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The Australian Council
on Healthcare Standards



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Health Services Research Group

Health Services
Research Group
University of Newcastle

Determining the Potential to Improve Quality of Care

5th Edition

***ACHS Clinical Indicator
Results for Australia
and New Zealand
1998 – 2003***

safety, quality, performance

Determining the Potential to Improve Quality of Care 5th Edition
ACHS Clinical Indicator Results for Australia and New Zealand 1998 – 2003

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University of Newcastle

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Foreword

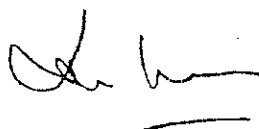
This is the 5th edition of Determining the Potential to Improve Quality of Care which presents the findings of clinical indicator data reported to the Australian Council on Healthcare Standards from health care organisations across Australia and New Zealand for the year 2003. The report also identifies trends from 1998 to 2003, providing a unique six-year review of where improvements in clinical care have occurred and areas where further improvements are required.

As well as assisting individual health care organisations to target their improvement activities, the report is potentially of value to governments and the health industry in determining where improvements could be made in the delivery of health care at a national level.

For the first time the report is presented in two sections. The Introduction, Executive Summary and Summary of Key Findings are presented in a printed medium, with complete indicator results found on an attached CD.

This report is provided to key health industry bodies and all ACHS members. It can also be downloaded from our website (www.achs.org.au).

The annual publication of this information is an important method by which ACHS contributes to the continuing improvement of quality and safety in health care in Australia and New Zealand.



Jon Mulligan (Dr)
ACHS President

Introduction

Objective of this report

The Australian Council on Healthcare Standards is pleased to provide this fifth edition of the report on the quality of health care. The objective of the report is twofold. The first is to present the findings of the clinical indicator data reported to the ACHS from health care organisations (HCOs) across Australia and New Zealand for the year 2003.

Secondly, the report identifies trends from 1998 to 2003, providing a six-year review of where improvements in clinical care have occurred and where areas for improvement are required.

How does the collection of clinical indicators impact on clinical care?

“We must formulate some method of hospital report showing as nearly as possible what are the results of the treatment obtained at different institutions. This report must be made out and published by each hospital in a uniform manner, so that comparison will be possible. With such a report as a starting point, those interested can begin to ask questions as to management and efficiency.”

E A Codman *Product of a hospital* 1914

“If the financial records of any hospital were audited as casually and as ineffectively as in the quality of its patient care, the Administrator and the Governing Board would probably land in gaol. Or barring such as unfortunate happening, the least they could hope for would be financial chaos, unpaid bills, and a richly deserved reputation for business incompetence.

Actually there is much more reason to do a continuing and adequate medical audit in a hospital than there is to keep meticulous and informative financial records. The medical audit deals with the life and health of people: the financial audit is concerned only with money.”

John Smyth, Surgeon, Royal Newcastle Hospital NSW

The Medical Journal of Australia Vol.1 No 10 1959

“While health care can do more for more people who are older and sicker, we know that some patients are being harmed by their care, yet we have insufficient accurate data to fully appreciate the current size or the multiple causes of this problem. Lack of health system data that is meaningful in regards to clinical care continues

to be a major barrier to change. Much of our information comes from reviewing medical records, which is costly and time consuming. Evidence suggests that we need the data from multiple sources, including incident monitoring systems, routine administrative data sources and the use of screening tools to pro-actively identify areas that may cause harm.”

B Barraclough *Maximising national effectiveness to reduce harm and improve care*

Fifth report to the Australian Health Ministers' Conference 2004

The above quotes span 90 years, all with a similar message: our health systems need data to monitor what they are doing well and to determine what they can improve. It may seem from the above statement by Professor Barraclough that the hospital data systems have not made improvements since the days of Doctor Codman in Boston (1914) or our own surgeon from Newcastle, Doctor Smyth (1959). However, this would be incorrect, as substantial progress has been made in many areas. Australia was one of the first countries to carry out a nationally representative study of adverse events in hospitals¹, which was followed by a similar study in New Zealand². Both studies found adverse events were associated with more than 12% of admissions. Governments have required all public and private hospitals to maintain computerised files on all admissions (the hospital in-patient data) and have encouraged hospitals to provide clinical indicator data to the ACHS. Hospitals are increasingly being asked to record critical incidents. Thus, the situation has improved and this has been made possible partially through the use of computers and better statistical methods. However, as with all data, it is not possible to always measure the aspects that we would like. Thus, these studies and developments represent a continuing attempt to fulfil the objectives of Doctors Codman and Smyth.

Assessing quality of care has become increasingly important to health care providers, purchasers and regulators and in an era of assessment and accountability in health services it is important to be able to assess quality³. The media coverage of cases of injury or death as a result of the health care provided has increased the public's concern about safety in hospitals. This concern may or may not be warranted, but until measures of safety are monitored over time it will not be possible to identify the magnitude of the problem or where patient care can be improved.

Clinical indicators are one tool that can assist in measuring the performance and outcomes of care and services provided. Indicators can describe the performance that should occur for a particular type

1 Wilson R, McL., Runciman WB, Gibberd RW et al. The Quality in Australian Health Care Study. *The Medical Journal of Australia* (1995) 163(9): 458-471.

2 Davis P, Lay-Yee R et al. Adverse Events in New Zealand Public Hospitals: Principal Findings from a National Survey. Ministry of Health Wellington, New Zealand (2001).

3 Clarke A, Rao M. Developing Quality Indicators to assess quality of care. *Quality & Safety in Health Care* Volume 13 Issue 4 August 2004 pp 248-249.

of patient or related health outcome and then evaluate whether the patient care is consistent with the evidence-based standards of care⁴. For example, the Australasian Triage Scale (ATS) developed by the Australasian College for Emergency Medicine indicates that patients who meet a category 1 on the ATS should be seen immediately and this should occur 100% of the time. Data provided to the ACHS suggests that on average this is achieved 98.6% of the time in Australian and New Zealand HCOs, whereas the better performing organisations achieve a rate of over 99.9%.

Understanding where there are opportunities for improvement can assist clinicians, health policy planners, and governments to direct resources and research capabilities to identifying solutions and actions for improvements.

Fortunately, during the last 15 years, the ACHS together with the Australian and NZ health care systems, colleges and HCOs have created an environment that has encouraged the measurement of indicators of quality. This has not been an easy task and this report reflects some of the lessons learnt which can be summarised as follows:

- Indicators are primarily a screening tool to identify clinical areas that may require further detailed review if the variation between HCOs is large.
- Process measures are better measures of quality than outcome measures, as they are under direct control of the health system. They are a fair measure of performance, especially when the process has been shown to result in a better outcome for the patient through randomised trials or evidence based medicine.
- The variation in the rates for some indicators across HCOs is larger than would be expected and the variation is not always explained by patient characteristics or their severity of disease.
- There is evidence that some organisations have used the results of their indicators to review their clinical practice and to improve their processes through the use of protocols or changing the 'culture' in their unit.

There have been many attempts to define quality and many frameworks developed to measure performance. Tier 3 of the National Health Performance Framework, developed by the National Health Performance Committee, has nine dimensions to measure health system performance. The ACHS has linked the clinical indicators to those dimensions and in 2003, 55% of the indicators measured the safety dimension and 43% measured the effectiveness dimension. More than half of the indicators measured an association with an adverse event.

How are the clinical indicators developed?

There are 20 clinical speciality areas or sets that are

covered by the 245 individual indicators for 2003. Each year specific sets are reviewed and new versions are introduced for the following collection period.

Key stakeholder groups collaborate in a Working Party to conduct the review. Working Party membership includes representatives from the speciality Colleges, Associations and Societies, health care providers, consumers, the National Centre for Classification in Health (NCCCH), Quality Health New Zealand, the Health Services Research Group at the University of Newcastle and staff from the ACHS.

Based on statistical analysis of the indicator results, feedback from users and input from clinicians, an indicator set is reviewed to ensure:

- it remains reflective of today's health care environment,
- there is consensus of collection and reporting requirements and
- that the indicator set has remained useful for quality improvement.

During 2002 several sets were reviewed for publication in 2003. The Hospital-Wide Medical Indicators Version 7 was reviewed and amended to Version 8 with a new title *Hospital-Wide Clinical Indicators*. Infection Control, Ophthalmology and Excimer Laser, Pathology and Radiation Oncology Indicators were all reviewed with new versions published. Two sets, Internal Medicine and Surgical, had minor amendments to improve the understanding of the intent of the indicators. The Mental Health indicators now incorporate Mental Health Inpatient and Community Based Indicators.

In 2003, 715 organisations submitted data to the ACHS an increase from 588 in 2002. There were 30,515 data records received and on average five sets are reported from each HCO with a median of 30 individual indicators reported per HCO. Generally, most organisations report on a six monthly basis.

The reporting of indicators to the ACHS is not a mandatory component of the accreditation process; however HCOs are required to demonstrate their achievements through the use of data. The indicators support this process and generally reflect the Continuum of Care Function within the Evaluation and Quality Improvement Program (EQuIP).

Measuring Quality

Health care is seen as being in a crisis in many countries. But during the last 10 years there has been an increased desire to identify problems and make improvements. There has been a strong growth in the proportion of staff who are involved in quality improvement and who are now acting on data to make changes and to monitor their impact. Measuring, reporting and acting on indicator data can save lives, reduce costs and improve efficiency and staff satisfaction.

⁴ Mainz J. Defining and classifying clinical indicators for quality improvement. International journal for Quality in Health Care 2003; Volume 15, Number 6: pp 523-530.



How does improvement occur? Three components are required: the use of data, the QI tools to improve processes within the health system, and support from staff to change the culture

There is no one measure of quality, and the ACHS data complements the hospital in-patient data that can be used to detect variation in safety (deaths, unplanned return to operating theatre, the use of ICD codes that indicate an adverse event may have occurred), efficiency (average length of stay) and appropriateness

(admission rates for elective surgery) The ACHS indicators focus on clinical areas involving processes that apply to the specialty involved

Although the health system is often seen to be in the midst of chaos, the ACHS indicators for the last six years have identified areas where improvements have been made, areas which have deteriorated and areas where there has been little or no improvement. Indicators that fall into these three categories are discussed in the Summary of Key Findings

Executive Summary

This is the 5th edition of the ACHS publication *Determining the Potential to Improve Quality of Care*. It contains the results for the ACHS indicators from 1998 – 2003, a six-year period. The information is relevant to policy makers, medical colleges, health care practitioners and providers, quality managers and surveyors. The ACHS is thankful to the staff and HCOs for providing time and resources to collect these data. Australia is one of the few countries that can report on trends in clinical indicator data, and this achievement is only possible with support from the staff in the HCOs.

This report presents data for 245 clinical indicators. The results are presented in the main results section as Tables, Figures and a brief summary for each indicator. These individual reports on each indicator are then summarised by identifying 54 indicators of major interest. This is done by classifying the indicators into four categories:

- Improved performance during 1998 – 2003
- Deteriorating performance during 1998 – 2003
- Failure to improve during 1998 – 2003 and
- Indicators that are of concern

The remaining indicators, are of lesser concern or do not have enough data to determine whether they should be in this summary.

Each indicator of interest is then categorised into whether the measure is a process or an outcome measure, and the proportion of indicators in each category are given in the Table below.

Table 1. Proportion of indicators identified as falling into the above categories

Category	Process	Outcome	Total
Improved	12	13	25
Deteriorating	6	2	8
Failure to improve	9	2	11
Area of concern	9	1	10
Total	36	18	54

Each of the 54 clinical indicators has an aspect that suggests that it should be studied further, either by obtaining additional data and research or by using an in depth analysis by a panel of relevant experts. The research task is to explain the trends that have been identified, or the variation in rates between HCOs that have been documented. These data provide the motivation to ask what we can learn from these trends or differences between rates, and whether any identified causes can be used to improve the processes in HCOs.

In this executive summary we cannot discuss all the above indicators, but would like to note the large proportion of process measures, which are in principle under the direct control of HCOs and staff.

Those that have deteriorated or failed to improve are:

- Delays in emergency departments (triage times);
- Low rates of plans for catch-up immunisation;
- High variation in the use of episiotomy;
- Decline in vaginal births after a caesarean section birth;
- Post-operative review of patients by Anaesthetist;
- Waiting time to commence radiotherapy treatment;
- Access block to wards;
- Access block to the ICU;
- Turn-around-time for serum/plasma potassium reports;
- Surgical site infection rates; and
- Written asthma discharge plan

The process indicators that have shown an improvement are:

- pre-anaesthetic consultation;
- compliance of anaesthesia records with ANZCA standards;
- failure to arrive for a day only procedure;
- delays in emergency departments for the most urgent cases;
- timely thrombolysis in AMI patients in the emergency department and department of medicine;
- documented CT scan following stroke;
- poorer rates for timely haemoglobin reports have improved;
- functional assessment of rehabilitation patients; initial functional assessment of rehabilitation patients, functional assessment of rehabilitation patients on cessation;
- rehabilitation planning; and
- rehabilitation discharge planning

As can be seen from the diversity of processes that have been identified above, there are considerable opportunities to identify scientifically the factors that caused an improvement or deterioration. By identifying these factors, the health system can also learn from them. Ultimately, scientific studies that identify the important factors for change may be seen as an essential component for those who aim to improve the quality of health care. HCOs, by continuing to provide these data are helping to make these studies a reality.

Summary of Key Findings

Improved Performance (in the midst of chaos) from 1998 to 2003

Process Indicators

There have been improvements in several process measures as a result of requirements by the medical and specialist colleges and health systems. The methods used to bring about these improvements are worth documenting to encourage those HCOs that still have lower rates to adopt them.

- In Anaesthetics, there has been improvement in the proportion of patients who had a consultation prior to the procedure by the anaesthetist. The rates have increased from 79% to 95% and over 80% of HCOs had rates of over 95% in 2003, whereas it was 25% in 1998. Similarly, the proportion of anaesthesia records that comply with the Australian and New Zealand College of Anaesthetists requirements has increased from 74% to 91%.
- In rehabilitation there has been an improvement in the assessment of patients. The proportion of patients who had a functional assessment within seven days of being admitted increased from 86% to 97%, the proportion having a functional assessment prior to cessation of an active inpatient rehabilitation program increased from 79% to 96%, the number who had an established multi-disciplinary rehabilitation plan within seven days of patient admission is now 97% compared to 86% in 1998. Finally the proportion of patients having an appropriate discharge plan on separation increased from 82% to 97%.
- Providing thrombolysis within one hour to persons with a heart attack has been shown to decrease the mortality rate. The proportion of patients with AMI requiring thrombolysis who receive thrombolytic therapy within one hour of presentation to the hospital has increased both in the emergency department and the internal medicine department. In the emergency department, the rate was 74% and improved to 80%, and for the internal medicine department the rate improved from 68% to 79%. In the better HCOs the rates are now about 90%.
- There has been a decline in the proportion of patients who failed to arrive for a day only procedure from 1.4% to 0.8%. This may reflect better communication with the patient before the procedure to remind them of their booking. The major cause for canceling a procedure, however, is for administrative or organisational reasons.
- Emergency departments are expected to treat unconscious patients immediately. In 1998 this occurred for 96% of patients, but in 2003 the overall rate was 99%, with 80% of departments achieving this rate or better.
- Documenting the assessment of mental function in patients admitted to a geriatric medicine or geriatric rehabilitation unit can influence positively the patient's outcome. The proportion of patients with a mental assessment increased from 73% to 84%, and the better HCOs had rates near 100%.
- Stroke is a common cause of admission to hospital and CT scanning contributes to the patient's management. The proportion of patients with a CT scan increased from 76% to 84%. The better rates were 90% in 2003.
- The delays in providing haemoglobin reports have not improved overall, but for the poorer performing HCOs, which had rates below 50% for turn-around-times of 60 minutes, these have improved by 20% or more.

Outcome Indicators

There has been improvement in several outcome measures, and the causes of this may be less easy to determine. However, where possible, it would be appropriate to document changes in surgical or medical practice that could have brought about these improvements.

- Looking at the surgical indicators, there has been an improvement in three areas. Firstly, there was a decline from 21% to 16% in the proportion of children with a pre-operative diagnosis of acute appendicitis, who after appendicectomy were found to have a normal appendix. Secondly, the proportion of patients having a laparoscopic cholecystectomy that resulted in a bile duct injury that required further intervention by the surgeon has declined from 0.5% to 0.3%. And finally, the rate of significant reactionary haemorrhage following tonsillectomy has halved from 1.3% to 0.6%.
- Warfarin is an anti-coagulant that is associated with adverse reactions such as spontaneous bleeding. The rate of abnormal bleeding in patients declined from 1.9% in 1999 to 0.7% in 2003. The measure of anti-coagulation, the international normalized ratio (INR), is used to determine the dosage, and values of INR in the range two to three are desirable. The proportion of patients with INR greater than five improved from over 5% in 2000 and 2001 to 3.5% in 2002 and 2003.
- There has been a decline in the proportion of patients who had an overnight admission following an operation/procedure that was intended to be a day only procedure. In 1998 the rate was 2.5% and in 2003 it was 1.8%.

- The proportion of patients having an unplanned return to the operating room during the same admission also declined from 0.54% to 0.43%
- The proportion of patients who had a coronary bypass operation within twenty-four hours of having the procedure PTCA (with or without stenting) in the same admission has declined from 0.7% to 0.3%, indicating that angioplasty is now a safer procedure
- The proportion of patients having a percutaneous trans pleural biopsy of the lung or mediastinum, who had a pneumothorax and/or haemothorax requiring intervention following the procedure, has declined from 20% to 12%
- There has been a slight improvement in anaesthesia events that are associated with a poorer outcome, but this improvement may be due to changes in the procedures rather than improved surgical technique
- The proportion of patients admitted to hospital with haematemesis and/or melaena, having both blood transfusion and endoscopic therapy, who subsequently have an operation during the same admission, has declined from 71% to 52%. The rates for NSW were 31% while Victoria had a rate of 61%. Knowledge of the possible reasons for these differences may help to standardise treatments for these patients
- The inpatient mortality for psychiatric services has shown a decline from 0.3% in 1998 to 0.1%. The higher rates have declined from 0.4% to 0.1%
- The mortality rate for rehabilitation patients has declined from 1.0% to 0.7%
- The proportion of patients who have a vaginal delivering following a previous primary caesarean section has declined from 24% to 16%. This represents a change in clinical practice although there is no clear evidence that this is consistent with evidence-based medicine. Further studies into this trend are required
- In the clinical area of cancer treatment, the proportion of patients waiting more than 21 days to commence radiotherapy treatment has shown a dramatic worsening from 10% to 36%. The declining access to radiotherapy treatment has been an issue for some years, but there is no evidence that the problem has been addressed, as it continues to worsen
- The rate of a documented complete physical examination within forty-eight hours of admission for mental health patients has declined from 90% in 1999 to 85% in 2003. This trend if continued may result in poorer outcomes for the patients. The better HCOs have rates of more than 99%

Outcome indicators

- The proportion of inpatients having surgery with a post-operative length of stay equal to or greater than seven days who develop post-operative pulmonary embolism has increased to 0.6% from a previous rate of 0.4%. Twenty percent of HCOs now have rates above 0.9%, an increase from 0.6% in 1998
- The rate of injury to the ureter or bladder during an abdominal or vaginal hysterectomy has increased from 0.6% to 1.0% during the last four years

Evidence of Deteriorating Performance from 1998 to 2000

Process indicators

- The recommended time to treat emergency presentations is determined by their triage categories. Categories two to five are recommended to have from 10 minutes to two hours waiting time. The achievement of these recommendations is low, with mean proportions of 73%, 60% and 63% for categories two, three, and four, respectively. Further, there has been a decline in these proportions during the last six years. The larger emergency departments have poorer performance, and the result is that 40,000 to 500,000 patients are not seen within the recommended time. The better HCOs have rates of 90% of patients seen within the time frame. The arrival rate of emergency patients is known from past data, and hence it is, in principle, possible to match staff requirements to the expected demand. Methods to improve the processes in emergency departments have been developed, but further development is required

Failure to Improve from 1998 to 2003

Process indicators

- The proportion of patients referred to an intensive care unit, who were not admitted to the unit because of inadequate resources has remained at about 5% for the six-year period and twenty percent of HCOs had rates of 8% or more. This would appear to be an unnecessary rate for hospitals to be operating at and methods to predict the demand for these facilities could be developed
- Access block refers to the delays in admitting patients presenting to the emergency departments to a ward, and for the years 2002 and 2003, the rate is about 25%. These delays are related to the availability of beds and the lack of planning for the known demand. In particular, hospitals have found that the problem is accentuated on Sunday evenings and Monday mornings as a result of the failure to discharge persons on the weekend. The better HCOs have less than 5% of emergency patients being delayed by eight hours
- The rate of documented evidence of post anaesthetic review within 48 hours of surgery has

improved to 62%, but the better HCOs have rates of over 99% and hence there is the potential to significantly improve this process, which is required for auditing the morbidity associated with anaesthesia.

- The cancellation of booked procedures in day only clinics because of administrative or organisational reasons has not improved and remains high for the public sector at 1.5%. For the 110 reports from the public HCOs, this resulted in over 3,500 cancellations in 2002 and 2003.
- Providing an appropriate discharge plan to patients with acute asthma has been shown to improve the control of asthma. The mean rate for providing written plans has remained below 60%, with a large variation between the rates for HCOs. The better HCOs have rates above 80% while the poorer had values below 20%.
- Births are one of the more frequent types of hospital admission. However, the indicators for quality of obstetric care show large variations between HCOs that should be of concern given the quarter of a million births each year in Australia and NZ. The induction of labour for reasons that are not appropriate varies from 4% to 14% with a mean of 9%. When expressed as a rate for all inductions the variation is from 22% to 48%, a mean of 34%. These rates have not shown any trend, and given the high rates for this inappropriate procedure an evidence based medicine review of criteria to be used is recommended. The large difference between the public and private sectors (7% and 14%) is also of major concern.
- Catch-up immunisation in infants whose immunisations are not up-to-date when they are admitted to hospital is an important way of reaching children who have not been immunised through the primary care system. The rates for immunisation (or planned immunisation) were 40%, with the poorer rates being below 27% and the better rates above 55%. Given the importance placed on immunisation programs in Australia, these low rates reflect poor processes within the hospital systems.
- The proportion of serum/plasma potassium reports which have a turn-around-time less than one hour is low (60% to 82%, depending on urgency) but also varies considerably between HCOs. The same issues also were found with delays in carrying out haemoglobin tests

Outcome indicators

- The proportion of patients who die in hospital after having a coronary artery bypass graft (CABG) operation has declined during the years 1998 – 2002, but showed an increase in 2003 from less than 2.0% to 2.1%. This increase was seen in elective cases and also in those over 70 years. The causes of this should be reviewed, as it could be related to casemix; as the increase in angioplasty may remove the less serious patients

and the more serious cases continue to CABG.

- There has been no change in the proportion of women, who after having their first delivery, require suture of the lower genital tract following delivery. About 70% of births require sutures, while the better HCOs had rates less than 60% and the worse rates were above 88%. The use of episiotomy could be the cause of this variation in outcome, and guidelines for its use may help to improve these results.

Areas of Concern

Process indicators

- The proportion of patients who were unable to be admitted to the ICU because of inadequate resources has remained at about 5% for the last six years. The better HCOs had low rates of 0.2%, compared to the poorer HCOs with rates of over 8%. The public rate was approximately ten times the private rate in 2002 and 2003. The causes of the considerable variation between hospitals may be used to ensure that resources are more equitably distributed.
- Asthma is a common condition for hospital admittance. The rate of documented assessment of severity was 90% on initial presentation and 86% for a subsequent assessment. The formulation of an appropriate discharge plan had a low rate of 55%, with the lower and higher rates being 21% and 78%.
- Elective surgery for insulin-treated diabetic patients requires an alteration of the treatment schedule. In particular, to reduce the risk of hypoglycaemia, at least four blood glucose measurements should be taken on the first post-operative day. There appears to have been no improvement in the overall rate since 1998 and in 2003 the rate was 85.5%, with the better rates being above 95%.
- Psychotropic doses and concurrent medications can result in harm to the patient if they are not appropriate. The proportion of patients on two or more psychotropic medications from one subgroup category at discharge is 25%, or one in four.
- The variation in the treatment of mental health patients should warrant further investigation. Four process measures of particular concern are: ECT, seclusion, assault and time to prepare discharge summary.

Evidence on the appropriate proportion of ECT treatments given during a defined course is not well established, and the data indicate that clinical practice varies. The rate at which mental health patients have more than twelve treatments of ECT during a course ranges from twenty percent of HCOs being less than 2% to twenty percent of HCOs being more than 12%. A review of the recommended maximum is required.

A similar situation exists for the use of seclusion: the corresponding proportions for patients

Summary of Key Findings

having seclusion are 4% and 16%. There are large differences between the States.

The rate of patient assault is around 4% but the poorer rates were above 7%, whereas the better rates were below 0.5%.

The proportion of patients with a final discharge summary recorded in the medical records within 2 weeks of discharge had rates of 67% or less for the poorer HCOs, while the better rates were 98% or more.

Outcome indicators

- Hospital acquired infections were reported for the first time in 2003. Surgical site infection rates ranged from 0.2% to 4.4%, the latter being for colectomy. Central line associated blood stream infections had rates for different locations that were less than 1%. The highest rate of blood stream infection was for haemodialysis, in centrally inserted (both cuffed and non-cuffed) dialysis lines.

Summary of Results for Each Set of Indicators

Adverse Drug Reaction Indicators Version 2

There are eight indicators in this set, six of which relate to the drug warfarin. The most common outcome for patients using warfarin was an INR/prothrombin reading greater than five. The proportion of patients with INR greater than five improved from over 5% in 2000 and 2001 to 3.5% in 2002 and 2003 but there were significant differences between the public and private HCOs. The rate of abnormal bleeding in patients receiving warfarin declined from 1.9% in 1999 to 0.7% in 2003, while cerebral haemorrhage and death were rare.

Two CIs, 2.5 and 2.6, introduced in 2002, are process indicators and reflect the use of written drug information for patients discharged with warfarin and the review of dosages when the INR/prothrombin reading was over five. The results were relatively high, greater than 92% for both indicators in both years, although they indicate that a higher rate is achievable.

Anaesthetics Indicators Version 3

There are three process measures and six outcome measures for anaesthetics. The process measures involve pre and post anaesthetic consultation and documentation meeting ANZCA minimum standards. There has been increased compliance during the last six years, although there still remains a need to increase the rate of post procedure visits.

The outcome indicators are sometimes associated with adverse events. The rates are generally low and all but one has shown a slight decline or improvement over the five years. The indicator that has not declined, CI 3.5, Recovery – unplanned stay > two hours, had rates close to 1.75% for most years.

Day Surgery/Endoscopy Indicators Version 3

There are four indicators that measure failure to arrive and cancellation of surgery after arrival. In 2003, the average rate for failure to arrive was less than one percent. Cancellation due to administrative or organisational reasons was 0.5%. The rate has not improved and remains high for the public sector at 1.5%.

There are three indicators that relate to outcome: the rate for unplanned return to the operating room remained relatively stable at one in every 2,500 procedures; unplanned transfer to an over-night facility declined to 1.8% and the proportion of patients with unplanned delayed discharge has declined to about 0.4% over the last six years.

Dermatology Indicators Version 1

There are nineteen indicators that have been developed, but there are few hospitals reporting their data. Hence the results may not reflect the majority of care provided, especially as dermatology is often performed as an outpatient or in a private surgery.

These indicators have undergone a major review and Version 2 is available for collection in 2004.

Emergency Medicine Indicators Version 3

These indicators contain measures for the time to

attendance for the five National Triage Scale categories, the rate for prolonged stay in the emergency department and the time to thrombolysis.

Only one indicator showed adequate results, namely, the proportion of patients in triage category one who were attended to immediately has increased from 96% in 1998 to 99% in 2003. The triage categories of two, three and four had substantially lower mean rates of 73%, 60% and 63%, and these rates have worsened from previous years. The low and declining rates suggest that this is a priority area for improvement.

Thrombolysis initiated within one hour of presentation for acute myocardial infarction has increased from 72% to 80% since 1998. However the average of 80% and the 20th centile of 75% indicate that implementing thrombolytic therapy within the recommended time frames remains a quality issue.

The average rate of prolonged stay in the emergency department was 25%, with NSW having a higher rate of 31%. These high rates also indicate a system issue that could be resolved.

Hospital in the Home Indicators Version 2

Hospital in the Home Indicators refer to unexpected telephone calls and unscheduled staff callouts and the mean rates were 6% or less. Similarly, the mean rate for program interruption caused by unplanned return to hospital was about 5%. The optimum level for these indicators is not known, but these rates would appear to be acceptable.

Hospital-Wide Clinical Indicators Version 8

The Hospital-Wide Clinical Indicators were one of the first developed by the ACHS. The rates are across all admissions, thus making it difficult to control for variation in types of admissions and procedures. However, the overall rates show that unplanned re-admissions have declined to 2% and return to operating theatre has remained below 0.5%. The rate of post-operative pulmonary embolism has increased from 0.32% in 1998 to about 0.56% in 2003.

Infection Control Indicators Version 2

The infection control indicators 1.1 to 1.11 all relate to surgical site infection (SSI) for different procedures. This is the first year that these revised indicators data have been collected and the proportion of HCOs that provided data for each indicator ranged between nine and 111. The mean rates of superficial infections for the procedures ranged from 1% to 2.14% except for elective partial/total colectomy (4.39%) and femoral-popliteal bypass (3.64%). The mean rates for Deep/organ space SSI ranged from 0.2% to 0.6% with the exception of the chest incision site in coronary artery bypass graft (0.96%), elective partial/total colectomy (1.54%) and in femoral-popliteal bypass procedures (1.41%).

Ten of the infection control indicators 2.1 to 2.14 relate to the rate of central line associated blood stream infection (BSI) per patient day. The mean rates ranged

Summary of Results for Each Set of Indicators

from zero to 0.9%. There was no clear relationship between infection rate and insertion point (central or peripheral). While the daily rate is less than one percent, the rate for an individual may increase substantially as the proportion of central line days for that patient increases. The remaining four indicators measured the proportion of patient days in ICU where a central line was utilised. More than 60% of patient days were associated with central lines (centrally inserted 57% and peripherally inserted 67.5%).

Indicators 3.1-3.5 related to blood stream infections in dialysis months for five different access types. The rates were less than 0.02% per patient month for AV fistula, synthetic graft and native vessel graft. Rates for the centrally inserted lines were 2.26% per patient month for non-cuffed dialysis line (temporary) and 3.45% for cuffed (semipermanent) dialysis lines.

Intensive Care Indicators Version 2

Indicators 1.1 and 1.2 are measures related to the utilisation of patient assessment systems. The average rate for entering adult patients onto the National Patient Database has been around 90% since 2000. Indicator 1.3 gives the proportion of HCOs participating in the participating in ARCCCR survey. The proportions were 95% and 84% in 2002 and 2003 respectively.

The proportion of patients who were not admitted to ICU because of inadequate resources has remained at a high rate of seven percent for the public sector. Determining the reasons why the demand and supply are not better matched may help to reduce this figure.

The rate for an unplanned readmission to ICU is between 1.4% and 2% since 1998. There was no association between the rates of refusal of admission to ICU and the unplanned readmission to an ICU.

Internal Medicine Indicators Version 3

There are 19 indicators for internal medicine, which cover eight specific aspects of care, ranging from cardiology to thoracic medicine. There are nine process indicators and these generally have the larger variation between the HCOs. In particular, for geriatric medicine the proportion of patients for whom there is documented assessment of mental function on admission, CI 4.1, has a high compliance rate of more than 99% for one fifth of HCOs, but the lower one fifth have rates of less than 66% for their patients. In principle, the current average of 84% could be increased to 99% but there has been no improvement in the rate during the years 1999-2003.

It is accepted that patients with AMI should receive thrombolysis within one hour of presentation to the hospital. The average rate has remained between 75% and 80% during the last four years. The 20th and 80th centiles were 66% and 91% in 2003, suggesting that a more acceptable figure could be achieved. The proportion of patients who had a coronary bypass operation within twenty-four hours of having the procedure PTCA (with or without stenting) in the same admission has declined from 0.7% to 0.3%, indicating that angioplasty is now a safer procedure.

The single process measure within the six indicators

for gastroenterology is CI 3.3, the proportion of patients admitted for haematemesis and/or melaena with a blood transfusion for whom a surgical staff member has been notified of the patient's condition. There has been no sustained improvement in this indicator.

In the area of neurology, the proportion of inpatients with a diagnosis of stroke that had a documented CI scan has improved from 76% to 83%. One fifth of HCOs are below 73% however, with the better performing fifth of HCOs above 90%.

A documented discharge plan for asthma patients is believed to improve the management of that illness but the average rate remains at about 55%, with the centiles showing large differences of 20% to 78%. Rates of objective assessment have not increased since 2000. The rates for initial and subsequent assessment were both around 90%.

Mental Health Inpatient Indicators Version 4

There are more indicators for this area than in the other sets: a total of 20, of which nine are process indicators. The following process measures all had large potential gains: aspects of care that relate to allocating a diagnosis within the admission and at discharge; carrying out a complete physical examination; providing a discharge summary and completing the medical record within two weeks of being discharged. This was because some hospitals were achieving rates close to 100%, while the poorer HCOs were often less than 80%, implying that a fifth of patients in these HCOs are not provided with the basic diagnostic and reporting requirements. The rates for the indicators relating to discharge summaries were less than 80%.

Other process measures are concerned with the clinical aspects of care, and relate to the use of two or more psychotropic drugs at discharge, and the use of seclusion. In both these measures, there is large between hospital variation, often involving significant differences between the States. There has been an increase in the rate of seclusion for more than four hours, which is unexpected since the desirable rate is low. This seclusion indicator has increased from 20% to 27% and the 80th centiles have also increased to 57% in 2002 and 51% in 2003.

In regards to the outcome indicators, the rate of unplanned readmissions within 28 days remain at around 4% or 5% and the mortality rate for inpatients has halved over the six year period to 0.13%. The indicators relating to suicide, assault and self harm have not changed substantially over the six year period.

Mental Health Community Based Indicators Version 1

This is the first year these three outcome indicators were collected. More than one third of clients had five or more contacts with the outpatient service, 8% were admitted only once and 16% more than once. Fourteen of the 16 reporting HCOs were public.

