

Patient Management Task Force

Paper No. 4

**Improving the Management
of Multi-Day Admissions:
Better Utilisation of Hospital Beds**

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Contents

Introduction	1
Recommendations	9
Observation and Findings	13
Appendix 1: Patient Management Task Force	37
Appendix 2: DRGs with 40 or More Separations Including a Component of Hospital in the Home, 1999–2000	39

Introduction

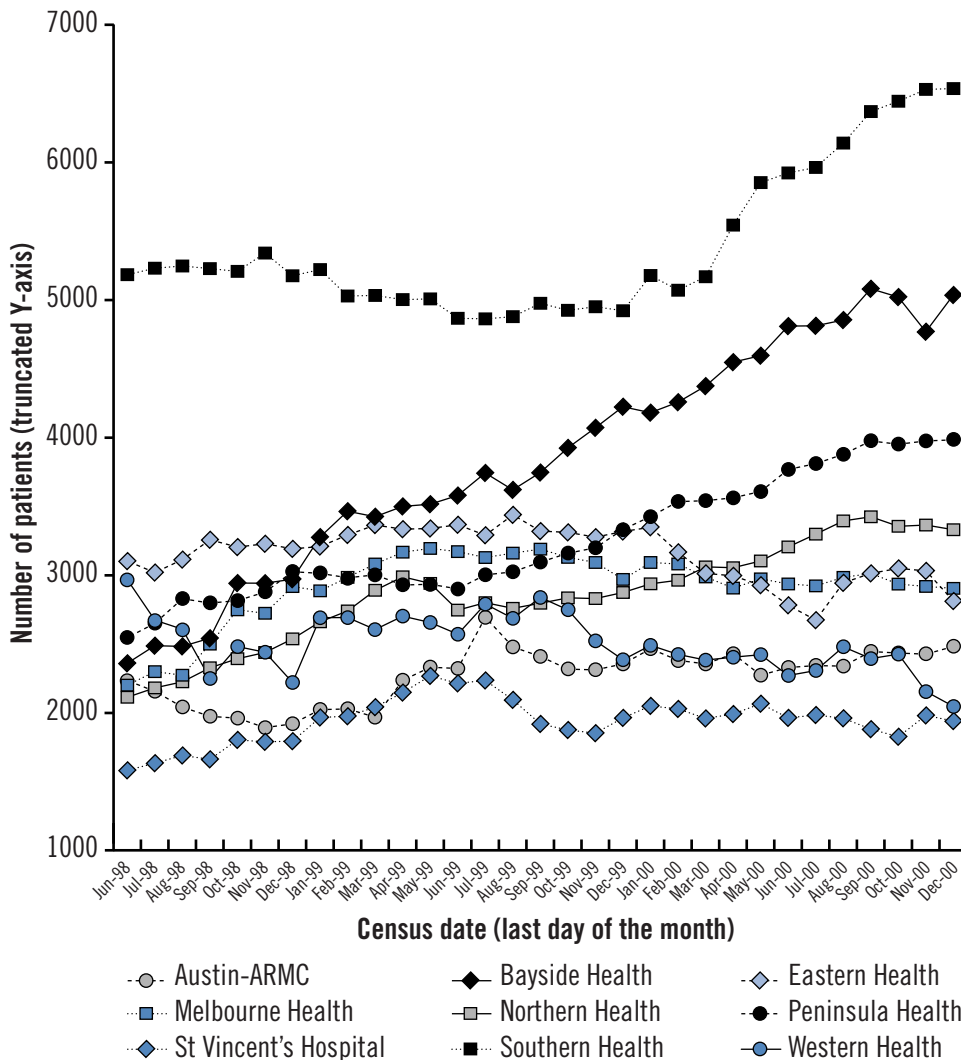
The Need To Improve Utilisation of Hospital Beds

The Victorian public hospital system, like hospital systems throughout Australia and around the world, including those in the United Kingdom, United States, Canada and New Zealand, is experiencing increasing demand for admissions. These demands are reflected in historically high waiting lists and long waiting times.

Better access to public hospitals for inpatient admissions can be achieved through improved utilisation of hospital beds.

Waiting lists for elective surgery across Victoria's metropolitan health services have generally been increasing over the period from 30 June 1998 to 31 December 2000.¹

Figure 1: Elective Surgery Waiting Lists by Metropolitan Health Services*



Data for September quarter and December quarter 2000 are provisional and subject to change.

* For the purposes of comparability, hospitals have been grouped according to the present Health Service configuration to derive waiting list numbers prior to 1 July 2000.

Source: Elective Surgery Information System

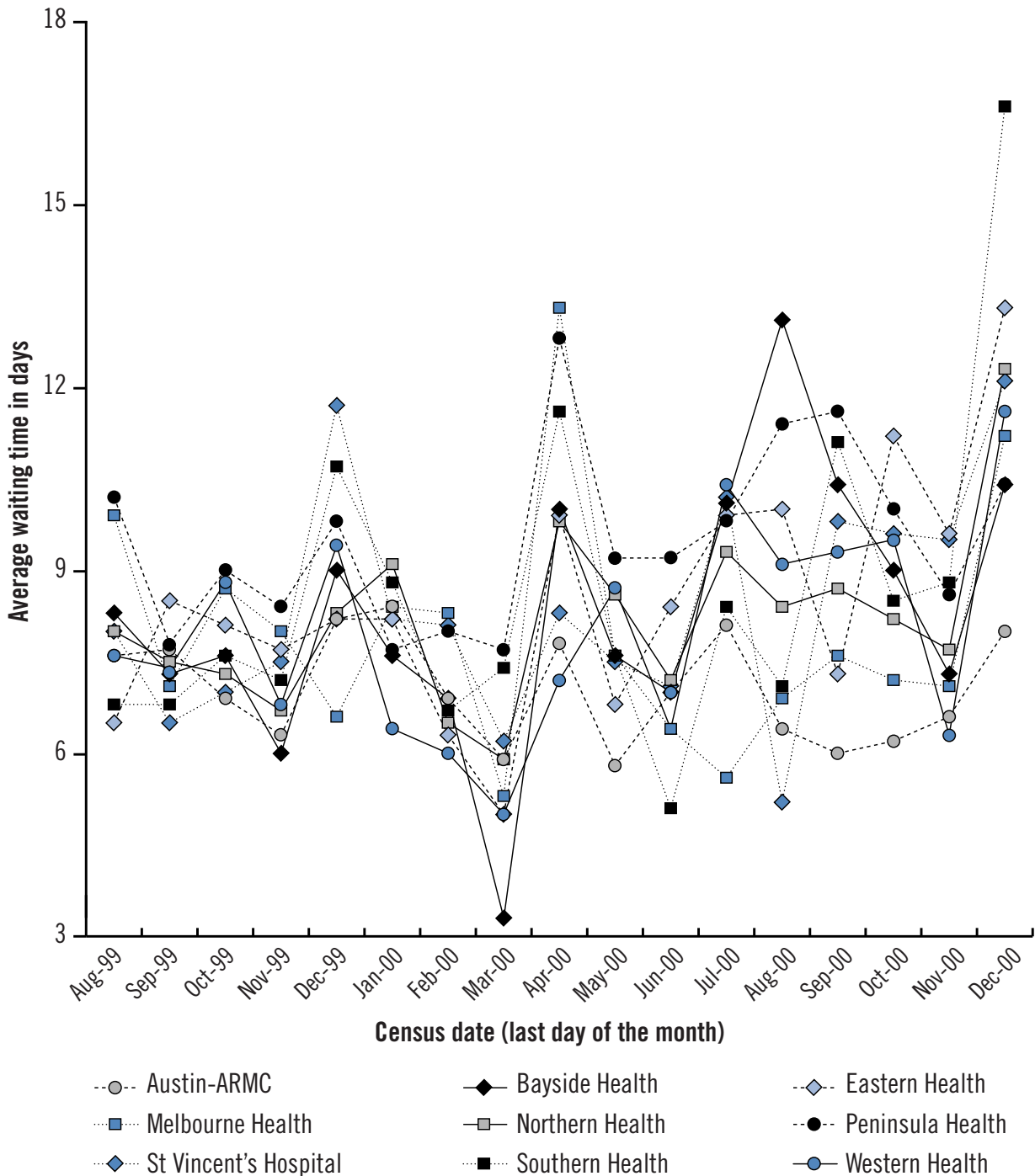
¹ Data for the September quarter and December quarter 2000 are provisional and subject to change.

At St Vincent's Hospital, the Austin and Repatriation Medical Centre, Melbourne Health, Western Health and Eastern Health, waiting lists have been relatively stable. However, a rising trend is evident in the other metropolitan health services. Waiting lists have been increasing steadily at Peninsula Health and Northern Health. The increase is most pronounced in Bayside Health, but Southern Health, after a period of stability, showed a substantial increase in the nine months from 31 March to 31 December 2000.

The average waiting times of category 1 (urgent) patients in the metropolitan health services over the period 31 August to 31 December 2000 are between five and 15 days in most cases (see Figure 2 on the following page).

Even after accounting for the small number of cases which exceed this range, the waiting times are well within the clinically recommended times of 30 days for this group of patients. The good performance of metropolitan health services can be partly attributed to a close alignment between the benchmarks set for incentive payments under the Department's Hospital Access Program and high levels of clinician acceptance.

Figure 2: Average Waiting Times of Category 1 (Urgent) Patients on the Waiting List by Metropolitan Health Service*



Data for September quarter and December quarter 2000 are provisional and subject to change.

