking acute medical patients. The cost savings made by the reorganisation of the acute medical service at Dunedin support that conclusion. However, the limitation of the comparative study and of this one is that no evidence of downstream cost of care or outcome of care is provided.

Modelling bed occupancy in an American private hospital and a Veterans Hospital, Harrison concluded that the private hospital achieved a fast-track single stream of flow by discharging patients from the acute care service to a separate rehabilitation service on another floor in the

same building.[11] Similarly, the Dunedin service achieved the same objective by closer collaboration with geriatric medicine.

Sustainable solutions to the problem of determining the number of beds to provide acute medical care must take account of several factors. First, the general medical bed allocation is nominal, not actual. In modelling terms the bed allocation is unconstrained, with infinite servers.[21] So the modern answer to Feldstein's paradox is that admitting medical teams, under pressure to admit, borrow beds rather than change discharge behaviour. Second, learnt behaviour establishes the "rhythm" of the ward, and changing senior staff behaviour is difficult and takes time. Third, external as well as internal factors influence the process of care. Fourth, hospitals are human activity systems and patients are unique individuals. Fifth, experience teaches that the process of inpatient care is better assessed using the distribution of the data, the interquartile range, and the destination at discharge. So, in addition to the average length of stay, the destination at discharge[22,23] and length of stay distribution must always be reported when services are compared.

No department is an island. The options open are now unclear. Both services have fast-tracked their inpatient care. The average stay in the acute care medical wards is 3.7 days and in geriatric medicine 15 days; and a quarter of older patients admitted under the acute care service are being transferred. Given the nature of illness, it is unlikely that the speed of acute care and rehabilitative care patients can be increased. So if no more beds are to be provided, either admission policies need to be changed or actions need to be taken outside the hospital if the second bed crisis is to be resolved. It would seem that any resolution would imply greater utilisation of, or as a minimum a shifting of, resources. How much consideration management give to such issues while the internal medicine service remains in crisis is not easily answered. The doctors and patients bear the clinical risks and the managers bear the financial risks. They also face considerable lobbying by staff from other services aimed at protecting resources currently allocated to their services. It is far from known whether resources exist in the community to aid in the resolution.

Clinically and managerially, efficient and inefficient hospitals fall into three groups. The first group are working efficiently. They have changed their clinical practice, and their resources are sufficient to meet the need. The second group is working inefficiently. Their clinical practice needs to change, but they don't know how. The last thing they need to solve their waiting list problems is more money. The third group needs money for more resources — it has modernised its working practice, but still has insufficient resources to meet the need[24] for hospital care. It's all a matter of "horses for courses", but without knowledge of the distribution of length of stay and discharge destination decision makers will never know which horse to back.

Conclusion

Staff discharge behaviour is a hidden dimension of hospital care. The Delayed Discharge Project changed senior staff behaviour in the general medical and geriatric medical wards, and made better use of resources. The pattern of the interquartile distribution of length of stay, before and after the changes in clinical practice were introduced, showed that the general medical service established a new stable state of discharge behaviour. However, before fast-tracking of acute care is embraced as a solution to the problems acute care hospitals face, there is a caveat, since 2 years after the successful cost saving measures were introduced the new system crashed. We conclude that the focus on use of the average length of stay to plan current and future hospital bed allocations is causing suboptimal decision making.

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Competing interests

The authors declare that they have no competing interests.

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Appendix

Changes made in the process of care as a result of the Delayed Discharge Project

Patient factors

Lack of early family and carer consultation: Where reasonable, patients and families are often told at the time of admission when they might be ready for discharge. Many of the special cause variation influences have been removed as a result of the CQI process, leaving the common cause variation, which means less month-to-month variation of the average length of stay (ALOS). This has made the estimate of discharge date more reliable.

Unexpected refusal by relatives to take patients home: By not recognising the increasing social dependency in our ageing population, we were often surprised at late presentations by patients and family of the reasons why they could not go home when we thought they were ready. Including exploration of these issues from the start of the admission has greatly diminished this problem. We also now have a full time social worker.