Obstetrics and Gynaecology Indicators Version 4

There are eleven indicators for obstetrics and two for gynaecology. The two aspects of obstetrics that show considerable clinical variations are the proportion of patients undergoing induction of labour for reasons

other than those defined as appropriate and the proportion of primiparous patients requiring surgical repair as a result of tearing and / or an episiotomy

The proportion of inappropriate or unnecessary inductions as a proportion of all deliveries was 8.7% percent, with the centiles ranging from 4% to 15%. While much of this variation is explained by the differences between the public and private sectors of 7% and 14%, within each sector there is unexplained variation. If the average could be shifted to the 20th centile of 5%, this would reduce the proportion of inductions per annum in Australia by approximately 10,000.

Similarly, there is a large variation in the proportion of patients requiring surgical repair after their first birth, with an average of 71% and the centiles ranging from 60% to 80%. If the average could be reduced to the 61%, there would be about 10,000 more intact perineums per annum in Australia.

There has been a major change in the proportion of patients delivering vaginally following a previous primary caesarean section in Australia. The mean rate has declined from 24% to 16%, with the centile rates declining by more than 5%. Although there are studies ongoing to determine the appropriate rate for vaginal birth after caesarean section, it would be an area where an appropriateness study could be carried out.

The proportion of patients receiving a blood transfusion during or after a hysterectomy has doubled over the last three years, and the metropolitan HCOs had a high rate of 6% in 2002. The 20th centile has remained stable at about 2%, and hence there is reason to determine the causes of the increase and the higher rate in the metropolitan HCOs. The rate of injury to the ureter or bladder during an abdominal or vaginal hysterectomy has increased from 0.6% to 1.0% during the last four years.

Ophthalmology and Excimer Laser Indicators Version 3

There are fourteen indicators for ophthalmology. The indicators are primarily outcome measures. The numerators are relatively small, since they focus on poor outcomes such as re-admission rates within 28 days, infections and re-treatment.

The rate of unplanned readmission days after cataract surgery has declined from 0.51% in 1998 to 0.32% in 2003. The rates of unplanned overnight stay and anterior vitrectomy in cataract surgery, first collected in 2003, were 0.65% and 0.84%.

In glaucoma surgery the rate of re-admissions within 28 days and the rate of patients having LOS greater than three days averaged 1.6% and 3.7% respectively over the six years to 2003 and both varied considerably from year to year. Readmission due to infection has been less than 0.2% since 1998.

In retinal detachment surgery the rate of unplanned readmission in 28 days over the six year period was 4.5% and varied considerably from year to year. The readmission rate was usually less than 0.2%. The length of stay indicator for retinal detachment had a decline over the last six years, the proportion with length of stay greater than three days declined from 3.5 to 2.5%.

The rate of revision within 28 days, first collected in 2003 was 3.63%.

The re-treatment rates in surface and non-surface ablation were 5.45% and 8.54% respectively.

Infection rates in excimer laser were low, 0.23% over the six year combined.

Oral Health Indicators Version 1

There are 12 indicators and the results were obtained from between one and 10 HCOs in 2002 and in 2003.

Paediatric Indicators Version 3

There are five indicators for paediatrics, two of which are measures of immunisation status. Whether catch-up immunisation was given or was planned for children without immunisation was only 38% in 2003, with the 20th and 80th centiles ranging from 27% to 55%. This indicates that there is an opportunity to increase immunisation rates for children who have not been previously immunised.

The re-admission rate for children with asthma is a relatively high 4%, with the 20th centile being not much lower at 3%. The lack of any trend or a low centile suggests that it may be hard to reduce this rate.

Pathology Indicators Version 2

The indicators for Pathology are primarily process measures, focussing on the turn-around time for the tests. There are no clear trends. There are large differences in the centiles for most of these indicators and the outlier gains are high for haematology and chemical pathology, due to the large sample sizes. As the better HCOs are able to achieve high rates of compliance with the indicators, there are opportunities for determining how these rates are achieved, and use the findings to improve the rates for all HCOs.

Radiation Oncology Indicators Version 2

There are six process indicators for radiation oncology. The proportion of HCOs (all public and metropolitan) reporting each indicator ranged between four and 12 in 2003.

The proportion of patients waiting more than 21 days for the commencement of radiotherapy treatment has increased from 10% to 36%, the 20th centile from 2% to 17% and the 80th centile from 23% to 51%. These three trends indicate a significant deterioration in the access to radiation therapy in Australia, with the decline seen in most of the HCOs.

The rate of CT planning was 70% and the better rate was 87% indicating that the rate could be improved. The trial participation rate for 3,196 patients at five HCOs was 11.6%. The proportion of patients having complete follow up for gliotic, prostate and breast cancer was around two thirds.

Radiology Indicators Version 2

There is one process measure for radiology involving turn-around-time for non-procedural non-urgent plain radiographs. There were large differences between the rates for the HCOs, and large centile and outlier gains.

The proportion of patients for whom there is documented evidence of pneumothorax and/or

Summary of Results for Each Set of Indicators

haemothorax requiring intervention after undergoing percutaneous trans pleural biopsy of the lung or mediastinum has declined from 20% to 12%. The centiles have also declined by about 8%, indicating that the morbidity from this procedure has been significantly reduced

Rehabilitation Medicine Indicators Version 3

There are seven rehabilitation indicators of which five are process measures concerned with whether functional assessments were carried out, rehabilitation plans established and appropriate discharge plans prepared. These indicators had significant improvement in the mean values with the rates for not having these items of care more being reduced to one quarter of the 1998 rates over the last five years.

The proportion of deaths within the rehabilitation unit/facility for rehabilitation patients has declined in 2003.

Surgical Indicators Version 3

There are 19 indicators reported for surgery, and except for the reporting of the mean operating time and the weight of tissue removed for patients having a transurethral resection for benign prostatomegaly, the indicators are primarily outcome measures.

Seven measures showed an improvement during the five-year period. The proportion of children who undergo appendicectomy with a normal histology has declined from 21% to 16%. There has been a gradual decline in the proportion of patients being administered a blood transfusion following transurethral prostatectomy, from 4.5% to 3.6%. The rates of a post-

operative in-hospital infection in primary THJ replacement have remained close to half the 1998 rate, which was 2.6%, in subsequent years. The mean rates for bile duct injury while having a laparoscopic cholecystectomy procedure have shown a slight reduction from 0.51% to 0.29%. The centiles have also declined by a similar amount. The rate of patients with a new neurological deficit following a neurosurgery procedure more than halved in 1999 and have remained at less than 2% since then. The rate of stroke following carotid endarterectomy (within the same admission) declined from 2.3% in 1998 and has remained around 1.6% since then. Finally, the proportion of tonsillectomies that had a significant haemorrhage declined by half from 1.3% to 0.63%, and the centiles also improved.

The other measures had no evidence of trend. The mortality rates for cardiothoracic coronary artery grafts, CAGS, have not declined since 1998. The overall mortality rate remains close to 2%, the rate for elective CAGS remains close to 1.5% and in patients aged 71 years or more the rate was 3.4% in 2003. Non-superficial neurosurgical infection in hospital rates averaged 1.4% since 2001. The mortality rate in abdominal aortic aneurism (AAA) was 4.8% in 2003, higher than in previous years however there was no difference between the better and poorer rates.

With the exceptions of CAGS where age exceeds 70 years and in neurosurgical infection there were no major variations between the rates of the HCOs for these measures, but these outcome indicators do provide clinicians and patient information on the likelihood of a poorer outcome associated with these surgical procedures.

Glossary and Examples

ACHS Clinical Indicator Results 1998 – 2003

Layout of the tables with rates

Table A. Fields used in the tables with rates

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
Field	Description									
CI	Clinical Indicator number.									
Year	Year of collection.									
No HCOs	Proportion of Health Care Organisations submitting the indicator each year.									
Numerator	The proportion of events that occurred.									
Denominator	The proportion of patients, admissions, procedures or patient days at risk of the event.									
Rate %	The overall rate for all HCOs combined, expressed as a percentage.									
Rate (20)%	20% of HCOs have a rate that is at or below Rate (20)%, the 20 th centile rate The rate is expressed as a percentage.									
Rate (80)%	20% of HCOs have a rate that is at or above Rate (80)%, the 80 th centile rate The rate is expressed as a percentage One of these two rates, the 20 th or 80 th centile rate, will usually be referred as the better rate depending on which is the more desirable (20 th for a low rate, 80 th for a high rate). The other will be referred to as the poorer rate.									
Centile gains	The centile gains are a measure of the potential gains that would be obtained if the overall rate were moved to the better rate.									
Stratum gains	The stratum gains are a measure of the potential gains that could be obtained if overall rate were moved to the rate of the best stratum (Public/private, Metropolitan/rural or State).									
Outlier gains	If any HCO has a poorer rate that is more than three standard deviations from the overall rate then that HCO is referred to as having statistically significantly high (or low) rate. The outlier gains measure the benefits of improving the rate of each of the outlier HCOs to the overall rate.									

Example 1 – An indicator where a high rate is desirable

Emergency Medicine, Area 1 Waiting Time

Rationale

Waiting time relative to triage category is the critical performance indicator for an emergency department. Where emergency department resources are chronically restricted, or during periods of transient patient overload, staff should be deployed so that performance is maintained in the most urgent categories. The following results are for:

Cl. 1.2, Australian Triage Scale Category 2 The proportion of patients attended to within 10 minutes in the Emergency Department.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.2	1998	166	103,412	139,888	73.9	62.8	88.6	20,555	18,606	8,081
	1999	159	122,001	160,928	75.8	67.2	89.4	21,857	4,309	9,792
	2000	177	147,571	199,049	74.1	66.7	89.0	29,573	–	11,989
	2001	182	158,528	214,694	73.8	63.4	88.7	31,891	9,391	11,708
	2002	168	176,030	236,831	74.3	64.6	89.8	36,667	12,032	12,629
	2003	179	185,413	254,122	73.0	65.3	91.0	45,731	12,313	14,459

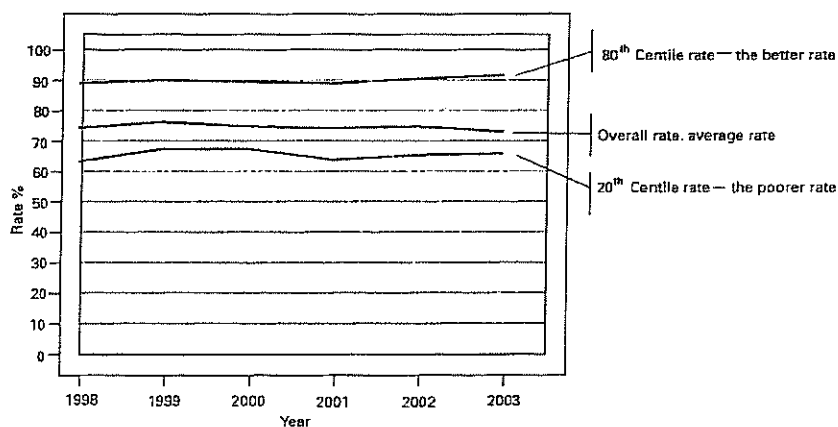
Explanation

The results table contains three rates referred to as Rate %, Rate (20)% and Rate (80)%. They are the overall rate, the 20th centile rate and the 80th centile rate respectively. Twenty percent of HCOs have rates equal to or greater than the 80th centile rate. Because it is desirable that a high rate be achieved this rate is referred to as the better rate. The better rate can be considered as achievable because twenty percent of HCOs are performing at or better than this rate. Twenty percent of HCOs have rates equal to or less than the 20th centile rate. This rate is referred to as the poorer rate. The difference between the overall rate and the better and poorer rates provides a measure of the variation between HCOs, with 60% of rates lying between the 20th and 80th centiles.

In 2003 the overall rate was 73% and hence approximately one in four patients were not seen within 10 minutes. The poorer rate (20th centile) was 65.3% and the better rate (80th centile) was 91.0%. The overall rate, the better and poorer rates are plotted against year in Figure 1.2. The plot demonstrates that:

- During the period from 1998 to 2003 the better rate, the poorer rate and the overall rate have varied little.
- The difference between the better and poorer rates has remained approximately constant at 25% since 1998.

Figure 1.2 ATSC 2 attended within 10 minutes



There is little evidence of improvement during the period 1998 to 2003. For the better performing hospitals, one in every 10 patients is not seen within the recommended time frame. The difference between the better and poorer rates in 2003 was 26%.

The three columns on the right of the results table contain three measures of the potential for improvement which are calculated from the data. They are centile, stratum and outlier gains.

In this indicator:

Centile gains represent the proportion of extra patients that would be seen in the specified time if the overall rate (73%) could be increased to the better rate (91%)

The calculation is as follows:

Centile gains = Sum of Denominators x (80th centile rate - Overall rate)

Stratum gains represent the proportion of extra patients that would be seen in the specified time if the overall rate (73%) could be increased to the rate of the better stratum (State, public/private, metropolitan/rural 83.9% see Table 1.2)

Outlier gains represent the proportion of extra patients that would be seen in the specified time if those HCOs that had unusually low (referred to as statistically significantly low) rates were to achieve the overall rate (73%)

These measures can assist in prioritising indicators for further investigation. Where variation between HCOs is large then centile gains tend to be large.

If the average of all HCOs could be brought to the 80th centile, an additional 45,731 patients (see centile gains column) from the 254,122 presentations to the emergency department would have been seen within the specified time of 10 minutes.

Most data are submitted from the public and metropolitan sectors. It can be seen from Table 1.2 that in 2003, 199,719 patients (approximately 80%) were from Metropolitan HCOs and almost 95% were from public HCOs. As might be expected, the emergency departments with the larger throughput had lower rates than the smaller units, (68% compared to 80%).

There was significant variation between the States, with NSW and Victoria having the better rates. The differences between the public and private sectors and between metropolitan and rural HCOs were not statistically significant. The stratum gains in 2003 (Table 1.2) were largest for South Australia and New Zealand. If South Australia were to achieve the best state rate in Victoria of 78.7%, then 4,474 additional patients would be seen within 10 minutes. Note that the best state rate is more than 10% lower than the rate for the top 20%.

Table 1.2 ATSC 2 attended within 10 minutes

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	66	58,652	75,539	77.6	1.3	—
	2003	74	58,210	75,300	77.3	1.3	—
QLD	2002	27	28,652	40,709	70.4	1.8	4,008
	2003	29	34,668	45,526	76.2	1.7	—
SA	2002	13	16,773	24,598	68.2	2.3	2,961
	2003	12	19,841	30,920	64.2	2.1	4,474
TAS	2002	6	3,924	7,032	55.9	4.4	1,712
VIC	2002	28	34,755	43,300	80.3	1.8	—
	2003	31	31,609	40,173	78.7	1.8	—
WA	2002	18	16,744	20,870	80.2	2.5	—
	2003	18	22,676	30,909	73.3	2.1	1,650
NZ	2003	7	11,596	20,978	55.3	2.6	4,894
Other	2002	10	16,530	24,783	66.7	2.3	3,349
	2003	8	6,813	10,316	66.1	3.6	1,294
Metropolitan	2002	81	135,065	179,599	75.2	0.94	—
	2003	80	144,653	199,719	72.4	0.94	—
Rural	2002	87	40,965	57,232	71.6	1.7	—
	2003	99	40,760	54,403	74.9	1.8	—
Public	2002	148	166,084	224,236	74.1	0.85	—
	2003	158	174,476	241,107	72.4	0.84	—
Private	2002	20	9,946	12,595	78.9	3.6	—
	2003	21	10,937	13,015	83.9	3.6	—

Example 2 – An indicator where a low rate is desirable

Surgery, Urology Transurethral Resection (TUR)

Rationale

This is a commonly performed procedure. Compliance in these indicators would be a reasonable measure of the care provided in a urological service. The following results are for:

CI. 2.4, The rate of patients having a blood transfusion (intra-operatively or post-operatively) following TUR for benign prostatomegaly

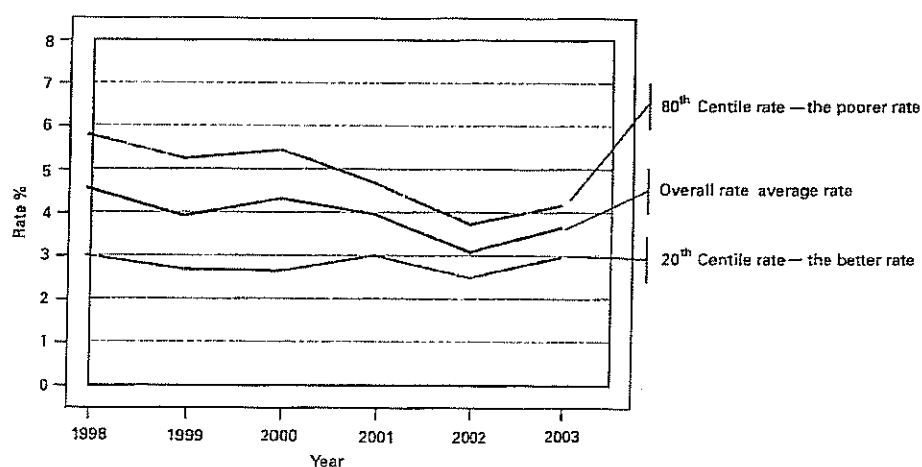
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.4	1998	82	172	3,787	4.54	3.00	5.78	58	47	—
	1999	83	135	3,450	3.91	2.67	5.22	42	—	3
	2000	96	180	4,172	4.31	2.63	5.44	70	—	2
	2001	114	220	5,596	3.93	2.97	4.64	54	40	10
	2002	109	160	5,241	3.05	2.47	3.70	30	—	—
	2003	101	182	5,000	3.64	2.94	4.15	34	—	—

The rates have decreased from 4.54% in 1998 to 3.64% in 2003. The rate of the poorer performing HCOs has decreased from 5.78% to 4.15% in 2003. There are small potential gains in 2003 of 34. There were no HCOs with statistically significantly low rates and there were no statistically significant differences between the strata. Hence no outlier or stratum gains appear in the table.

The overall rate, the better and poorer rates are plotted against year in Figure 2.4. It is desirable that the rate of blood transfusion following prostatectomy be minimised. Hence the better rate is given in this case by the 20th centile rate, the bottom trend line in the plot. The plot demonstrates that the difference between the better and poorer rates has diminished since 1998 and both the poorer rate and the overall rate have decreased. (That is to say, the variation between HCOs has decreased over the period.) The better rate has remained close to 3% during the entire period.

Figure 2.4 TUR for benign prostatomegaly – blood transfusion.



Layout of tables for averages

Averages include the average length of stay, average operating time and average weight. The following table describes the fields in the tables for averages.

Table B. Fields in the results tables for averages

CI	Year	No HCOs	Mean	Std	20 th centile	Median	80 th centile
Field	Description						
CI	Clinical Indicator number.						
Year	Year of collection.						
No HCOs	Proportion of Health Care Organisations submitting the indicator each year.						
Mean	Overall mean for all contributing Health Care Organisations.						
SD	The standard deviation of the averages reported by all contributing Health Care Organisations.						
20 th Centile	The 20 th Centile of the averages reported by all contributing Health Care Organisations.						
Median	The median of the averages reported by all contributing Health Care Organisations.						
80 th Centile	The 80 th Centile of the averages reported by all contributing Health Care Organisations.						

Example 3 – Average length of stay

Paediatrics – Area 2 Asthma

Rationale

Asthma is a common childhood condition, the severity and frequency of which may be decreased by careful management. The following results are for CI. 2.1, the average length of stay in all children admitted with a primary diagnosis of asthma.

Results

CI	Year	No HCOs	Mean	Std	20 th Centile	Median	80 th Centile
2.1	1998	65	2.00	0.56	1.50	1.91	2.50
	1999	61	1.83	0.44	1.50	1.78	2.11
	2000	63	1.80	0.47	1.46	1.73	2.11
	2001	69	1.77	0.41	1.41	1.70	2.10
	2002	66	1.74	0.43	1.40	1.70	2.00
	2003	65	1.67	0.42	1.32	1.62	1.92

Explanation

The data provided by the HCOs is the average length of stay and the proportion of patients in each HCO is not known. The median as well as the mean of the average length of stay are provided in the table. If the mean is substantially greater than the median then the distribution of means is skewed. Twenty percent of HCOs had an average length of stay less than the 20th centile and twenty percent had length of stay exceeding the 80th centile length of stay.

The average length of stay has decreased from 2.00 days in 1998 to 1.67 days in 2003. A similar trend in the median occurred. Twenty percent of HCOs had an average length of stay exceeding 2.50 days in 1998 and in 2003 twenty percent had an average length of stay above 1.92 days (see 80th centile in Table 2.1). Western Australia reported the highest average length of stay in 2003 (Table 2.1).

Table 2.1 Average length of stay for children admitted for Asthma

State	No HCOs	ALOS
NSW	28	1.71
QLD	20	1.59
SA	6	1.70
TAS	5	1.63
VIC	18	1.52
WA	12	2.05
ACT, NT, NZ	6	1.50

Adverse Drug Reaction Indicators – Version 2

Area 1 Reporting Mechanisms

Rationale

Reporting of adverse drug reactions, both internally and to an external body, is to identify whether certain drugs have unusual side effects. This will be beneficial for the future management and safety of patients.

The indicators are:

CI.1.1 The rate of adverse drug reactions among non same-day patients reported to ADRAC

CI.1.2 The rate of adverse drug reactions among non same-day patients reported within the HCO

These indicators are difficult to interpret because while it is important that adverse drug reactions be reported when they occur it is also desirable that the rates be low. We have taken low rates as being desirable, assuming that all adverse drug reactions are routinely reported by the organisations.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2002	88	857	496,870	0.17	0.02	0.23	769	140	371
	2003	124	1,301	736,055	0.18	0.01	0.19	1,202	616	576
1.2	1999	48	2,246	233,804	0.96	0.09	0.90	2,038	621	1,109
	2000	76	4,524	397,036	1.14	0.07	1.90	4,232	1,291	2,039
	2001	101	6,231	634,042	0.98	0.09	1.28	5,672	1,750	2,579
	2002	122	5,184	662,227	0.78	0.07	1.08	4,713	–	2,341
	2003	141	5,535	766,063	0.72	0.07	1.11	4,977	–	2,640

CI. 1.1 The rate of adverse drug reactions among non same-day patients reported to ADRAC.

For the year 2003, there were 1,301 adverse drug reactions reported for almost 750,000 patients, a rate of 0.18%. There were large differences in rates between the HCOs, the higher rates were ten times the lower rates. The mean rate for private HCOs of 0.12% was approximately half the public rate, 0.22%. There was no significant relationship between the proportion of admissions and the rates of the HCOs. The majority of the 11 outlier HCOs were public whereas almost two thirds were private. The State differences were similar for both 2002 and 2003, with NSW having lower rates (Table 1.1).

Table 1.1 Adverse drug reactions reported to ADRAC.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	29	199	190,411	0.11	0.03	–
	2003	53	287	303,241	0.10	0.03	–
QLD	2002	19	121	59,610	0.20	0.06	–
	2003	20	221	91,483	0.24	0.05	135
VIC	2002	33	352	206,166	0.17	0.03	–
	2003	36	519	226,103	0.23	0.03	297
WA	2003	7	19	43,349	0.05	0.08	–
Other	2002	7	185	40,683	0.45	0.07	140
	2003	8	255	71,879	0.35	0.06	182

CI. 1.2 The rate of adverse drug reactions among non same-day patients reported within the HCO.

The overall rates have declined and the proportion of HCOs providing data has doubled since 2000. There were 5,535 adverse drug reactions reported for 766,063 non same day admissions (0.72%). The private rate (0.48%) was approximately half the public HCO rate (0.93%) although there was considerable variation in rates in both groups. There was no significant relationship between the numbers of patients represented and the rates of the HCOs. Twenty seven of the 36 outlier HCOs were public whereas almost two thirds of contributing HCOs were private.

Differences in case-mix may account for some of the variation in rates. This is supported by the fact that the HCO reporting the highest rates in each of the four years 1999 to 2002 treats cancer patients.

Area 2 Drug Monitoring

Rationale

Warfarin is a widely used anti-coagulant that is associated with potentially serious adverse reactions such as spontaneous bleeding. The degree of anti-coagulation is monitored using the international normalized ratio (INR) and in most clinical conditions require the INR to be between two and three. Values above five are regarded as too high and increase the risk of bleeding.

The following six indicators, which relate to the administration of Warfarin, all relate to non same-day admissions except for 2.5

The indicators are:

- CI. 2.1 Abnormal bleeding
- CI. 2.2 Cerebral haemorrhage
- CI. 2.3 INR/prothrombin reading greater than five
- CI. 2.4 Death as a result of an adverse reaction to Warfarin
- CI. 2.5 Written Warfarin drug information on discharge
- CI. 2.6 Dosage reviewed before next dose when INR is above the therapeutic range

Results

CI	Year	No HCOs	Numerator	Denominator	Rate (%)	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1999	29	35	1,810	1.93	1.60	1.96	6	—	—
	2000	36	25	2,473	1.01	0.84	1.47	4	—	—
	2001	27	10	1,973	0.51	0.51	0.51	—	—	—
	2002	27	21	2,173	0.97	0.32	0.91	14	—	7
	2003	26	15	2,140	0.70	0.17	0.61	11	10	7
2.2	1999	27	8	1,611	0.50	0.37	0.49	2	3	—
	2000	35	1	2,128	0.05	0.02	0.04	—	—	—
	2001	28	0	2,049	0.00	0.00	0.00	—	—	—
	2002	29	4	2,783	0.14	0.14	0.14	—	—	—
	2003	29	3	2,925	0.10	0.10	0.10	—	—	—
2.3	1999	34	202	4,762	4.24	3.78	7.04	21	100	61
	2000	46	341	6,375	5.35	3.94	9.20	89	167	54
	2001	41	189	3,609	5.24	3.03	6.26	79	—	17
	2002	40	275	8,505	3.23	2.57	5.62	56	66	6
	2003	34	230	6,188	3.72	2.49	6.58	75	51	22
2.4	1999	28	4	2,805	0.14	0.14	0.14	—	—	—
	2000	37	5	2,476	0.20	0.02	0.08	4	—	1
	2001	27	1	2,046	0.05	0.05	0.05	—	—	—
	2002	28	0	2,637	0.00	0.00	0.00	—	—	—
	2003	26	5	2,540	0.20	0.03	0.13	4	—	2
2.5	2002	19	429	468	91.7	92.0	97.0	25	—	15
	2003	18	357	381	93.7	83.2	97.0	12	—	5
2.6	2002	16	318	345	92.2	89.1	96.1	13	19	15
	2003	18	353	374	94.4	93.5	97.9	12	14	7

CI. 2.1 The rate of abnormal bleeding among non same-day separations receiving Warfarin.

The rate of abnormal bleeding has declined significantly from the 1999 figure of 1.9% to 0.7% in 2003. The rates for the better and poorer performing HCOs have also decreased. The proportion of HCOs reporting a rate of zero has increased from 60% in 1999 to 79% in 2003. The rates for the poorer performing HCOs are three times the rates for the better performing HCOs. The results suggest that the proportion of episodes of abnormal bleeding in patients taking Warfarin could be decreased by approximately two thirds.

The two outlier HCOs (public, rural) had rates of 4% or more and reported four and seven episodes of abnormal bleeding and contributed greatly to the metropolitan/rural differences (Table 2.1)

Table 2.1 Abnormal bleeding.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Metropolitan	2003	12	1	1,304	0.19	0.21	–
Rural	2003	14	14	836	1.49	0.26	10

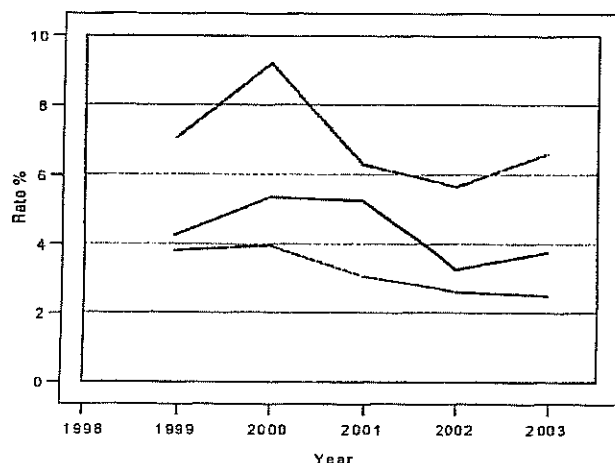
CI. 2.2 The rate of cerebral haemorrhage among non same-day separations receiving Warfarin.

Ninety percent of HCOs had no cases of cerebral haemorrhage since 2000. Three HCOs reported a single case of cerebral haemorrhage for patients taking Warfarin in 2003.

CI. 2.3 The rate of INR/prothrombin reading greater than five among non same-day separations receiving Warfarin.

There has been an improvement in the rate since 2000 (Figure 2.3). Both the overall rates and the rates of the better performing HCOs have decreased. The rate of HCOs reporting poorer performance is twice that of the better performing HCOs. The data suggest that the proportion of elevated readings of INR could be reduced by approximately one third. There were four outlier HCOs in 2003. Two of these HCOs were outliers in previous years.

Figure 2.3 Warfarin – INR/prothrombin greater than 5.

**CI. 2.4 The mortality rate due to an adverse reaction to Warfarin among non same-day separations.**

This is a relatively rare outcome for which there is no evidence of a decline in deaths.

CI. 2.5 The rate of providing written drug information about Warfarin for patients discharged on hospital initiated Warfarin.

Combining the results for the two years, half of HCOs had rates of 100%. This is a process for which all HCOs should aim to achieve rates close to 100%.

CI. 2.6 The rate of Warfarin dosage review before the next dose when the INR result is above the therapeutic range.

In the last two years two thirds of HCOs have reported rates of 100%, but twenty percent had rates below 94% in 2003. As with CI 2.5, all HCOs should be able to achieve rates of more than 95%.

Anaesthetics Indicators – Version 3

Area 1 Pre-Anaesthetic Consultation

Rationale

Consultation by an anaesthetist is essential for the medical assessment of a patient prior to anaesthesia for surgery or other procedure to ensure that the patient is in the optimal state for anaesthesia and surgery

The indicator is:

CI.1.1 Documented pre-anaesthetic patient consultation

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	148	91,065	115,205	79.0	71.6	99.7	23,820	7,922	11,734
	1999	138	117,612	140,508	83.7	84.4	99.7	22,422	–	12,294
	2000	151	157,055	168,825	93.0	87.9	99.9	11,562	–	6,755
	2001	161	170,190	178,720	95.2	93.0	100	8,451	–	5,458
	2002	181	216,493	231,366	93.6	91.9	100	14,808	–	11,152
	2003	168	198,275	209,741	94.5	95.1	100	11,390	8,719	7,717

CI.1.1 The rate of documented evidence of a pre-anaesthetic consultation.

The rates increased from 79% in 1998 to 95% in 2001 and have remained at this level. The proportion of HCOs having a rate of 100% has increased from 28% in 1998 to 43% in 2003 and the proportion of HCOs with statistically significantly low rates has decreased from 20% in 2000 to 15% in 2003. This represents a significant improvement although there is potential to improve further.

In 2002 and 2003, the rates were lowest in Queensland (Table 1.1).

Table 1.1 Documented evidence of a pre-anaesthetic consultation.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	64	76,831	80,174	95.8	1.87	–
	2003	57	69,654	70,397	98.9	1.34	–
QLD	2002	35	49,123	55,781	88.1	2.24	–
	2003	40	40,333	45,505	88.6	1.67	4,686
SA	2002	18	13,486	14,248	94.6	4.44	–
	2003	17	14,754	16,206	91.0	2.79	1,279
VIC	2002	42	41,411	44,523	93.0	2.51	–
	2003	33	43,132	46,381	93.0	1.65	2,754
WA	2002	10	7,276	7,452	97.6	6.14	–
	2003	12	7,024	7,309	96.1	4.16	–
Other	2002	12	28,366	29,188	97.2	3.10	–
	2003	9	23,378	23,943	97.6	2.30	–

Area 2 Anaesthesia Records

Rationale

An adequate anaesthesia record is an essential part of the patient's medical record and should chart all aspects of management relevant to anaesthesia care.

The indicator is:

CI. 2.1 Compliance of the anaesthesia record with the minimum requirements of the Australian and New Zealand College of Anaesthesia (ANZCA)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	133	77,450	105,190	73.6	23.5	99.6	27,349	13,354	13,914
	1999	120	94,565	117,088	80.8	51.5	99.6	22,013	16,300	13,169
	2000	139	132,329	142,271	93.0	81.7	99.9	9,836	—	6,488
	2001	150	152,700	160,829	94.9	84.2	100.0	8,067	—	5,688
	2002	161	166,157	193,916	85.7	74.9	100.0	27,673	16,416	19,992
	2003	155	162,705	178,601	91.1	79.8	100.0	15,828	—	11,601

CI. 2.1 The rate of substantial compliance with ANZCA requirements for anaesthetic records.

This indicator improved in the year 2000, but has failed to make any improvement since then. The better performing HCOs have reported rates close to 100%. The poorer performing HCOs reported rates of compliance of 80% or less (Figure 2.1).

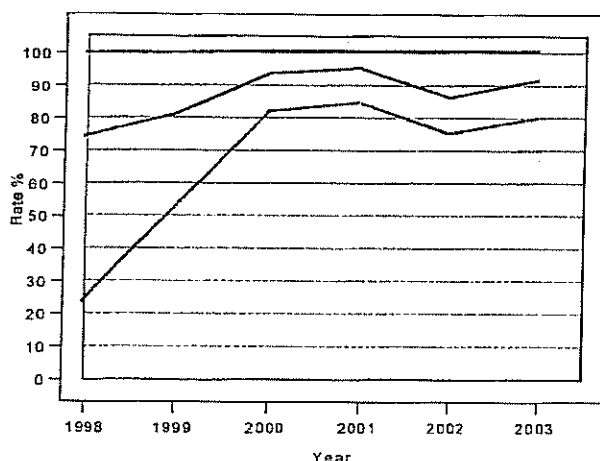


Figure 2.1 Anaesthetics – record compliance with ANZCA requirements.

The proportion of HCOs reporting rates of 100% has increased from 22% in 1998 to 36% in 2003. This indicator measures a process that is under the control of each HCO and hence further improvement could be achieved.

The proportion of HCOs with significantly lower rates has decreased from 35% in 2000 to 26% in 2003. Rates were lowest in Queensland in 2002 and 2003 (Table 2.1). Private rates were lower than the public rates (89% and 94% respectively).