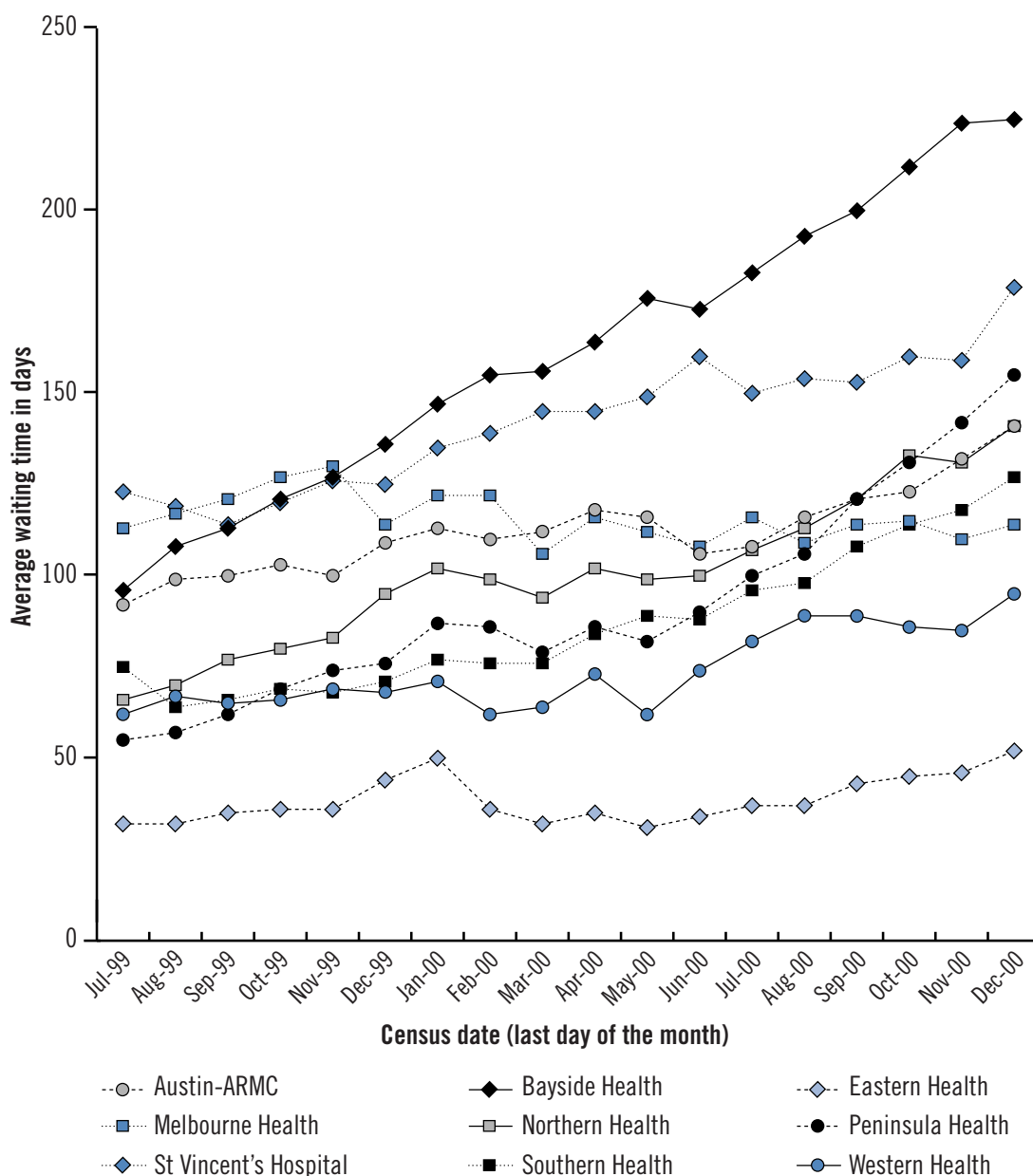
A Category 1 (urgent patient) is where admission within 30 days is desirable for a condition that has the potential to deteriorate quickly to the point that it may become an emergency.

* For the purposes of comparability, hospitals have been grouped according to the present Health Service configuration to derive average waiting times prior to 1 July 2000.

Source: Elective Surgery Information System

With the exception of Eastern Health and Melbourne Health, average waiting times for category 2 (semi-urgent) patients in the metropolitan health services have been steadily increasing over the period from 31 July 1999 to 31 December 2000.

Figure 3: Average Waiting Time of Category 2 (Semi-Urgent) Patients on the Waiting List by Metropolitan Health Service*



Data for September quarter and December quarter 2000 are provisional and subject to change.

A Category 2 (semi-urgent patient) is where admission within 90 days is desirable for a condition causing some pain, dysfunction or disability, but which is not likely to deteriorate quickly or become an emergency.

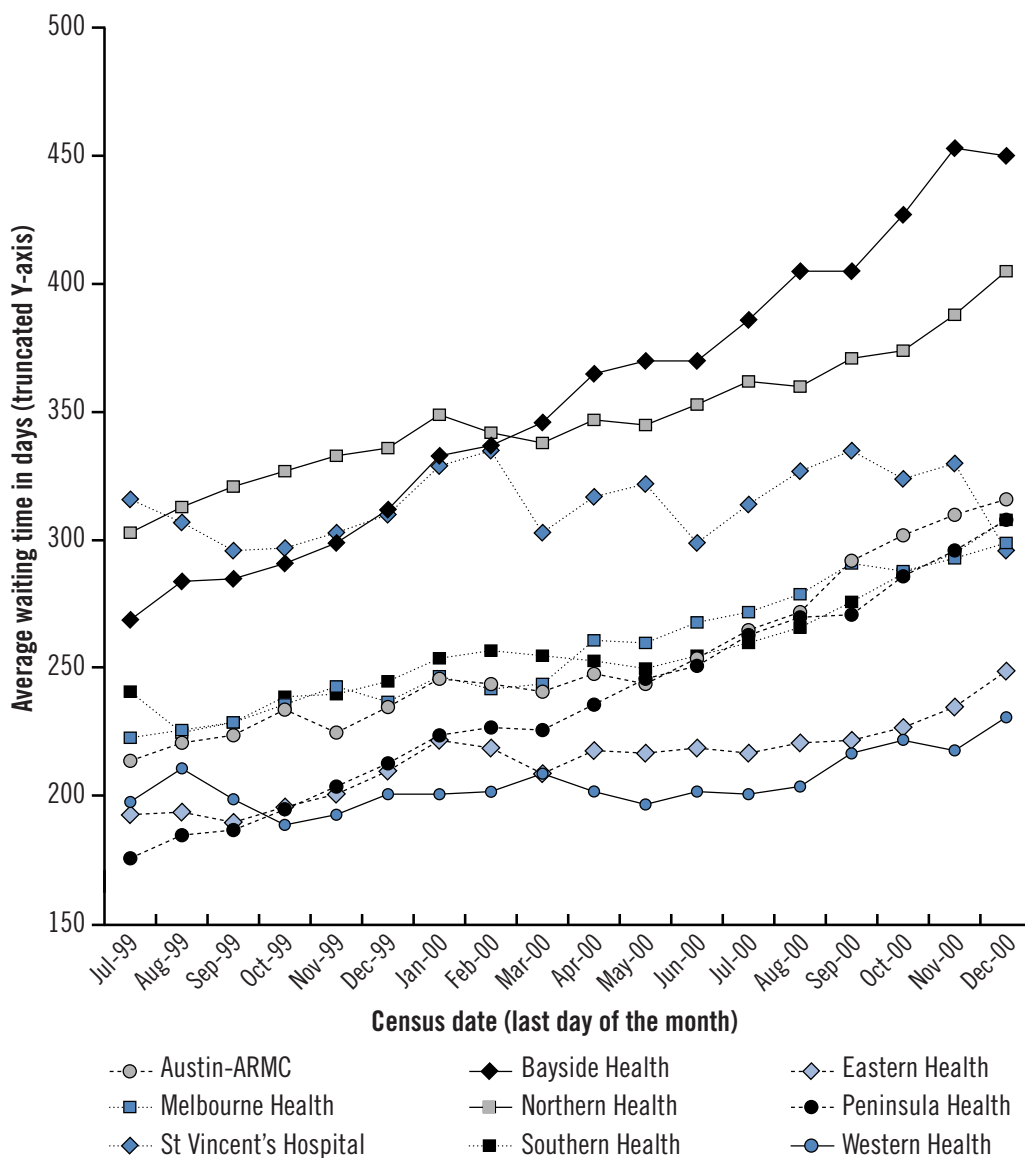
* For the purposes of comparability, hospitals have been grouped according to the present Health Service configuration to derive average waiting times prior to 1 July 2000.

Source: Elective Surgery Information System

Average waiting times for most of the metropolitan health services were at their highest at 31 December 2000 with Bayside Health and St Vincent's Hospital having the longest times, substantially longer than the other metropolitan health services, rising to their highest at 225 days and 179 days respectively.

As at 31 December 2000, the average waiting times for all the metropolitan health services, except for Eastern Health, were above the clinically recommended waiting time of 90 days.

Figure 4: Average Waiting Time of Category 3 (Non-urgent) Patients on the Waiting List by Metropolitan Health Service



Data for September quarter and December quarter 2000 are provisional and subject to change.

A Category 3 (non-urgent patient) is where admission some time in the future is acceptable for a condition causing minimal or no pain, dysfunction or disability, but which is unlikely to deteriorate quickly and which does not have the potential to become an emergency.

Source: Elective Surgery Information System

Average waiting times for category 3 (non-urgent) patients in the metropolitan health services have been increasing steadily over the period from 31 July 1999 to 31 December 2000. The most notable rate of increase was observed for Bayside Health (high of 450 days) and Peninsula Health (high of 308 days) with Northern Health (high of 405 days) and Melbourne Health (high of 299 days) showing more moderate rates of increase.

The Patient Management Task Force

An objective of the Task Force is to engage actively with hospital management and clinicians in dealing with problems of access to emergency services and elective surgery—both at the individual health service level and in professional forums.

The Patient Management Task Force was set up November 2000 to identify specific areas for improvement in in-hospital patient management processes and to advise on system factors that will encourage best practice in patient management. An objective of the Task Force is to engage actively with hospital management and clinicians in dealing with problems of access to emergency services and elective surgery—both at the individual health service level and in professional forums. The Task Force is also seeking to obtain views from a wide range of stakeholder groups on effective solutions. The Task Force's terms of reference and membership are at Appendix 1.

The Task Force is focusing on major metropolitan hospitals² and is carrying out its work in three stages:

- Stage 1, the information gathering stage. An overview paper, *Serving the Needs of the Patient: Better Patient Management in Melbourne's Public Hospitals*, was released in March 2001.
- Stage 2 involves producing papers on 'action areas' for consideration and comment by the field. Papers are being published on the following topics:
 - Emergency services
 - Ambulatory care
 - Multi-day medical and elective surgery patients
 - Services for older people
 - Improving the system
 - Care decision making.
- Stage 3 of the Task Force's work will be the preparation of a short final paper which will include a summary of its principal themes, key areas for action and incorporating any changes to the views of the Task Force as a result of comments received.