Staff factors

Too many consultants — large variation in clinical practice: Workload assessment led to fewer admitting physicians, each with a greater assignment of time to general medicine. Subspecialists had been required to maintain their full-time subspecialty practice in addition to intermittent attachments to general medicine

Failure to adequately plan discharge: A structured discharge planning sheet was introduced which helped ensure components of the process were not forgotten.

Reluctance to discharge on a Friday or weekend: This was mostly due to a perception of insufficient community resources. Realisation that geriatric medicine had no similar hesitancy to discharge went a long way to encouraging physicians to change practice.

Registrar not allowed to discharge at weekend: Policies changed, so more discharges occurred at weekends.

Junior doctors too busy in afternoon to get all discharges done: Ward round processes were altered: time critical work, for example a lung scan for suspected pulmonary embolism, was arranged during the ward round, which often meant the test could be done the same day. Completing a structured ward round in the morning meant the junior doctors had a clear idea of tasks and had clear direction from seniors on the order of priorities.

Too late to discharge by the time the ward round ended: As the ALOS dropped quite quickly we found that each team had fewer patients remaining from previous days when next on acute take. Fewer patients meant faster ward rounds.

Processes within control of service

Adverse events: Verbal handover concerning potentially unstable patients was encouraged between junior and senior staff. This was facilitated by having staff on the wards at consistent times.

Ward rounds miss patients: A daily current print out of patients for each team giving name, age, admission date, days in hospital and ward is available each morning before ward rounds occur.

Not seen at weekends: Junior medical staff are required to write weekend summaries for all patients, including criteria for possible discharge.

Nothing happens on a weekend — support services: Nursing staff are empowered to bring problems forward. Junior medical staff are encouraged to attend ward multidisciplinary meetings.

A lack of communication across disciplines: An area in each ward was dedicated to wall-mounted, clear plastic boxes that were the repository of referral sheets. A new referral was immediately apparent.

Intravenous medications not transferred to oral form: The presence of formal weekend management plans and empowering nursing staff have addressed this issue.

Lack of a diagnosis: The requirement that every patient have an identifiable management plan minimises any tendency for loss of momentum of the patients trajectory through a diagnostic and therapeutic pathway.

All diagnoses not dealt with from the start of the admission: All active problems are addressed at the same time. There was a tendency to deal with the most acute problem first and progress in a linear fashion through the active problems. If planned investigations become unnecessary they are cancelled as soon as possible to maximise the chance the time slot will be made available to another patient.

Too many patients under a single team: Reduced length of stay has reduced occupancy and team patient loads.

Too many consultants — lack of consistency: Fewer physicians with increased service focus allowed discussion and agreement over relevant policies.

Too late to discharge by the time the ward round by consultant completed: A service policy was developed; all ward rounds start at 8.30 am, seven days a week. The junior doctors start work at 8.00 am.

Interrupted ward rounds by being paged for non-urgent requests: Reduced occupancy removed the problem.

Processes outside the control of the service

Waiting for rehabilitation services: Referral is made on admission or as soon as the possibility of need is identified, if it is thought that these services may be needed.

Waiting for consultations from other services: Early written referral is encouraged as well as faxing the referral if necessary; team members pursue other services physically or by phone if necessary. Keeping an active management plan foremost in doctors' minds minimises the chance they will forget to pursue services.

Waiting for radiology: Referral as soon as the need is identified has achieved a high percentage of same-day service. This has been and remains a difficult area. Staff resources in the radiology department have been an issue.

Waiting for rest home and long-term hospital beds: A close liaison has been developed between the general and geriatric medical teams; all staff, including our social worker, nurses and medical staff, are encouraged to identify patients from an early stage in the admission who may need such placement, and those who may benefit from rehabilitation. By the time patients are ready for discharge, beds have been identified and secured.