Table 2.1 Anaesthetics – record compliance with ANZCA requirements.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
ACT	2003	5	6,482	6,552	98.9	6.52	—
NSW	2002	58	56,850	60,859	93.4	3.03	—
	2003	50	42,735	46,925	91.1	2.44	—
QLD	2002	33	32,616	47,062	69.3	3.44	12,127
	2003	37	37,931	46,225	82.1	2.45	—
SA	2002	15	9,737	11,090	87.8	7.09	—
	2003	16	16,202	16,902	95.8	4.06	—
VIC	2002	38	36,403	42,797	85.1	3.61	4,288
	2003	31	36,576	38,640	94.7	2.68	—
WA	2002	8	6,397	6,706	95.4	9.11	—
	2003	11	6,215	6,394	97.2	6.60	—
Other	2002	9	24,154	25,402	95.1	4.68	—
	2003	5	16,564	16,963	97.6	4.05	—

Area 3 Patient Recovery Period

Rationale

The occurrence of one of the following five clinical events may indicate less than optimal performance of anaesthesia

The indicators are:

- CI. 3.1 Recovery – respiratory distress
- CI. 3.2 Recovery – cardiac arrest
- CI. 3.3 Recovery – core temperature < 35C
- CI. 3.4 Recovery – severe pain
- CI. 3.5 Recovery – unplanned stay > 2 hours

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	215	1,457	632,557	0.23	0.05	0.33	1,165	–	500
	1999	240	1,443	728,933	0.20	0.06	0.28	1,008	155	445
	2000	259	1,547	864,401	0.18	0.06	0.25	1,043	457	383
	2001	279	1,693	978,916	0.17	0.06	0.24	1,123	426	387
	2002	294	1,793	1,054,911	0.17	0.05	0.23	1,316	521	501
	2003	299	1,825	1,126,106	0.16	0.04	0.22	1,339	670	522
3.2	1998	214	214	614,297	0.03	0.01	0.03	180	–	105
	1999	229	161	682,414	0.02	0.01	0.03	78	42	22
	2000	254	170	858,021	0.02	0.01	0.02	88	34	23
	2001	279	211	969,199	0.02	0.01	0.02	97	–	21
	2002	289	203	1,026,339	0.02	0.01	0.02	105	–	33
	2003	295	281	1,122,197	0.03	0.01	0.02	186	–	64
3.3	1998	212	4,827	617,712	0.78	0.13	1.14	3,995	–	1,798
	1999	221	5,120	682,121	0.75	0.07	1.12	4,608	–	2,246
	2000	251	6,087	832,766	0.73	0.11	1.14	5,181	–	2,600
	2001	264	5,272	923,479	0.57	0.08	0.92	4,498	–	2,051
	2002	277	5,148	1,011,289	0.51	0.08	0.88	4,381	–	2,041
	2003	284	4,670	1,082,224	0.43	0.09	0.78	3,691	–	1,529
3.4	1998	220	4,790	635,244	0.75	0.06	0.85	4,394	–	2,495
	1999	236	3,899	723,150	0.54	0.08	0.69	3,324	–	1,615
	2000	257	6,201	853,227	0.73	0.06	0.65	5,701	–	3,153
	2001	276	5,022	971,868	0.52	0.06	0.74	4,472	–	2,176
	2002	287	4,607	1,034,301	0.45	0.07	0.65	3,862	1,904	1,903
	2003	295	5,155	1,097,193	0.47	0.08	0.55	4,271	2,358	2,298
3.5	1998	221	10,810	655,057	1.65	0.21	1.97	9,424	–	5,080
	1999	244	13,111	740,836	1.77	0.12	1.71	12,201	6,133	6,671
	2000	262	15,651	889,995	1.76	0.08	1.45	14,898	–	8,138
	2001	273	17,215	970,935	1.77	0.15	1.56	15,717	9,161	9,022
	2002	286	12,881	1,002,930	1.28	0.13	1.27	11,574	5,936	6,178
	2003	294	19,473	1,108,249	1.76	0.10	1.26	18,322	10,686	10,517

In relation to indicators 3.1 to 3.4, it is likely that some of the differences between HCOs are related to factors such as type of surgery. This is consistent with the slightly higher rates in the metropolitan and public HCOs. The indicators provide evidence that the rates for intervention by an anaesthetist have remained low and are probably related to the complexity of the surgery. Thus, in practice, the reductions in the proportion of these adverse outcomes may not be achievable to the degree indicated in the tables

CI. 3.1 The rate of patients having documented evidence of respiratory distress in the recovery period requiring intervention by an anaesthetist.

The rate has declined steadily since 1998 (Figure 3.1) The rates for the better performing HCOs have remained at approximately 0.05%, less than one third of the overall rate. The rate of the poorer performing HCOs has remained at five times the rate of the better performing HCOs. The public rate is approximately twice the rural rate (Table 3.1)

Figure 3.1 Recovery – respiratory distress.

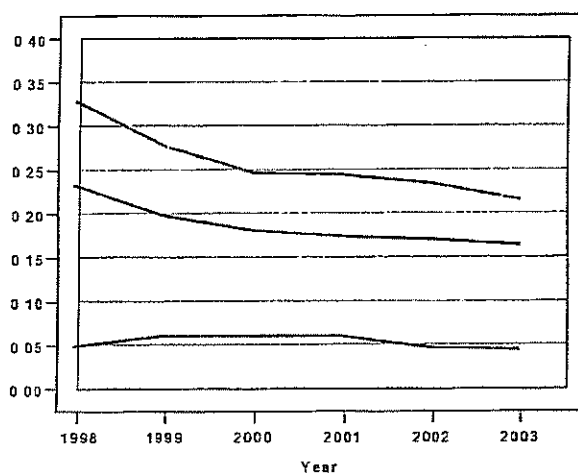


Table 3.1 Recovery – respiratory distress.

Stratum	No Year	HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	113	1,033	382,032	0.26	0.01	521
	2003	112	1,158	415,341	0.27	0.01	670
Private	2002	181	760	672,879	0.12	0.01	—
	2003	187	667	710,765	0.10	0.01	—

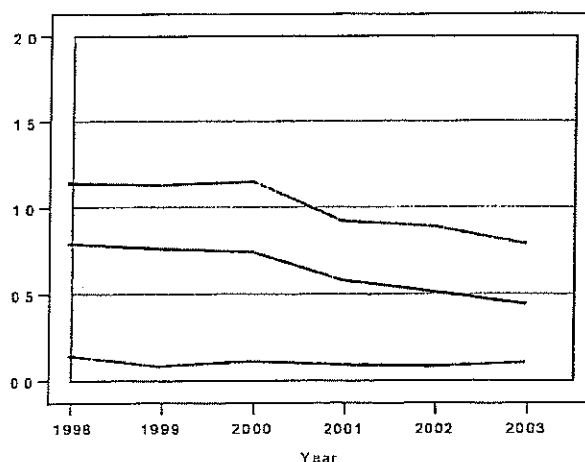
CI. 3.2 The rate of respiratory or cardiac arrest in recovery.

The rates have remained stable and low at 0.02% since 1998

CI. 3.3 The rate of patients having low core temperature in the recovery period.

The rates have steadily decreased since 1998 (Figure 3.3) The rate in 2003 is almost half the rate in 1998. The rates of the poorer performing HCOs have decreased as well, but remain at almost double the average rate. This is an avoidable outcome and the large variation between HCOs indicates that the rates could be reduced by at least half. Forty three HCOs had statistically significantly high rates for at least three of their reports during the six year period.

Figure 3.3 Recovery – core temperature < 35°C.



CI. 3.4 The rate of occurrence of severe pain in recovery requiring the intervention of an anaesthetist.

The rates have declined from 0.75% in 1998 to approximately 0.5% in 2003. The better performing HCOs had rates less than 0.1% since 1998. The public rates were approximately three times the private rates in both 2002 and 2003 (Table 3.4). This appears to be a potentially avoidable outcome and the large variation between HCOs indicates that the rates could be reduced by at least half. Thirty HCOs had statistically significantly high rates for at least three times during the six-year period.

Table 3.4 Recovery – severe pain.

Stratum	No Year	HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	108	2,932	375,026	0.77	0.05	1,904
	2003	111	3,415	390,659	0.86	0.06	2,358
Private	2002	179	1,675	659,275	0.26	0.04	—
	2003	184	1,740	706,534	0.26	0.04	—

CI 3.5 The rate of unplanned recovery stay exceeding two hours.

The rates have remained at about 1.7% since 1998 and there were significant differences between the HCOs. Public rates were three times higher than the private rates in 2002 and 2003 (Table 3.5). Twenty public metropolitan HCOs accounted for almost all of the 10,517 outliers.

CI 3.5 Recovery – unplanned stay > two hours.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	107	7,904	344,988	2.28	0.15	5,210
	2003	112	14,004	411,030	3.39	0.26	10,686
Private	2002	179	4,977	657,942	0.77	0.11	–
	2003	182	5,469	697,219	0.79	0.20	–

Area 4 Unplanned Admission to Intensive Care Unit

Rationale

Unplanned admission to an intensive care unit may be due to an avoidable incident in anaesthesia.

The indicator is:

CI. 4.1 Unplanned admission to ICU within 24 hours of the procedure

Results

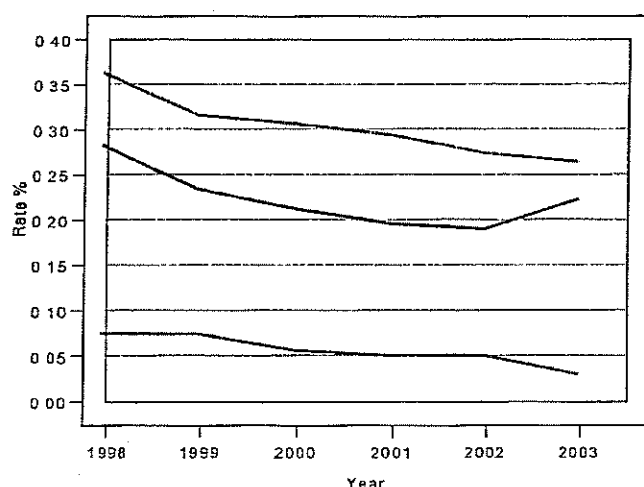
CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	157	1,372	487,076	0.28	0.07	0.36	1,013	—	421
	1999	164	1,285	553,149	0.23	0.07	0.32	882	—	302
	2000	180	1,295	611,945	0.21	0.06	0.30	956	—	341
	2001	179	1,281	660,025	0.19	0.05	0.29	958	—	332
	2002	184	1,289	681,225	0.19	0.05	0.27	959	—	358
	2003	194	1,565	706,050	0.22	0.03	0.26	1,359	—	544

CI. 4.1 The rate of unplanned admission to ICU within 24 hours of a procedure.

The overall rates have remained at about 0.2% since 1999, while the rates of the better and the poorer performing HCOs have declined (Figure 4.1). Public metropolitan rates are the highest (0.4%) but public/private and metropolitan/rural differences do not explain the variation between HCOs.

There were seven outlier public metropolitan HCOs which accounted for two thirds of the 544 outlier events. Eleven HCOs had statistically significantly high rates at least three times during the six year period.

Figure 4.1 Anaesthetics - unplanned ICU admission.



Area 5 Post-Anaesthetic Review

Rationale

Follow up of patients after surgery is essential to audit morbidity in relation to anaesthesia.

The indicator is:

CI. 5.1 Documented evidence of post anaesthetic review within 48 hours

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1998	48	18,489	71,731	25.8	0.43	62.5	26,319	10,405	7,987
	1999	43	13,250	59,342	22.3	0.29	90.0	40,169	–	5,414
	2000	39	22,922	73,147	31.3	0.28	99.3	49,717	25,917	8,844
	2001	33	18,887	45,337	41.7	15.8	99.7	26,330	13,161	6,785
	2002	36	28,673	41,444	69.2	16.2	99.9	12,734	5,873	7,119
	2003	41	27,696	44,896	61.7	23.7	100	17,180	12,660	7,370

CI. 5.1. The rate of documented evidence of post anaesthetic review within 48 hours.

The rates have increased since 1998 (Figure 5.1). The proportion of HCOs reporting rates of 100% has increased from 6% in 1998 to 44% in 2003. However, these results suggest that there still remains an opportunity to significantly increase the rate of post anaesthetic review from 62% to over 90%. A single rural public HCO accounted for almost three quarters of the 7,370 outlier cases. When this outlier was removed, the public rate was lower than the private rate.

Figure 5.1 Anaesthetics - patient review within 48 hours

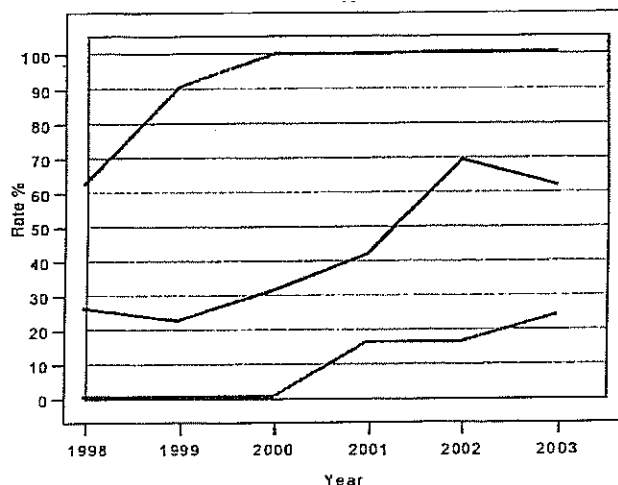


Table 5.1 Anaesthetics – patient review within 48 hours.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	12	14,299	17,238	82.9	7.39	–
	2003	15	12,111	14,856	81.5	7.07	–
QLD	2002	8	4,537	9,724	46.6	9.84	3,528
	2003	9	5,645	15,531	36.3	6.92	8,463
SA	2002	7	5,038	5,868	85.8	12.7	–
	2003	6	2,833	3,118	90.8	15.4	–
VIC	2003	5	2,492	3,339	74.6	14.9	–
Other	2002	9	4,799	8,614	55.7	10.5	2,344
	2003	6	4,615	8,052	57.3	9.61	2,698
Metropolitan	2003	24	20,005	24,521	81.6	5.23	–
Rural	2003	17	7,691	20,375	37.8	5.73	8,928
Public	2003	18	13,605	29,223	46.6	4.92	12,660
Private	2003	23	14,091	15,673	89.9	6.71	–

Day Surgery / Endoscopy Indicators – Version 3

Area 1 Cancellation of Booked Procedures

Rationale

These indicators provide evidence of the effectiveness of the booking system in day procedure facilities. They are based on the rates at which booked procedures are cancelled or not carried out

The indicators are:

- CI. 1.1 Failure to arrive
- CI. 1.2 Cancellation – pre-existing medical condition
- CI. 1.3 Cancellation – acute medical condition
- CI. 1.4 Cancellation – administrative/organisational reasons

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	234	5,893	425,661	1.38	0.16	1.97	5,214	–	2,291
	1999	252	7,379	510,100	1.45	0.15	1.84	6,606	–	2,974
	2000	289	7,674	606,630	1.27	0.12	1.62	6,916	–	3,647
	2001	298	6,446	690,840	0.93	0.09	1.37	5,845	2,462	2,903
	2002	316	6,214	766,742	0.81	0.09	1.19	5,531	2,246	2,659
	2003	319	6,256	795,367	0.79	0.08	1.16	5,657	2,703	2,968
1.2	2001	308	2,148	705,751	0.30	0.06	0.44	1,756	880	898
	2002	322	2,227	788,270	0.28	0.05	0.39	1,849	1,017	911
	2003	333	1,959	837,545	0.23	0.06	0.34	1,489	–	628
1.3	2001	256	1,963	563,564	0.35	0.09	0.51	1,467	742	666
	2002	294	2,150	714,994	0.30	0.08	0.49	1,600	850	650
	2003	312	2,503	793,141	0.32	0.08	0.47	1,883	958	827
1.4	2001	256	2,926	567,303	0.52	0.07	0.81	2,546	1,683	1,459
	2002	300	4,379	720,061	0.61	0.05	0.80	4,036	3,072	2,256
	2003	314	4,248	799,446	0.53	0.07	0.85	3,724	3,097	2,252

CI. 1.1 The rate of patients failing to arrive after being booked into a day procedure facility.

The rates for failing to arrive have decreased since 1998 (Figure 1.1). The decrease has occurred in both the public and private sectors. The rates for the public sector have been approximately three times the rates of the private sector since 1998 (Table 1.1). The low rates for many HCOs suggest that the rate could be reduced further.

Figure 1.1 Failure to arrive

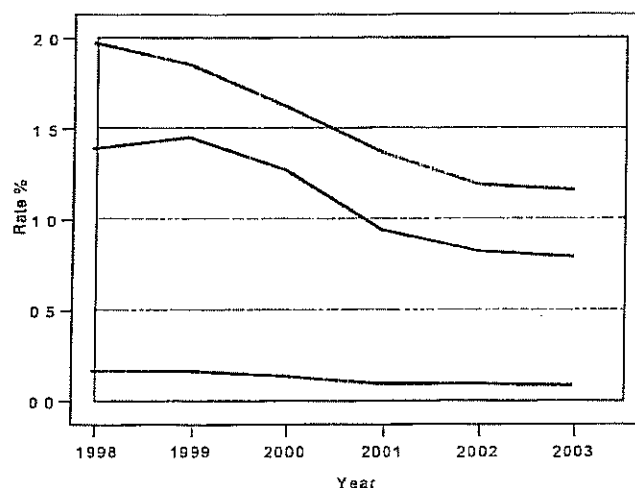


Table 1.1 Failure to arrive

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	125	3,555	241,166	1.5	0.084	2,246
	2003	117	3,856	243,265	1.6	0.087	2,703
Private	2002	191	2,659	525,576	0.52	0.057	–
	2003	202	2,400	552,102	0.45	0.058	–

CL 1.2 The rate of booked day procedure patients having their procedure cancelled because of a pre-existing medical condition

The rates have declined slightly since 2001. The rate for the public sector is three times the rate for the private sector. The rate of the better performing HCOs is less than a quarter of the average rate in each sector.

CL 1.3 The rate of booked day procedure patients having their procedure cancelled because of an acute medical condition

The rates have changed little since 2001. The rate for the public sector was higher than the private sector.

CL 1.4 The rate of cancellation of booked procedures for administrative or organisational reasons.

This is the more common cause of cancellation of a procedure and the rates have remained at about 0.53% since 2001. The public sector rate was approximately ten times the private sector rate (Table 1.4). In both sectors the rate of the better performing HCOs is less than one third of the average rate.

There were 52 public HCOs and two private HCOs having significantly high rates.

Table 1.4 Cancellation – administrative/organisational reasons

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	109	3,548	222,564	1.6	0.12	3,072
	2003	110	3,547	235,456	1.5	0.06	3,097
Private	2002	191	831	497,497	0.18	0.078	–
	2003	204	701	563,990	0.15	0.037	–

Area 2 Unplanned Return to Operating Room

Rationale

An unplanned return to the operating room during the same admission may reflect problems in the performance of the procedure

The indicator is:

CL 2.1 Unplanned return to the operating room during the same admission in a day procedure facility

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	221	185	395,108	0.05	0.02	0.07	105	—	39
	1999	250	160	482,662	0.03	0.02	0.05	53	—	7
	2000	283	301	598,818	0.05	0.02	0.08	177	—	53
	2001	295	301	684,683	0.04	0.02	0.06	171	—	50
	2002	317	311	760,040	0.04	0.02	0.06	165	—	41
	2003	323	358	803,319	0.04	0.02	0.07	212	—	59

CL 2.1 The rate of unplanned return to the operating/procedure room.

The rates, while low, have remained at about 0.04% since 1998. The average rates were about twice the rates of the better performing HCOs.

Area 3 Unplanned Overnight Admission

Rationale

This indicator may reflect possible problems in the performance of procedures or in the appropriate selection of patients for management in a day procedure facility

The indicator is:

CI. 3.1 Unplanned overnight admission

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	270	11,973	487,559	2.46	0.33	4.01	10,361	–	3,409
	1999	303	12,927	595,623	2.17	0.23	3.88	11,528	4,048	4,357
	2000	327	15,534	730,467	2.13	0.20	3.39	14,077	4,217	5,030
	2001	344	15,879	821,344	1.93	0.20	3.20	14,246	3,511	5,135
	2002	353	16,352	902,517	1.81	0.18	3.05	14,728	3,971	5,293
	2003	356	16,101	922,083	1.75	0.13	2.91	14,880	3,734	5,364

CI. 3.1 The rate of intended same-day patients who have an unplanned overnight admission.

There has been a decline in the rates since 1998 (Figure 3.1). The rates for the public sector were twice the rate of the private sector (Table 3.1). The public and private sectors contributed approximately equally to the 5,364 outlier admissions.

Figure 3.1 Unplanned overnight admission.

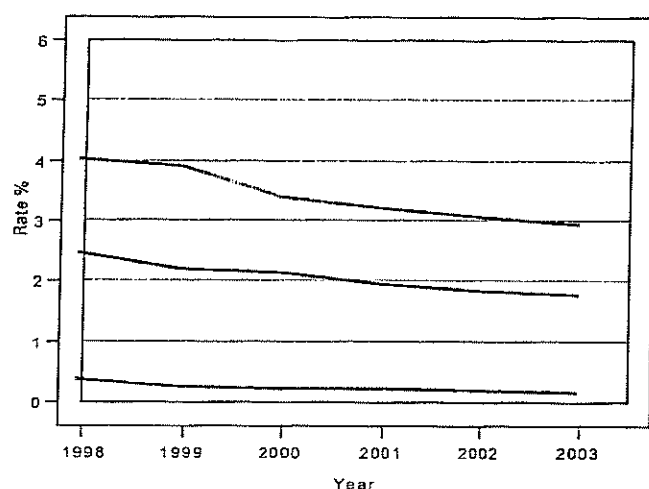


Table 3.1 Unplanned overnight admission.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	136	7,711	266,804	2.9	0.11	3,971
	2003	125	7,324	262,116	2.8	0.12	3,734
Private	2002	217	8,641	635,713	1.4	0.074	–
	2003	231	8,777	659,967	1.3	0.076	–

Area 4 Delayed Patient Discharge

Rationale

This indicator may reflect possible problems in the administration of anaesthesia or sedation or the selection of patients or other aspects of management in a day procedure facility

The indicator is:

CI. 4.1 Unplanned delay in discharge

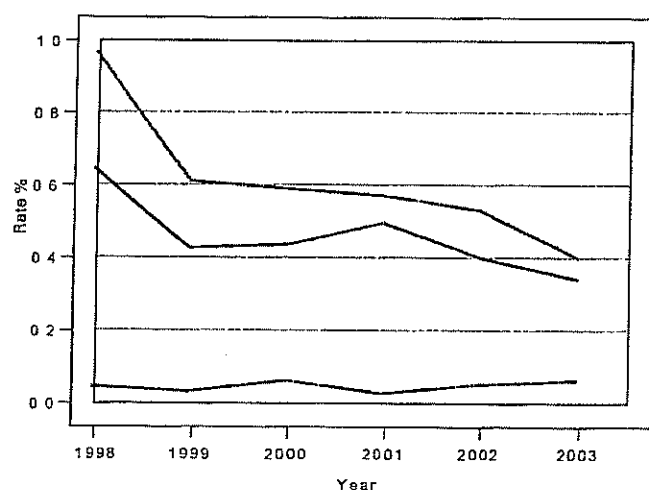
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	212	2,318	361,447	0.64	0.04	0.96	2,168	—	1,251
	1999	240	1,859	438,401	0.42	0.03	0.61	1,746	—	1,059
	2000	260	2,368	544,782	0.43	0.06	0.59	2,046	—	1,306
	2001	274	3,168	641,858	0.49	0.02	0.57	3,015	—	1,790
	2002	305	2,952	745,981	0.40	0.05	0.53	2,599	568	1,560
	2003	308	2,648	779,787	0.34	0.06	0.40	2,216	—	1,368

CI. 4.1 The rate of unplanned delay in discharge from a day procedure facility.

The rates have halved since 1998 (Figure 4.1), primarily due to the decline in the poorer performing HCOs from 0.96% to 0.40%. The rates for the better performing HCOs have not changed. The public rates were approximately twice the private rates but there remains the large differences between the higher and lower rates between HCOs (0.40% and 0.06% in 2003).

Figure 4.1 Unplanned delay in discharge



Dermatology Indicators – Version 1

Area 1 Toxic Drug Monitoring (outpatients)

Rationale

Isotretinoin is used for severe cystic acne unresponsive to routine therapy. This drug has well known potential toxic effects on foetal development, lipid levels and liver function.

The indicators are:

- CI. 1.1 Isotretinoin – Females having blood test for pregnancy before commencement
- CI. 1.2 Isotretinoin – Females providing a guarantee of effective contraception before commencement
- CI. 1.3 Isotretinoin – lipid screening before commencement
- CI. 1.4 Isotretinoin – follow-up lipid screening after commencement
- CI. 1.5 Isotretinoin – LFTs performed before commencement
- CI. 1.6 Isotretinoin – follow-up LFTs performed after commencement
- CI. 1.7 Isotretinoin – documented that informed of risks before commencement
- CI. 1.8 Isotretinoin – evidence that dose is weight related

Only CI 1.1 was collected in 2003

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	2	7	7	100	100	100	–	–	–
	1999	4	14	15	93.3	93.3	93.3	–	–	–
	2000	3	15	19	78.9	58.0	95.9	3	–	–
	2001	2	17	37	45.9	1.26	88.2	15	–	–
	2002	1	2	19	10.5	10.5	10.5	–	–	–
	2003	1	0	2	0.00	0.00	0.00	–	–	–
1.2	1998	2	7	7	100	100	100	–	–	–
	1999	4	15	15	100	100	100	–	–	–
	2000	3	16	19	84.2	72.1	94.4	1	–	–
	2001	1	18	19	94.7	94.7	94.7	–	–	–
1.3	1998	3	11	11	100	100	100	–	–	–
	1999	4	28	28	100	100	100	–	–	–
	2000	4	40	42	95.2	95.3	95.3	–	–	–
	2001	1	33	33	100	100	100	–	–	–
1.4	1998	3	11	11	100	100	100	–	–	–
	1999	4	28	28	100	100	100	–	–	–
	2000	4	42	42	100	100	100	–	–	–
1.5	1998	3	11	11	100	100	100	–	–	–
	1999	4	28	28	100	100	100	–	–	–
	2000	4	40	42	95.2	95.3	95.3	–	–	–
	2001	1	32	33	97.0	97.0	97.0	–	–	–
1.6	1998	3	9	9	100	100	100	–	–	–
	1999	4	28	28	100	100	100	–	–	–
	2000	4	42	42	100	100	100	–	–	–
1.7	1998	3	9	9	100	100	100	–	–	–
	1999	4	27	28	96.4	96.4	96.4	–	–	–
	2000	4	37	42	88.1	84.7	97.9	4	–	–
	2001	1	28	33	84.8	84.9	84.9	–	–	–
1.8	1998	3	9	9	100	100	100	–	–	–
	1999	3	21	23	91.3	46.6	98.1	1	–	1
	2000	4	34	42	81.0	75.4	94.1	5	–	–
	2001	1	25	33	75.8	75.8	75.8	–	–	–

CI. 1.1 to 1.8

The results obtained from these indicators were based on four or less reports and few patients. Thus it is not possible to determine any trends or gains. These indicators have been discontinued.

Area 2 Use of Complex Physical Therapy (outpatients)

Rationale

PUVA is photo chemotherapy consisting of Psoralens and Ultra Violet Light A. This treatment may have toxic effects on patients.

The indicators are:

- CI. 2.1 PUVA – documented reasons for treatment for other than standard indications
- CI. 2.2 PUVA – documented reasons for treatment in the presence of major contra-indications
- CI. 2.3 PUVA – ophthalmic examination performed before commencement
- CI. 2.4 PUVA – ophthalmic examination performed during treatment
- CI. 2.5 PUVA – anti-nuclear antibodies performed before commencement
- CI. 2.6 PUVA – compliant treatment record maintained

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1999	1	2	2	100	100	100	–	–	–
2.2	1999	1	0	2	0.00	0.00	0.00	–	–	–
2.3	1998	1	0	2	0.00	0.00	0.00	–	–	–
	1999	2	3	6	50.0	54.3	54.3	–	–	–
	2000	2	2	4	50.0	39.0	55.2	–	–	–
2.4	1998	1	1	2	50.0	50.0	50.0	–	–	–
	1999	2	3	6	50.0	54.3	54.3	–	–	–
	2000	2	2	4	50.0	39.0	55.2	–	–	–
2.5	1998	1	1	2	50.0	50.0	50.0	–	–	–
	1999	2	4	6	66.7	35.3	81.9	–	–	–
	2000	2	2	4	50.0	39.0	55.2	–	–	–
2.6	1998	1	2	2	100	100	100	–	–	–
	1999	2	6	6	100	100	100	–	–	–
	2000	2	4	4	100	100	100	–	–	–

CI No. 2.1 to 2.6

The numbers were too small to comment on the results. These indicators have been revised for 2004.

Area 3 Dermatological Surgery (SCC)

Rationale

The approaches used to manage patients with Squamous Cell Carcinoma of the skin (SCC) may have adverse effects on the patient's future morbidity and mortality. The outlook for patients depends upon adequate follow-up.

The indicators are:

- CI. 3.1 SCC – histological confirmation of diagnosis before or after excision
- CI. 3.2 SCC – excision margins clear
- CI. 3.3 SCC – documented evidence of examination of nodal status
- CI. 3.4 SCC – positive excision margins and documented plan of action
- CI. 3.5 SCC – documented follow-up plan

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	7	112	124	90.3	73.0	98.4	10	–	–
	1999	6	67	67	100	100	100	–	–	–
	2000	7	124	170	72.9	94.2	98.9	44	–	23
	2001	6	218	221	98.6	98.6	98.6	–	–	–
	2002	6	209	212	98.6	97.0	99.5	1	–	–
	2003	4	92	92	100	100	100	–	–	–
3.2	1998	7	97	115	84.3	79.1	94.2	11	–	–
	1999	7	77	79	97.5	97.5	97.5	–	–	–
	2000	7	140	158	88.6	85.3	91.2	4	–	–
	2001	7	198	225	88.0	79.1	91.9	8	–	–
	2002	5	176	187	94.1	94.1	94.1	–	–	–
	2003	5	101	104	97.1	97.1	97.1	–	–	–
3.3	1998	4	41	57	71.9	52.3	81.6	5	–	–
	1999	6	14	55	25.5	23.2	36.5	6	–	–
	2000	7	59	149	39.6	22.4	64.3	36	–	–
	2001	5	49	159	30.8	1.16	97.0	105	–	24
	2002	5	18	184	9.78	0.88	53.1	79	–	–
	2003	4	10	92	10.9	1.75	29.2	16	–	–
3.4	1998	5	26	77	33.8	18.3	75.8	32	–	–
	1999	5	16	54	29.6	2.39	56.1	14	–	–
	2000	6	13	144	9.03	4.00	15.7	9	–	–
	2001	6	15	221	6.79	0.94	9.49	5	–	–
	2002	5	12	196	6.12	2.38	10.5	8	–	–
	2003	3	2	84	2.38	0.11	31.3	24	–	–
3.5	1998	5	90	97	92.8	76.7	98.5	5	–	1
	1999	6	53	55	96.4	97.7	99.6	1	–	1
	2000	7	85	149	57.0	3.80	97.9	60	–	–
	2001	4	115	132	87.1	93.5	97.7	13	–	10
	2002	5	87	196	44.4	27.5	92.6	94	–	20
	2003	4	39	65	60.0	27.4	98.6	25	–	13

In each of the following indicators there were at most seven HCOs that submitted data in the last three years. Hence there is insufficient data to determine trends or stratum differences. These indicators have been discontinued.

CI. 3.1 SCC – The rate histological confirmation of diagnosis, prior to treatment or after excision in patients managed for SCC.
The HCOs reporting since 2001 have reported rates close to 100%.

CI. 3.2 SCC – The rate of excision margins that are clear based on histological examination.
There was no clear trend with the rates being about 90%.

CI. 3.3 SCC – The rate of documented evidence of examination of nodal status in the primary drainage area in patients managed for SCC.
The rates have declined to 11% and exhibited large variation between the HCOs.

CI. 3.4 SCC – The rate of positive excision margins and documented plan of action in all SCC excised.

This indicator was difficult to interpret in its present form and has been discontinued.

CI. 3.5 SCC – The rate of having a documented follow-up plan in patients managed for SCC.

In 2002 and 2003 one HCO reported rates of 0%. The rates of the remaining HCOs were 59% and 95% respectively in those years. The better rates were above 92.6% for all years, but the lower rates ranged from 3.8% to 97.7%. This can be due to only four to seven HCOs reporting.

Emergency Medicine Indicators – Version 3

Area 1 Waiting Time

Rationale

The waiting times for each triage category (ATS Categories 1 – 5) are the critical performance indicators for an emergency department. Where emergency department resources are restricted, or during periods of transient patient overload, staff should be deployed so that performance is maintained in the most urgent categories. The measure of performance is defined in terms of the proportion of patients seen within a specified time period.