2 The Alfred Hospital (Bayside Health); Austin and Repatriation Medical Centre; Box Hill, Maroondah and Angliss hospitals (Eastern Health); Frankston Hospital (Peninsula Health); Monash Medical Centre (Clayton and Moorabbin) and Dandenong Hospital (Southern Health); Northern Hospital (Northern Health); Royal Melbourne Hospital (Melbourne Health); St. Vincent's Hospital; Western Hospital and Sunshine Hospital (Western Health).

This paper focuses on patient management processes and models of care for planned public hospital patients. The emphasis is on better access to treatment and care through improved utilisation of hospital beds, rather than through increased numbers of hospital beds.

This paper draws extensively on two literature reviews commissioned by the Patient Management Task Force from La Trobe University and the Centre for Clinical Effectiveness, Monash Institute of Public Health with the Planning and Development Unit, Southern Health. The literature reviews are available at the Task Force Web site at <http://www.dhs.vic.gov.au/ahs/patman>. However, the paper does not contain a detailed or comprehensive review of all the available data, especially with respect to variations in patterns of practice in Victoria (and the causes of those variations).

Providing Feedback

The Patient Management Task Force invites you to submit your views and comments on this paper and its recommendations to:

Patient Management Task Force
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Email: patient.management@dhs.vic.gov.au

Recommendations

1. The Department of Human Services should adopt the DOSA rate as a key performance indicator as part of a suite of performance indicators to be reported by all major hospitals. The Department should publish a specialty-by-specialty report on hospital DOSA rates.
2. Metropolitan health services should collaborate with clinicians (including doctors, nurses and other health care workers) and with each other to achieve best practice DOSA rates.
3. Metropolitan health service boards should include the DOSA rate as a key performance indicator in the performance plans of CEOs.
4. All metropolitan health services should have comprehensive pre-admission programs.
5. The Department of Human Services should commission the preparation and dissemination of an implementation kit and best practice guidelines on pre-admission programs.
6. Metropolitan health services should investigate the feasibility and cost of quarantining beds for elective admissions.
7. Metropolitan health services should develop action plans for a more intensive use of existing facilities during current low-activity periods. They should also ensure that they are prepared for 2001 winter demand pressures.
8. Metropolitan health services should review weekend and weekday admission and discharge practices and move as quickly and as closely as possible to a continuous 24-7-365 cycle. They should take collaborative action to improve Sunday discharges and avert Monday congestion.
9. The Department of Human Services should provide advice and guidelines to metropolitan health services on the establishment of medi-hotels including a formal evaluation of the cost-benefit of medi-hotels in Victoria and elsewhere.
10. Metropolitan health services should explore opportunities to increase access to elective surgery by developing a medi-hotel or similar arrangements.
11. The Department of Human Services should develop a casemix adjusted HITH substitution rate. In the context of the 2001–02 health service agreement, metropolitan health services and the Department of Human Services should agree how and over what timeframe each metropolitan health service plans to achieve the benchmark substitution rate.
12. In 2001–02, the Department of Human Services should commission two or three pilot projects to expand HITH through the use of information and communications technology.

13. All metropolitan health services should adopt an integrated bed management system based on the principles identified by the National Demonstration Hospitals Program.
14. In collaboration with the industry, the Department of Human Services should support the implementation of a robust computer-based waiting list optimisation system within the major hospitals.
15. In partnership with the industry, the Department of Human Services should develop means to share information, knowledge and experience in the development and application of pathways.
 - By 30 June 2001, the Department should commission an appropriate organisation to establish a collaborative forum on pathways with a view to it becoming self-sufficient over time.
 - The forum should have an initial focus on a small number of high volume conditions (examples include chronic obstructive airways disease, fractured neck of femur and chest pain).
16. Metropolitan health services should make better use of integrated clinical care pathways in order to avoid duplication or delay in the provision of care and to coordinate the roles of different care professionals in the treatment of patients.
17. The Department of Human Services should commission the development of computer-based patient flow modelling tools to assist metropolitan health services in forward planning their elective caseloads.
18. The Department of Human Services should enhance the Clinicians Health Channel to disseminate data on variations in clinical practice.
19. In collaboration with clinicians, researchers and hospitals, the Department of Human Services should investigate the desirability and practicability of a clinical categorisation system for elective medical patients that is suitable for the Victorian health system. Subject to feasibility, a pilot project could be developed during 2001–02 and implemented in 2002–03.
20. In collaboration with clinicians and hospitals, the Department of Human Services should develop a ‘day of medical admission rate’ (DOMA) analogous to the DOSA rate.
21. The Advisory Committee on Access to Elective Surgery, in conjunction with the Department of Human Services, should investigate the feasibility of metro-wide coordination of waiting lists and ways of dealing with the barriers to greater integration of waiting lists. The benefits and implications for patients should be the prime consideration in this investigation. The Committee should report by 30 September 2001.

22. Metropolitan health services should make arrangements with other (metropolitan and regional) health services to improve access for patients requiring certain types of elective surgery.
23. As part of the development of the metropolitan health services plan, the Department of Human Services should coordinate the development of elective surgery facilities, especially in the peripheral hospitals. In some areas, specialty planning needs to be undertaken and decisions made about the mix, volume and location of these services.
24. Together, metropolitan health services and the Department of Human Services should establish collaborative structures involving clinicians (doctors, nurses and other health care workers), hospital executive management and the Department to promote the achievement of the patient management and clinical practice improvement objectives proposed by the Task Force.
25. The Department should agree on a small set of specific improvement targets with metropolitan health services as part of the annual health service agreement process with an at-risk payment tied to the metropolitan health service's progress towards meeting those targets. These arrangements should commence with the 2001–02 health service agreement.

Observations and Findings

From its discussions with clinicians, managers and other stakeholders, the Task Force makes three principal observations about the need to improve service delivery:

- There are many examples of innovation in patient management practice that, if applied more widely across the metropolitan health services, would improve both the system's cost-effectiveness and its capability to respond to demand. **Observations and Findings 1–9**
- Improvements in access to services, and achieving a fair balance between the needs of elective and emergency patients and between medical and surgical patients, could be better supported by wider dissemination and discussion of information about differences in practice and by improving the planning and distribution of services. **Observations and Findings 10–12**
- The implementation of recommended patient management practice changes should not be left only to the discretion of individual metropolitan health services. More collaborative approaches are needed to promote the widespread implementation of innovations. Funding arrangements could be more closely linked to supporting practice improvement. **Observation and Finding 13**

1. Admission on day of surgery improves bed utilisation. Day of surgery admission rates vary substantially between metropolitan hospitals.

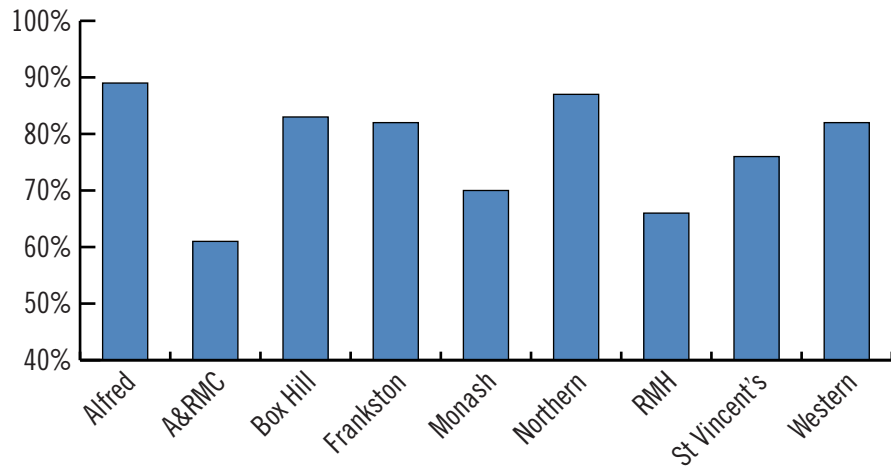
Improved utilisation of hospital beds and, therefore, access to elective surgery, is possible if patients are admitted on the day of their surgery. Day of surgery admissions (DOSAs) are increasing, although rates vary between hospitals for reasons including staff practices, procedure complexity, available diagnostic services and available facilities. Admission on day of surgery generally reduces overall length of stay by at least one day.

A literature review commissioned by the Task Force found no evidence that admitting people on day of surgery delays discharge or increases morbidity or mortality.

For selected groups of patients, there is evidence that admission on the day of surgery is safe (as measured by level of pre-operative, intra-operative and post-operative complications) and cost-effective. This is based on studies of patients admitted for coronary artery bypass grafting, aorto-iliac surgery and thyroidectomy.

There is no evidence that admitting people on day of surgery delays discharge or increases morbidity or mortality.

Figure 5: Day of Surgery Admissions for the Six Months July–December 2000



Source: Data provided by hospitals

DOSA rates reported to the Task Force for the six months to December 2000 vary markedly, ranging from 61 per cent to 89 per cent. The Alfred and Northern hospitals have the highest DOSA rates, above 85 per cent. The Austin and Repatriation Medical Centre's rate was 61 per cent. However, the Task Force is not confident about the accuracy of these data nor that hospitals are collecting data on a common or systematic basis.

The industry needs to establish common definitions and counting rules to describe a 'day of surgery admission', as well as to identify priority conditions and treatments for day of surgery admissions and establish benchmark targets.

The New South Wales Health Council recommended a DOSA rate of 80 per cent for public hospitals in that State to apply from 1 July 2000. The Task Force believes that the following targets should be set for all Victorian metropolitan health services, to apply from 1 July 2001:

- A minimum of 85 per cent average for all specialties.
- 95 per cent in the following specialty areas:
 - ear, nose and throat
 - ophthalmology
 - orthopaedics
 - plastic surgery
 - urology.

Achieving high DOSA rates depends on a range of factors. During presentations to the Task Force, it became apparent that strong clinical leadership was a major factor in this improvement. Where DOSA rates were high, clinicians spoke of the strong focus on ensuring a close relationship with pre-admission clinics, identifying carefully those patients who were unsuitable for DOSA, and minimising the risk of late cancellation of surgery. Services where DOSA rates were lower generally did not demonstrate the same level of understanding of these relationships, and awareness of DOSA rate performance was low as this information was not readily available.