The indicators are:

- CI. 1.1 ATS Category 1 patients attended to immediately
- CI. 1.2 ATS Category 2 patients attended to within 10 minutes
- CI. 1.3 ATS Category 3 patients attended to within 30 minutes
- CI. 1.4 ATS Category 4 patients attended to within 60 minutes
- CI. 1.5 ATS Category 5 patients attended to within 120 minutes

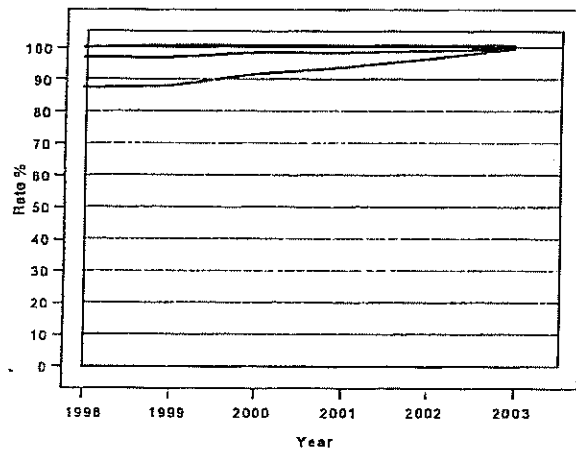
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	154	19,517	20,297	96.2	87.1	99.7	720	–	493
	1999	154	22,272	23,178	96.1	87.2	99.8	859	–	552
	2000	172	25,582	26,143	97.9	91.1	99.9	524	–	392
	2001	179	26,193	26,705	98.1	93.0	99.9	489	–	372
	2002	167	24,262	24,611	98.6	96.1	99.9	327	–	226
	2003	174	26,456	26,693	99.1	99.0	99.9	219	–	134
1.2	1998	166	103,412	139,888	73.9	62.8	88.6	20,555	18,606	8,081
	1999	159	122,001	160,928	75.8	67.2	89.4	21,857	4,309	9,792
	2000	177	147,571	199,049	74.1	66.7	89.0	29,573	–	11,989
	2001	182	158,528	214,694	73.8	63.4	88.7	31,891	9,391	11,708
	2002	168	176,030	236,831	74.3	64.6	89.8	36,667	12,032	12,629
	2003	179	185,413	254,122	73.0	65.3	91.0	45,731	12,313	14,459
1.3	1998	163	426,153	634,236	67.2	61.3	88.8	136,973	54,794	36,603
	1999	161	478,019	723,022	66.1	59.1	87.6	155,382	60,466	42,192
	2000	178	550,736	863,713	63.8	60.1	91.2	236,905	81,169	57,860
	2001	185	567,929	917,822	61.9	57.0	88.5	244,648	166,126	58,998
	2002	168	612,373	1,013,110	60.4	55.0	86.3	261,681	199,647	67,044
	2003	178	623,696	1,034,905	60.3	55.1	89.2	299,168	227,942	67,301
1.4	1998	161	745,984	1,105,705	67.5	59.5	91.9	270,337	239,579	70,598
	1999	160	840,756	1,240,024	67.8	59.1	91.5	293,912	267,594	74,488
	2000	173	934,624	1,442,763	64.8	56.0	92.7	402,799	323,855	97,646
	2001	183	914,619	1,452,654	63.0	53.7	92.5	428,941	319,589	98,503
	2002	166	949,064	1,542,745	61.5	53.0	91.7	465,394	375,525	113,076
	2003	175	979,025	1,553,445	63.0	54.0	92.4	457,031	350,149	109,354
1.5	1998	155	461,279	529,957	87.0	81.5	98.7	61,919	–	27,147
	1999	157	435,664	498,940	87.3	9.3	98.7	56,563	–	26,204
	2000	173	473,849	546,126	86.8	78.1	98.6	64,840	–	29,439
	2001	182	438,037	513,258	85.3	75.9	98.0	4,960	–	29,162
	2002	166	437,662	517,745	84.5	77.3	97.7	68,215	–	29,243
	2003	174	431,464	507,769	85.0	77.9	98.4	67,955	–	26,881

CI 1.1 The rate of patients allocated ATS Category 1 who are attended to immediately.

The rates have now reached 99% showing improvement in each year. The differences between the better performing and the poorer performing HCOs have also been reduced (Figure 1.1). Two thirds of the 23 HCOs with rates less than 90% had fewer than one ATS Category 1 patient each week.

Figure 1.1 ATS 1 attended immediately.



CI 1.2 The rate of patients allocated ATS category 2 who are attended to within 10 minutes.

For triage category 2, there was little evidence of improvement, with one in every four patients not being seen within 10 minutes. For the better performing hospitals, one in every 10 patients were not seen within the recommended time frame. If the average of all HCOs could be brought to this rate, an additional 50,000 patients would have received treatment in the recommended timeframe.

Most data are submitted from the public and metropolitan sectors. As might be expected, the emergency departments with the larger throughput had poorer rates than the smaller units, (68% compared to 80%). There were significant variations between the States, with NSW and Victoria having better rates (Table 1.2).

Figure 1.2 ATS 2 attended within 10 minutes.

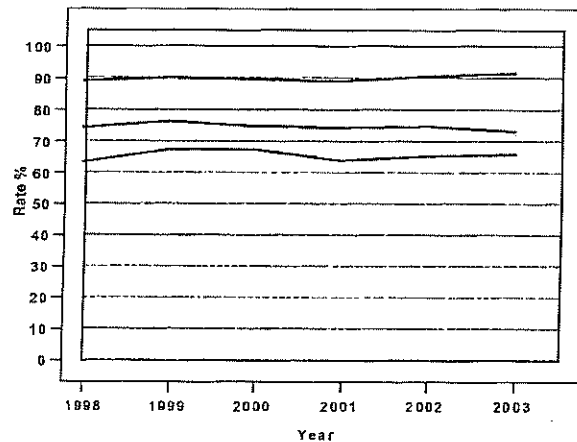


Table 1.2 ATSC 2 attended within 10 minutes

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	66	58,652	75,539	77.6	1.3	–
	2003	74	58,210	75,300	77.3	1.3	–
QLD	2002	27	28,652	40,709	70.4	1.8	4,008
	2003	29	34,668	45,526	76.2	1.7	–
SA	2002	13	16,773	24,598	68.2	2.3	2,961
	2003	12	19,841	30,920	64.2	2.1	4,474
TAS	2002	6	3,924	7,032	55.9	4.4	1,712
VIC	2002	28	34,755	43,300	80.3	1.8	–
	2003	31	31,609	40,173	78.7	1.8	–
WA	2002	18	16,744	20,870	80.2	2.5	–
	2003	18	22,676	30,909	73.3	2.1	1,650
NZ	2003	7	11,596	20,978	55.3	2.6	4,894
Other	2002	10	16,530	24,783	66.7	2.3	3,349
	2003	8	6,813	10,316	66.1	3.6	1,294
Metropolitan	2002	81	135,065	179,599	75.2	0.94	–
	2003	80	144,653	199,719	72.4	0.94	–
Rural	2002	87	40,965	57,232	71.6	1.7	–
	2003	99	40,760	54,403	74.9	1.8	–
Public	2002	148	166,084	224,236	74.1	0.85	–
	2003	158	174,476	241,107	72.4	0.84	–
Private	2002	20	9,946	12,595	78.9	3.6	–
	2003	21	10,937	13,015	83.9	3.6	–

CI.1.3 The rate of patients allocated to ATS Category 3 who are attended to within 30 minutes.

Triage category 3 also showed no improvement, with in fact a decline from 67% to 60% for the overall rates. The rates for those with a smaller throughput was 80% and drops to 60% for those with a higher throughput. As with the triage category 2 patients, the better performing hospitals were able to achieve a rate of 90%, or one person in every 10 not being seen within 30 minutes. If the overall rate were increased to 90%, over a quarter of a million patients would be seen in the recommended timeframe. The rates vary between states, with Victoria having the better rates of over 70% (Table 1.3)

Figure 1.3 ATSC three attended within 30 minutes

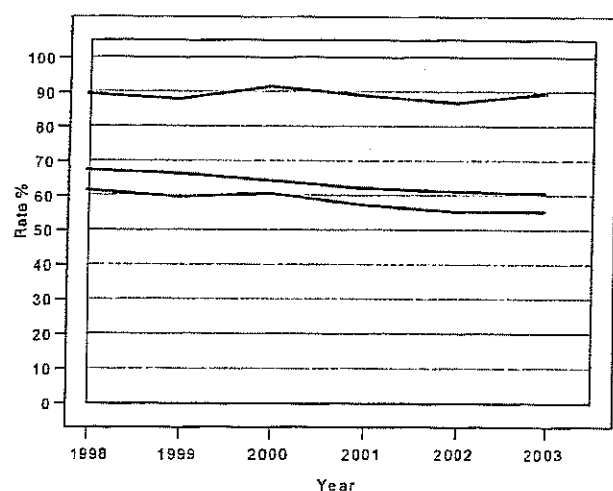


Table 1.3 ATSC 3 attended within 30 minutes

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	67	204,419	360,651	56.7	1.5	54,470
	2003	73	202,579	341,960	59.2	1.4	47,250
QLD	2002	27	109,105	177,080	61.6	2.1	18,017
	2003	29	117,073	194,893	60.1	1.9	25,310
SA	2002	12	40,211	82,756	48.6	3.1	19,188
	2003	12	43,662	97,808	44.7	2.7	27,779
TAS	2002	6	20,533	33,118	62.0	4.9	–
VIC	2002	28	129,406	180,235	71.8	2.1	–
	2003	31	123,779	169,400	73.1	2.0	–
WA	2002	18	43,545	60,957	71.4	3.6	–
	2003	18	64,306	95,556	67.3	2.7	5,520
NZ	2003	7	42,585	88,753	48.0	2.8	22,242
Other	2002	10	65,154	18,313	55.1	2.6	19,769
	2003	8	29,712	46,535	63.9	3.9	4,281
Metropolitan	2002	81	417,214	716,036	58.3	1.1	–
	2003	80	441,947	761,790	58.0	1.1	–
Rural	2002	87	195,159	297,074	65.7	1.8	–
	2003	98	181,749	273,115	66.5	1.8	–
Public	2002	148	555,918	942,707	59.0	0.96	199,647
	2003	157	560,953	958,691	58.5	0.91	227,942
Private	2002	20	56,455	70,403	80.2	3.5	–
	2003	21	62,743	76,214	82.3	3.2	–

CL 1.4 The rate of patients allocated to ATS Category 4 who are attended to within 60 minutes.

The situation with triage category 4 is similar to categories 2 and 3. There has been no improvement in delays in emergency treatment for these patients, and there was considerable variation between HCOs. Those with less throughput have rates of about 85% while the larger units have rates of 55%. There was a considerable difference between the better and poorer rates, being 54% and 92% respectively, for 2003.

Figure 1.4 ATSC 4 attended within 60 minutes.

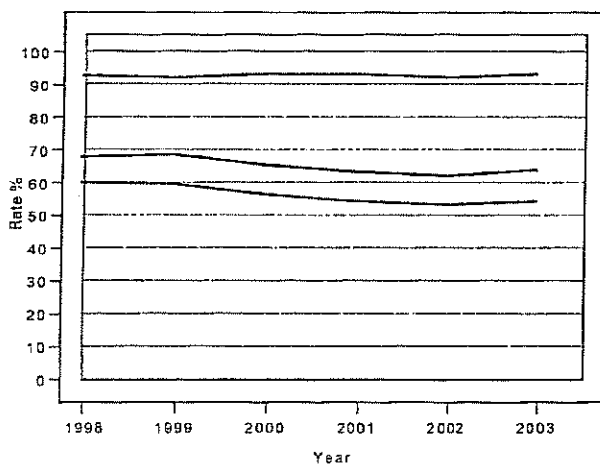


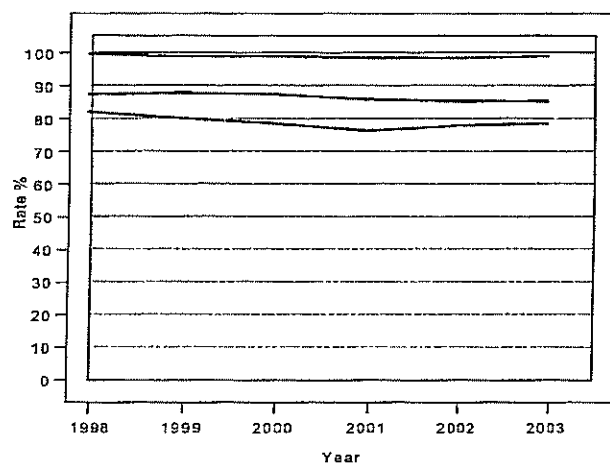
Table 1.4 ATSC 4 attended within 60 minutes

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Metropolitan	2002	81	555,208	967,001	57.4	1.3	—
	2003	80	601,015	1,011,845	59.4	1.2	—
Rural	2002	85	393,856	575,744	68.4	1.7	—
	2003	95	378,010	541,600	69.8	1.6	—
Public	2002	147	840,052	1,415,807	59.3	1.0	375,525
	2003	155	865,612	1,420,924	60.9	0.95	350,149
Private	2002	19	109,012	126,938	85.9	3.4	—
	2003	20	113,413	132,521	85.6	3.1	—

CI. 1.5 The rate of patients allocated to ATS Category 5 who are attended to within 120 minutes.

For triage category 5, the rates were generally better than those for categories 2, 3 and 4. However, there was also no evidence of improvement, with the overall rate dropping to 85% from 87%.

Figure 1.5 ATSC 5 attended within 120 minutes



Area 2 Acute Myocardial Infarction (AMI)

Rationale

Multi-centre studies have shown that the mortality rate of acute myocardial infarction is proportional to the time delay from arrival to hospital to the commencement of definitive therapy. The time delay must be minimised and emergency department management is crucial to this end. This indicator gives the rate of thrombolysis that was initiated within one hour of arrival for acute myocardial infarction.

The indicator is:

CI. 2.1 Thrombolysis initiated within one hour of presentation for acute AMI

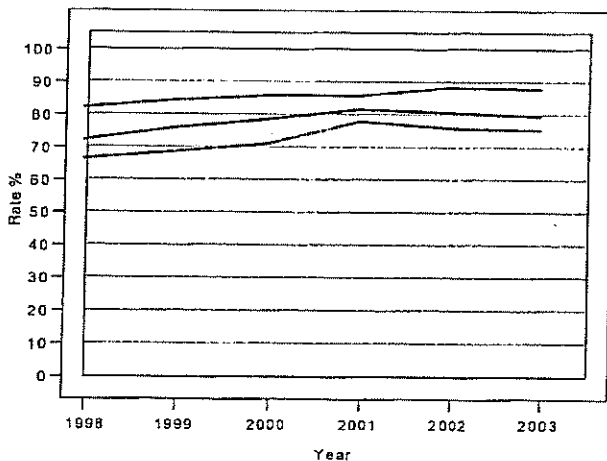
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	106	1,818	2,542	71.5	65.8	81.9	263	—	70
	1999	109	1,836	2,436	75.4	68.1	84.0	209	—	65
	2000	133	2,276	2,927	77.8	70.4	85.5	225	—	31
	2001	122	2,012	2,474	81.3	77.5	85.3	98	—	—
	2002	126	2,140	2,671	80.1	75.6	88.0	210	—	27
	2003	115	1,597	2,017	79.2	74.6	87.4	164	—	22

2.1 The rate of AMI patients receiving thrombolysis within 1 hour of presentation.

As a result of the findings that thrombolysis should be provided as soon as possible, the proportion of AMI patients receiving treatment within this time frame has increased from 72% to 81% in 2001. However, there has been no improvement during the years 2001 to 2003 (Figure 2.1). The better performing HCOs have only managed to achieve rates of about 87%. The reasons for not being able to achieve higher rates are worth investigating.

Figure 2.1 AMI - thrombolysis within one hour.



Area 3 Access Block

Rationale

The hospital executive is responsible for the establishment and maintenance of a bed management system which minimises access problems for emergency patients. Patients held in the emergency department for more than eight hours after being cleared for transfer to a ward bed may reflect lack of beds. If the time taken to transfer a patient to the ward exceeds eight hours then this counted as access block.

The indicator is:

CI. 3.1 The rate of access block for patients requiring in-patient care

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	2002	50	77,421	309,383	25.0	2.62	40.7	69,312	43,143	23,052
	2003	55	105,401	438,514	24.0	5.84	41.1	79,807	48,630	32,637

CI. 3.1 The rate of access block for patients requiring in-patient care

The proportion of patients who present at the emergency department and were delayed by more than eight hours before being admitted to a ward not only varies considerably between hospitals but also has rates that were excessively high. One in four patients were unable to be admitted within eight hours, and for the poorer performing hospitals the rate was 40% or two in every five patients. The better HCOs had rates of 5%, or one in every 20 patients was unable to be admitted within 8 hours. NSW and Victorian HCOs had higher rates of about 30%, with the other States having rates less than 15% (Table 3.1).

Table 3.1 Access block

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	23	44,273	143,073	30.9	2.8	28,410
	2003	24	54,455	184,845	29.5	2.6	31,519
QLD	2002	6	4,509	40,695	11.1	5.2	—
	2003	7	10,379	64,786	16.0	4.5	—
TAS	2002	5	1,852	17,827	10.4	7.9	—
	2003	5	2,392	19,010	12.6	8.3	—
VIC	2003	8	10,369	35,661	29.1	6.0	5,948
WA	2002	5	2,412	20,795	11.6	7.3	—
	2003	5	6,226	50,228	12.4	5.1	—
Other	2002	11	24,375	86,993	28.0	3.6	14,732
	2003	6	21,580	83,984	25.7	3.9	11,162
Metropolitan	2002	32	66,296	217,857	30.4	2.2	39,786
	2003	35	88,558	318,037	27.8	2.0	44,064
Rural	2002	18	11,125	91,526	12.2	3.4	—
	2003	20	16,843	120,477	14.0	3.3	—

Hospital in the Home Indicators – Version 2

Area 1 Patient Safety and Selection

Rationale

The success of Hospital in the Home care requires the selection of patients with appropriate conditions, who consent to care and have a safe and stable home environment. Careful patient selection prior to a Hospital in the Home admission may avoid potential problems during admission

The indicators are:

- CI.1.1 One unexpected telephone call
- CI.1.2 More than one unexpected telephone call
- CI.1.3 One unscheduled staff callout
- CI.1.4 More than one unscheduled staff callout

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2000	17	571	7,408	7.71	3.36	10.7	321	–	87
	2001	23	782	9,145	8.55	4.44	10.1	376	–	145
	2002	28	890	14,557	6.11	3.03	9.20	449	–	155
	2003	26	793	14,448	5.49	2.63	6.93	412	–	149
1.2	2000	15	109	6,036	1.81	0.83	3.26	59	–	17
	2001	21	238	8,275	2.88	0.96	4.31	158	–	28
	2002	25	266	13,519	1.97	0.27	2.77	229	–	101
	2003	25	268	14,159	1.89	0.45	3.12	204	–	121
1.3	2000	18	251	8,167	3.07	0.74	4.77	190	81	53
	2001	25	234	11,141	2.10	1.44	3.04	73	36	19
	2002	30	311	16,501	1.88	0.79	3.38	80	72	45
	2003	29	259	16,070	1.61	0.89	2.96	115	52	33
1.4	2000	17	27	7,007	0.39	0.13	0.65	17	4	4
	2001	24	28	10,665	0.26	0.11	0.49	16	5	–
	2002	28	61	15,690	0.39	0.10	0.78	44	–	11
	2003	28	50	15,782	0.32	0.11	0.64	32	16	8

CIs. 1.1 – 1.4 Unexpected telephone calls and staff callouts

Two of the four indicators measuring patient selection (CI 1.1 and 1.3) have improved their rates (Figures 1.1 and 1.3). The other two indicators relating to patient selection (CI 1.2 and 1.4) have remained at fairly low levels. The reasons for the improvement may relate to better selection of patients or better patient education. The differences between the better and lower performing HCOs may reflect the different patient mix, although when analysed by the possible ways to stratify the HCOs, no significant differences were found for unexpected telephone calls. There were some differences between public and private rates for unexpected staff callouts (Tables 1.3 and 1.4).

Victoria contributes to about two-thirds of these data, and is more involved in monitoring the success of the hospital in the home program.

Figure 1.1. One unexpected telephone call

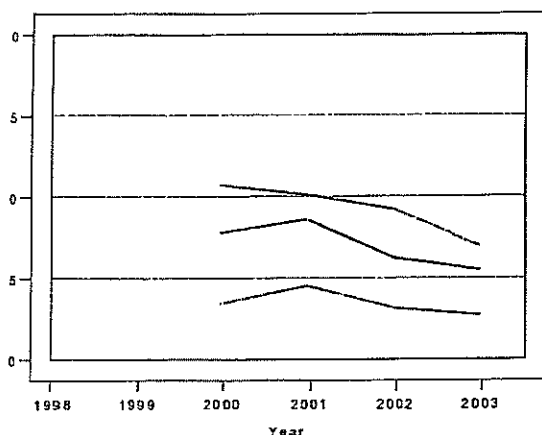


Figure 1.3. One unscheduled staff callout

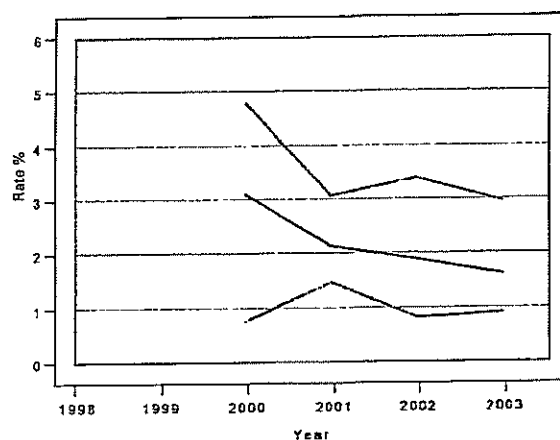


Table 1.3 One unscheduled staff callout

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	25	254	15,104	1.7	0.21	—
	2003	23	163	13,397	1.3	0.16	—
Private	2002	5	57	1,397	3.7	0.68	28
	2003	6	96	2,673	3.2	0.36	52

Table 1.4 More than one unscheduled staff callout/gains

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	22	21	13,109	0.21	0.05	—
Private	2003	6	29	2,673	0.82	0.12	16

Area 2 Program Interruption

Rationale

An unplanned interruption to a Hospital in the Home program may reflect less than optimal patient management

The indicators are:

- CI.2.1 Unplanned return to hospital – no return to HITH
- CI.2.2 Unplanned return to hospital – return to HITH within 24 hrs
- CI.2.3 Unplanned return to hospital – return to HITH after 24 hrs
- CI.2.4 Unplanned return to hospital

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	2000	22	249	8,040	3.10	2.54	4.29	44	—	3
	2001	29	401	11,749	3.41	2.59	5.05	96	—	—
	2002	33	474	15,880	2.98	2.15	4.36	132	—	32
	2003	32	36	17,033	2.56	1.29	5.13	216	—	68
2.2	2000	20	62	7,459	0.83	0.40	1.75	32	10	11
	2001	28	216	11,663	1.85	0.50	3.62	157	—	64
	2002	33	232	15,880	1.46	0.27	2.53	188	—	80
	2003	31	247	17,148	1.44	0.33	2.98	189	140	90
2.3	2000	20	76	7,459	1.02	0.40	1.46	46	44	18
	2001	28	195	11,663	1.67	0.68	2.34	116	—	30
	2002	33	176	16,320	1.08	0.61	1.61	76	—	39
	2003	32	241	17,163	1.40	0.52	1.98	152	114	44
2.4	2002	31	759	15,295	4.96	2.90	7.65	316	—	122
	2003	32	936	17,490	5.35	2.72	8.51	460	346	198

CIs. 2.1-2.4 The rate of unplanned return to hospital without return to the HITH program.

There were four measures of unplanned return to hospital. The overall rate for 2003 was 5.4%, and of these 1.4% returned to hospital in the home within 24 hours, and a similar percent returned after 24 hours. About 2.6% of these patients were unable to return to the program. The percentage of patients unable to return has declined from 3.1% to 2.6% over the last four years (Figure 2.1). In 2003 the Victorian rate, 6.7%, was twice the rate of the seven other states (Table 2.4).

Figure 2.1 Unplanned return to hospital – no return to HITH

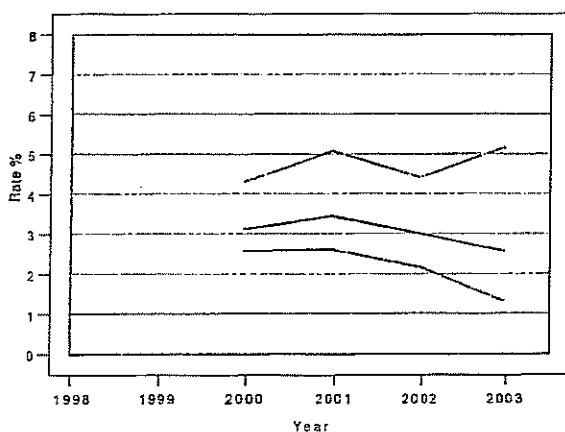


Table 2.4 Unplanned return to hospital

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
VIC	2003	18	712	10,494	6.67	0.51	346
Other	2003	14	224	6,996	3.37	0.62	—

Hospital-Wide Clinical Indicators – Version 8

Area 1 Pulmonary Embolism

Rationale

Pulmonary embolism, with its attendant risk of death, is to some extent avoidable through the use of appropriate prophylaxis

The indicator is:

CL 1.1 Post-operative pulmonary embolism in patients with length of stay greater than seven days

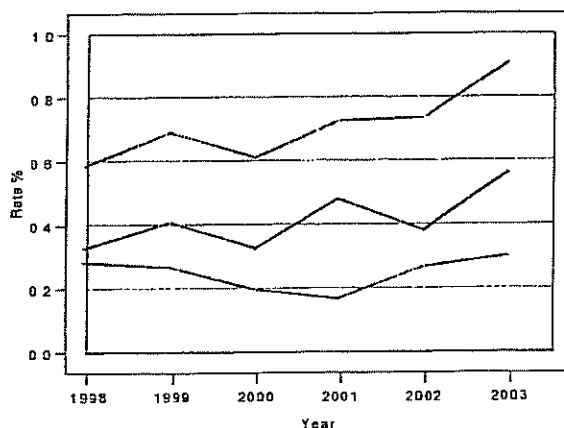
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	140	459	142,384	0.32	0.28	0.58	61	—	38
	1999	132	502	124,411	0.40	0.26	0.69	175	—	68
	2000	155	475	146,709	0.32	0.19	0.61	189	—	98
	2001	163	625	130,696	0.48	0.16	0.72	409	252	213
	2002	172	509	134,651	0.38	0.26	0.73	157	217	72
	2003	159	796	142,741	0.56	0.30	0.90	374	—	195

CL 1.1 The rate of post-operative pulmonary embolism in patients whose length of stay is at least seven days.

The proportions of patients having pulmonary embolism as a result of surgery increased from less than 0.4% for years 1998 – 2000 to the highest proportion in 2003 to 0.56% (Figure 1.1). The higher rates in 2001 and 2003 were also associated with more outlier HCOs. In 2003, six public and six private HCOs contributed one third of the cases of pulmonary embolism. The rates for these HCOs ranged from 1.9% to 10.9%. If they were excluded from the analysis, then the 2003 rate becomes 0.38%, the same as the rate in 2002. The outlier HCOs should examine their use of prophylaxis.

Figure 1.1 PE in post-operative patients



Area 2 Hospital Re-admissions

Rationale

An unplanned and unexpected re-admission to a hospital may reflect less than optimal patient management.

The indicator is:

CI 2.1 Unplanned and unexpected hospital readmission within 28 days

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	348	50,886	2,032,443	2.50	0.77	4.08	35,316	20,560	14,139
	1999	330	44,623	1,992,419	2.24	0.66	3.26	31,465	18,130	12,045
	2000	349	53,555	2,281,453	2.35	0.60	3.48	39,952	23,833	16,076
	2001	325	38,279	2,180,353	1.76	0.57	3.06	25,799	13,829	11,122
	2002	313	41,157	2,297,069	1.79	0.47	2.77	30,398	16,257	12,505
	2003	317	54,619	2,622,714	2.08	0.48	2.99	42,001	28,525	19,131

CI. 2.1 The rate of unplanned and unexpected re-admissions within twenty-eight days of separation.

There has been a downward trend in the mean proportions as well as the centiles (Figure 2.1). Because of the large denominators, there were many statistically significantly high rates or outliers. Thirty HCOs reported statistically significantly high rates in five of the six years. The average rate of the outlier HCOs in 2003 was 4.5% and was 4.3% in the previous years combined. The public sector had higher rates than the private (Table 2.1). The extent to which this is the result of different case mix needs to be assessed.

Figure 2.1 Unplanned readmission

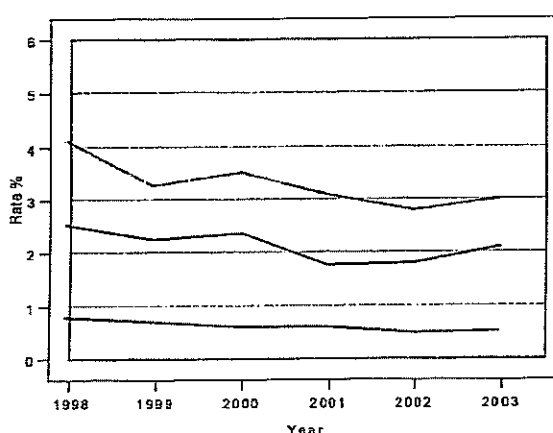


Table 2.1 Unplanned readmission

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	110	14,158	779,834	1.8	0.12	–
	2003	119	18,605	829,599	2.2	0.14	10,744
QLD	2002	50	6,916	404,226	1.7	0.16	–
	2003	45	8,348	429,914	1.9	0.20	4,287
SA	2002	28	2,658	179,055	1.5	0.24	–
	2003	25	3,050	150,315	2.0	0.33	1,630
TAS	2002	8	1,569	120,261	1.3	0.29	–
	2003	7	1,239	131,810	0.94	0.35	–
VIC	2002	90	10,355	576,034	1.8	0.13	–
	2003	84	10,402	560,182	1.9	0.17	5,124
WA	2002	19	1,903	120,747	1.6	0.29	–
	2003	28	4,018	286,880	1.4	0.24	–
Other	2002	8	3,598	116,912	3.1	0.30	–
	2003	9	8,957	234,014	3.8	0.26	6,737
Public	2002	139	27,441	1,018,819	2.7	0.088	16,257
	2003	136	40,138	1,233,503	3.2	0.099	27,035
Private	2002	174	13,716	1,278,250	1.1	0.079	–
	2003	181	14,481	1,389,211	1.1	0.094	–

Area 3 Return to Operating Room

Rationale

An unplanned return of a patient to the operating room during the same admission may reflect less than optimal management.

The indicator is:

CI. 3.1 Unplanned return to the operating room

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	270	5,355	1,000,550	0.54	0.23	0.68	3,061	—	950
	1999	285	5,469	1,118,868	0.49	0.19	0.61	3,353	—	1,263
	2000	293	5,870	1,208,473	0.49	0.20	0.58	3,422	—	1,171
	2001	281	6,009	1,291,212	0.47	0.20	0.56	3,435	—	1,072
	2002	280	6,079	1,363,432	0.45	0.16	0.56	3,918	—	1,278
	2003	291	5,917	1,388,091	0.43	0.16	0.55	3,696	1,140	1,313

CI. 3.1 The rate of unplanned return to the operating room during the same admission.

There has been a slight decline in the unplanned return to the operating theatre (Figure 3.1). In 2003 the public and private sectors had rates of 0.59% and 0.34% respectively (Table 3.1).

Figure 3.1 Unplanned return to operating room

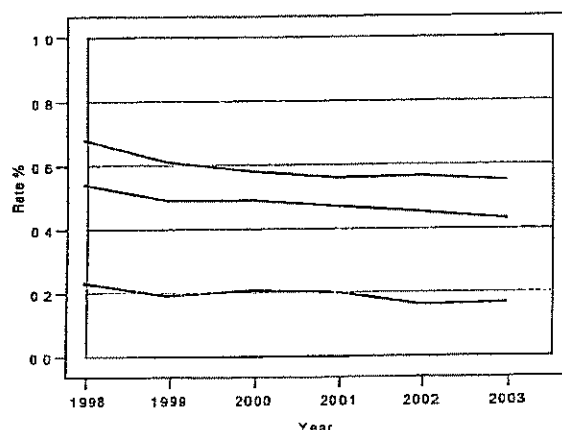


Table 3.1 Unplanned return to operating room

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	118	2,440	415,253	0.58	0.031	—
	2003	121	2,784	455,444	0.59	0.028	1,140
Private	2002	162	3,639	948,179	0.39	0.021	—
	2003	170	3,133	932,647	0.34	0.019	—

Area 4 Pressure ulcers

Rationale

Despite a general consensus that pressure ulcers are a preventable adverse event, they continue to remain a problem in all health care settings and extract a considerable fiscal and social cost

The indicators are:

CI. 4.1 The rate of pressure ulcers (one or more) in non day-only patients

CI. 4.2 The proportion of pressure ulcers that are Stage 1

CI. 4.3 The proportion of pressure ulcers that are Stage 2

CI. 4.4 The proportion of pressure ulcers that are Stage 3

CI. 4.5 The proportion of pressure ulcers that are Stage 4

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	2003	79	2,085	458,991	0.45	0.053	0.57	1,839	1,398	770
4.2	2003	30	654	1,457	44.7	38.2	50.2	95	54	–
4.3	2003	31	652	1,462	44.5	39.7	45.4	69	53	24
4.4	2003	28	110	1,415	6.9	6.1	9.3	12	–	–
4.5	2003	30	22	1,455	1.5	1.1	2.1	6	1	1

CI. 4.1 The rate of pressure ulcers (one or more) in non day-only patients.

These data were first collected in 2003 and the overall rate for the 79 HCOs was 0.45%. The spread of the rates was from 0.05% to 0.57%, with the best explanatory variable being public or private. The private proportion was 0.15% compared to the public rate of 0.56%. Differences were also found between the metropolitan and rural HCOs and between the States (Table 4.1).

Table 4.1 The rate of pressure ulcers (one or more) in non day-only inpatients

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	43	1,054	212,718	0.50	0.07	–
QLD	2003	18	474	145,363	0.33	0.09	–
VIC	2003	9	109	38,426	0.27	0.17	–
Other	2003	9	448	62,484	0.71	0.13	–
Metropolitan	2003	42	1,888	356,661	0.53	0.05	–
Rural	2003	37	197	102,330	0.20	0.10	–
Public	2003	43	1,929	344,180	0.56	0.05	1,398
Private	2003	36	156	114,811	0.15	0.09	–

CI. 4.2 – 4.5 The proportion of pressure ulcers that are Stage 1, 2, 3 and 4.

The ulcers were classified into four stages, with one being the least severe to stage 4 which involves full thickness skin loss or damage to structures such as muscle and bone. About 45% of ulcers were determined to be stage 1 with stage 2 also having 45%. The HCOs that presented data for all five indicators were used to estimate the proportion of admissions which developed stage 1 to 4 pressure ulcers. The results were 0.21%, 0.21%, 0.035% and 0.007%. The strata had similar proportions for the severity of the ulcers.

Infection Control Indicators – Version 2

Area 1 Surgical site infection

These indicators measure the in-hospital infection rates for a selection of surgical procedures. Timely investigation of higher than expected rates of infection may identify issues relating to preventative factors for documentation and corrective action. For example errors may have occurred in administration of the correct type, dose, route and the timing of antimicrobial prophylaxis. The washing of hands has been shown to decrease infections, but is not practiced routinely by all staff. The incorrect timing of surgical prophylaxis is reported to be associated with increases⁵ of between two to six times the rates of surgical-site infection for surgery where prophylaxis is recommended. Hospital acquired infections constitute a significant burden on the healthcare system.