Recommendations

1. The Department of Human Services should adopt the DOSA rate as a key performance indicator as part of a suite of performance indicators to be reported by all major hospitals. The Department should publish a specialty-by-specialty report on hospital DOSA rates.
2. Metropolitan health services should collaborate with clinicians (including doctors, nurses and other health care workers) and with each other to achieve best practice DOSA rates.
3. Metropolitan health service boards should include the DOSA rate as a key performance indicator in the performance plans of CEOs.

2. A key building block in improving DOSA rates is the use of pre-admission processes to assess patients' readiness for surgery and to identify higher risk elective patients.

Pre-admission clinics can be used in most areas of surgery. Pre-admission processes are important for DOSA patients as there is less time to deliver necessary information to the patient and ensure that consent procedures have been completed and results are in order. There is well-established evidence for the use of pre-admission programs. The issue for metropolitan health services is not whether to establish these programs, but to ensure that they are well implemented and functioning effectively.

Pre-admission assessment typically begins with a review of the pre-admission form by a nurse using agreed criteria.³ In the public sector, the nurse may refer the patient to a pre-admission assessment clinic to ensure that the patient's health, preparedness and home support are consistent with the requirements of the procedure.

The Task Force identified considerable variation in pre-admission practice across metropolitan health services. In some hospitals all elective patients must attend a pre-admission clinic. In other hospitals where specific criteria have been developed, only a proportion of the elective patients is required to attend a pre-admission clinic. In one hospital, the patients received a copy of their clinical pathway as part of their education and preparation for admission. This includes the procedure, the post-operative management and the expected length of stay. The ability to separately identify cancellation rates for those who do and those who do not attend a pre-admission clinic is an important quality measure.

The issue for metropolitan health services is not whether to establish pre admission programs, but to ensure that they are well implemented and functioning effectively.

³ Commonwealth Department of Health and Aged Care (2000), *Strengthening day surgery: lessons in practice from some Australian case studies*. p. 6

Case Study: A Good Practice Model of Pre-Admission Clinics, Frankston Hospital

- All patients complete a pre-admission health questionnaire. A pre-admission nurse reviews this.
- Pre-admission is conducted using criteria and a triage model to assess a patient's need for a structured pre-admission visit.
- Some patients do not attend a clinic, being referred to their GP to arrange certain pathology and radiology procedures. Another group of patients attend Frankston Integrated Care Centre for a formal pre-admission clinic.
- Patients who are required to attend a pre-admission clinic are given a booked outpatient appointment.
- Liaison nurses who are in contact with the patients manage the coordination of this pre-admission service.

The key characteristics of comprehensive pre-admission programs that function effectively include:

- Admissions policies that focus on how the hospital will best schedule resources, such as beds and theatre time, for elective patients.
- Admissions, bed management and discharge policies that are developed in collaboration with GPs and community-based health services.
- Improved systems for maintaining records of all resources, such as beds and theatre time committed to date, and for scheduling beds for elective patients from the time of their admission and throughout their expected length of stay.
- Involvement of other professionals, such as bed managers, in decisions about the number and type of patients to admit on each day—to ensure that the full impact of these decisions on hospital resources is understood.
- New ways of preparing elective patients for theatre at a place other than an acute ward, for example, the introduction of admissions lounges.

Recommendations

4. All metropolitan health services should have comprehensive pre-admission programs.
5. The Department of Human Services should commission the preparation and dissemination of an implementation kit and best practice guidelines on pre-admission programs.

3. Quarantining a limited number of beds could provide a cost-effective option to improve access for elective patients in some metropolitan health services.

As in all complex systems, some spare capacity is essential for the effective management of unplanned peaks in demand. A study by Bagust et al.

found that 'Risks are discernible when average bed occupancy rates exceed about 85 per cent, and an acute hospital can expect regular bed shortages and periodic bed crises if average bed occupancy rises to 90 per cent or more'.⁴

Some metropolitan health services are able to develop elective-only surgical campuses or units. Such elective facilities would need to run at, or as close as possible to, 100 per cent bed occupancy to maintain efficiency. The advantages of running such facilities on a separate campus are that:

- Beds are only used for elective surgery patients.
- Beds are not used for emergency medical patients.
- Nursing staff and support services are geared to deal with the requirements of a surgical focus.

There is also the opportunity to develop a small number of quarantined elective beds within an already existing staffed area. One such example is at the Austin and Repatriation Medical Centre. The Austin has programmed a small unit of 10 elective surgery beds. In a 10-week period, 141 patients with a value of 126 Weighted Inlier-equivalent Separation (WIES) and an average length of stay of 2.4 days were managed in these beds. These patients were admitted from the category 2 waiting list.

For this model to be successful, there needs to be an executive-led commitment that these beds are only for elective patients. Hospitals should investigate different models and should share experiences and learning with their peers.

Recommendation

6. Metropolitan health services should investigate the feasibility and cost of quarantining beds for elective admissions.

4. There are distinct patterns in hospital activity across the seasons with lower activity generally around the Christmas–New Year and Easter periods. These lower-activity periods present opportunities to use the available capacity for elective admissions.

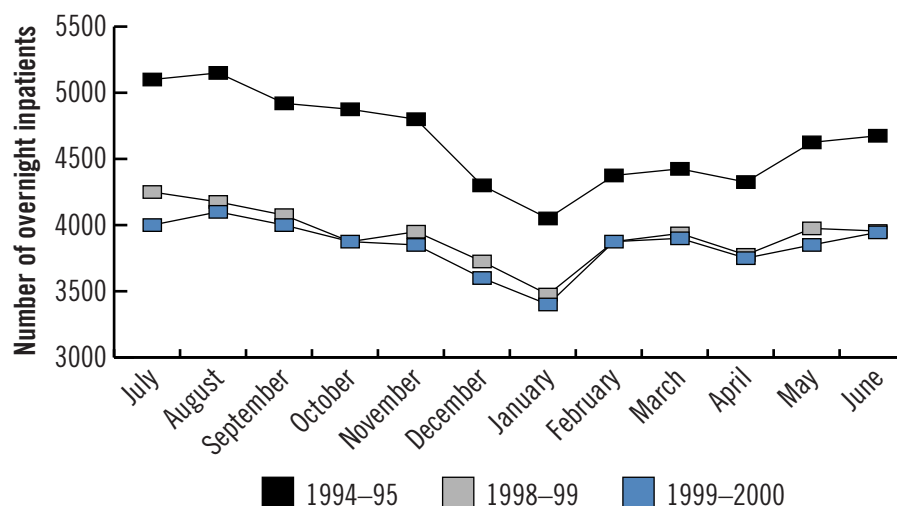
Analysis of seasonal variations in Victorian public hospitals shows that, historically, hospitals experience periods of lower occupancy during Easter and the Christmas–New Year breaks and at some other times. Operational factors, including staffing and maintenance, are common reasons for the breaks. However, in the light of the tight bed capacity and high demand for treatment, these breaks offer potentially valuable opportunities for metropolitan health services to increase elective admissions.

There are limits to the occupancy rates that can be achieved without considerable risk to the efficient delivery of emergency care.

Early planning and preparation enables more effective use of hospitals' knowledge of emergency admissions to assess likely demands on resources.

⁴ Bagust, A., Place, M. and Posnett, JW. 'Dynamics of bed use in accommodating emergency admissions: stochastic simulation model', *BMJ* 1999; 319: p. 155–8.

Figure 6: Monthly Average Overnight Inpatient Census, 1994–95, 1998–99 and 1999–2000



Source: *Seasonal Analysis of Activity in Victorian Public Hospitals*, page 11

Seasonal planning should include plans to meet winter pressures as well as scheduling work in current low-activity periods.

Elective care should be scheduled through the year to free up resources during the winter months (because of the expected increases in emergency medical demand).

However, the ability of metropolitan health services to increase activity during holiday periods depends on workforce and patient availability. Some patients are reluctant to have their surgery during the summer period and some staff are not available due to holidays. However, early planning and preparation should make more effective use of hospitals' knowledge of patterns of emergency admissions to assess likely demands on their resources.

Hospitals can make better use of tools to improve planning of the number and type of elective admissions they can accept.

More intensive use of existing facilities during current low-activity periods could be planned, including:

- Using available bed capacity at Christmas–New Year and Easter to increase elective admissions.
- Allocating surgery across the seasons so that in winter more day cases are performed with an emphasis on multi-day surgery in summer.
- Extending day surgery recovery room hours until 10.30 pm.
- Performing elective surgery in the afternoon. Recovery room hours could be extended so that patients can be monitored during the evening within a day surgery area and not occupy an overnight bed.
- Investigating the cost-benefit of performing Saturday surgical lists.

Seasonal planning should include plans to meet winter pressures as well as scheduling work in current low-activity periods. The UK National Health Service has issued guidelines to assist health and social care agencies prepare for winter.⁵ The Task Force suggests that metropolitan health services adopt similar approaches to planning for winter in 2001.

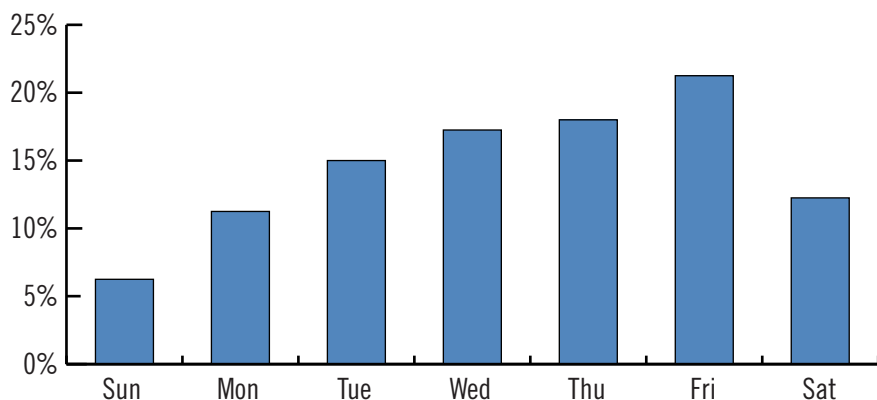
Recommendation

- Metropolitan health services should develop action plans for a more intensive use of existing facilities during current low-activity periods. They should also ensure that they are prepared for 2001 winter demand pressures.

5. There are notably more admissions and fewer discharges on Mondays.

Monday (or the Tuesday following a Monday public holiday) is the worst day for ambulance bypass. Patients who could be discharged on the weekends are being kept in hospitals, reducing the flow of patients through the system.

Figure 7: Overnight Stay Elective Inpatient Separations by Day of Discharge 1999–2000



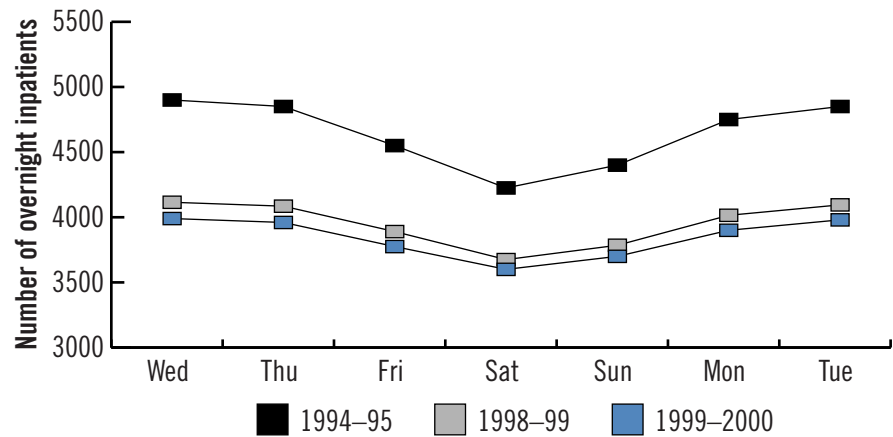
Source: VAED

The number of patients in hospital peaks on Wednesdays with a trough on Saturdays. Weekday patient levels are much higher than weekend patient levels. The difference between the trough on Saturday and the peak on Wednesday is narrowing. The data suggest that hospitals have been smoothing out their weekly workloads in response to bed pressures.

Common causes of delayed patient discharges appear to be the timing of decisions to discharge and the poor scheduling of support services.

5 <http://www.doh.gov.uk/winter/criteria.htm>

Figure 8: Average Overnight Inpatient Census by Day of the Week 1994–95, 1998–99 and 1999–2000



Source: *Seasonal Analysis of Activity in Victorian Public Hospitals*, page 12

The most common causes of delayed patient discharge are the timing of consultants' decisions and poor scheduling of support services. This is essentially driven by the work practices of clinicians and other health care workers. Such practices include:

- Lack of consultant ward rounds at weekends.
- Inability of junior medical staff and/or senior nursing staff to discharge patients over the weekend and out of hours.
- Insufficient time to organise home support services.
- Lack of documented discharge criteria to promote discharges over the weekend.
- Lack of information and understanding about essential discharge practices.
- Lack of a multidisciplinary approach to formulating an accurate estimated date of discharge.
- Lack of timely test results.

The challenge is to ensure that the right hospitals are doing the right work at the right time.

With respect to discharge, best practice hospitals:

- Plan patient discharge earlier—before or at the time of the patient's admission—and regularly examine the internal causes of delayed discharges and work to resolve the obstacles identified.
- Tackle external causes of delay, for example, by notifying community services more promptly of a patient's need for assessment which may help them initiate patient assessment and ongoing care services.
- Develop the role of discharge coordinators to ensure that any internal causes of delayed discharge are addressed, and to secure the maximum degree of cooperation between health and community social services to meet the needs of discharged patients.
- Provide suitably situated and staffed discharge lounges for patients ready to leave hospital, to enable them to vacate beds promptly and allow new patients to be admitted to them.

- Maximise the use of alternative services, such as the post-acute care program, to allow patients to return home promptly, as well as step-down care beds, to be used where there are delays in the provision of services from other care providers and where occupation of an acute ward bed is no longer appropriate.

The Victorian Effective Discharge Strategy has produced an extensive body of information and guidance to hospitals on best practice in discharge planning.⁶ The challenge is to ensure that the right hospitals are doing the right work at the right time.

Extended hours or 24-hour services are not required in every hospital but every metropolitan health service needs to ensure that patients are guided to appropriate care whatever the time of day and that key hospitals in the health service are operating on a continuous 24-7-365 cycle.

Recommendation

8. Metropolitan health services should review weekend and weekday admission and discharge practices and move as quickly and as closely as possible to a continuous 24-7-365 cycle. They should take collaborative action to improve Sunday discharges and avert Monday congestion.

6. Some metropolitan health services have developed medi-hotels as an alternative to inpatient care in order to decrease the pressure on overnight beds.

A 'medi-hotel' is intended to provide high quality accommodation suited to the needs of mobile low-dependency patients at less cost than a traditional ward/unit. Typically, these are set up through a contractual arrangement with a commercial accommodation provider. Patients admitted for acute care and patients awaiting discharge are appropriate for care in a medi-hotel.⁷

Patients who are involved in the medi-hotel model are predominantly patients booked for surgery the following day. These patients may be from the country, peripheral metropolitan or local area. They attend the pre-admission clinic and must be assessed as not requiring an overnight inpatient bed prior to admission. They are then booked directly into the hotel from the elective booking office.

Evidence suggests that the advantages of such an arrangement include:

- Patients are not using an inpatient overnight bed
- Cost and resource savings
- Use of a local facility

6 See <http://www.dhs.vic.gov.au/ahs/quality/external.htm>

7 NHS Management Executive (1995) *Patient hotels, a quality alternative to ward care* London HMSO.

- Promotion of higher DOSA rates
- High levels of measured patient satisfaction.

There is potential to develop the model further utilising registered nurses on site for post-day surgery procedures, post-chemotherapy patients, day medical patients, and transplant work up patients, as well as for hospital in the home (HITH) in the hotel.

Recommendations

9. The Department of Human Services should provide advice and guidelines to metropolitan health services on the establishment of medi-hotels including a formal evaluation of the cost-benefit of medi-hotels in Victoria and elsewhere.
10. Metropolitan health services should explore opportunities to increase access to elective surgery by developing a medi-hotel or similar arrangements.

7. Hospital in the Home (HITH) relieves pressure on beds by substituting in-hospital care with care at home. There are opportunities for metropolitan health services to increase the use of HITH services.

There are clear opportunities for metropolitan health services to increase the rate of substitution of in-hospital care with home-based treatment.

HITH services reduce the use of hospital beds either as a direct admission from emergency departments, planned admission from home or part way through a hospital episode.

In the four years from July 1996 to June 2000, HITH separations and HITH days in Victorian hospitals have grown by an average of 21 per cent and 19 per cent a year respectively. In 1999–2000, HITH comprised 2 per cent of total separations and 3.7 per cent of total days in the 43 hospitals (including all metropolitan health services) providing HITH services. However, there are clear opportunities for metropolitan health services to increase the rate of substitution of in-hospital care with home-based treatment. The HITH episode should be part of the clinical path or treatment plan for the patient.

The extent of use of HITH for elective and emergency patients varies markedly among metropolitan health services—within a range of 0.2 per cent to 14.5 per cent of total separations in 1999–2000. While these differences reflect significant practice variation, the diversity in the use of HITH and the conditions for which it is used mean that the relative complexity of the caseload must be taken into account when making comparisons.

The relative complexity of each hospital's patient load will influence the extent to which HITH can be substituted for an in-hospital stay. The Task Force has examined diagnosis related group (DRG) data on variations in use of HITH across the 12 major metropolitan hospitals and suggests that a HITH substitution rate should be developed which takes casemix into

account. The measure would need to be an overall hospital rate to report as a key performance indicator (KPI), rather than a mass of individual rates for specific DRGs. This would enable hospital-specific targets that reflect benchmark practice to be set as part of the annual Health Service Agreement.

Substituting Hospital in the Home for Inpatient Care

HITH cases are commonly those that entail intravenous medications such as antibiotics (for example, for patients with cellulitis), anti-coagulants (patients with deep vein thrombosis or following heart surgery) and cytotoxic drugs (for cancer patients). Some chronic diseases such as cystic fibrosis and multiple sclerosis can also have a significant part of an acute admission managed in the patient's home.

Different hospitals use HITH in very different ways. For example, in 1999–2000 across the five major tertiary hospitals there was a home component for 6 per cent of all patients having coronary bypass surgery without invasive investigation of the heart. Three of these hospitals had a home component for around 40 per cent of patients, but the in-home segment was short, entailing only one or a few days. One of the five used it for only seven patients, but these were long stay patients (average stay around 20 days) for whom the home component amounted to half their stay. The fifth hospital had only one patient with a HITH stay.

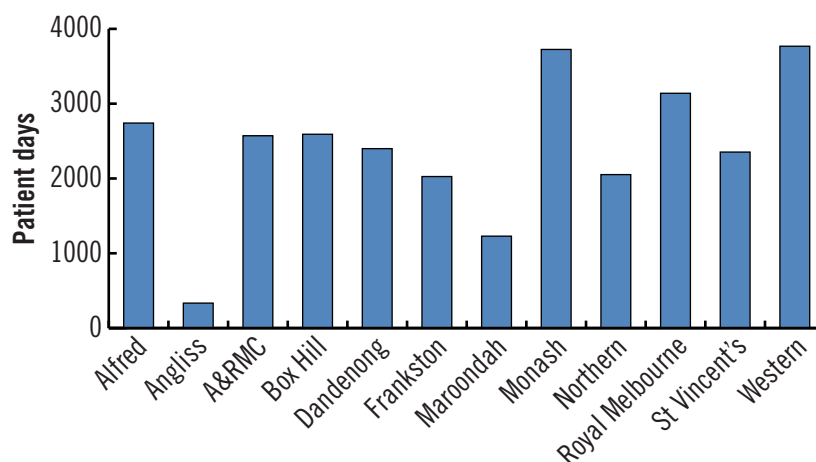
Determining a reasonable benchmark in relation to the proportion of cases that could be managed in a patient's home could be tackled in a variety of ways.

A simple analysis was carried out for those DRGs in the 12 major hospitals which had more than 40 separations in 1999–2000 with a HITH component (see Appendix 2). The HITH usage rate (measured as length of stay) for the hospital with the highest HITH uptake in each DRG was applied to all the separations in that DRG. The analysis shows that if all hospitals used HITH for those DRGs at the rate of the highest hospital then around 29,000 in-hospital bed days could possibly be freed—equivalent to approximately 80 beds. This would entail something like a doubling of HITH days across these DRGs, except for Angliss Hospital where HITH usage is already high.