The indicators are:

- CI 1.1 Superficial SSI in hip prosthesis procedures
- CI 1.2 Deep/organ space SSI in hip prosthesis procedures
- CI 1.3 Superficial SSI in knee prosthesis procedures
- CI 1.4 Deep/organ space SSI in knee prosthesis procedures
- CI 1.5 Superficial SSI (in the chest incision site) in coronary artery bypass graft
- CI 1.6 Deep/organ space SSI (in the chest incision site) in coronary artery bypass graft
- CI 1.7 Superficial SSI (in the leg donor incision site) in coronary artery bypass graft
- CI 1.8 Deep SSI (in the leg donor incision site) in coronary artery bypass graft
- CI 1.9 Superficial SSI in elective partial/total colectomy (anastomosis, no stoma)
- CI 1.10 Deep/organ space SSI in elective partial/total colectomy (anastomosis, no stoma)
- CI 1.11 Superficial SSI in femoral-popliteal bypass procedures
- CI 1.12 Deep/organ space SSI in femoral-popliteal bypass procedures
- CI 1.13 Superficial SSI in open abdominal aortic aneurysm (AAA) procedures
- CI 1.14 Deep/organ space SSI in open abdominal aortic aneurysm (AAA) procedures
- CI 1.15 Superficial SSI in lower segment caesarean section procedures
- CI 1.16 Deep/organ space SSI in lower segment caesarean section procedures
- CI 1.17 Superficial SSI in abdominal hysterectomy procedures
- CI 1.18 Deep/organ space SSI in abdominal hysterectomy procedures

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2003	111	134	9,722	1.38	1.07	1.93	30	13	–
1.2	2003	105	48	9,125	0.53	0.40	0.54	11	3	–
1.3	2003	109	118	11,543	1.02	0.65	1.21	42	30	10
1.4	2003	103	52	10,674	0.49	0.27	0.50	23	–	3
1.5	2003	24	67	5,491	1.22	0.33	1.57	49	32	19
1.6	2003	24	51	5,332	0.96	0.44	1.35	27	7	6
1.7	2003	25	57	3,855	1.48	0.91	2.07	21	–	–
1.8	2003	19	9	3,504	0.26	0.23	0.30	–	–	–
1.9	2003	30	41	933	4.39	2.29	5.94	19	–	4
1.10	2003	33	25	1,619	1.54	1.22	2.27	5	12	1
1.11	2003	19	16	440	3.64	2.51	7.73	4	–	2
1.12	2003	15	3	213	1.41	1.41	1.41	–	–	–
1.13	2003	9	4	187	2.14	2.14	2.14	–	–	–
1.14	2003	9	1	176	0.57	0.50	0.68	–	–	–
1.15	2003	77	205	16,568	1.24	0.67	2.05	93	56	22
1.16	2003	72	31	15,746	0.20	0.12	0.20	12	–	4
1.17	2003	59	28	2,540	1.10	0.71	1.33	9	5	–
1.18	2003	52	8	2,096	0.38	0.37	0.38	–	–	–

⁵ Burke JP (2003) Infection Control — a problem for patient safety. *The New Eng. J. Med.* 348: 651-656

CI. 1.1 Superficial SSI in hip prosthesis procedures.

The overall rate was 1.38%. The rate of the poorer performing HCOs was approximately twice the rate of the better performing HCOs (1.9% compared to 1.1%). These results suggest that the proportion of infections could be reduced by about one quarter (approximately 34 infections). The private HCO rate was lower than the public rate (1.8% and 1.2% respectively).

Table 1.1 Superficial SSI in hip prosthesis procedures.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	33	59	2,337	1.81	0.09	13
Private	2003	78	75	7,385	1.24	0.05	–

If the above SSI rate is applied to the proportion of separations for hip prosthesis procedures in Australia in 2002/2003, (30,496 including 3,267 revisions) then the estimated proportion of superficial SSIs in Australia is 400 per year.

CI. 1.2 Deep/organ space SSI in hip prosthesis procedures.

Deep SSI in hip prosthesis occurred in 0.53% of patients. The results suggest the proportion of these infections could be reduced by approximately one quarter. There were small state differences.

Table 1.2 Deep/organ space SSI in hip prosthesis procedures.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	30	5	1,893	0.48	0.05	–
QLD	2003	30	10	1,977	0.51	0.05	–
SA	2003	9	3	683	0.48	0.08	–
VIC	2003	21	12	2,701	0.47	0.04	–
WA	2003	6	10	1,024	0.77	0.07	3
Other	2003	9	8	847	0.59	0.07	–

If the above SSI rate is applied to the Australia hip prosthesis procedures in 2002/2003, then the estimated proportion of deep SSIs nationally is 160 per year.

CI. 1.3 Superficial SSI in knee prosthesis procedures.

The overall rate was 1.02%. There is potential to reduce the proportion of these infections by approximately one third, from 118 to 80. The lowest state rate was reported by New South Wales (0.72%). There were two outlier reports. The rates were 5.2% (in 251 procedures) and 9.5% (in 81 procedures). These HCOs should review their procedures.

Table 1.3 Superficial SSI in knee prosthesis procedures.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	36	11	3,082	0.72	0.10	–
QLD	2003	30	31	2,806	1.05	0.11	9
SA	2003	9	9	1,088	0.94	0.17	–
VIC	2003	21	44	2,644	1.36	0.11	17
WA	2003	5	11	1,221	0.92	0.16	–
Other	2003	8	12	702	1.29	0.21	4

In 2002/2003 there were 26,368 separations for knee prosthesis procedures in Australia. If the average SSI rate is applied to these procedures then the estimated proportion of superficial SSIs nationally is 270 per year.

CI. 1.4 Deep/organ space SSI in knee prosthesis procedures.

The overall rate was 0.49%. There is potential to reduce the proportion of these infections by approximately one third. There were two outlier reports, with rates 4.2% (in 71 procedures) and 7.7% (in 52 procedures) respectively. These HCOs should review their procedures.

If the average SSI rate is applied to all such procedures in Australia, then the estimated proportion of deep SSIs nationally is 130 per year.

CI. 1.5 Superficial SSI (in the chest incision site) in CABG.

The overall rate was 1.22%. The better performing HCOs had rates of 0.3%. The rate for Victoria (4.4%) was twice the overall rate. The public rate was approximately twice the private rate (2.1% and 0.8% respectively). There were four outlier reports.

Table 1.5 Superficial SSI (in the chest incision site) in CABG.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	8	14	1,550	0.94	0.33	–
QLD	2003	6	4	1,484	0.48	0.33	–
VIC	2003	5	46	1,654	2.43	0.31	32
Other	2003	5	3	803	0.65	0.45	–
Public	2003	7	40	1,766	2.06	0.34	21
Private	2003	17	27	3,725	0.83	0.23	–

There were 15,791 procedures for coronary artery bypass grafts in Australia in 2002/2003. Applying the overall rate to these procedures indicates there were approximately 200 Superficial SSI (in the chest incision site) annually.

CI. 1.6 Deep/organ space SSI (in the chest incision site) in CABG.

The rate of deep SSI (in the chest incision site) in coronary artery bypass was 0.96%. The rural rate was twice metropolitan rate (2.1% and 0.8% respectively). There were two outlier reports from one rural HCO. This HCO should review its results and procedures.

Table 1.6 Deep/organ space SSI (in the chest incision site) in CABG.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Metropolitan	2003	19	33	4,716	0.81	0.10	–
Rural	2003	5	18	616	2.09	0.27	7

Applying the average rate to the proportion of Australian admissions indicates there were approximately 150 deep/organ space SSIs annually in Australia.

CI. 1.7 Superficial SSI (in the leg donor incision site) in CABG.

The overall rate was 1.48%, with the better HCOs having a high rate of 0.9%.

The overall rate implies that there were approximately 230 superficial SSIs annually in Australia.

CI. 1.8 Deep SSI (in the leg donor incision site) in CABG.

The overall rate was 0.26%. There was no evidence of differences between HCOs.

The overall rate indicates there were approximately 40 deep SSIs annually in Australia.

CI. 1.9 Superficial SSI in elective partial or total colectomy procedures (with anastomosis and no stoma formed).

The rate of superficial SSI in colectomy procedures was 4.39% and the higher and lower rates were 5.9% and 2.3%.

CI. 1.10 Deep/organ space SSI in elective partial or total colectomy procedures (with anastomosis and no stoma formed).

The overall rate was 1.54%. Victoria reported the lowest state rate (0.79%) and the greatest proportion of procedures.

Table 1.10 Deep/organ space SSI in elective colectomy procedures

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	10	5	446	1.68	0.25	3
QLD	2003	10	13	355	2.38	0.28	5
VIC	2003	6	3	603	0.79	0.21	—
Other	2003	7	4	215	2.01	0.36	2

CI. 1.11 Superficial SSI in femoral-popliteal bypass procedures.

The overall rate was 3.64% with the higher rate being 7.7%

CI. 1.12 Deep/organ space SSI in femoral-popliteal bypass procedures.

The overall rate was 1.41%. There was no evidence of differences between HCOs

CI. 1.13 Superficial SSI in open abdominal aortic aneurysm (AAA) procedures.

The overall rate was 2.14%. There was no evidence of differences between HCOs

CI. 1.14 Deep/organ space SSI in open abdominal aortic aneurysm (AAA) procedures.

The overall rate was 0.57%. There was little variation between HCOs

CI. 1.15 Superficial SSI in lower segment caesarean section procedures.

The overall rate was 1.24%. There is potential to almost halve the proportion of these infections, from 205 to approximately 100. New South Wales reported the lowest rate (0.8%) and the greatest proportion of procedures. The public rate (1.8%) was almost twice the private HCO rate. There were six outlier HCOs, all reporting rates of 4% or more. These HCOs should review their data and/or procedures

Table 1.15 Superficial SSI in lower segment caesarean section procedures.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	23	27	4,426	0.81	0.18	—
QLD	2003	19	55	4,386	1.26	0.18	20
SA	2003	5	21	2,377	1.02	0.25	—
VIC	2003	17	32	3,044	1.11	0.22	—
Other	2003	13	70	2,335	2.38	0.25	36
Public	2003	32	128	6,263	1.78	0.15	54
Private	2003	45	77	10,305	0.91	0.12	—

There were 69,300 caesarean section procedures performed in Australia in 2002/2003. If the average rate is applied to these procedures then the estimated proportion of superficial SSIs nationally is 850

CI. 1.16 Deep/organ space SSI in lower segment caesarean procedures.

The overall rate was 0.2%. Twelve infections could be avoided if the overall rate was reduced to the better rate. If the overall rate is applied to the proportion of procedures performed nationally, then the estimated proportion of deep SSIs is 140

CI. 1.17 Superficial SSI in abdominal hysterectomy procedures.

The overall rate was 1.1%, with a difference between the public and private sectors (Table 1.17)

Table 1.17 Superficial SSI in abdominal hysterectomy procedures.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	17	19	632	1.79	0.15	5
Private	2003	42	9	1,908	0.88	0.09	—

There were 32,600 hysterectomies performed in Australia in 2002/2003. If the overall rate is applied to these procedures the estimated proportion of superficial SSIs that occur in Australia annually is 360

CI. 1.18 Deep/organ space SSI in abdominal hysterectomy procedures.

The overall rate was 0.38%. There was little variation between HCOs. The estimated proportion of deep/organ space SSIs that occur in Australia annually is 125

Area 2 Central line associated blood stream infection (CLAB)

Rationale

Central line associated blood stream infections are responsible for 20-40% of healthcare associated blood stream infections. Risks for occurrence differ amongst clinical units and depend on the type of line used and patient factors. A significant proportion of CLAB events are preventable through adoption of best clinical practice. The occurrence of healthcare associated blood-stream infections (BSI) can be used as a measure of the safety of key clinical practice processes within a unit.

The indicators are:

- CI. 2.1 Adult ICU-related centrally-inserted CLAB infection rate
- CI. 2.2 Adult ICU-related centrally-inserted central line utilisation ratio
- CI. 2.3 Adult ICU-related peripherally-inserted CLAB rate
- CI. 2.4 Adult ICU-related peripherally-inserted central line utilisation ratio
- CI. 2.5 Paediatric ICU-related centrally-inserted CLAB infection rate
- CI. 2.6 Paediatric ICU-related centrally-inserted utilisation ratio
- CI. 2.7 Paediatric ICU-related peripherally-inserted (PI) CLAB infection rate
- CI. 2.8 Paediatric ICU-related peripherally- inserted utilisation ratio
- CI. 2.9 Haematology Unit centrally-inserted CLAB infection rate
- CI. 2.10 Haematology Unit peripherally- inserted CLAB infection rate
- CI. 2.11 Oncology Unit centrally-inserted CLAB infection rate
- CI. 2.12 Oncology Unit PI CLAB infection rate
- CI. 2.13 Outpatient Intravenous Therapy Unit centrally-inserted CLAB infection rate
- CI. 2.14 Outpatient Intravenous Therapy Unit peripherally-inserted CLAB infection rate

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	2003	22	95	19,385	0.49	0.21	0.90	54	–	3
2.3	2003	8	3	672	0.45	0.25	0.67	1	–	1
2.5	2003	1	5	568	0.88	0.88	0.88	–	–	–
2.7	2003	1	5	1,386	0.36	0.36	0.36	–	–	–
2.9	2002	5	3	2,063	0.15	0.15	0.15	–	–	–
	2003	1	29	8,949	0.33	0.33	0.33	–	–	–
2.10	2002	3	1	143	0.70	0.70	0.70	–	–	–
	2003	1	1	300	0.32	0.32	0.32	–	–	–
2.11	2002	4	4	6,028	0.07	0.01	0.50	3	–	–
	2003	5	90	18,528	0.49	0.04	0.79	83	–	24
2.12	2002	5	0	5,115	0.00	0.00	0.00	–	–	–
	2003	6	6	14,322	0.04	0.01	0.09	4	–	–
2.13	2002	3	10	3,891	0.26	0.26	0.26	–	–	–
	2003	1	1	206	0.49	0.49	0.49	–	–	–
2.14	2002	3	8	885	0.90	0.05	2.26	7	–	–
	2003	2	0	165	0.00	0.00	0.00	–	–	–

No data was submitted for CIs 2.6 and 2.8 in 2003

Central line utilisation ratios

CI	Year	No HCOs	Numerator	Denominator	Rate %
2.2	2003	18	12,432	21,793	57.0
2.4	2003	9	561	8,305	6.75

CI. 2.1 Adult ICU-related centrally-inserted CLAB infection rate.

The overall rate was 0.49% per patient day, with the better rates being 0.2%

CI. 2.2 Adult ICU-related centrally-inserted central line utilisation ratio.

Of the reported patient-days in Adult ICU, 57% involved the utilisation of centrally-inserted central lines. The utilisation rate in New South Wales was lower than in the other states (Table 2.2).

Table 2.2 Adult ICU-related centrally-inserted central line utilisation ratio

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error %
NSW	2003	10	4,721	10,413	45.4	0.49
Other	2003	8	7,711	11,380	67.7	0.44

CI. 2.3 Adult ICU – related peripherally – inserted CLAB infection rate.

The overall rate was 0.45% per patient day. A small proportion of patient days were reported (672).

CI. 2.4 Adult ICU-related peripherally – inserted central line utilisation ratio.

Of the reported patient-days in adult ICU, 6.75% involved the utilisation of peripherally-inserted central lines.

CI. 2.5 Paediatric ICU-related centrally – inserted CLAB infection rate.

The paediatric ICU-related centrally-inserted CLAB infection rate was reported by a single HCO, as 0.88% per patient day.

CI. 2.6 Paediatric ICU – related centrally – inserted utilisation ratio.

There were no reports for this indicator.

CI. 2.7 Paediatric ICU – related peripherally – inserted (PI) CLAB infection rate.

The paediatric ICU-related peripherally-inserted CLAB infection rate was reported by a single HCO as 0.36% per patient day.

CI. 2.8 Paediatric ICU – related peripherally – inserted utilisation ratio.

There were no reports for this indicator.

CI. 2.9 Haematology Unit centrally – inserted CLAB infection rate.

The Haematology Unit centrally-inserted CLAB infection rate was reported by five HCOs in 2002 and a single HCO in 2003. The annual rates were 0.15% and 0.33% per patient day respectively.

CI. 2.10 Haematology Unit peripherally - inserted CLAB infection rate.

The Haematology Unit peripherally-inserted CLAB infection rate was reported by three HCOs in 2002 and a single HCO in 2003. The annual rates were 0.70% and 0.32% per patient day respectively.

CI. 2.11 Oncology Unit centrally-inserted CLAB infection rate.

The oncology unit centrally-inserted CLAB infection rate was reported by only a few HCOs. The rate in 2003 was 0.49% per patient day. There was one outlier HCO.

CI. 2.12 Oncology Unit PI CLAB infection rate.

Five HCOs reported no Oncology Unit peripherally-inserted CLAB infections. The rate was 0.04% per patient day in 2003.

CI. 2.13 Outpatient Intravenous Therapy Unit centrally – inserted CLAB rate.

The outpatient intravenous therapy unit centrally-inserted CLAB infection rate was reported by three HCOs in 2002 and a single HCO in 2003. The annual rates were 0.26% and 0.49% per patient day respectively.

CI. 2.14 Outpatient Intravenous Therapy Unit peripherally – inserted CLAB infection rate.

Outpatient Intravenous Therapy Unit peripherally-inserted CLAB infection rate was reported by three HCOs in 2002 and two HCOs in 2003.

Area 3: Haemodialysis associated blood stream infection

Rationale

Dialysis-associated blood stream infections cause considerable morbidity. A proportion of infections are potentially preventable through adherence to appropriate standards of care and the avoidance where possible of devices that have more frequent occurrence of infection.

The indicators are:

CI. 3.1 Haemodialysis AV fistula-associated blood stream infection rate

CI. 3.2 Haemodialysis synthetic graft-associated blood stream infection rate

CI. 3.3 Haemodialysis native vessel graft – associated blood stream infection rate

CI. 3.4 Haemodialysis centrally inserted non-cuffed dialysis line (temporary) – associated blood stream infection rate

CI. 3.5 Haemodialysis centrally inserted cuffed (semipermanent) dialysis line-associated blood stream infection rate

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	2003	6	1	4,657	0.02	0.02	0.03	–	–	–
3.2	2003	4	0	377	0.00	0.00	0.00	–	–	–
3.3	2003	2	0	84	0.00	0.00	0.00	–	–	–
3.4	2003	3	2	38	5.26	5.10	5.14	–	–	–
3.5	2003	4	14	406	3.45	3.45	3.45	–	–	–

CI. 3.1 Haemodialysis AV fistula-associated blood stream infection rate.

There was one blood stream infection in 4,657 patient months where haemodialysis was performed via AV fistula.

CI. 3.2 Haemodialysis synthetic graft-associated blood stream infection rate.

There were no infections in 377 patient dialysis months from four HCOs where haemodialysis was performed via AV synthetic graft.

CI. 3.3 Haemodialysis native vessel graft - associated blood stream infection rate.

There were no infections in 84 patient dialysis months from two HCOs where haemodialysis was performed via native vessel graft.

CI. 3.4 Haemodialysis centrally inserted non-cuffed dialysis line (temporary) – associated blood stream infection rate.

Three HCOs reported a total of two infections in 38 patient dialysis months (5.26%).

CI. 3.5 Haemodialysis centrally inserted cuffed (semipermanent) dialysis line-associated blood stream infection rate.

Four HCOs reported a total of 14 infections in 406 patient dialysis months (3.45%).

Area 4 Neonatal infections

Rationale

Early onset infections are usually acquired from the mother during the birth process. Some of these infections are preventable through adherence to appropriate standards of care. Late onset infections within Neonatal Intensive Care may also be prevented through adherence to appropriate standards of care, particularly with management of intravascular lines. The risk of early and late onset infections is strongly correlated with birth weight.

The indicators are:

CI 4.1 Early invasive infection rate – all neonates

CI 4.2 Early invasive infection rate – neonates admitted to ICU

CI 4.3 Late ICU blood stream infection rate- neonates of birth weight <1000g or <28 weeks gestation admitted to ICU

CI 4.4 Late ICU blood stream infection rate – neonates of birth weight ≥ 1000g or ≥ 28 weeks gestation admitted to ICU

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	2003	8	2	2,923	0.07	0.07	0.07	–	–	–
4.2	2003	1	1	73	1.37	1.37	1.37	–	–	–
4.3	2003	1	3	9	38.8	38.8	38.8	–	–	–
4.4	2003	1	0	48	0.00	0.00	0.00	–	–	–

CI 4.1 Early invasive infection rate (Blood and/or CSF within 48 hours) – all neonates.

There were a total of two of these infections reported in 2,923 neonates from 8 HCOs (0.07%).

CI 4.2 Early invasive infection rate (Blood and/or CSF within 48 hours) – neonates admitted to intensive care.

A single HCO reported one infection in 73 neonates (1.37%).

CI 4.3 Late intensive care blood stream infection rate (after 48 hours from birth) – neonates of birth weight < 1000g or < 28 weeks gestation, admitted to intensive care.

A single HCO reported three of these infections in nine neonates (33.3%).

CI 4.4 Late intensive care blood stream infection rate (after 48 hours from birth) – neonates of birth weight > 1000g or > 28 weeks admitted to intensive care.

A single HCO reported no infections in 48 neonates.

Intensive Care Indicators – Version 2

Area 1 Utilisation of Patient Assessment Systems

Rationale

Participation in the National Patient Databases and The Australian and New Zealand Intensive Care Society (ANZ-ICS) Research Centre for Critical Care Resources (ARCCCR) Survey provides national comparative data to objectively assess casemix and severity adjusted mortality together with available ICU resources

The indicators are:

CI 1.1 The rate of entry into ANZICS Adult Patient Database with completed information and review of results

CI 1.2 The rate of entry into the Australian and New Zealand Paediatric Intensive Care (ANZPIC) Registry with completed information and review of results

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	36	14,947	15,151	98.7	97.8	100	200	—	143
	1999	43	15,176	18,998	79.9	65.0	100	3,814	—	2,701
	2000	50	21,582	23,501	91.8	78.4	100	1,911	—	1,368
	2001	48	20,031	21,322	93.9	89.7	99.9	1,277	—	813
	2002	62	30,088	33,009	91.2	92.5	100	2,915	2,117	2,159
	2003	67	35,415	39,479	89.7	86.8	100	4,048	—	2,860
1.2	2002	9	54	1,026	5.26	0.08	92.7	897	—	40
	2003	15	1,120	1,233	90.8	14.8	99.7	109	99	97

CI 1.1 The rate of entry into ANZICS Adult Patient Database.

The proportion of admissions that were forwarded to this database was relatively high, with 80% of HCOs submitting more than 87% of their admissions. The better performing HCOs have rates near 100%. This would suggest that compliance is relatively high and appropriate to allow the data to be used to assess mortality rates.

CI 1.2 The rate of entry into the ANZPIC Registry.

The proportion of HCOs providing data to this database increased from nine in 2002 to 15 in 2003. The ANZPIC data are used to describe paediatric intensive care practices and outcomes in Australia and New Zealand and was established in 1997. New South Wales had a rate of 99% in 2003 (Table 1.2).

Table 1.2 Australian and NZ Paediatric Intensive Care Registry

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	6	982	991	99.2	5.71	—
Other	2003	9	138	242	58.1	11.6	99

CI 1.3 Participation in ARCCCR survey

In 2002, 95% of HCOs responded to the most recent ARCCCR survey. In 2003, 84% of HCOs responded to the survey.

Table 1.3 Proportion of HCOs participating in ARCCCR survey.

CI	Year	No. Reports	No. HCOs	HCOs (%)
1.3	2002	25	20	95
	2003	45	32	84

Area 2 Utilisation of Intensive Care Resources

Rationale

The inability by staff to admit a patient into an intensive care unit may be a consequence of inadequate resources

The indicator is:

CI. 2.1 The proportion of patients referred to an ICU who were not admitted because of inadequate resources

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	41	1,058	22,536	4.69	0.33	9.05	984	949	488
	1999	55	1,548	29,700	5.21	0.19	9.16	1,492	1,340	757
	2000	73	2,210	39,492	5.60	0.20	9.43	2,131	1,926	972
	2001	74	2,079	40,358	5.15	0.14	8.76	2,021	1,835	928
	2002	74	2,025	39,422	5.14	0.20	8.47	1,945	1,727	905
	2003	72	1,979	40,585	4.88	0.20	8.23	1,897	1,752	815

CI. 2.1 The rate of ICU access block

The proportion of patients who were unable to be admitted to the ICU because of inadequate resources has remained at about 5% for the last 6 years (Figure 2.1). The better HCOs had rates of 0.2%, compared to the poorer HCOs with rates of 8%. The public rate was approximately ten times the private rate in 2002 and 2003 (Table 2.1).

Figure 2.1 ICU - access block

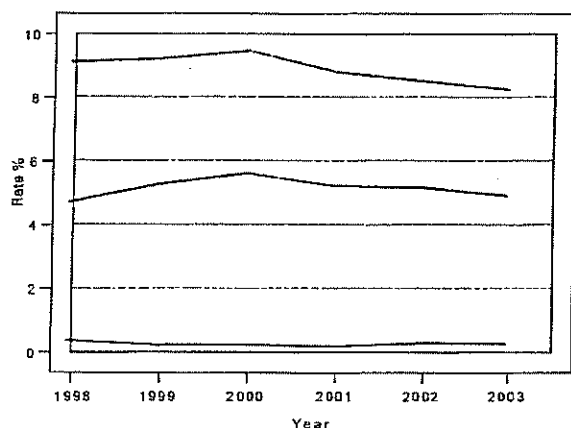


Table 2.1 ICU – access block

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	46	1,949	27,585	7.02	0.68	1,727
	2003	43	1,924	28,380	6.74	0.63	1,752
Private	2002	28	76	11,837	0.76	1.04	–
	2003	29	55	12,205	0.56	0.96	–

Area 3 Intensive Care Patient Management

Rationale

Unplanned re-admission into an intensive care unit may reflect less than optimal management of a patient. It may also reflect premature discharge as a consequence of inadequate resources or reflect the standard of ward care

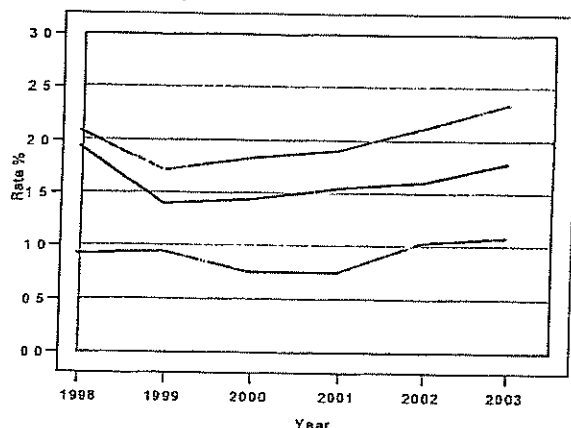
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	62	529	27,459	1.93	0.90	2.08	280	156	99
	1999	72	499	35,963	1.39	0.94	1.70	160	–	29
	2000	88	660	46,251	1.43	0.74	1.82	319	–	89
	2001	88	712	46,472	1.53	0.75	1.90	365	–	74
	2002	94	742	46,429	1.60	1.03	2.10	262	–	22
	2003	95	985	55,399	1.78	1.08	2.33	387	–	77

CI. 3.1 The rate of unplanned readmission to ICU within 72 hours.

There appears to have been neither an improvement in the overall rates or in the better and poorer rates since 1998 (Figure 3.1). The poorer rates have been approximately twice the better rates. This variation suggests that there is potential to reduce the proportion of unplanned readmissions to ICU within 72 hours by one third.

Figure 3.1 ICU - unplanned readmission



Internal Medicine Indicators – Version 3

Area 1 Cardiology I

Rationale

Thrombolysis is a life saving treatment that must be given as soon as possible after AMI

The indicator is:

CL 1.1 Receipt of thrombolytic therapy for AMI within one hour of presentation

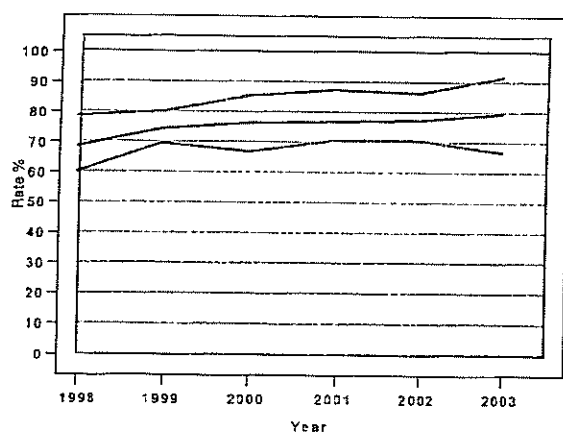
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	72	1,019	1,503	67.8	59.7	78.2	155	39	45
	1999	52	783	1,063	73.7	69.0	79.4	61	42	7
	2000	61	950	1,253	75.8	66.5	85.0	115	91	8
	2001	57	845	1,106	76.4	70.3	86.9	115	33	33
	2002	52	809	1,054	76.8	70.0	85.8	95	–	5
	2003	46	586	741	79.1	66.3	91.2	90	34	21

CL 1.1 The rate of thrombolysis within one hour of presentation in AMI patients who had thrombolysis.

The rates for timely thrombolysis increased from 68% in 1998 to 79% in 2003 (Figure 1.1). In 2003, one in five patients who received thrombolysis did not receive it within one hour. The better rates have been about ten percentage points higher than the overall rates during that period. This variation indicates that the rates could be improved by ten percentage points. Victoria reported the highest rate in 2003 (Table 1.1).

Figure 1.1 AMI – thrombolysis within one hour



Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	17	167	234	71.3	3.45	34
QLD	2003	7	85	112	77.6	4.98	–
VIC	2003	12	165	189	86.3	3.84	–
Other	2003	10	169	206	82.1	3.67	–

Area 1 Cardiology II

Rationale

PTCA should be performed with a high primary success rate and a low rate of immediate complications, such as Acute Myocardial Infarction (AMI) or complications requiring Coronary Artery Bypass Grafts (CABG)

The indicators are:

Cl. 1.2 The rate of primary success in vessels in which PTCA (with or without stenting) is undertaken

Cl. 1.3 The rate of inpatients undergoing CABG within twenty-four hours of a PTCA (with or without stenting) in the same admission

Results

Cl	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.2	1998	20	5,047	5,350	94.3	93.4	95.8	80	64	–
	1999	21	6,471	6,847	94.5	93.8	97.0	170	160	47
	2000	24	8,460	8,933	94.7	94.1	95.7	90	59	15
	2001	23	8,540	9,220	92.6	93.4	97.2	419	–	228
	2002	24	8,634	8,992	96.0	94.3	97.2	106	–	–
	2003	27	13,049	13,505	96.6	95.0	97.7	145	–	23
1.3	1998	25	41	5,562	0.74	0.71	0.81	1	–	–
	1999	25	31	7,807	0.40	0.35	0.44	3	2	–
	2000	28	32	9,117	0.35	0.35	0.35	–	–	–
	2001	26	37	8,984	0.41	0.21	0.62	18	–	5
	2002	25	26	9,535	0.27	0.09	0.43	17	–	5
	2003	28	34	12,628	0.27	0.10	0.51	21	–	3

Cl. 1.2 The rate of primary success in vessels in which PTCA (with or without stenting) is undertaken.

The rates have increased from 94% 1998 to 97% in 2003. Over this period there were only small differences between the HCOs with the better and the poorer rates.

In 2001 one large HCO reported a rate of 51%. When this HCO is removed the rate was 95% in 2001.

Cl. 1.3 The rate of inpatients undergoing CABG within twenty-four hours of a PTCA (with or without stenting) in the same admission.

The rates have decreased from 0.7% in 1998 to 0.3% in 2003, that is less than three per 1000. Both the better and poorer rates have decreased over that period.

Area 2 Endocrinology

Rationale

Elective surgery for insulin-treated diabetic patients requires an alteration of the treatment schedule. It is estimated that between 0.5 and 2.0% of patients undergoing elective surgery are insulin-treated diabetics. Inappropriate management creates the risk of hypoglycaemia.

The indicators are:

CI 2.1 The rate of insulin treated diabetic inpatients having an elective operation, and a length of stay equal to or greater than 48 hours, whose medical record shows at least four blood glucose measurements on the first post-operative day.

CI 2.2 The rate of insulin treated diabetic inpatients having an elective operation, and a length of stay equal to or greater than forty-eight hours with a recorded blood glucose level, BSL, less than 4mmol/l in the post-operative period.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	24	145	275	52.7	52.8	88.8	99	65	44
	1999	19	127	135	94.1	94.1	94.1	–	–	–
	2000	20	195	213	91.5	90.8	95.1	7	9	–
	2001	18	151	175	86.3	79.5	94.3	14	–	4
	2002	14	137	152	90.1	90.4	94.9	7	–	2
	2003	19	230	269	85.5	81.7	95.3	6	26	19
2.2	1998	19	43	188	22.9	11.2	33.3	22	–	–
	1999	18	46	151	30.5	23.0	33.2	11	–	5
	2000	17	28	184	15.2	12.7	17.7	4	6	–
	2001	16	31	188	16.5	13.8	20.3	5	–	–
	2002	13	28	145	19.3	15.1	22.3	6	–	–
	2003	18	54	266	20.3	18.5	21.9	4	4	–

CI 2.1 The rate of insulin treated diabetic inpatients undergoing elective surgery having at least 4 BSL on the first post-operative day.

There appears to have been no improvement in the overall rates since 1998. In 2003 the rate was 85.5%. The proportion of patients represented by this indicator is small and consequently the rates varied considerably. Over the entire six-year period the overall rate, the better rates and the poorer rates were 81%, 94% and 79% respectively.

Since 1998, more than half of HCOs have had rates of 100% and hence it should be possible for more HCOs to have rates close to 95%.

The New South Wales rate and the public rate were highest in 2003, being 95% and 93% respectively (Table 2.1).

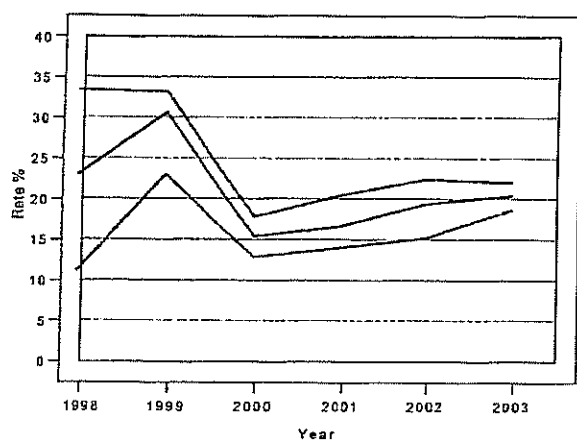
Table 2.1 Insulin treated diabetics – at least 4 BSLs

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	7	146	151	95.3	5.34	–
Other	2003	12	84	118	72.9	6.04	26
Public	2003	12	162	172	93.4	5.08	–
Private	2003	7	68	97	71.4	6.76	21

CI 2.2 The rate of insulin treated diabetics undergoing elective surgery having post-operative BSL < 4mmol/l

There appears to have been no improvement in the overall rates since 1998, however the difference between the better and poorer rates has been less than ten percentage points since 2000 (Figure 2.2). The proportion of patients represented by this indicator was small and consequently the overall rates varied considerably, ranging from 15% to 31% over the six-year period. Over the entire six-year period the overall rate, the better rate and the poorer rate were 21%, 16% and 24% respectively.