Such an analysis does not allow for a number of other factors affecting HITH utilisation such as variations in patient complexity between hospitals, and the possibility that those hospitals using HITH at lower rates may already have clinical processes that allow for shorter lengths of stay.

continues

Figure 9: In-hospital patient days converted to HITH days if hospitals used HITH at top usage rates for selected DRGs,* 12 major hospitals, 1999–2000



* Based on all DRGs with 40 or more HITH separations excluding chemotherapy. Also excludes a number of other cancer DRGs with a large number of HITH separations, but where only one hospital (A&RMC) was using HITH to a significant extent.

Source: VAED

In a project conducted by The Alfred Hospital to develop HITH within the nursing home, preliminary data show a potential saving in bed days. There are opportunities across the system to explore this model of care further. The Task Force encourages all metropolitan health services to investigate opportunities to develop HITH within the nursing home.

The future of HITH can be seen by the development of this program in other countries. The United States Health Care system has embraced the use of HITH and technology. Some examples of conditions that are monitored at home using technology in American hospitals are: heart failure, lung disease, diabetes, chronic wounds, patients residing at home who normally would be in residential care facilities and post-operative patients.

Recommendations

11. The Department of Human Services should develop a casemix adjusted HITH substitution rate. In the context of the 2001–02 health service agreement, metropolitan health services and the Department of Human Services should agree how and over what timeframe each metropolitan health service plans to achieve the benchmark substitution rate.
12. In 2001–02, the Department of Human Services should commission two or three pilot projects to expand HITH through the use of information and communications technology.

8. Metropolitan health services have different approaches to bed management. The effectiveness of these approaches in reducing fragmentation and promoting coordination is variable. A position with central hospital-wide responsibility and authority in bed allocation is a key success factor.

Metropolitan health services must balance the access demands of emergency and elective surgical and medical patients to available beds. There is unprecedented pressure on hospitals to ensure that inefficiencies in the use of existing bed resources are minimised.

In addition to managing a patient's continuum of care, an integrated bed management system involves a coordinated health service/hospital-wide approach to the allocation of beds, irrespective of their location or designated use. The system requires a collaborative culture that aims to ensure that a patient, whether emergency or elective, has access to a bed according to clinical priority. While metropolitan health services have adopted bed management approaches in various forms, the effectiveness of the systems is variable.

Systems that are not supported by relevant and timely information, effective communication processes, and transparent and accountable organisational processes, often lead to rivalry for beds between various interests within the hospital (including emergency department, waiting list managers and clinicians). The lack of an agreed system of allocating beds affects the ability of a metropolitan health service to prioritise admissions effectively, according to clinical need.

The development of a bed allocation process, that is credible and supported by key decision makers within a metropolitan health service, underpins the continued success of an integrated bed management system. The development of a data system that provides timely and comprehensive health service-wide information is a vital component in the process. An integrated bed management system developed in conjunction with clinicians should be based on the principles identified in the National Demonstration Hospitals Program (NDHP). These principles include:

- There is an organisation-led commitment to manage all hospital beds.
- There is a centralised point of authority and accountability for the allocation of all hospital resources. Bed allocation staff should have adequate authority to allocate beds.
- A bed management forum is established to identify and resolve bed management problems. Executive management should support this forum.
- Integrated bed management occurs 24 hours a day, every day including weekends, and at peak and low times.
- The allocation of beds to clinical units is notional and beds should be allocated on agreed clinical criteria.

This system requires a collaborative culture to ensure that a patient, whether emergency or elective, has access to a bed.

The lack of an agreed system of allocating beds affects the ability of a metropolitan health service to prioritise admissions effectively, according to clinical need.

The development of a bed allocation process, which is credible and supported by key decision makers within a metropolitan health service, underpins the continued success of an integrated bed management system.

- The bed allocation process is supported by accurate real time information. Information systems should enable data to be continuously collected, audited, analysed and shared to guide resource management and optimise efficiency.

Good practice guidance to hospitals and training in bed management functions is already widely available.⁸

In conjunction with improved bed management systems, waiting lists across campuses could be consolidated and managed from a whole-of-health service perspective.

Such an approach would reduce overlap and competition, and enable better internal role delineation and coordination. A computer-based waiting list optimisation system could support the management of consolidated waiting lists.

Recommendations

13. All metropolitan health services should adopt an integrated bed management system based on the principles identified by the National Demonstration Hospitals Program.
14. In collaboration with the industry, the Department of Human Services should support the implementation of a robust computer-based waiting list optimisation system within the major hospitals.

9. Patient care pathways can help to optimise length of hospital stay and efficient use of resources. A large number of clinical pathways have been developed by metropolitan health services. Except in a small number of hospitals, these are not used in a systematic way.

The benefits of evidence-based clinical pathways, particularly for surgical procedures, are well established and widely reported. While reducing lengths of stay and increasing capacity utilisation are significant benefits of improving access to beds, clinical pathways also improve patient outcomes by supporting continuous quality improvements, reduced hospital readmission rates, introduction of clinical guidelines, interdisciplinary teamwork, and increased staff and patient satisfaction. Some researchers have reported a reduction in length of stay of up to 21 per cent and a decrease in cost of up to 33 per cent.

⁸ See, for example, <http://www.archi.net.au/>

Patient Care Pathways

Patient care pathways can help to optimise length of stay and efficient use of resources.

Patient care pathways help to map out the whole sequence of good quality care that the patient will receive on admission to hospital and afterwards.⁹ Pathways have been shown to reduce length of stay, and avoid duplication or delay in the provision of care to patients.

Pathways appear to be most successful when they are targeted at specific, high volume conditions.

In a study by Shekelle, Woolf, Eccles and Grimshaw¹⁰ three key principles were identified for the development of clinical pathways:

- the development of guidelines requires sufficient resources in terms of people with a wide range of skills, including expert clinicians, health services researchers, and group process leaders and financial support;
- a systematic review of the evidence should be at the heart of every guideline;
- the group assembled to translate the evidence into a guideline should be multidisciplinary.

A study by Dowsey et al¹¹ looked at the use of clinical pathways in hip and knee arthroplasty. The study was a randomised prospective trial comparing patients treated through a clinical pathway. The results were that the patients on a clinical pathway had a shorter mean length of stay, progressed to earlier ambulation, had a lower readmission rate and had a closer match to discharge destination.

The study showed that a patient on a pathway had a 1.5 day shorter length of stay; the study also concluded that co-morbidities should not necessarily exclude patients from clinical pathways. 'Patients with co-morbid conditions may actually be better served because of the greater fastidiousness and vigilance imposed by the daily protocol.'

In consultations with metropolitan health services and the learned colleges, the Task Force found that the value of clinical pathways is widely acknowledged and many of them have been developed. The most common pathways are for total hip replacement, total knee replacement, laparoscopic cholecystectomy, acute myocardial infarction and asthma.

Much duplication could be avoided through greater sharing of information, knowledge and experience about pathways that have already been developed.

9 National Audit Office NHS Executive Inpatient admissions and bed management in NHS acute hospitals 2000

10 Shekelle, Woolf, Eccles and Grimshaw, 'Clinical guidelines Developing guidelines', *BMJ* 1999;318:593–596 (27 February)

11 Dowsey, Kilgour, Santamaria and Choong, 'A practical tool for specifying, evaluating and improving the quality of clinical practice', *MJA* 1999; 170 59–62

The Task Force also observes that the extent of development and systematic use of pathways is highly dependent on the enthusiasm and leadership of an individual or a team of clinicians. Even in hospitals where pathways are used extensively, systems and processes for analysing variances, implementing changes, evaluation and refinement, in a cycle of improving practice are often limited. Some of the reasons are lack of knowledge, lack of clinician support, commitment and leadership, the time consuming nature of such a process, and the need for technological support.

Better use of integrated clinical care pathways avoids duplication or delay in the provision of care and clarifies the roles played by the different care professionals in the treatment of patients.

Clinical pathways should take into account a number of critical success factors including:

- A strong evidence base.
- Clinical leadership and commitment to developing and implementing pathways.
- Multidisciplinary involvement (spelling out the roles and responsibilities of all involved in the handling of patients with particular conditions).
- An 'in-house' design and implementation team to address local issues.
- Implementation within a cycle of continuous improvement including variance analysis, evaluation and refinement.
- Information technology support.
- Ongoing education for staff.

The Task Force has observed that much duplication could be avoided through greater sharing of information, knowledge and experience about pathways that have already been developed. Metropolitan health services could also increase learning and improve their performance through peer reviews and comparison. To focus effort, a collaborative project on pathways could begin with a small number of high volume conditions (examples include chronic obstructive airways disease, fractured neck of femur and chest pain).

Recommendations

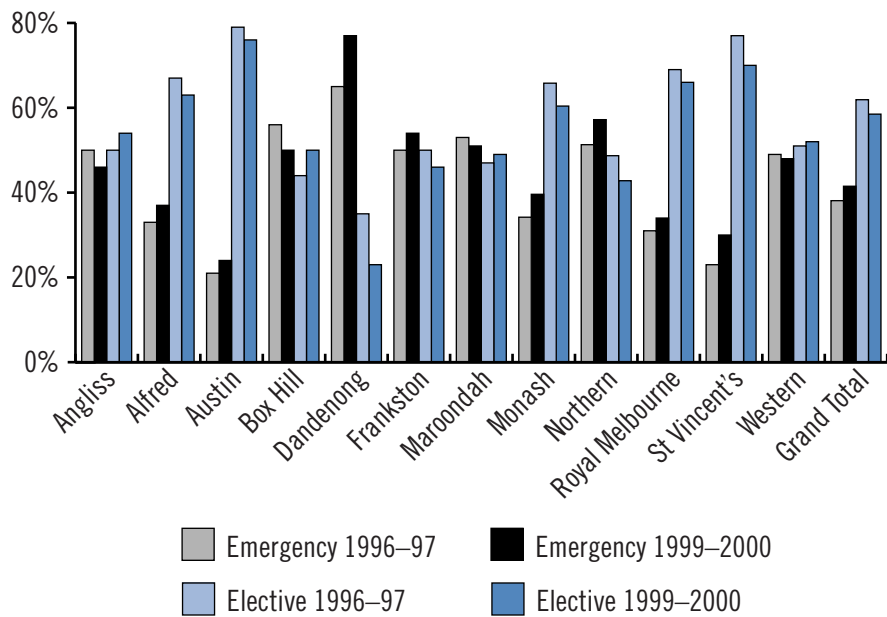
15. In partnership with the industry, the Department of Human Services should develop means to share information, knowledge and experience in the development and application of pathways.
 - By 30 June 2001, the Department should commission an appropriate organisation to establish a collaborative forum on pathways with a view to it becoming self-sufficient over time.
 - The forum should have an initial focus on a small number of high volume conditions (examples include chronic obstructive airways disease, fractured neck of femur and chest pain).

16. Metropolitan health services should make better use of integrated clinical care pathways in order to avoid duplication or delay in the provision of care and to coordinate the roles of different care professionals in the treatment of patients.

10. There are indications of a shift in the balance of hospital admissions from elective to emergency patients.

The data presented in the chart below demonstrate that there has been some notable movement in the proportion of the overnight inpatient workload represented by the various case types. The most substantial change is the shift from elective surgery to emergency medical care.

Figure 10: Proportion of Separations by Case Type, 1996–97 to 1999–2000

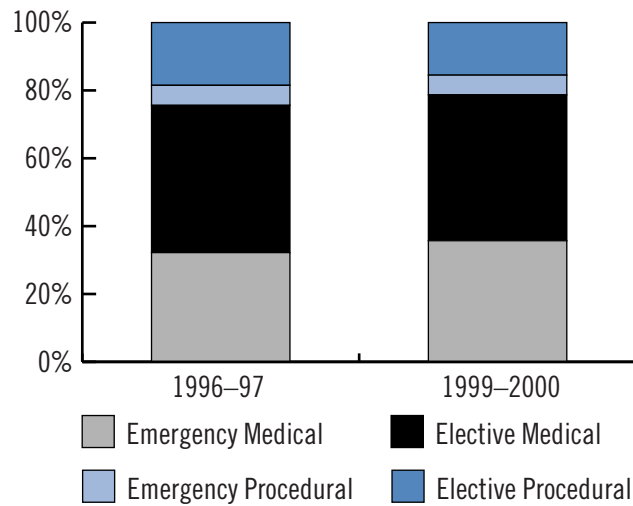


Monash includes Moorabbin and Western includes Sunshine

Source: VAED

Over the four-year period from 1996–1997 to 1999–2000, individual hospitals have balanced elective and emergency demand differently. Across the system as a whole, emergency patient separations increased from 38.1 per cent to 41.5 per cent of total separations. At Northern Hospital there was a 6 per cent increase, with a 7 per cent increase at St Vincent's and a 12 per cent increase at Dandenong.

Figure 11: Mix of Elective and Emergency Admissions 1996–97 and 1999–2000 (Excluding Maternity, Newborn and Statistical Admissions)



Source: VAED

Patient flow models have the potential to drive change by aligning clinical goals with organisational goals, a key determinant for enlisting the support of clinicians.

Wider dissemination and discussion of differences in practice would enable clinicians and managers to understand better the impact of variations in patterns of care on the balance between elective and emergency medical and surgical treatment in their hospitals. Examples vary at the hospital, unit and clinician level on comparative lengths of stay, and rates of admission from the emergency department for particular conditions (for example, chest pain). Medical interventions and treatment pathways should be compared within specialty areas and across hospitals, and metropolitan health services should monitor the extent to which well-established guidelines are being followed by their clinical staff. The Clinicians Health Channel provides access to guidelines and protocols as well as training and support links. The Channel could be enhanced to support the dissemination of timely and relevant data on variations in practice and improvement methodologies.

A number of studies have been conducted in an attempt to forecast demand for hospital beds and the implications on available bed capacity.¹² These studies used computer models to explore the dynamics within hospitals using a system approach and modelling patient flow.

Patient flow models have the potential to drive change by aligning clinical goals with organisational goals, a key determinant for enlisting the support of clinicians.

¹² Lane D., Monefeldt, C. and J Rosenhead, *Looking in the wrong place for healthcare improvements: a system dynamics study of an accident and emergency department*. 1998 London School of Economics and Political Science: London;

Bagust A, Place, M and Posnett, J, 'Dynamics of bed use in accommodating emergency admissions: stochastic simulation model', *British Medical Journal* 1999 319:155–158;

Millard P et al, 'Measuring and modelling surgical bed usage'. *Ann R Coll Surg Engl* 2000 82:75–82

The Task Force commissioned a patient flow modelling project to assess the feasibility of predicting the impact that changes to various elements of the health care system may have, if implemented.

Results suggest that a model can be developed that delivers information to hospital managers and clinicians to predict the effects of changes in various elements of hospital activity and support forward planning of the mix and volume of the hospital's work so as to help optimise performance.

Recommendations

17. The Department of Human Services should commission the development of computer-based patient flow modelling tools to assist metropolitan health services in forward planning their elective caseloads.
18. The Department of Human Services should enhance the Clinicians Health Channel to disseminate data on variations in clinical practice.

11. The clinical prioritisation of elective medical patients is not well understood.

The decision making process and clinical criteria for booking an elective medical patient are not as systematic or transparent as they are for booking a surgical patient onto a waiting list.

It is difficult to identify formal processes to set priorities for elective medical patients within metropolitan health services.

However, metropolitan health services in Victoria are not alone. There is limited research and no significant body of material on practical applications in the international literature. There is no doubt that developing a categorisation tool for this group of patients presents significant methodological and clinical challenges. However, the Task Force believes that the degree of difficulty should not stop a genuine attempt at progress in Victoria. Together, clinicians, researchers, hospitals and the Department should begin the task.

Recommendations

19. In collaboration with clinicians, researchers and hospitals, the Department of Human Services should investigate the desirability and practicability of a clinical categorisation system for elective medical patients that is suitable for the Victorian health system. Subject to feasibility, a pilot project could be developed during 2001–02 and implemented in 2002–03.
20. In collaboration with clinicians and hospitals, the Department of Human Services should develop a 'day of medical admission rate' (DOMA) analogous to the DOSA rate.

The absence of transparent clinical priority-setting processes opens up the possibility that elective medical patients may have a greater chance of being treated than their surgical counterpart with a higher level of clinical need.

12. There are wide variations in waiting lists and waiting times for different specialties among hospitals. Better role delineation and collaboration could improve the management of waiting lists across the system.

Patients waiting for treatment at some hospitals and in some specialties are at a relative disadvantage compared with their peers on other hospitals' waiting lists.

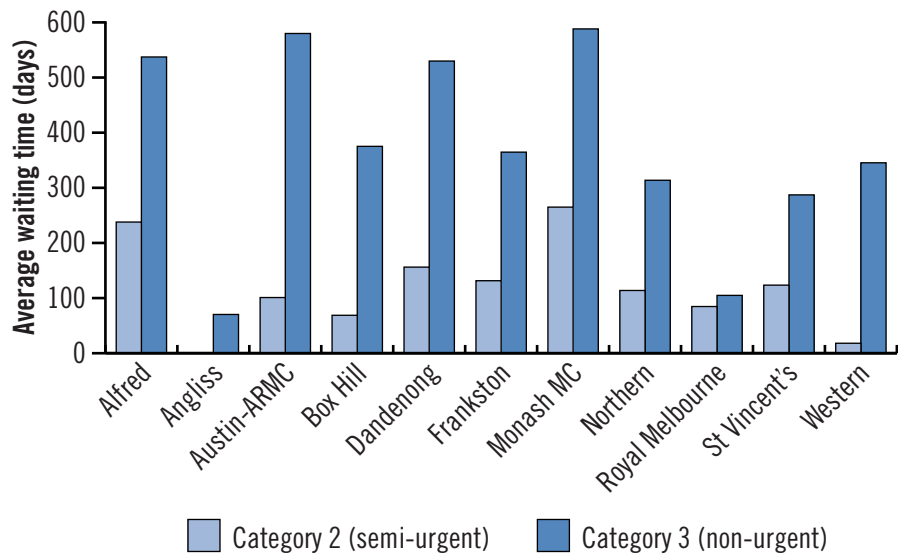
The Ministerial Review of Health Care Networks recommended that metropolitan health services should be required to:

- Develop strategies to ensure equity in waiting times within their responsibility, between specialties and in comparison with metropolitan-wide benchmarks.
- Establish a mechanism to assist consumers to make an informed choice of the location for their surgery.

Better role delineation, specialisation and collaboration between hospitals could help to reduce the differences in access to care.

The Task Force believes that the next step is to establish a consistent and integrated approach to equity across all the metropolitan health services, and publish information for consumers.

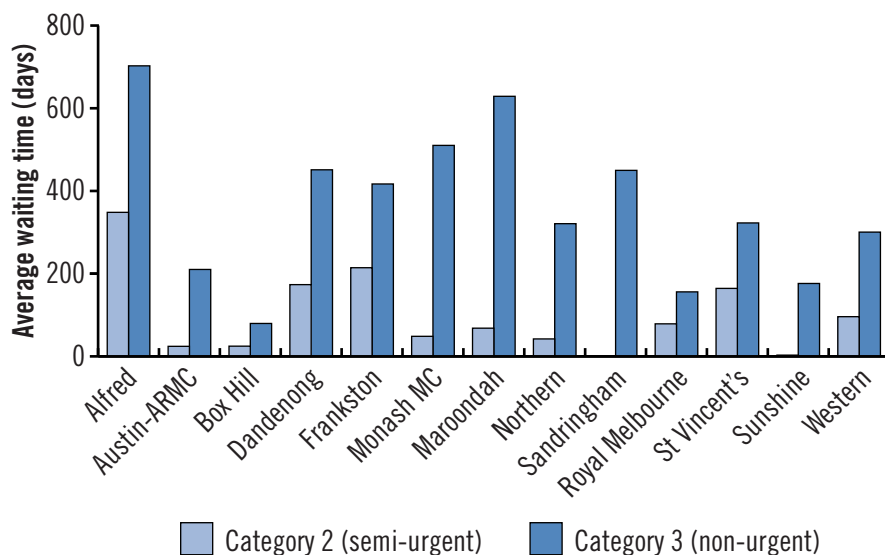
Figure 12: Average Waiting Times for Vascular Surgery as at 30 June 2000



Source: Elective Surgery Information System

The Task Force sees merit in increased use of specialist centres for some specific treatment types (for example, ophthalmology). Structured referral and follow-up systems would need to be established and arrangements made to enable patients to use the services conveniently and easily (for example, patient transport). There may be barriers for some patients (including distance and lack of family support) to use services that are far from their homes, so good access to community-based services would be essential.