Figure 2.2 Insulin treated diabetics — post operative BSL < 4mmol/l



Area 3 Gastroenterology

Rationale

Haematemesis and melaena (H&M) are common symptoms necessitating admission to hospital and often indicate significant potential morbidity. These indicators relate to the management of patients admitted with haematemesis and/or melaena who also received a blood transfusion

The indicators are:

CI. 3.1 The rate of gastroscopy within 24 hours in H&M patients who had a blood transfusion

CI. 3.2 The rate of having a specific discharge diagnosis explaining the cause of bleeding in H&M patients who had a blood transfusion

CI. 3.3 The rate of surgical staff notification in H&M patients who had a blood transfusion

CI. 3.4 The rate of operation in H&M patients who had a blood transfusion

CI. 3.5 The rate of operation in H&M patients who had a blood transfusion and endoscopic therapy

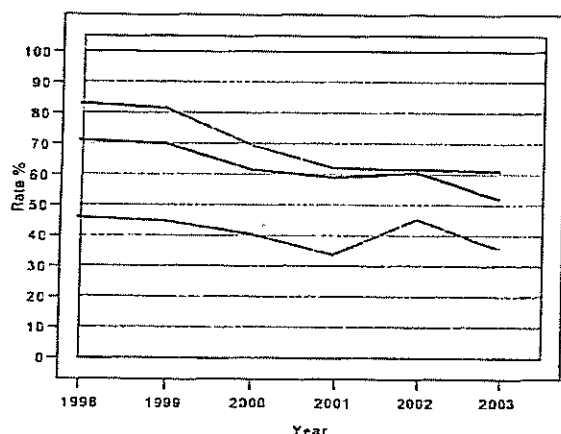
CI. 3.6 The rate of death in H&M who had a blood transfusion

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	31	492	696	70.7	45.2	82.9	85	98	33
	1999	29	561	808	69.4	44.2	81.3	95	95	19
	2000	29	329	540	60.9	40.3	68.8	42	–	–
	2001	24	393	670	58.7	33.4	61.8	20	91	14
	2002	17	274	457	60.0	44.9	60.9	4	20	–
	2003	25	397	767	51.8	35.7	60.6	67	223	60
3.2	1998	30	531	675	78.7	68.2	84.2	37	40	11
	1999	26	641	782	82.0	79.9	84.1	16	10	–
	2000	24	324	427	75.9	65.8	85.1	39	13	6
	2001	20	37	552	79.2	62.0	88.7	52	21	10
	2002	14	260	327	79.5	58.1	88.1	27	11	–
	2003	20	333	454	73.3	54.3	72.1	–	–	–
3.3	1998	26	268	626	42.8	36.4	1.4	178	153	–
	1999	22	398	734	54.2	40.2	70.6	120	–	–
	2000	20	207	382	54.2	42.8	75.8	82	25	–
	2001	15	225	328	68.6	48.4	89.0	66	–	9
	2002	12	167	293	57.0	64.2	89.3	94	63	44
	2003	16	155	359	43.2	42.1	77.7	123	90	31
3.4	1998	26	52	651	7.99	6.30	11.2	21	–	–
	1999	22	48	734	6.54	6.12	7.56	7	–	–
	2000	26	58	501	11.6	2.84	23.7	60	–	–
	2001	23	91	694	13.1	7.69	16.4	23	–	–
	2002	16	77	450	17.1	6.03	30.9	62	72	–
	2003	21	72	682	10.6	3.61	22.6	47	17	32
3.5	1998	21	89	351	25.4	23.3	24.1	7	6	–
	1999	23	77	760	10.1	2.38	4.87	58	51	40
	2000	22	34	461	7.38	1.76	12.5	25	–	11
	2001	17	24	456	5.26	4.72	5.59	2	–	–
	2002	15	19	433	4.39	3.03	3.91	5	–	2
	2003	20	20	672	2.98	1.10	3.92	12	8	6
3.6	1998	27	59	686	8.60	8.60	8.60	–	–	–
	1999	25	60	777	7.72	6.13	8.52	12	–	–
	2000	25	39	497	7.85	7.85	7.85	–	–	–
	2001	27	86	825	10.4	10.4	10.4	–	–	–
	2002	19	85	775	11.0	8.68	11.0	17	10	–
	2003	25	82	793	10.3	9.32	11.5	8	7	–

CI. 3.1 The rate of gastroscopy within 24 hours in H&M patients who had a blood transfusion.

The overall rates have decreased from 70.7% in 1998 to 51.8% in 2003 (Figure 3.1). Both the better rates and the poorer rates have decreased over the period and the differences between these have decreased suggesting more uniform practice among reporting HCOs. In 2003 half of the patients who received blood transfusions had a gastroscopy. The better rates were about two thirds and the poorer rates about one third. This variation indicates that the rate of gastroscopy in these patients could be increased, if it is desirable that a gastroscopy be performed. New South Wales reported the lowest rate, 31% in 2003 (Table 3.1).

Figure 3.1 H&M with blood transfusion – gastroscopy within 24 hour**Table 3.1 H&M with blood transfusion - gastroscopy within 24 hours**

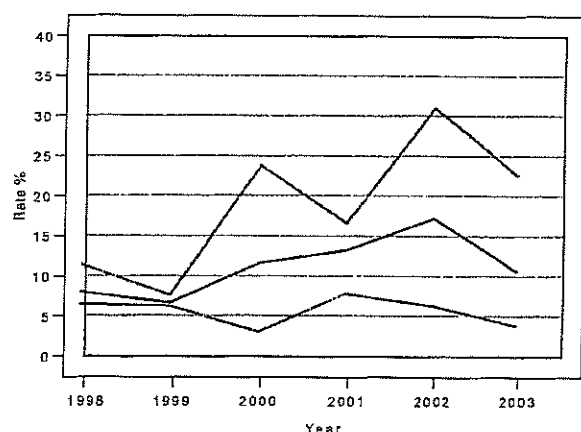
Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	5	87	293	30.6	5.24	147
QLD	2003	9	84	177	49.2	6.74	56
VIC	2003	5	65	101	61.0	8.93	20
Other	2003	6	161	196	80.9	6.41	–

CI. 3.2 The rate of having a specific discharge diagnosis explaining the cause of bleeding in H&M patients who had a blood transfusion.

The overall rates do not appear to have improved since 1998. The rate was lowest, 73%, in 2003. In years prior to 2003 the better rate was in excess of 80%.

CI. 3.3 The rate of surgical staff notification in H&M patients who had a blood transfusion.

The rates of notification of surgical staff in these patients varied between 43% and 69% over the period 1998 to 2003. The better rate was at least 25 percentage points above the average over that period indicating that the rate could be increased.

Figure 3.4 H&M with blood transfusion – Operation**CI. 3.4 The rate of operation in H&M patients who had a blood transfusion**

The proportion of patients having surgery varied from 6.5% to 17.1% between 1998 and 2003. The better rates ranged from 2.84% to 7.69% over that period. The rural rate was 28.1%, which may be of concern.

Table 3.4 H&M with blood transfusion – operation

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Metropolitan	2003	12	46	597	8.11	3.41	–
Rural	2003	9	26	85	28.1	9.03	17

CI. 3.5 The rate of operation in H&M patients who had a blood transfusion and endoscopic therapy.

The rates have decreased from 25.4% in 1988 to 2.98% in 2003. The difference between the better and poorer rates since 2001 has been a few percentage points. Since 2000, the overall rates and the better and poorer rates were lower in this group of patients than in those who did not have an endoscopy (CI. 3.4). New South Wales had the lowest rate of 1.2% in 2003 (Table 3.5).

Table 3.5 H&M with blood transfusion, endoscopic therapy and operation

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	5	2	293	1.20	1.02	–
QLD	2003	6	12	101	9.19	1.74	8
Other	2003	9	6	278	2.64	1.05	–

CI. 3.6 The rate of death in H&M patients having blood transfusion.

The death rates varied between 8% and 11% between 1998 and 2003. During that period there were differences of one or two percentage points between the better and poorer rates. The stratum differences were small. Thus, although the mortality rate is high, there are no indications that the outcome varies between HCOs.

Area 4 Geriatric Medicine I

Rationale

Altered mental state is frequently seen in elderly patients and is often a major factor influencing the patient's outcome. Mental function assessment should be made on admission or during the admission if more appropriate, within a geriatric medicine or geriatric rehabilitation unit. Evidence of this must be documented.

The indicator is:

CI. 4.1 The rate of documented assessment of mental function in patients admitted to a geriatric medicine or geriatric rehabilitation unit.

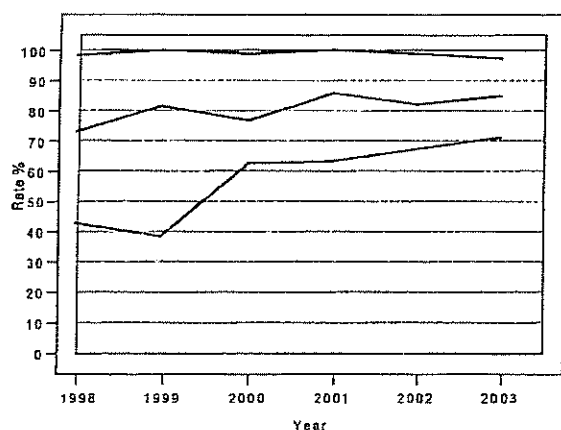
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	23	3,672	5,038	72.9	42.2	98.1	1,271	328	498
	1999	18	4,840	5,948	81.4	38.1	99.5	1,078	587	561
	2000	25	4,917	6,424	76.5	62.3	98.6	1,417	–	709
	2001	24	6,483	7,616	85.1	62.6	99.7	1,106	740	547
	2002	23	5,115	6,273	81.5	66.8	98.4	1,055	–	482
	2003	28	8,039	9,563	84.1	70.6	97.1	1,248	–	663

CI. 4.1 The rate of documented assessment of mental function in patients admitted to a geriatric medicine or geriatric rehabilitation unit.

The rates have increased from 72.9% in 1998 to 84.1% in 2003 (Figure 4.1). The poorer rates increased from 42.2% to 70.6%. The better rates have exceeded 97% for the last six years indicating that all HCOs could achieve higher rates.

Figure 4.1 Geriatrics – documented mental function



Area 4 Geriatric Medicine II

Rationale

Patients who are admitted to a geriatric medicine or geriatric rehabilitation unit must have a documented objective assessment of physical function. Comprehensive functional assessment and re-assessment are vital to planning appropriate treatment programs and should be done at least twice during an inpatient stay.

The indicator is:

CL 4.2 Assessment of physical function

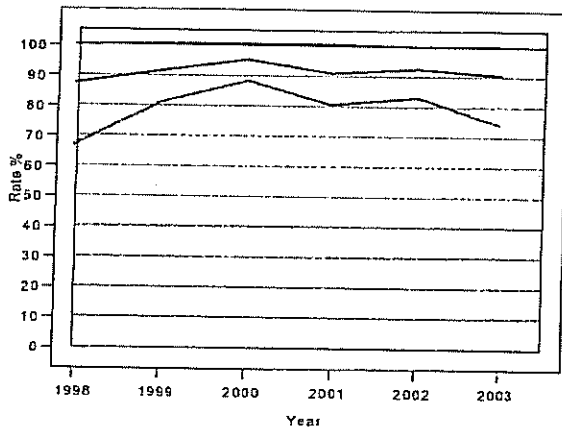
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.2	1998	24	4,589	5,283	86.9	66.6	99.6	674	–	347
	1999	15	4,022	4,403	91.3	80.6	99.8	371	209	176
	2000	18	5,296	5,576	95.0	87.9	99.8	269	–	139
	2001	25	6,194	6,858	90.3	80.1	99.8	650	–	436
	2002	23	5,902	6,414	92.0	82.9	99.6	486	–	307
	2003	27	7,836	8,689	90.2	73.9	99.6	820	–	431

CL 4.2 The rate of documented assessment of physical function in patients admitted to a geriatric medicine or geriatric rehabilitation unit.

The rates have increased marginally from 87% in 1998 to above 90% in the subsequent years (Figure 4.2). The better rates exceeded 99.5% in all years indicating that rates close to 99% could be attained by all HCOs.

Figure 4.2 Geriatrics – documented physical assessment



Area 5 Nephrology

Rationale

Renal biopsy is a procedure commonly performed as part of the assessment of patients with renal disease. It is an invasive technique, which may put the patient at risk.

The indicator is:

CI. 5.1 Adequacy and safety of renal biopsy as determined by the presence of macroscopic haematuria

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1998	13	42	653	6.43	6.43	6.43	–	–	–
	1999	14	69	892	7.74	2.99	13.1	42	–	7
	2000	19	38	1,114	3.41	2.36	4.66	11	5	–
	2001	21	58	1,819	3.19	1.96	4.62	22	–	13
	2002	23	47	1,531	3.07	2.75	5.27	4	4	2
	2003	16	29	571	5.08	2.96	7.60	12	–	–

CI. 5.1 The rate of developing macroscopic haematuria within 24 hours in inpatients having a renal biopsy.

The rates from 2000 have been lower than those in 1998 and 1999. The better and poorer rates have been variable over the period, with the better rates being less than half the poorer rates from 1999 onwards. This variation indicates some potential to reduce the rate that patients develop macroscopic haematuria.

Area 6 Neurology

Rationale

Stroke is a common cause of admission to hospital that is resource intensive. Computerised tomography (CT) scanning makes an important contribution to patient management

The indicator is:

CI 6.1 Stroke investigation using a CT Scan

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.1	1998	82	3,709	4,902	75.7	57.5	88.3	618	293	194
	1999	72	3,782	4,594	82.3	63.6	92.0	446	112	145
	2000	76	4,741	5,853	81.0	66.8	92.1	649	–	213
	2001	74	5,396	6,746	80.0	68.0	92.4	836	531	254
	2002	65	4,232	5,165	81.9	72.3	92.5	547	218	120
	2003	70	5,294	6,341	83.5	73.1	90.0	410	223	177

CI 6.1 The rate of documented CT scan in patients with a discharge diagnosis of stroke.

The overall rates of documented CT scan in stroke patients increased from 76% in 1998 to 80% or more in subsequent years (Figure 6.1). The better rates have been approximately ten percentage points higher than the overall rates suggesting that there is potential to increase the rate in all HCOs to 90% or more. New South Wales and Victoria reported the highest rates in both 2002 and 2003 (Table 6.1).

Figure 6.1 Stroke - documented CT scan

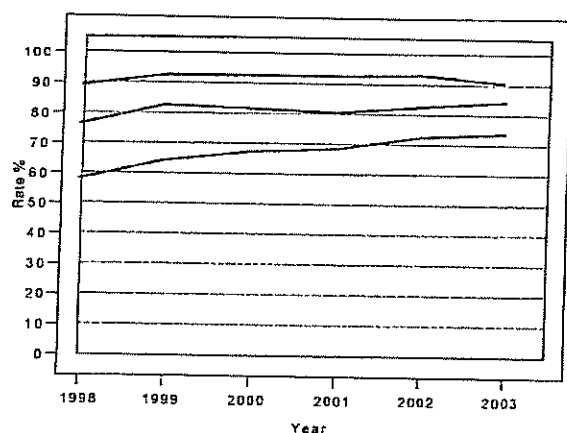


Table 6.1 Stroke – documented CT scan

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	18	1,280	1,461	87.1	2.11	–
	2003	21	1,435	1,629	87.5	1.75	–
QLD	2002	14	1,013	1,319	77.1	2.22	132
	2003	15	1,127	1,478	76.7	1.84	158
SA	2002	7	204	297	70.9	4.67	48
TAS	2002	5	279	347	80.3	4.32	–
	2003	5	287	413	71.8	3.48	64
VIC	2002	14	1,045	1,222	85.1	2.30	–
	2003	16	1,664	1,905	87.3	1.62	–
WA	2003	5	299	355	83.9	3.75	–
Other	2002	7	411	519	79.8	3.53	37
	2003	8	482	561	85.2	2.99	–

Area 7 Oncology

Rationale

Stage II carcinoma of the breast with nodal involvement is a common malignancy in pre-menopausal women. The standard management usually includes systemic adjuvant therapy.

The indicator is:

CI. 7.1 Use of systemic adjuvant treatment for Stage II breast cancer

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
7.1	1998	18	238	247	96.4	95.9	97.5	2	—	—
	1999	12	220	227	96.9	97.4	98.0	2	3	—
	2000	14	110	123	89.4	80.9	99.1	11	—	8
	2001	8	106	116	91.4	83.7	97.2	6	—	3
	2002	9	152	169	89.9	84.5	96.0	10	—	2
	2003	14	166	174	95.4	91.2	97.7	4	—	1

CI. 7.1 The rate of documented evidence of treatment, or intention to treat, with poly-chemotherapy in pre-menopausal patients with stage II carcinoma of the breast.

The overall rates do not appear to have improved over the six years 1998 to 2003. In 2003 all but eight of the 174 patients covered by this indicator were offered the use of poly-chemotherapy. The better rates have remained at 96% or more indicating that all HCOs could achieve rates close to this.

Area 8 Thoracic Medicine

Rationale

Asthma is a common condition with most hospitals involved in both outpatient and inpatient management. The condition affects approximately 8% of the population. There are approximately 700 deaths per year in Australia. An admission to hospital for acute asthma should include evidence of a documented review of maintenance therapy, and formulation of an individual crisis plan with the patient.

Objective assessment of severity during inpatient management will depend on available facilities and may take the form of peak expiratory flow measurement (at a minimum), spirometry or indices of gas exchange.

The indicators are:

CI 8.1 The rate of documented objective assessment of severity on initial presentation in patients admitted to hospital with acute asthma

CI 8.2 The rate of documented subsequent objective assessment of severity in patients admitted to hospital with acute asthma

CI 8.3 The rate of documented evidence of an appropriate discharge plan in patients admitted to hospital with acute asthma

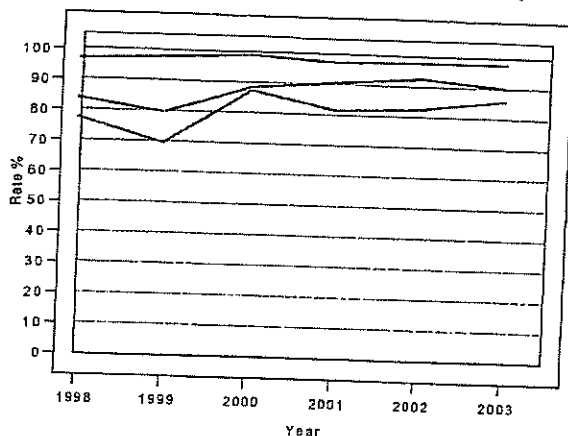
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
8.1	1998	50	1,686	2,026	83.2	77.1	96.5	268	–	93
	1999	36	1,493	1,890	79.0	68.9	97.5	350	278	164
	2000	43	1,532	1,738	88.1	86.9	98.3	176	102	83
	2001	39	1,397	1,554	89.9	80.9	97.0	110	–	40
	2002	29	999	1,086	92.0	81.9	97.2	56	53	22
	2003	34	1,409	1,572	89.6	85.1	97.5	124	–	45
8.2	1998	49	1,594	1,966	81.1	71.1	96.1	295	95	93
	1999	35	1,429	1,763	81.1	68.9	94.9	244	188	123
	2000	41	1,486	1,689	88.0	84.0	96.9	150	139	50
	2001	37	1,352	1,524	88.7	79.5	96.6	119	86	45
	2002	28	943	1,061	88.9	80.9	97.3	89	–	44
	2003	32	1,323	1,531	86.4	75.2	95.4	137	–	55
8.3	1999	33	781	1,542	50.6	15.3	81.9	482	150	122
	2000	40	900	1,720	52.3	19.0	85.7	574	–	134
	2001	41	1,105	1,845	59.9	26.7	86.6	492	–	180
	2002	33	536	1,010	53.1	22.3	85.5	327	195	74
	2003	33	773	1,405	55.0	20.5	77.7	318	187	93

CI 8.1 The rate of documented objective assessment of severity on initial presentation in patients admitted to hospital with acute asthma.

The rates increased from 83% in 1998 to approximately 90% from 2001 onwards. The poorer rates have been above 80% since then (Figure 8.1). The better rates have been above 97% since 1999 indicating that all HCOs could achieve rates close to this.

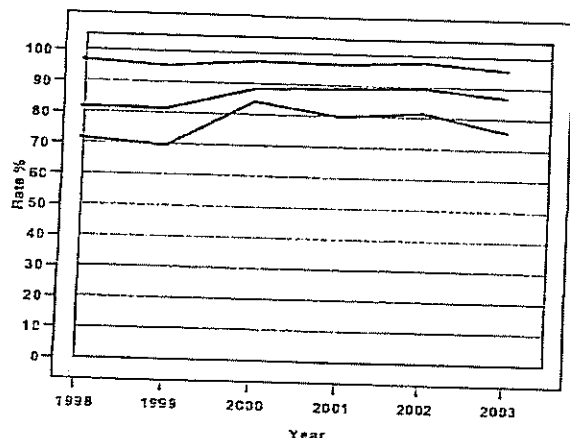
Figure 8.1 Acute asthma – documented severity on presentation



CI. 8.2 The rate of documented subsequent objective assessment of severity in patients admitted to hospital with a acute asthma.

The rates of subsequent objective assessment were a couple of percentage points lower than the corresponding rates on admission (CI 8.1). The better rates have been 95% or above during the six year period indicating that all HCOs could achieve rates close to this. There is evidence that the rates have declined slightly in 2003 (Figure 8.2)

Figure 8.2 Acute asthma – documented severity in addition to presentation

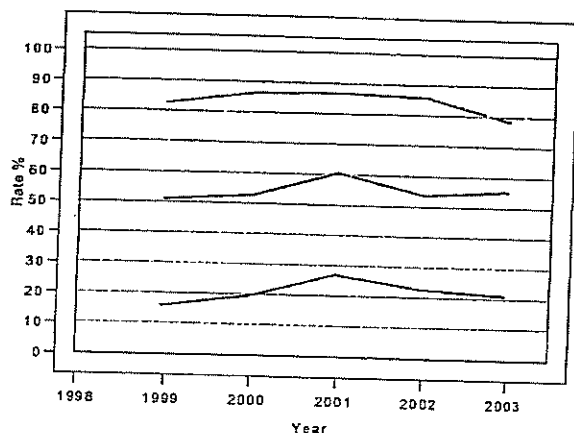


CI. 8.3 The rate of documented evidence of an appropriate discharge plan in patients admitted to hospital with a acute asthma.

The rates have ranged from 50% to 60% between 1999 and 2003 (Figure 8.3). Approximately 50% of asthma patients have documented evidence of an appropriate discharge plan. The rates for the better performing HCOs have been three or four times the rates for the poorer HCOs and twenty percentage points above the overall rates. These differences indicate that substantial improvements in the overall rate could be made.

In 1998/1999 there were 42,336 admissions to the Australian Refined Diagnosis Related Groups (AR-DRG) "E69C, Bronchitis and Asthma Age less than 50 without complications or co-morbidities". The number declined to 28,759 in 2002/2003, a reduction by one third. If the 2003 rate is applied to these 28,759 admissions then the estimated proportion of patients not receiving an appropriate discharge plan is approximately 13,000 (45%).

Figure 8.3 Acute asthma – documented discharge plan



Mental Health Inpatient Indicators – Version 4

Area 1 Diagnosis

Rationale

Mental health patients should be given a diagnosis as part of their management. These indicators are measures of the processes of patient care, which are under the control of the organisation.

The indicators are:

CL 1.1 The rate of allocation of a diagnosis within twenty-four hours of admission

CL 1.2 The rate of having a diagnosis on separation recorded in the medical record

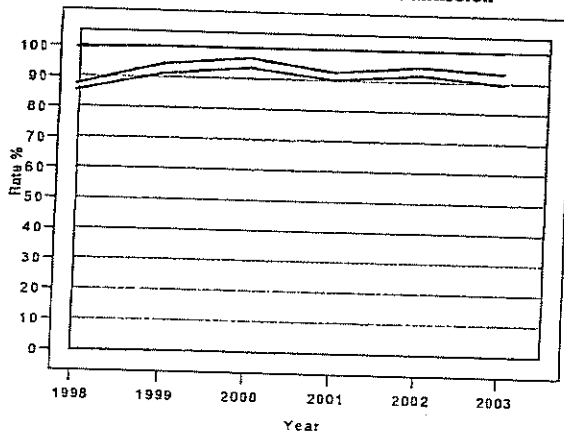
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	55	15,568	17,968	86.6	84.9	98.8	2,192	–	1,454
	1999	57	18,800	20,113	93.5	90.5	99.4	1,191	–	673
	2000	58	22,988	23,858	96.4	93.3	99.4	734	–	380
	2001	64	23,721	25,739	92.2	89.5	99.3	1,849	–	1,047
	2002	79	31,524	33,430	94.3	91.8	99.6	1,772	–	855
	2003	78	34,853	37,713	92.4	89.1	99.6	2,707	–	1,472
1.2	1998	57	13,499	18,401	73.4	66.2	99.5	4,800	–	2,540
	1999	57	18,324	21,439	85.5	73.9	99.7	3,058	–	1,629
	2000	56	20,881	23,340	89.5	76.7	99.7	2,396	–	1,163
	2001	58	20,402	24,213	84.3	74.3	99.4	3,675	–	1,644
	2002	79	26,633	31,238	85.3	75.3	99.7	4,523	–	2,276
	2003	77	32,071	36,981	86.7	80.7	99.7	4,792	–	2,738

CL 1.1 The rate of allocation of a diagnosis within twenty-four hours of admission.

The better rates have exceeded 99% since 1999 and the difference between the better and poorer performing HCOs has been around ten percentage points during that period. Nine HCOs have had statistically significantly low rates during three or more years since 1998. Since this is a process indicator there is potential for the HCOs with the poorer rates to improve.

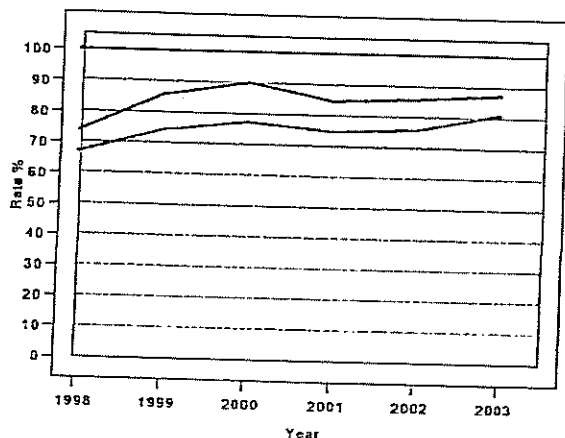
Figure 1.1 Diagnosis within 24 hours of admission



CI. 1.2 The rate of having a diagnosis on separation recorded in the medical record.

There were considerable differences between the HCOs, with the better rates exceeding 99.4% in all years. However, the poorer rates were around twenty percentage points lower than these rates (Figure 1.2). Thirteen HCOs have had statistically significantly low rates during the three or more years since 1998. There is potential for the HCOs with the poorer rates to improve.

Figure 1.2 Diagnosis in medical record on discharge



Area 2 Physical Examination of Patients

Rationale

Evidence of a complete physical examination is an index of the completeness of care for mental health patients

The indicator is:

CL 2.1 Documented evidence of a complete physical examination with 48 hours of admission

Results

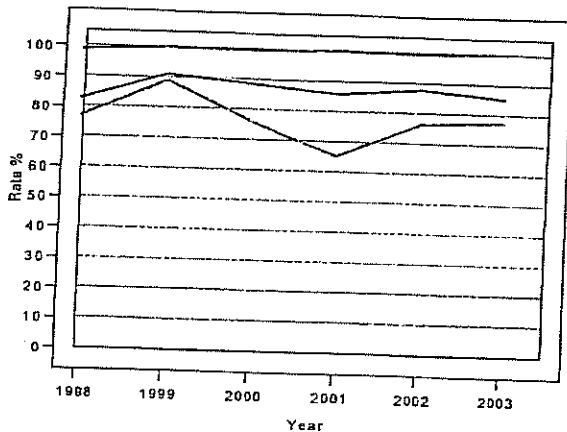
CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	61	12,500	15,232	82.1	76.6	98.6	2,523	840	1,171
	1999	57	17,738	19,618	90.4	88.3	99.6	1,809	737	953
	2000	59	17,876	20,297	88.1	75.3	99.1	2,234	–	1,051
	2001	62	18,862	22,119	85.3	64.8	99.3	3,109	1,874	1,564
	2002	78	25,636	29,286	87.5	76.0	99.1	3,388	–	1,683
	2003	78	28,327	33,473	84.6	77.1	99.4	4,929	–	2,175

CL 2.1 The rate of a documented complete physical examination within forty-eight hours of admission.

There has been a decline in the overall rates since 1999, from 90% to 85%. However, the HCOs with the better rates have exceeded 99% since 1999. The HCOs with the poorer rates provide a complete physical examination to less than 75% of their patients.

Fifteen HCOs have had statistically significantly low rates during three or more years since 1998. Since this is a process indicator the causes of the decline should be investigated.

Table 2.1 Documented complete physical exam within 48 hours



Area 3 Prescribing Patterns

Rationale

Psychotropic doses and concurrent medications can result in harm to the patient if they are not appropriate. This indicator is an index of the safety of patient care.

The indicator is:

CL 3.1 The rate of inpatients on two or more psychotropic medications from one sub-group category[#], at the time of discharge.

[#] Outlined in the ACHS Clinical Indicator Users' Manual 2003

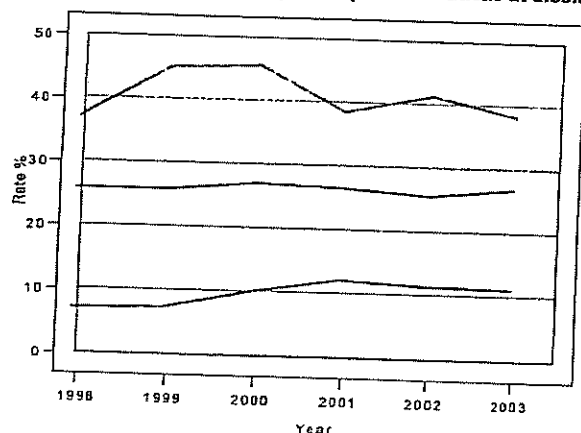
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	43	2,437	9,545	25.5	6.87	36.9	1,780	921	755
	1999	42	3,164	12,308	25.7	7.03	44.8	2,299	1,068	926
	2000	47	3,990	14,883	26.8	9.81	45.4	2,530	992	1,098
	2001	44	3,601	13,716	26.3	12.0	38.3	1,958	1,580	803
	2002	62	4,743	18,750	25.3	11.1	41.2	2,652	1,524	1,090
	2003	59	5,416	20,297	26.7	10.9	38.2	3,205	868	1,335

CL 3.1 The rate of inpatients on two or more psychotropic medications from one sub-group category at discharge.

The overall rates have remained close to 26% since 1998. The poorer rates have been ten or fifteen percentage points higher than the overall rates and the lower rates were fifteen percent below (Figure 3.1). The causes of the large variation in rates should be determined as they may indicate a difference in casemix or a difference in clinical practice. Ten HCOs had statistically significantly high rates during three or more years. Victoria and South Australia had the highest rates in 2003 (Table 3.1).

Figure 3.1 Two or more psychotropic medications at discharge



Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	20	1,268	7,563	17.2	2.4	—
	2003	19	1,899	8,816	21.7	2.7	—
QLD	2002	20	1,231	4,240	28.9	3.2	496
	2003	16	902	4,206	21.4	3.9	—
SA	2003	5	774	2,223	34.8	5.3	291
VIC	2002	11	792	2,474	31.9	4.1	364
	2003	10	1,056	2,193	48.0	5.4	577
Other	2002	11	1,434	4,473	32.0	3.1	662
	2003	9	785	2,859	27.3	4.7	—

Area 4 Electro Convulsive Therapy

Rationale

These indicators focus on the appropriateness of the proportion of ECT treatments given during a defined course and the rate of major medical complication among patients undergoing ECT treatment

Major medical complications include the following: myocardial infarct, damage to teeth, bone fracture, inhalation, arrhythmia, CVA or a serious anaesthetic complication. Day patient admissions are included

The indicators are:

CI 4.1 The rate of inpatients undergoing more than twelve treatments of ECT during a course

CI 4.2 The rate of inpatients experiencing major medical complications while undergoing ECT

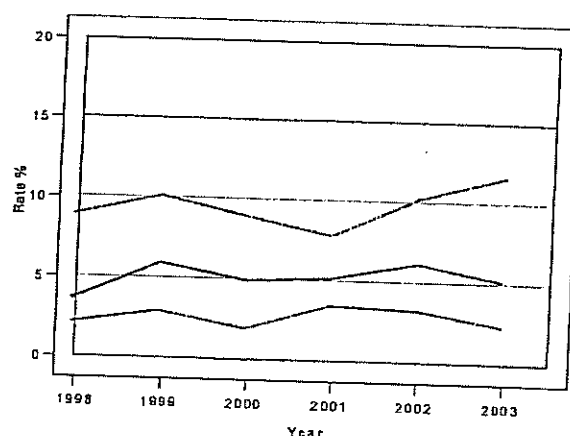
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	58	131	3,678	3.56	2.08	8.80	54	43	17
	1999	68	168	2,883	5.83	2.84	10.1	86	72	6
	2000	69	185	3,829	4.83	1.89	8.81	112	–	33
	2001	76	172	3,389	5.08	3.38	7.73	57	–	16
	2002	83	257	4,247	6.05	3.13	10.2	124	–	43
	2003	93	313	6,154	5.09	2.26	11.6	173	–	91
4.2	1998	58	25	3,880	0.64	0.56	0.91	3	–	1
	1999	66	30	2,992	1.00	0.71	1.16	8	–	1
	2000	65	31	3,913	0.79	0.57	0.88	8	–	2
	2001	75	30	3,829	0.78	0.58	0.87	7	10	1
	2002	82	39	4,318	0.90	0.61	1.05	12	13	4
	2003	88	37	6,031	0.61	0.42	0.82	11	–	3

CI 4.1 The rate of inpatients undergoing more than twelve treatments of E.C.T. during a course.