Figure 13: Average Waiting Times for Plastic Surgery as at 30 June 2000



Source: Elective Surgery Information System

A patient on a waiting list at a metropolitan health service who is given the option of surgery much earlier at another hospital, for example, a metropolitan specialist hospital (such as the Royal Victorian Eye and Ear Hospital) or a regional health service or a hospital just beyond the fringes of the metropolitan area, may choose to transfer to that location. The Ministerial Review of Health Care Networks recommended developing memoranda of understanding between major regional and metropolitan hospitals, particularly for the provision of specialist treatment and care such as coronary care or intensive care. Subject to assessments of cost, patient safety and quality of care in each case, similar arrangements could be put in place to promote access for metropolitan elective surgery patients. These arrangements would cover such matters as staff secondments, dual appointments, and teaching and support services including transport arrangements and support for patients' relatives and carers. To avoid unnecessary duplication and overlap, the Department would provide guidance to hospitals on appropriate linkages and designate certain areas to tertiary centres.

Recommendations

21. The Advisory Committee on Access to Elective Surgery, in conjunction with the Department of Human Services, should investigate the feasibility of metro-wide coordination of waiting lists and ways of dealing with the barriers to greater integration of waiting lists. The benefits and implications for patients should be the prime consideration in this investigation. The Committee should report by 30 September 2001.

22. Metropolitan health services should make arrangements with other (metropolitan and regional) health services to improve access for patients requiring certain types of elective surgery.
23. As part of the development of the metropolitan health services plan, the Department of Human Services should coordinate the development of elective surgery facilities, especially in the peripheral hospitals. In some areas, specialty planning needs to be undertaken and decisions made about the mix, volume and location of these services.

13. Implementing these recommendations will require a concerted and comprehensive change strategy.

The success of the Task Force's recommendations will depend on leadership from metropolitan health services supported by the Department.

Many of the ideas and proposals are already operating in some metropolitan hospitals and have been driven by enthusiastic and committed professionals. Through collaborative approaches these initiatives need to be extended across the metropolitan area as a whole to promote improved system-wide performance.

A number of elements will be necessary to support a successful change management strategy, including:

- Collaboration across metropolitan health services along the lines of the NDHP, the Institute for Healthcare Improvement **Breakthrough** methodology or the Victorian **Designing Care** program.
- Benchmarking and comparative performance evaluation (for example, the Melbourne Benchmarking Consortium).
- Requirements mandated by the Department (for example through guidelines on the development of metropolitan health service plans and assessments of the performance of metropolitan health services as part of an annual review process).

Metropolitan health services and the Department need to develop means to share information, knowledge and experience, and establish forums for peer review and comparison.

Metropolitan health services and the Department need to develop means to share information, knowledge and experience, and establish forums for peer review and comparison. Such forums should include a focus on improvements to pre-admission processes, the development of clinical pathways across the system as a whole, as well as other areas of patient management and process improvement identified in Task Force recommendations.

The Institute for Healthcare Improvement Breakthrough model (which is already being used to improve waiting times and patient satisfaction across participating Victorian emergency departments in metropolitan and rural areas) has two parts:

- The fundamental questions: 'What are we trying to accomplish?', 'How will we know that a change is an improvement?', and 'What changes can we make that will result in improvement?'
- The Plan-Do-Study-Act cycle to test and implement changes in real work settings.

The Task Force proposes that the Department should agree to a small set of specific improvement targets with metropolitan health services as part of the annual health service agreement process. By rolling up existing specified grants and special funding programs for quality improvement and process redesign, a new simpler program could be established with an at-risk component tied to the metropolitan health service's progress towards meeting those targets.

The Task Force will provide a more detailed examination of the approaches that could be adopted in a future paper on improving system performance through capacity and capability building (including incentives and other strategies).

Recommendations

24. Together, metropolitan health services and the Department of Human Services should establish collaborative structures involving clinicians (doctors, nurses and other health care workers), hospital executive management and the Department to promote the achievement of the patient management and clinical practice improvement objectives proposed by the Task Force.
25. The Department should agree on a small set of specific improvement targets with metropolitan health services as part of the annual health service agreement process with an at-risk payment tied to the metropolitan health service's progress towards meeting those targets. These arrangements should commence with the 2001–02 health service agreement.

Funding schemes and performance measurement and accountability arrangements should support clinical practice and patient management process improvements.

Appendix 1: Patient Management Task Force

Terms of Reference

1. To identify essential organisational and patient management practices that should be in place in all hospitals.
2. To determine the extent to which these practices are occurring in metropolitan health services, identify specific areas where improvements should occur and advise on how these improvements could be quickly achieved.
3. To determine key indicators of good patient management practice and the benchmarks that should be achieved by health services.
4. To advise on incentives and other strategies that could be used to encourage health services to achieve benchmarks.
5. To communicate and engage with representative bodies of health professionals, practitioners, managers and other stakeholders in identifying and implementing good patient management practices.

Membership

Dr Michael Walsh (Chair), Chief Executive, Bayside Health

Dr Jim Breheny (Deputy Chair), Chair, Austin and Repatriation Medical Centre Board

Professor Gordon Clunie, Chair, Ministerial Advisory Emergency and Critical Care Committee

Ms Ella Lowe, Executive Director Operations, Peninsula Health

Mr Robert Burnham, General Manager, Northern Hospital

Dr Heather Buchan, Assistant Director, Quality and Care Continuity Branch, Acute Health Division, Department of Human Services

Mr Geoff Lavender, Regional Director, Barwon-South Western Region, Department of Human Services (Project Director)

Project Team

Ms Robynne Cooke, Austin & Repatriation Medical Centre

Mr Peter Lewis, Acute Health Division, Department of Human Services

Mr Nick Legge, Aged, Community & Mental Health Division, Department of Human Services

Mr Amos Yee (Acute Health Division, Department of Human Services)

Ms Julie La Gamba, Acute Health Division, Department of Human Services

Appendix 2: DRGs with 40 or More Separations Including a Component of Hospital in the Home, 1999–2000

	emerg.	elect.	total	% of total separations	% HITH days in total patient days in benchmark hospital	% HITH days in total patient days in other 11 hospitals
066 multiple sclerosis & cerebellar ataxia age<45 w/o cc	21	29	50	17%	77%	56%
168 pulmonary embolism (age>69 w/o cc) or (age<70 w cc)	55	3	58	21%	75%	43%
169 pulmonary embolism age<70 w/o cc	49	4	53	29%	12%	6%
170 respiratory infections/inflamns age>54 w cc	57	12	69	2%	72%	29%
171 respiratory infections/inflamns (age>54 w/o cc) or (age<55 w cc)	68	12	80	4%	50%	25%
172 respiratory infections/inflamns age<55 w/o cc	83	7	90	5%	8%	4%
173 cystic fibrosis	37	64	101	33%	38%	13%
177 chronic obstructive airways disease	62	22	84	2%	32%	26%
223 cardiac valve proc w pump w/o invasive card inves proc w maj cc	6	58	64	37%	38%	20%
224 cardiac valve proc w pump w/o invasive card inves proc w/o maj cc	6	83	89	28%	26%	4%
239 vein ligation & stripping	6	91	97	12%	9%	3%
249 circ disorders w ami w/o invasive cardiac inves proc w/o major cc	39	4	43	2%	10%	2%
252 heart failure & shock	39	9	48	1%	18%	4%
253 venous thrombosis w major cc	34	14	48	40%	28%	5%
254 venous thrombosis w/o major cc	462	76	538	53%	54%	27%
274 circ dsr w/o ami w invas card inves proc w/o comp dx & w/o maj cc	3	44	47	2%	33%	15%
277 peripheral vascular dsr (age<75 w n-maj cc)or(age>74 w/o cc)	50	22	72	9%	11%	5%
280 non-major arrhythmia & conduction disorders age>69 or w n-maj cc	39	10	49	2%	6%	1%
288 coronary bypass w invasive card inves proc age>64 or w n-maj cc	28	19	47	28%	50%	24%
290 coronary bypass w/o invasive cardiac inves proc w major cc	23	115	138	28%	23%	8%
291 coronary bypass w/o invasive cardiac inves proc w/o major cc	44	276	320	27%	21%	5%
318 anal & stomal procedures w/o cc	40	32	72	3%	83%	12%
320 inguinal & femoral hernia procedures age>9	9	53	62	5%	13%	2%
367 cholecystectomy w/o c.d.e.	21	75	96	4%	37%	9%
400 infect/inflam of bone&joint w misc musc sys&conn tiss procs	41	25	66	9%	28%	15%
482 perianal & pilonidal procedures	14	45	59	13%	39%	19%
484 other skin, subcutaneous tissue & breast procedures	15	39	54	1%	73%	26%
489 cellulitis age>59 w cc	115	59	174	24%	37%	2%
490 cellulitis (age>59 w/o cc) or (age<60 w cc)	245	63	308	29%	59%	25%
491 cellulitis age<60 w/o cc	471	93	564	34%	17%	7%
495 major procedures for malignant breast conditions	5	92	97	28%	15%	7%
496 minor procedures for malignant breast conditions	5	157	162	22%	11%	5%
577 kidney & urinary tract infections age<70 w/o cc	62	9	71	4%	44%	10%
587 other kidney & urinary tract diagnoses w/o cc	28	25	53	2%	6%	1%
678 postpartum & post abortion diagnoses w/o o.r. procedure	36	7	43	7%	41%	2%
763 coagulation disorders age<70	16	48	64	7%	12%	4%
808 septicaemia age>34	36	17	53	5%	15%	14%
821 postoperative & post-traumatic infections age>54	47	27	74	18%	42%	29%
822 postoperative & post-traumatic infections age<55	55	21	76	16%	10%	4%
934 short stay contacts w health services	34	14	48	2%	37%	11%
938 planned same day aftercare w/o sdx of history of malignancy	7	60	67	2%	64%	7%
939 aftercare w/o sdx of history of malignancy	16	51	67	18%	6%	3%
943 other factors influencing health status age<80 w/o cc	13	47	60	2%	5%	1%
Total for selected DRGs	2,542	2,033	4,575	7%	22%	8%
TOTAL SEPARATIONS	4,008	4,760	8,768	2%		

Source: VAED