The rates do not appear to have decreased during the period 1998 to 2003 (Figure 4.1). The better rates have been approximately half the overall rates during the period. The variation between HCOs exists in both the public and private sectors, and indicates that there is a capacity to reduce rates

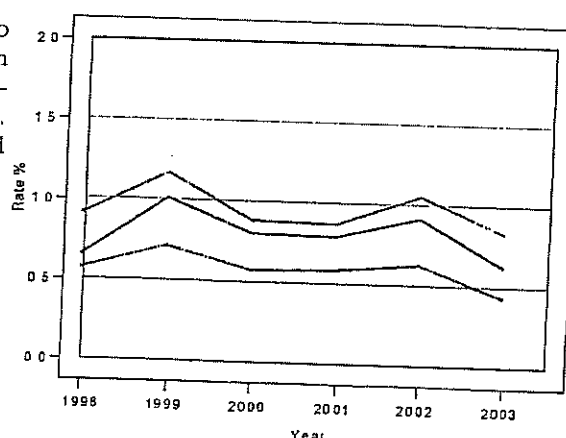
Figure 4.1 More than 12 treatments of E.C.T. during a course



CI 4.2 The rate of inpatients experiencing major medical complications while undergoing E.C.T.

The rates have not decreased during the period 1998 to 2003 (Figure 4.2). There was relatively small variation between HCOs, the better rates having been approximately one and a half times the poorer rates over the period. The variation between HCOs exists in both the public and private sectors.

Figure 4.2 Major medical complications with E.C.T.



Area 5 Use of Seclusion

Rationale

Monitoring patients' care is measured through the use and safety of seclusion. Seclusion is defined as sole confinement in a room; the door and windows of which are locked on the outside. Interruptions by staff for toilet and nourishment breaks are accepted. Major complications while in seclusion include the following: fractures, burns, attempted suicide.

The indicators are:

CI. 5.1 The proportion of inpatients having at least one episode of seclusion in an admission

CI. 5.2 The proportion of secluded patients having at least two episodes of seclusion (in an admission or in a one month period of an extended admission)

CI. 5.3 The proportion of secluded patients having seclusion for more than four hours in one episode

CI. 5.4 The proportion of secluded patients who were not reviewed by sight at least half-hourly

CI. 5.5 The proportion of secluded patients who experience major complications while in seclusion

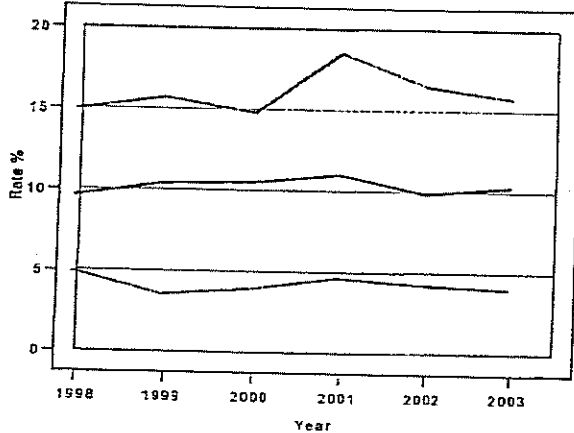
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1998	33	2,297	24,147	9.51	4.87	14.9	1,120	—	355
	1999	45	2,597	25,078	10.4	3.47	15.6	1,725	747	503
	2000	45	2,751	26,415	10.4	3.87	14.7	1,728	—	429
	2001	51	3,156	28,799	11.0	4.52	18.5	1,853	1,072	745
	2002	59	3,961	40,193	9.85	4.18	16.4	2,279	1,568	728
	2003	65	4,517	44,193	10.2	3.98	15.7	2,759	1,562	801
5.2	1998	31	862	2,167	39.8	30.1	49.0	209	—	24
	1999	45	1,045	2,563	40.8	32.3	43.5	216	78	47
	2000	42	1,133	2,819	40.2	32.4	47.8	220	—	10
	2001	50	1,217	3,327	36.6	31.1	42.6	180	—	—
	2002	53	1,425	3,761	37.9	34.4	41.5	129	48	—
	2003	59	1,690	4,381	38.6	34.1	43.6	195	205	—
5.3	1998	35	466	2,236	20.8	6.30	41.0	325	181	134
	1999	46	531	2,802	19.0	6.27	44.6	355	418	154
	2000	42	638	2,776	23.0	5.86	46.9	475	79	201
	2001	49	892	3,291	27.1	12.8	51.1	471	422	170
	2002	54	1,177	3,875	30.4	8.05	57.6	865	689	215
	2003	60	1,204	4,457	27.0	7.94	51.2	849	470	283
5.4	2002	48	73	2,955	2.47	0.20	2.95	67	57	51
	2003	46	35	3,240	1.08	0.55	1.58	17	—	10
5.5	1998	30	26	1,940	1.34	0.24	1.59	21	—	16
	1999	44	5	2,472	0.20	0.10	0.30	2	—	1
	2000	35	9	2,309	0.39	0.18	0.38	4	—	2
	2001	48	13	2,991	0.43	0.20	0.51	6	—	2
	2002	52	13	3,468	0.37	0.28	0.41	3	—	—
	2003	51	11	3,478	0.32	0.10	0.40	7	—	3

Except for one or two private HCOs, these data are for public HCOs

CI. 5.1 The rate of inpatients having at least one episode of seclusion in an admission.

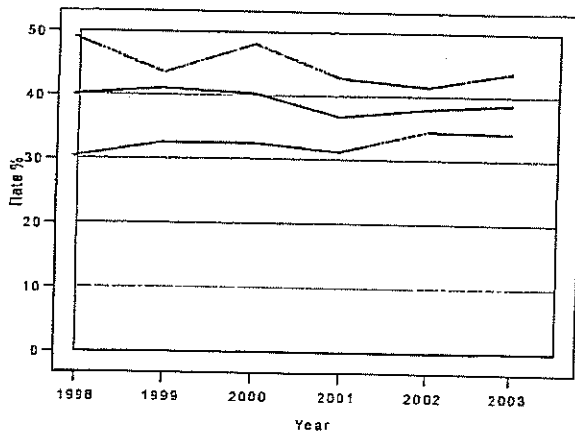
The overall rates have remained close to 10%, the better and poorer rates being 5% and 15% approximately (Figure 5.1). The rates of the better performing HCOs have been one third of the rates of the poorer performing HCOs. These differences suggest that there could be an opportunity to decrease the rates of seclusion. Queensland had the lowest rates in 2002 and 2003 (Table 5.1).

Figure 5.1 At least one episode of seclusion in an admission**Table 5.1 At least one episode of seclusion in an admission**

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	17	1,466	16,020	9.1	0.88	513
	2003	19	1,517	16,306	9.3	0.82	423
QLD	2002	14	497	8,775	5.9	1.2	—
	2003	14	670	10,290	6.7	1.0	—
VIC	2002	18	1,398	9,517	14.6	1.1	824
	2003	19	1,401	9,441	14.6	1.1	751
Other	2002	10	600	5,881	10.2	1.5	254
	2003	13	929	8,156	11.4	1.2	386

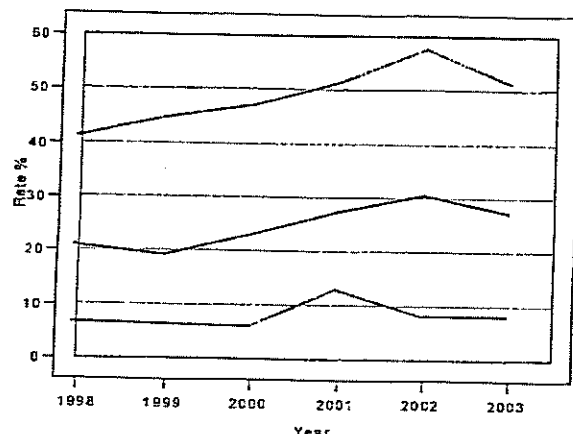
CI. 5.2 The proportion of secluded patients having at least two episodes of seclusion.

For those patients who have had at least one episode of seclusion, nearly 40% have two or more episodes. The rates for secluded patients being secluded more than once does not appear to have decreased over the period however the differences between the better and poorer performing HCOs has diminished. The difference between the better and poorer performing HCOs has been around ten percentage points in the last few years (Figure 5.2).

Figure 5.2 At least two episodes of seclusion in an admission

CL 5.3 The proportion of secluded patients having seclusion for more than four hours in one episode.

The rates appear to have increased from 21% in 1998 to 27% in 2003. There has been an apparent increase in both the lower and the higher rates as well (Figure 5.3). The higher rates have been approximately twice the overall rates indicating that there is the capacity to determine the causes of these differences. The New South Wales rates were the lowest in 2002 and 2003 (Table 5.3).

Figure 5.3 Seclusion for more than four hours in one episode**Table 5.3 Seclusion for more than four hours in one episode**

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	16	174	2,280	8.4	2.5	—
	2003	16	229	1,467	16.3	3.4	—
QLD	2002	13	228	482	45.2	5.4	177
	2003	12	270	504	51.5	5.7	177
VIC	2002	17	620	1,398	43.9	3.2	497
	2003	20	550	1,573	34.9	3.2	292
Other	2002	8	156	551	28.1	5.0	108
	2003	12	155	913	17.2	4.3	—

CL 5.4 The proportion of secluded patients who were not reviewed by sight at least half-hourly.

All but six HCOs had rates less than 10% in 2003 and all but three HCOs had rates less than 5% in 2003. In 2003 the better rate of 0.55% was approximately half the overall rate and one third of the poorer rate.

CL 5.5 The proportion of secluded patients who experience major complications while in seclusion.

The rates have decreased from more than 1% to 0.3% in 2003. The rates have been low in recent years.

Area 6 Major Critical Incidents

Rationale

Major critical incidents are any untoward happenings, which are not consistent with the routine operation of the organisation. These indicators measure the process and outcome of patients who attempt or actually suicide, assault, self mutilate or suffer other significant injuries

The indicators are:

- CI. 6.1 The rate of inpatient attempted or actual suicide in an admission
- CI. 6.2 The rate of inpatients assaulting in an admission
- CI. 6.3 The rate of assaulting inpatients having assaulted twice or more in an admission
- CI. 6.4 The rate of inpatients undertaking significant self-mutilation in an admission
- CI. 6.5 The rate of inpatients suffering significant other injuries in an admission

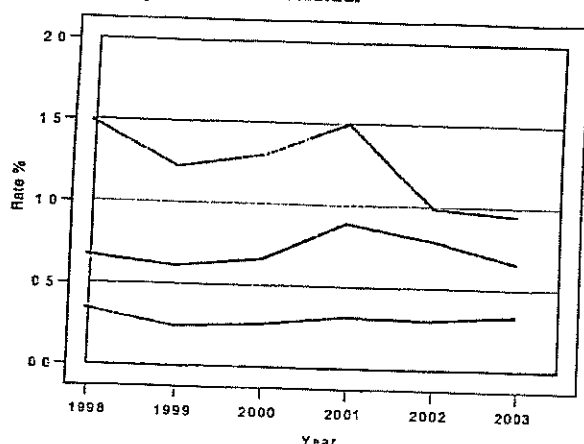
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.1	1998	69	307	46,434	0.66	0.33	1.49	152	193	79
	1999	73	337	55,393	0.61	0.24	1.22	204	219	114
	2000	74	301	46,127	0.65	0.25	1.29	185	–	48
	2001	79	377	42,748	0.88	0.30	1.50	247	–	45
	2002	87	407	51,589	0.79	0.29	0.98	256	124	81
	2003	93	381	58,349	0.65	0.32	0.95	192	109	59
6.2	1998	68	1,833	45,505	4.03	0.53	4.56	1,592	1,393	969
	1999	71	1,726	54,732	3.15	0.39	6.28	1,514	1,458	937
	2000	71	1,627	45,031	3.61	0.52	6.90	1,392	1,394	798
	2001	75	1,984	40,742	4.87	0.53	7.37	1,769	1,667	882
	2002	88	2,256	53,412	4.22	0.46	7.20	2,012	1,736	987
	2003	92	2,172	58,320	3.72	0.46	6.72	1,902	1,712	1,004
6.3	2002	60	437	1,381	31.6	22.8	42.4	122	299	47
	2003	65	509	1,547	32.8	24.2	38.3	132	–	58
6.4	1998	68	424	46,581	0.91	0.30	1.81	284	–	144
	1999	73	434	56,751	0.76	0.26	1.55	285	–	136
	2000	73	448	46,367	0.97	0.25	2.03	329	–	134
	2001	76	512	40,557	1.26	0.36	1.91	365	–	128
	2002	85	544	53,506	1.02	0.24	1.72	416	183	136
	2003	88	498	56,270	0.89	0.14	1.35	421	–	123
6.5	1998	56	377	38,270	0.99	0.17	1.87	311	270	156
	1999	65	298	50,830	0.59	0.12	1.54	236	226	134
	2000	67	258	43,464	0.59	0.10	1.14	212	–	94
	2001	70	409	36,896	1.11	0.20	1.34	334	–	181
	2002	75	357	40,941	0.87	0.21	1.07	269	106	126
	2003	82	275	52,762	0.52	0.14	0.93	203	98	81

CI. 6.1 The rate of attempted or actual suicide in an admission.

The overall rates have remained around 0.7% since 1998 however there was a decline in the poorer rates from 1.5% to 1% in the 2002 and 2003 (Figure 6.1)

CI. 6.1 Attempted or actual suicide.



CI. 6.2 The rate of inpatients assaulting in an admission.

The overall rates have remained around 4% during the period 1998 to 2003. The variation between HCOs is large. The poorer rates have remained close to 7% since 2000, whereas the better rates have been around 0.5% 2003 (Figure 6.2). The public rates were approximately seven times the private rates in 2002 and 2003 (Table 6.2). All the private HCOs had rates less than 5% and approximately half of the public HCOs had rates less than 5% in 2002 and 2003. Ten public HCOs have had statistically significantly high rates, (usually between 10% and 20%) for at least three of the six years. This degree of variation indicates that the causes should be determined.

Figure 6.2 Assault in an admission

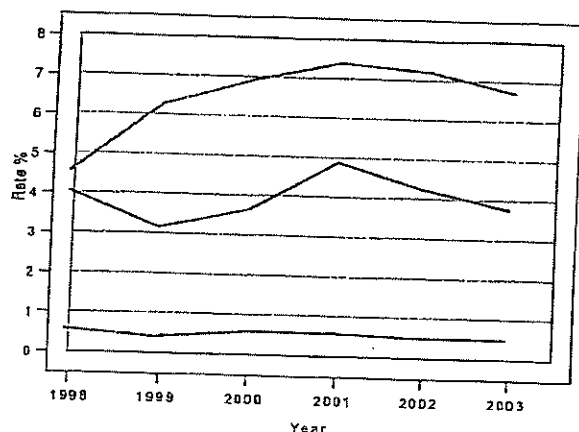


Table 6.2 Assault in an admission

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	48	2,006	33,032	6.01	0.49	1,736
	2003	61	2,049	39,740	5.10	0.44	1,712
Private	2002	30	100	15,973	0.76	0.71	—
	2003	31	123	18,580	0.79	0.64	—

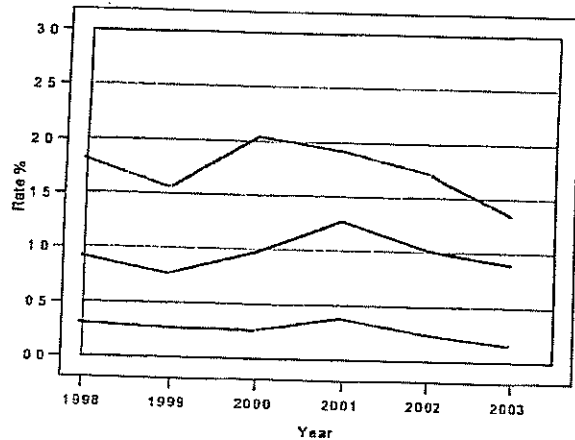
CI. 6.3 The proportion of assaulting inpatients having assaulted twice or more in an admission.

Almost one third of patients that had assaulted once assaulted at least once more during the same admission. The variation between HCOs within the public and the private sectors were similar, both had rates of approximately 30% and similar better and poorer rates (20% and 35%).

CI. 6.4 The rate of inpatients undertaking significant self-mutilation in an admission.

These rates have not decreased since 1998, varying around 1% (Figure 6.4). The rates for both the public and the private sectors were similar. Seven HCOs had statistically significantly high rates between 2% and 10%.

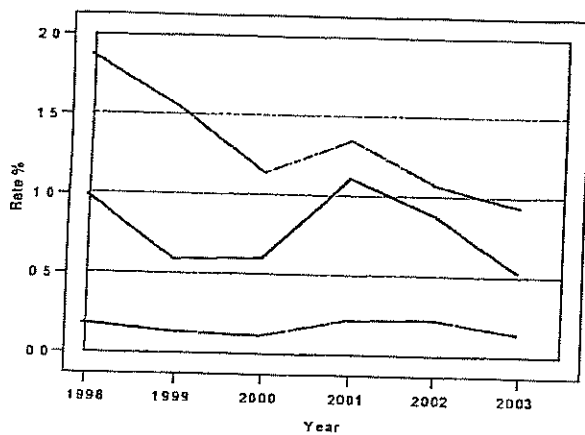
Figure 6.4 Significant self mutilation



CL 6.5 The rate of inpatients suffering significant other injuries in an admission.

The overall rates did not decrease since 1998, ranging from between 0.52% and 1.1%, but the higher rates have declined from 1.87% in 1998 to less than 1% in 2003 (Figure 6.5). Despite this reduction in differences between the rates, the lower rates of 0.2% were significantly below the overall rates, which suggests that there is capacity to improve.

Figure 6.5 Significant other injuries



Area 7 Re-admissions to hospital

Rationale

Re-admissions to hospital may be a measure of the quality of care given during the patient's initial admission. The intent of the indicator is to flag those unexpected re-admissions to the same organisation, which are potentially avoidable.

Unplanned hospital re-admission refers to an unexpected readmission for:

- Further treatment of the condition for which the patient was previously hospitalised
- Treatment of a condition related to one for which the patient was previously hospitalised
- A complication of the condition for which the patient was previously hospitalised

The indicator is:

CI. 7.1 Unplanned readmission within 28 days

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
7.1	1998	67	2,711	29,679	9.13	5.17	12.4	1,177	—	430
	1999	73	2,968	32,004	9.27	4.11	12.9	1,653	—	663
	2000	77	2,936	37,982	7.73	4.33	10.8	1,291	—	367
	2001	77	3,511	40,840	8.60	3.71	11.8	1,997	670	626
	2002	88	3,930	44,742	8.78	4.56	12.1	1,891	843	508
	2003	98	4,284	49,971	8.57	4.30	11.3	2,136	1,280	754

CI. 7.1 The rate of unplanned re-admissions within twenty-eight days.

The rates have not decreased and have ranged from 7.73% to 9.27%. The overall rates were approximately twice the better rates during the six years (Figure 7.1). The public rates, 9.9%, were three percentage points above the private rates in 2002 and 2003 (Table 7.1). There was considerable variation within each sector, a two fold difference between the better and poorer rates, which indicates that there is capacity to improve.

Figure 7.1 Unplanned readmissions within 28 days

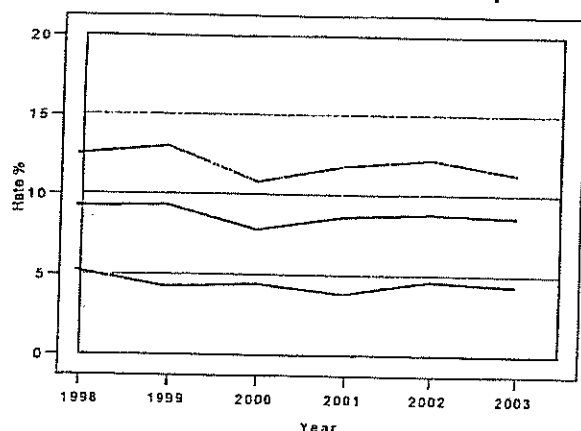


Table 7.1 Unplanned readmissions within 28 days

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	54	2,832	28,556	9.85	0.43	843
	2003	66	3,312	33,332	9.85	0.43	1,280
Private	2002	34	1,098	16,186	6.90	0.58	—
	2003	32	972	16,639	6.01	0.61	—

Area 8 Mortality

Rationale

Whilst not all deaths may be preventable, this indicator measures the inpatient death rates as a measure of the safety and quality of care for psychiatric patients. The data refer to inpatient psychiatric services only.

The indicator is:

CL 8.1 The rate of inpatient deaths

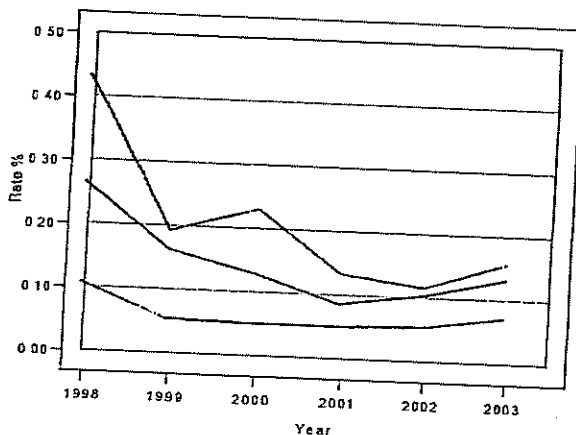
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
8.1	1998	67	102	38,777	0.26	0.11	0.43	61	—	31
	1999	74	65	40,150	0.16	0.05	0.19	44	27	11
	2000	77	65	51,085	0.13	0.05	0.23	39	—	11
	2001	82	36	42,433	0.08	0.05	0.13	15	—	1
	2002	93	52	50,936	0.10	0.05	0.11	26	—	11
	2003	102	76	58,595	0.13	0.07	0.15	35	28	9

CL 8.1 The rate of inpatient deaths.

The mortality rates have decreased from 0.26% in 1998 to around 0.1% from 2000 onwards (Figure 8.1). The difference between the better and poorer rates has decreased over the period, from 0.3% in 1998 to 0.075% in 2001.

Figure 8.1 Inpatient deaths



Area 9 Continuity of Care

Rationale

Continuity of patient care for mental health patients leads to better management. Measures of continuity are derived from discharge summaries.

The indicators are:

CI. 9.1 Rate of discharge summary or letter at time of discharge

CI. 9.2 Rate of final discharge summary recorded in the medical records within two weeks of discharge

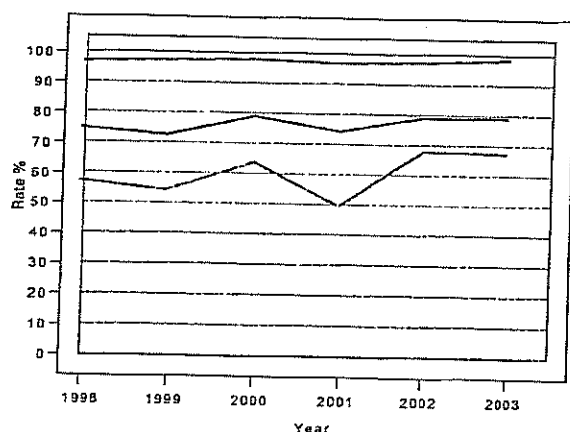
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
9.1	2002	79	23,352	31,469	74.2	43.5	97.2	7,230	–	2,843
	2003	80	26,031	35,433	73.5	48.9	98.5	8,877	–	3,538
9.2	1998	57	14,083	18,895	74.5	56.8	96.5	4,159	3,749	1,268
	1999	58	17,483	24,234	72.1	53.6	97.1	6,038	–	2,515
	2000	59	20,260	25,854	78.4	63.2	97.5	4,941	5,117	1,929
	2001	65	18,254	24,719	73.8	48.9	96.2	5,534	2,574	2,270
	2002	77	23,769	30,263	78.5	67.2	96.6	5,476	4,367	2,136
	2003	72	26,625	33,976	78.4	67.1	97.8	6,604	3,374	2,812

CI. 9.1 The rate of inpatients having a discharge summary or letter at discharge.

Almost three quarters of inpatients were discharged with a discharge summary or letter in 2002 and 2003. The rates for the poorer performing HCOs were less than 50% whereas the better rates were in excess of 97%. In 2003 the median rates were approximately 80% in both the public and private sectors and both had similar better and poorer rates (approximately 95% and 50%). These differences suggest that the process of providing a discharge summary could be improved in both sectors.

Figure 9.2 Final discharge summary in medical record within two weeks



CI. 9.2 The rate of inpatients having a final discharge summary recorded in the medical record within two weeks of discharge.

The overall rates have not increased since 1998 although the poorer rates have improved from 57% to 67% over the period (Figure 9.2). In 2002 and 2003 both the public and private sectors had similar rates. The New South Wales rates were significantly poorer in 2002 and 2003 (Table 9.2).

Table 9.2 Final discharge summary in medical record within two weeks.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	25	7,939	11,420	69.6	3.1	2,839
	2003	23	8,932	13,688	65.3	3.0	3,374
QLD	2002	17	3,542	4,628	76.6	4.9	825
	2003	14	3,051	3,836	79.5	5.6	–
SA	2003	5	2,101	2,292	91.5	7.3	–
VIC	2002	19	6,418	7,537	85.1	3.8	702
	2003	17	7,322	8,168	89.6	3.9	–
WA	2002	6	2,035	2,152	94.4	7.2	–
	2003	5	2,081	2,509	83.0	7.0	–
Other	2002	10	3,835	4,526	84.6	4.9	–
	2003	8	3,138	3,483	90.0	5.9	–

Mental Health Community Based – Version 1

Area 1 Outpatients

Rationale

The role of outpatient community care is to provide safe, quality and consistent service to clients in the community and to minimise the admission of those clients to psychiatric hospitals

The outpatient community indicators have been developed to monitor workloads for individual clinics in terms of the proportion of people seen who require relatively intensive care. This may allow services to examine differences and what reasons may explain them. The figure of five contacts or more has been chosen to set the standard but may be varied in future versions as experience demonstrates how clinically useful that figure is.

Some exclusions have been required to allow figures to reflect as near as possible direct personal and therapeutic contact. The two indicators regarding admissions are to let services see how they compare when their role of being able to help clients remain out of hospital is reviewed.

The indicators are:

CL 1.1 The rate of clients having five or more contacts with the outpatient service

CL 1.2 The rate of outpatient clients being admitted to hospital for psychiatric reasons only once

CL 1.3 The rate of outpatient clients being admitted to hospital for psychiatric reasons more than once

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2003	16	20,222	54,235	37.3	28.2	51.0	4,937	2,859	3,163
1.2	2003	16	4,400	53,645	8.20	6.53	17.0	895	–	966
1.3	2003	16	861	53,645	1.60	0.83	3.22	417	208	280

Two private HCOs and 14 public HCOs submitted data for the indicators in this set.

CL 1.1 The rate of clients having five or more contacts with the outpatient service.

In 2003, 37% of patients had five or more contacts. Ten of the 16 HCOs had rates between 28% and 51%. The New South Wales rate was the highest at 51% (Table 1.1).

Table 1.1 Outpatients – Clients having five or more outpatient contacts.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	6	7,777	15,336	50.7	4.28	2,859
Other	2003	10	12,445	38,899	32.0	2.69	–

CL 1.2 The rate of outpatient clients being admitted to hospital for psychiatric reasons only once.

In 2003, 8.2% of patients had one admission for psychiatric reasons only once. The better rate, 6.5%, was similar to the overall rate.

CL 1.3 The rate of outpatient clients being admitted to hospital for psychiatric reasons more than once.

In 2003, 1.6% of outpatients were admitted to hospital more than once. The overall rate was twice the lower rate of 0.83%.

Obstetrics and Gynaecology Indicators – Version 4

Area 1 Obstetrics – Induction of labour other than for defined indications

Rationale

These indicators are used because induction of labour is a common obstetric intervention and one, which is often stated by community critics to be unnecessarily high. The appropriate rate, however, is not known although a lower rate may be thought to be better. Hence, the gains are displayed in terms of reducing the rate of inductions.

The indicators are:

CI 1.1 The rate of induction of labour for indication other than those listed below[#] excluding augmentation

CI 1.2 The rate of induction of labour for indication other than those listed below[#] excluding augmentation from the total proportion of patients delivering including augmentation

[#] diabetes, premature rupture of membranes, hypertensive disorders (including chronic renal disease), intrauterine growth retardation, isoimmunisation, foetal distress (as documented by the clinician), foetal demise, chorioamnionitis, prolonged pregnancy (41 completed weeks, or more). Induction of labour is defined as surgical and/or medical induction.

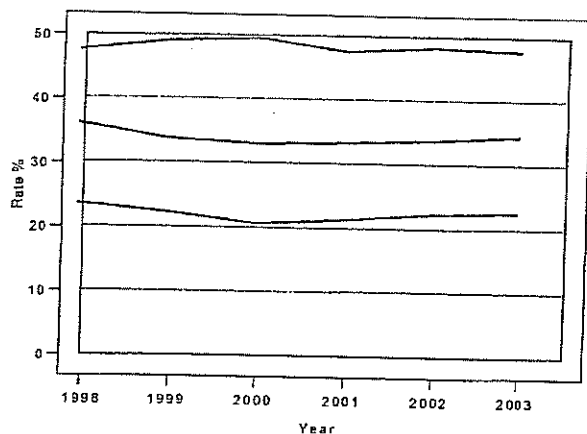
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (2D)%	Rate (8D)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	163	9,551	26,614	35.9	23.4	47.3	3,328	1,586	1,235
	1999	165	10,544	31,295	33.7	22.2	48.9	3,597	1,561	1,784
	2000	182	10,662	32,318	33.0	20.4	49.4	4,060	1,636	1,621
	2001	186	11,755	35,554	33.1	21.2	47.3	4,230	2,212	1,524
	2002	182	12,550	37,347	33.6	22.2	48.1	4,266	2,476	1,624
	2003	187	13,040	38,032	34.3	22.4	47.7	4,534	2,494	1,748
1.2	1998	169	9,650	105,322	9.16	4.58	13.8	4,825	2,097	1,861
	1999	163	9,915	105,938	9.36	4.39	14.8	5,260	2,760	2,312
	2000	178	10,659	125,468	8.50	4.60	14.5	4,882	2,232	2,211
	2001	186	11,627	130,973	8.88	4.94	14.3	5,159	2,601	2,086
	2002	179	12,136	141,722	8.56	4.57	13.7	5,660	2,956	2,349
	2003	184	12,805	147,106	8.70	4.35	14.6	6,409	3,041	2,560

CI 1.1 The rate of induction of labour for indications other than those listed above (excluding augmentation of labour) in patients undergoing induction.

The proportions have remained between 33% and 34% for the last five years, with no evidence of a trend. Also, the HCOs with lower rates were significantly less than those with higher rates (Figure 1.1). This significant variation between HCOs, with 20% of the rates being less than 22% and another 20% being greater than 48% indicates that there is a capacity to reduce inductions by more than 4,000. The public and private HCOs had significantly different proportions of 27% and 46% respectively in 2002 and 2003 (Table 1.1).

Figure 1.1 Induction for other than defined reasons (all inductions)



There are opportunities to determine the causes of the significantly high proportions in some individual HCOs. In all years, more than 1,600 inductions would not have been carried out if the HCOs that were outliers were to have the average rate of 34%.

Table 1.1 Induction for other than defined reasons (all inductions)

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	120	6,335	24,137	27.0	0.69	–
	2003	126	7,104	26,178	27.7	0.72	–
Private	2002	62	6,215	13,210	45.7	0.93	2,476
	2003	61	5,936	11,854	48.8	1.07	2,494

CI. 1.2 The rate of induction of labour for indications other than those listed above (including augmentation of labour) in all patients delivering.

When the proportion of inductions is expressed as a proportion of all deliveries, the percentages also showed no trends, remaining at a little less than 9% over the last four years. The variation between HCOs has also remained large and relatively stable. The rate could be halved if the average were to be reduced to 4.4%, which is the rate for the better HCOs. This would reduce the proportion of inductions by about 6,000. The difference in proportions between the public and private sectors also provided evidence that lower rates could be achieved. The public HCOs had mean rates that were one half of the private rates.

As with CI 1.1 there were HCOs with significantly high rates, which if their rates were reduced to the overall average would result in 2,000 less inductions.

Both of these indicators show a consistent pattern: large clinical practice variations in the public and private sectors, and a large proportion of individual HCOs with high rates. Research to determine the appropriate criteria for inductions is recommended.

Figure 1.2 Induction for other than defined reasons (all deliveries)

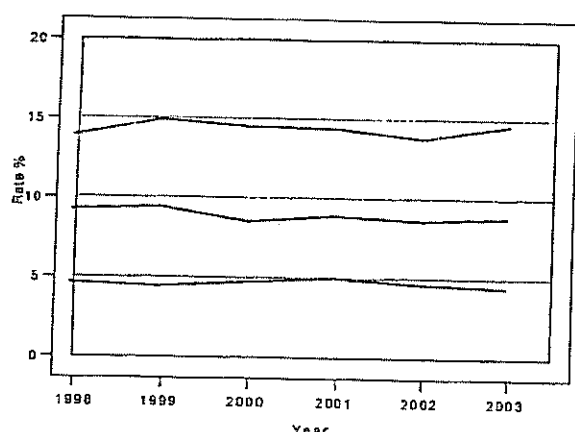


Table 1.2 Induction for other than defined reasons (all deliveries)

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	118	6,269	98,745	6.48	0.25	–
	2003	124	6,990	106,833	6.64	0.27	–
Private	2002	61	5,867	42,977	13.4	0.37	2,956
	2003	60	5,815	40,273	14.2	0.43	3,041

Area 2 Obstetrics – The rate of vaginal delivery following primary caesarean section

Rationale

This indicator is used to monitor the conduct of labour in those patients having a caesarean section for their first delivery. Evidence supports the finding that vaginal delivery after a previous caesarean birth is a reasonable option for many women. The recommended rate is not known, but rates of over 30% have been suggested. Thus, we have taken the desired rate to be high, and the potential gains are given in terms of increasing vaginal deliveries.

The indicator is:

CL 2.1 Rate of vaginal delivery following primary caesarean section

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	133	1,879	7,714	24.4	17.2	30.1	440	314	68
	1999	118	1,790	7,314	24.5	18.1	34.1	707	681	74
	2000	139	2,118	9,449	22.4	15.7	30.4	756	541	115
	2001	142	1,876	9,369	20.0	14.0	26.6	612	505	56
	2002	148	2,143	12,856	16.7	11.5	25.0	1,072	1,544	173
	2003	151	2,174	13,574	16.0	11.0	21.3	721	842	39

CL 2.1 The rate of vaginal delivery following a previous primary caesarean section.

The rates for this indicator have declined, especially over the period 2000 – 2002. The proportion in 2003 was 16% compared to 24% in 1998 and 1999. Further there has been a decline in the centiles (Figure 2.1). This dramatic decline is probably due to a change in clinical attitudes to vaginal birth after a caesarean and research or studies on what would be a desirable rate could be conducted.

The differences in rates remains high, with the HCOs with higher rates being twice that of the HCOs with lower rates. The difference between the States and the public and private sectors also provided evidence of significant variation in clinical practice (Table 2.1). Queensland (13%) and Victoria (13% and 15% in 2002 and 2003 respectively) had lower rates than the other States. The public rates are 6% higher than the private rates (18% and 12% respectively).

Figure 2.1 Vaginal delivery following caesarean

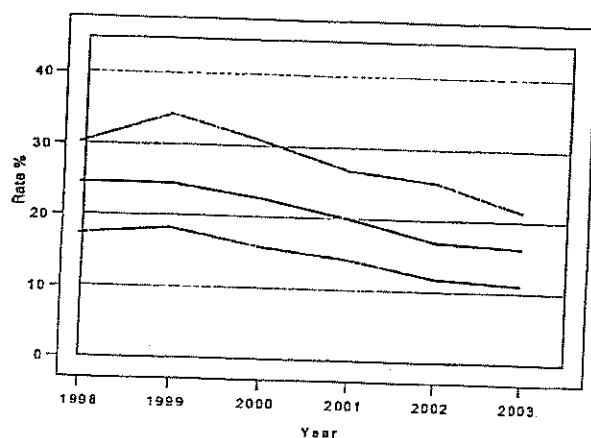


Table 2.1 Vaginal delivery following caesarean

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	53	905	4,752	19.0	0.83	457
	2003	53	743	4,482	16.4	0.67	262
QLD	2002	26	287	2,188	13.4	1.23	334
	2003	22	307	2,532	12.7	0.89	241
SA	2002	12	173	874	18.9	1.95	85
	2003	12	255	1,097	22.2	1.35	–
VIC	2002	34	434	3,467	13.0	0.98	543
	2003	35	442	2,935	15.3	0.83	203
WA	2002	14	138	923	15.4	1.89	122
	2003	18	219	1,701	14.3	1.09	134
Other	2002	9	206	652	28.7	2.25	–
	2003	11	208	827	22.2	1.56	–
Public	2002	91	1,591	8,284	18.8	0.66	–
	2003	92	1,575	8,351	18.3	0.48	–
Private	2002	57	552	4,572	12.8	0.89	273
	2003	59	599	5,223	12.4	0.61	306

Area 3 Obstetrics – Primary caesarean section for failure to progress

Rationale

These indicators monitor the adequacy of trial of labour and relate to patients undergoing primary (first) caesarean section after a period of labour. Failure to progress is evidenced by the clinician's documented statement of failure to progress and may include a proportion of underlying causes for example, cephalopelvic disproportion, uterine inertia and persistent occipitoposterior position.

The indicators are:

CI 3.1 The rate of primary caesarean section for failure to progress after a period of labour with cervical dilatation of 3cm or less

CI 3.2 The rate of primary caesarean section for failure to progress after a period of labour with cervical dilatation of more than 3cm

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	141	1,151	12,146	9.48	8.01	23.7	177	329	291
	1999	140	928	9,047	10.3	8.62	22.0	148	–	122
	2000	159	1,049	11,293	9.29	7.27	18.3	227	309	117
	2001	165	1,346	11,948	11.3	8.35	21.2	348	274	152
	2002	162	1,574	15,873	9.92	6.50	19.3	541	312	189
	2003	163	1,538	15,452	9.95	7.06	16.8	446	284	141
3.2	1998	135	2,395	9,712	24.7	26.8	41.8	–	521	101
	1999	141	2,472	8,963	27.6	27.5	42.4	7	201	109
	2000	158	3,278	11,213	29.2	27.0	39.2	252	–	46
	2001	166	3,746	11,935	31.4	28.3	38.7	363	487	28
	2002	160	4,372	15,675	27.9	24.8	39.5	78	741	222
	2003	163	4,597	14,968	30.7	26.8	36.3	583	–	83

CI 3.1 and 3.2 The rate of primary caesarean section for failure to progress after a period of labour with cervical dilatation of 3cm or less and cervical dilatation of more than 3cm.

These indicators were reported for all patients undergoing a primary non-elective caesarean section, and estimated the proportion that failed to progress with dilatation of 3cm or less and the proportion with dilatation of 3cm or more. The rates for CI 3.1 were about 10% while for 3.2 they increased from 25% to 31% in 1998 – 2003. It is interesting to note that the differences in rates between the HCOs were larger in 1998 than in 2003: the rates for the HCOs with a higher proportion have declined by 7% for CI 3.1 and by 5.5% for CI 3.2. That is, the HCOs with the more extreme rates for caesarean have reduced their rates, while those with lower rates have remained stable (Figures 3.1 and 3.2). The reasons for these changes may be important to determine.

The private sector had a higher mean rate of 15%, compared to the public rate of 8% for CI 3.1 (Table 3.1). For CI 3.2 the differences were small, the private sector rate was 29%, compared to the public rate of 31%.

Figure 3.1 Primary caesarean section for failure to progress, < 3cm dilation

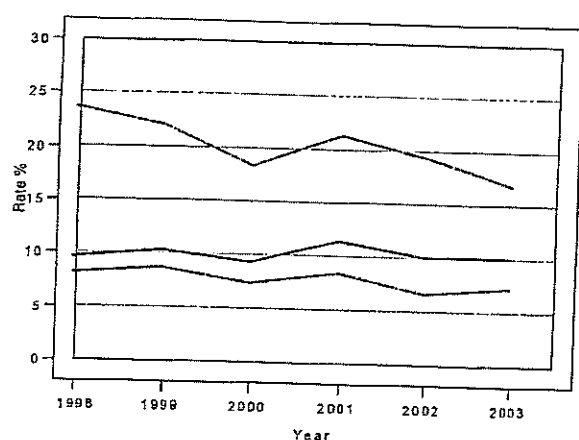
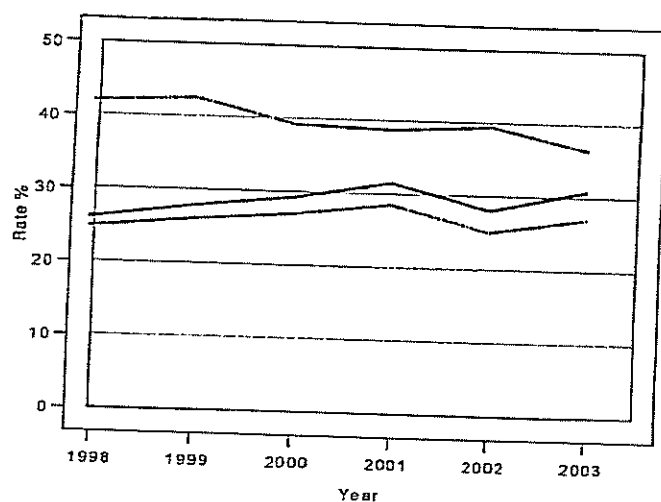


Table 3.1 Primary caesarean section for failure to progress, < 3cm dilation.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	105	853	11,140	7.94	0.50	–
	2003	103	847	11,036	8.11	0.41	–
Private	2002	57	721	4,733	14.6	0.76	312
	2003	60	691	4,416	14.6	0.65	284

Figure 3.2 Primary caesarean section for failure to progress, > 3cm dilation



Area 4 Obstetrics – Primary caesarean section for foetal distress

Rationale

To determine the comparative frequency of caesarean section for foetal distress

These indicators relate to patients having a caesarean section for foetal distress in their first delivery. Foetal distress is evidenced by the clinician's documented diagnosis of foetal distress. We have assumed that a lower rate is desirable for CI 4.1, since this may imply a smaller proportion in distress. However, for CI 4.2, a higher rate is appropriate, since it reflects that foetal distress should be a major reason for a caesarean section.

The indicators are:

CI 4.1 The rate of primary caesarean section for foetal distress in all deliveries

CI 4.2 The rate of primary caesarean section for foetal distress in all patients delivering by primary caesarean section only

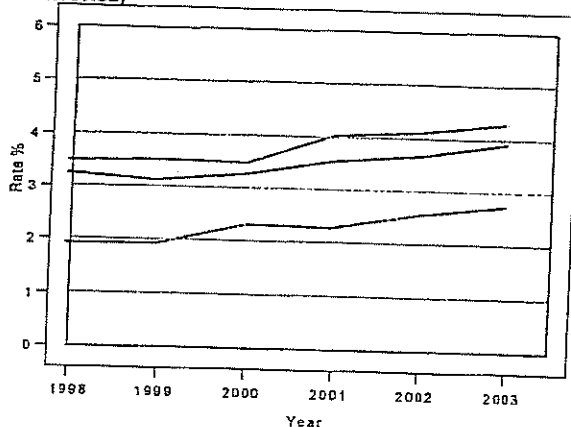
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	158	3,504	108,488	3.23	1.92	3.45	1,423	–	428
	1999	158	3,534	113,779	3.11	1.91	3.49	1,362	–	423
	2000	172	4,177	128,042	3.26	2.3	3.47	1,238	–	365
	2001	175	4,448	25,759	3.54	2.27	4.01	1,588	–	395
	2002	164	4,986	136,925	3.64	2.53	4.1	1,521	–	296
	2003	174	5,650	145,388	3.89	2.71	4.28	1,716	–	335
4.2	1998	151	3,433	17,256	19.9	16.7	25.4	954	1,462	443
	1999	151	3,452	14,869	23.2	17.9	26.8	536	668	157
	2000	167	4,123	19,601	21.0	16.5	26.3	1,033	666	356
	2001	170	4,414	19,971	22.1	16.1	26.5	882	470	77
	2002	164	4,998	24,325	20.5	14.1	26.6	1,468	1,577	381
	2003	171	5,626	25,934	21.7	16.1	26.9	1,362	1,624	270

CI 4.1 The rate of primary caesarean section for foetal distress in all deliveries.

All three rates (mean and centiles) have shown an increase of about 0.6% over the six-year period. This increase may be related to changes in measuring foetal distress, the increase in caesarean section rates and/or to the increasing age of mothers who are having their first child. There have not been any significant differences between the strata, and the variation between the high and low rates is not large.

Figure 4.1 Primary caesarean section for distress (all deliveries)



CI 4.2 The rate of primary caesarean section for foetal distress in all patients delivering by primary caesarean section only.

One of the reasons for a caesarean is foetal distress, and a high rate may indicate that this procedure was carried out more appropriately. However, the rate was about 20% and the reasons for the other 80% of caesareans were not provided, some of which may be appropriate, elective or unnecessary. Assuming that higher rates indicate better care, the rates have not shown a marked increase.

However, there are large differences between the public and private sectors and the States (Table 4.2). These may reflect some known differences. For example, the private sector has higher caesarean section rates and hence it would be expected to have lower rates for foetal distress if the additional cases were due to higher rates of elective caesareans. The public and private rates differ by 8% (25% and 17% respectively).

The differences between NSW and SA with rates of 24% and 28% were significantly different to Victoria with rates of 17% and 20% (Table 4.2). WA showed an unusual decline from 26% to 20%.

Figure 4.2 Primary caesarean section for foetal distress (all primary caesareans)

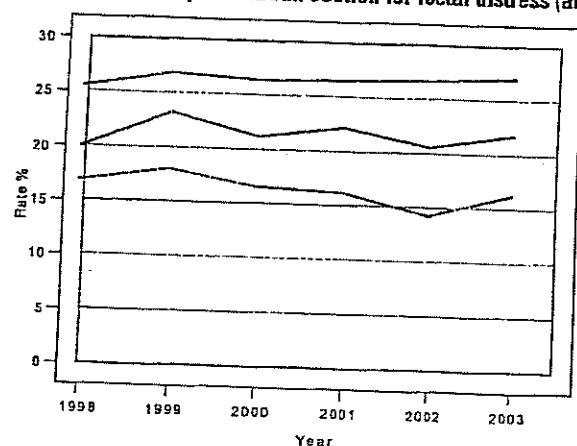


Table 4.2 Primary caesarean section for foetal distress (all primary caesareans)

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	57	2,185	9,225	23.3	0.78	372
	2003	57	2,093	8,380	24.4	0.78	295
QLD	2002	28	796	5,044	16.4	1.1	552
	2003	27	1,042	5,952	18.1	0.92	586
SA	2002	14	403	1,427	27.3	2.0	—
	2003	17	539	1,879	28.0	1.6	—
TAS	2002	5	99	449	21.4	3.5	—
	2003	5	121	583	21.2	2.9	39
VIC	2002	41	1,060	6,393	17.1	0.94	652
	2003	38	1,021	5,133	20.4	0.99	390
WA	2002	14	291	1,093	26.1	2.3	—
	2003	20	534	2,681	19.8	1.4	218
Other	2002	5	164	694	23.1	2.8	—
	2003	7	276	1,326	20.8	2.0	94
Metropolitan	2002	82	3,814	17,957	21.0	0.61	—
	2003	85	4,424	19,732	22.3	0.54	—
Rural	2002	82	1,184	6,368	19.3	1.0	—
	2003	86	1,202	6,202	19.9	0.96	—
Public	2002	105	3,460	15,422	22.1	0.64	—
	2003	110	4,132	16,543	24.5	0.52	—
Private	2002	59	1,538	8,903	17.9	0.84	—
	2003	61	1,494	9,391	16.7	0.69	729

Area 5 Obstetrics – Incidence of an intact lower genital tract in primiparous patients delivering vaginally

Rationale

A high incidence of an intact perineum is considered to be a desirable outcome.

Lower genital tract is defined as those structures below and not including the cervix. Surgical repair is defined as suture of the lower genital tract following delivery. This indicator relates to those patients who are having their first delivery. Factors leading to a low rate are a higher use of episiotomy (rates lower than 10% have been recommended) and tears while delivering.

The indicator is:

CI. 5.1 Rate of primiparous patients not requiring surgical repair of the lower genital tract

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1998	180	10,269	35,526	28.9	18.6	39.4	3,739	6,345	1,413
	1999	165	9,984	33,792	29.5	19.0	41.4	4,004	4,360	1,543
	2000	181	11,283	39,157	28.8	18.3	38.6	3,815	5,958	1,403
	2001	177	11,303	37,030	30.5	19.3	43.7	4,896	5,645	1,449
	2002	173	11,755	40,512	29.0	19.8	39.0	4,062	6,314	1,435
	2003	172	11,665	40,439	28.8	18.1	40.0	4,512	6,817	1,446

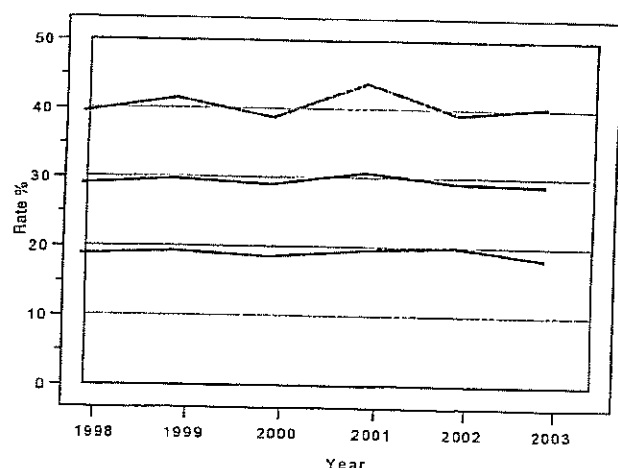
CI. 5.1 The rate of primiparous patients not requiring surgical repair of the lower genital tract.

As shown in Figure 5.1, there has been no major change in the proportions, which have remained comparatively stable for the six years. However, there is substantial variation in the rates between HCOs, with 20% of rates being less than 18% and 20% being greater than 40%. The potential to improve this outcome is large in all years with about 4,000 more primiparous patients not requiring surgical repair of the lower genital tract if the 80th centile could be achieved.

The State differences (Table 5.1) reflect an interesting pattern, with the smaller States (SA, Tasmania and the remainder) having higher rates of about 40%. In contrast, Victoria and NSW had lower rates of 25%. The large within strata variations suggest that there is an unusually large clinical variation in the use of episiotomy in Australia.

Publications have shown that reducing the rate of episiotomy can increase the rate of intact perineum after delivery and hence the rate for this indicator⁶. These data suggest that there is a need to review the use of episiotomy in all HCOs, and to compare the practices in the States.

Figure 5.1 Intact lower genital tracts in primiparous vaginal birth



⁶ Rockner G and Fianu-Jonasson A. Changed pattern in the use of episiotomy in Sweden. *British J Obstet and Gynaecology* (1999), 106, 95 – 101

Table 5.1 Intact lower genital tracts in primiparous vaginal birth

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	56	4,468	17,069	26.4	1.11	3,162
	2003	55	3,336	14,011	24.1	1.32	3,039
QLD	2002	26	1,466	5,049	29.1	2.04	794
	2003	25	1,982	6,099	32.3	2.00	826
SA	2002	19	1,326	2,912	44.9	2.68	—
	2003	18	1,185	3,308	35.5	2.71	339
TAS	2002	5	404	977	40.0	4.63	—
	2003	5	537	1,136	45.8	4.63	—
VIC	2002	46	2,451	10,021	24.6	1.44	2,027
	2003	42	2,371	9,687	24.7	1.58	2,047
WA	2002	16	986	2,917	33.6	2.68	329
	2003	21	1,367	4,189	32.3	2.41	565
Other	2002	5	654	1,567	40.8	3.65	—
	2003	6	887	2,009	43.7	3.48	—

Area 6 Obstetrics – Apgar Score

Rationale

These indicators measure one outcome of labour, the assessment of baby wellbeing

The indicators are:

CI. 6.1 The proportion of babies born with an Apgar score of four or below at five minutes post delivery

CI. 6.2 The proportion of babies born with an Apgar score of six or below at ten minutes post delivery

The potential improvements are in terms of reducing the proportion of babies born with low Apgar scores

Results

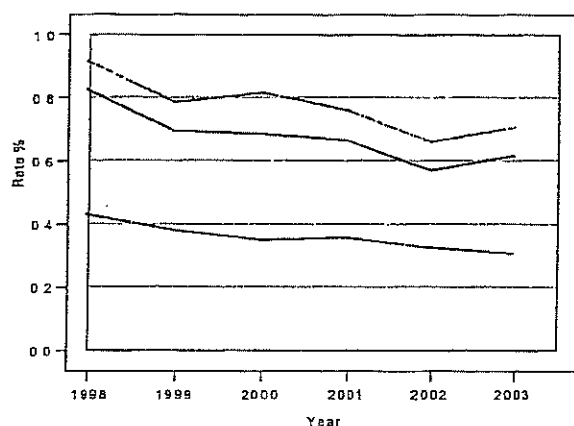
CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.1	1998	187	1,006	122,264	0.82	0.43	0.91	482	503	151
	1999	172	836	121,017	0.69	0.38	0.78	381	191	94
	2000	186	938	137,462	0.68	0.35	0.81	463	349	156
	2001	180	842	127,187	0.66	0.35	0.76	390	288	141
	2002	181	783	137,718	0.57	0.32	0.66	338	—	98
	2003	187	917	149,310	0.61	0.30	0.70	462	—	179
6.2	1998	123	507	66,606	0.76	0.25	0.80	338	—	246
	1999	130	252	74,201	0.34	0.26	0.44	61	—	8
	2000	138	267	89,882	0.30	0.22	0.39	66	—	8
	2001	143	363	100,119	0.36	0.21	0.48	154	—	38
	2002	157	408	119,459	0.34	0.21	0.44	159	—	46
	2003	159	397	117,412	0.34	0.15	0.45	219	131	73

CI. 6.1 The rate of babies born with an Apgar score of four or below at five minutes post delivery.

The rates showed a consistent although small decline from 0.8% to 0.6% for a sample of about half of the births in Australia. The higher and lower proportions also show a similar decline. The 20th centile is now 0.3% and the 80th is 0.7%, a rate that is now below the mean rate for the year 1998.

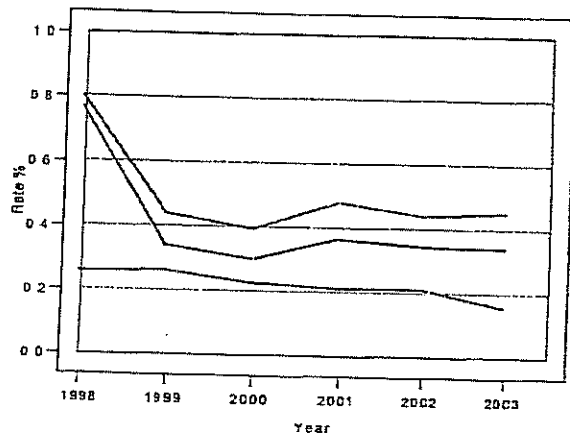
For this indicator there were no significant differences between the public and private sectors or the States and rural/urban HCOs.

Figure 6.1 Apgar score – four or below at five minutes.



CI. 6.2 The rate of babies born with an Apgar score of six or below at ten minutes post delivery.

The mean rates declined by more than half in 1999, from 0.8% to 0.3% but has remained at this level during the next five years.

Figure 6.2 Apgar score – six or below at ten minutes

For this indicator there were differences between the States with NSW and SA having lower rates

Table 6.2 Apgar score – six or below at ten minutes.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	60	95	46,893	0.23	0.03	–
QLD	2003	19	51	12,789	0.38	0.06	18
SA	2003	13	3	5,029	0.17	0.10	–
VIC	2003	36	151	29,648	0.47	0.04	71
WA	2003	21	48	13,907	0.38	0.06	20
Other	2003	10	49	9,146	0.46	0.07	20

Area 7 Obstetrics – Term babies transferred or admitted to a Neonatal Intensive Care Unit for reasons other than congenital abnormality

Rationale

This indicator provides an index of the overall management of labour in terms of the outcome for the baby

A term baby is one born at 37 weeks gestation or later. Babies born after a prolonged pregnancy of 41 completed weeks or more, are included. Babies having routine or non-intensive care observations carried out in a neonatal intensive care unit are excluded. Transfers/admissions due to congenital abnormality are excluded. A neonatal intensive care unit is defined as a separate and self-contained facility in the hospital capable of providing complex multi system life support for an indefinite period.

The indicator is:

Cl. 7.1 The rate of term babies transferred/admitted to a NICU for reasons other than congenital abnormality

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
7.1	1998	141	1,024	93,700	1.09	0.36	1.32	688	–	327
	1999	139	1,283	93,922	1.37	0.39	1.55	915	–	526
	2000	155	1,355	113,747	1.19	0.27	1.17	1,044	–	501
	2001	155	1,093	105,336	1.04	0.36	1.28	718	258	392
	2002	157	1,305	118,479	1.10	0.22	1.32	1,039	251	477
	2003	162	1,414	128,319	1.10	0.21	1.21	1,149	739	614

Cl. 7.1 The rate of term babies transferred/admitted to a neonatal intensive care unit for reasons other than congenital abnormality.

The proportions of transfers have remained slightly over 1% during the six years. The higher and lower proportions show no clear trend, but there is a marked difference in the rates (1.2% and 0.2% in 2003). The variation in rates would be related to the availability of neonatal ICU facilities and the complexity of the births in the hospital.

The differences between States in 2002 and 2003 is due to Victoria having lower rates of 0.7% and 0.4%, while Tasmania and other States had higher rates of over 4% (Table 7.1). The reasons for these higher rates should be determined by HCOs in these regions.

Table Cl. 7.1 Term babies admitted to NICU.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	57	511	53,878	0.98	0.14	–
	2003	60	465	48,428	1.00	0.15	273
QLD	2002	21	121	13,455	0.94	0.27	–
	2003	20	172	17,778	0.99	0.25	99
SA	2002	14	73	7,123	1.00	0.38	–
	2003	14	110	9,888	1.07	0.34	–
TAS	2002	5	154	3,382	4.29	0.55	120
	2003	5	246	4,296	5.39	0.52	213
VIC	2002	40	211	30,204	0.72	0.18	–
	2003	39	117	29,404	0.43	0.20	–
WA	2002	15	67	7,212	0.92	0.37	–
	2003	18	116	12,566	0.93	0.30	–
Other	2002	5	168	3,225	4.76	0.56	130
	2003	6	188	5,959	3.00	0.44	152

Area 8 Gynaecology – Blood transfusion for gynaecological surgery

Rationale

This indicator estimates the proportion of patients receiving a blood transfusion during or post abdominal or vaginal hysterectomy. It is a measure of surgical management and may reflect the variation in the criteria used to determine the need for blood transfusions. Autologous blood transfusions are included. Endoscopic diagnostic procedures and/or surgery for malignancy are excluded.

The indicator is:

CI. 8.1 The rate of blood transfusion during/post abdominal or vaginal hysterectomy (excluding laparoscopic hysterectomy)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
8.1	1998	95	235	6,536	3.60	1.89	4.71	111	–	20
	1999	91	228	7,027	3.24	2.52	5.43	50	–	12
	2000	103	237	11,409	2.08	2.04	4.61	4	103	38
	2001	136	483	15,273	3.16	2.38	5.68	120	231	94
	2002	143	520	10,816	4.81	2.27	6.18	274	188	64
	2003	142	445	10,840	4.11	1.99	5.96	229	121	23

CI. 8.1 The rate of blood transfusion during/post abdominal or vaginal hysterectomy (excluding laparoscopic hysterectomy). The decline over the three years 1998 to 2000 has been reversed in 2001 to 2003. The higher rates have shown a 1.2% increase from 1998 to 2003. There were significant differences between the States, where NSW and Tasmania had lower rates of 3%.

However, there were also differences between the rural and metropolitan HCOs, with the metropolitan HCOs having a rate of 6% and rural HCOs having a rate of 3% (Table 8.1).

Figure 8.1 Hysterectomy – blood transfusion

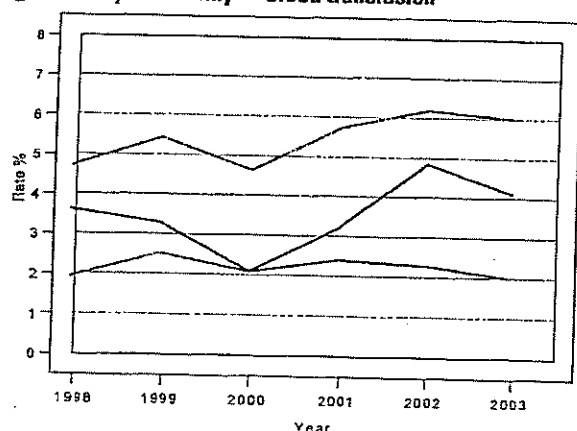


Table 8.1 Hysterectomy – blood transfusion

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	38	64	2,592	2.98	0.40	–
QLD	2003	32	93	2,398	4.11	0.41	26
SA	2003	9	48	646	6.58	0.80	23
TAS	2003	8	25	974	2.97	0.65	–
VIC	2003	35	117	2,466	4.33	0.41	33
WA	2003	13	47	1,000	4.64	0.64	16
Other	2003	7	51	764	5.79	0.73	21
Metropolitan	2002	84	443	7,466	5.58	0.25	188
Rural	2002	59	77	3,350	3.06	0.37	–

Area 9 Gynaecology – Urinary tract injury during a gynaecological operative procedure

Rationale

This indicator is a measure of intra-operative morbidity associated with gynaecological procedures. Endoscopic diagnostic procedures and/or surgery for malignancy are excluded.

The indicator is:

CI. 9.1 The rate of injury (with or without repair) to ureter/s or bladder during an abdominal or vaginal hysterectomy (excluding laparoscopic hysterectomy)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
9.1	1998	105	53	7,068	0.75	0.75	0.75	–	–	–
	1999	91	57	8,098	0.70	0.47	1.01	18	23	3
	2000	105	44	8,083	0.54	0.44	0.57	8	–	–
	2001	130	86	15,024	0.57	0.53	1.11	6	42	5
	2002	135	146	11,239	1.30	0.43	1.15	97	–	50
	2003	138	103	10,564	0.98	0.51	1.44	48	–	7

CI. 9.1 The rate of injury (with or without repair) to ureter/s or bladder during an abdominal or vaginal hysterectomy (excluding laparoscopic hysterectomy).

The proportion of procedures with injury while low has increased to about 1% over the last two years. In 2002, the higher rate was due to one HCO with 54 injuries from 217 procedures, and excluding this HCO the mean rate was 0.8%. This then suggests a general trend for an increase from 0.7% to 1%. The rate for the poorer performing HCOs in 2003 was 1.4%.

Ophthalmology & Excimer Laser Indicators – Version 3

Area 1 Cataract Surgery

Rationale

This is a commonly performed operation, which should be associated with low morbidity and a short length of stay

Cataract surgery is defined as all cataract operations with or without lens implant and includes the Australian Classification of Health Interventions (ACHI) codes (as defined[†]). Anterior vitrectomy is defined as ACHI code 42719-01 Removal of vitreous, anterior approach

[†] Outlined in the ACHS Clinical Indicator Users' Manual 2003

The indicators are:

CL 1.1 The rate of unplanned readmissions within 28 days after cataract surgery

CL 1.2 The rate of treatment for infection within 28 days after cataract surgery

CL 1.3 The rate of unplanned overnight stay after cataract surgery

CL 1.4 The rate of anterior vitrectomy in cataract surgery

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	74	117	22,870	0.51	0.08	0.78	98	—	27
	1999	81	243	36,316	0.67	0.17	0.73	180	119	83
	2000	105	166	46,027	0.36	0.14	0.44	101	28	28
	2001	112	229	57,231	0.40	0.13	0.46	156	96	88
	2002	119	216	57,058	0.38	0.15	0.49	130	49	38
	2003	112	176	54,650	0.32	0.17	0.35	82	—	11
1.2	1998	61	20	20,323	0.10	0.10	0.10	—	2	—
	1999	64	54	30,676	0.18	0.09	0.17	27	—	8
	2000	86	53	38,223	0.14	0.09	0.15	19	—	3
	2001	95	46	49,474	0.09	0.06	0.10	18	—	4
	2002	103	58	49,979	0.12	0.04	0.09	36	—	13
	2003	101	33	47,982	0.07	0.05	0.06	7	—	3
1.3	2003	106	315	48,353	0.65	0.11	0.66	262	—	167
1.4	2003	68	287	34,147	0.84	0.16	0.94	233	148	94

CL 1.1 The rate of unplanned readmissions within 28 days after cataract surgery.

The rates have decreased from more than 0.5% in 1998 to 0.32% in 2003. The decrease also occurred in the poorer (higher) rates which halved over that period. The difference between the better rates and the poorer rates has diminished over the period (Figure 1.1). This reduction in variation between HCOs is indicative of improvement having been made across the majority of HCOs. The public rate, 0.66%, was more than double the private rate in 2002 (Table 1.1).

Figure 1.1 Cataract surgery – unplanned readmissions within 28 days.

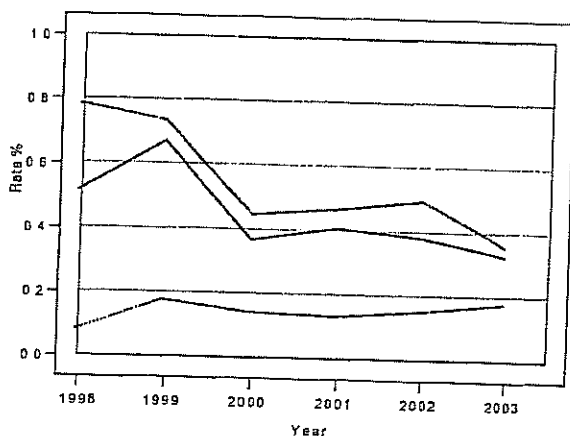


Table 1.1 Cataract surgery - unplanned readmissions within 28 days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	26	103	13,516	0.66	0.04	49
Private	2002	93	113	43,542	0.29	0.02	–

Cl. 1.2 The rate of treatment for infection within 28 days after cataract surgery.

The rates were low and have ranged between 0.07% and 0.18% from 1998 to 2003. For 2003, the rates for the HCOs were very similar, except for one outlier.

Cl. 1.3 The rate of unplanned overnight stay after cataract surgery.

The rate was 0.65% in 2003. The higher rate was six times the lower rate indicating that the rates could be reduced. Those HCOs with statistically significantly high rates were from both the public and private sectors and had rates in excess of 2%. One HCO reported a rate of 47% on more than 100 patients in a six-month period.

Cl. 1.4 The rate of anterior vitrectomy in cataract surgery.

In 2003, the overall rate was 0.84%, with rates for the centiles being 0.11% and 0.66%. The public and metropolitan rates were higher (Table 1.4). The rate for the public metropolitan HCOs was 2.2%. This rate may be consistent with casemix differences. If this is not the case then the causes should be determined.

Table 1.4 Cataract surgery – anterior vitrectomy

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Metropolitan	2003	38	252	23,619	1.03	0.10	148
Rural	2003	30	35	10,528	0.41	0.14	–
Public	2003	15	179	9,057	1.83	0.12	121
Private	2003	53	108	25,090	0.48	0.07	–

Area 2 Glaucoma Surgery

Rationale

This is a commonly performed operation, which should be associated with a low morbidity and a short length of stay

The indicators are:

CI. 2.1 The rate of re-admissions within 28 days following glaucoma surgery that were related to the operated eye

CI. 2.2 The rate of re-admission within 28 days following glaucoma surgery due to infection in the operated eye

CI. 2.3 The rate of patients having LOS greater than three days following glaucoma surgery

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	36	18	1,251	1.44	0.96	1.38	5	10	6
	1999	38	44	3,325	1.32	1.56	3.05	–	30	16
	2000	44	34	1,648	2.06	1.56	2.80	8	14	11
	2001	62	39	1,065	3.66	2.57	3.09	11	9	–
	2002	55	29	2,114	1.37	1.38	2.07	–	24	11
	2003	45	42	3,486	1.20	1.44	2.68	–	29	26
2.2	1998	31	0	1,123	0.00	0.00	0.00	–	–	–
	1999	34	1	3,319	0.03	0.03	0.03	–	–	–
	2000	40	3	1,569	0.19	0.20	0.21	–	–	–
	2001	56	10	932	1.07	0.17	0.33	8	8	7
	2002	50	1	1,201	0.08	0.08	0.08	–	–	–
	2003	43	3	3,441	0.09	0.06	0.08	–	1	–
2.3	1998	35	33	1,233	2.68	1.58	5.50	13	25	12
	1999	40	101	3,404	2.97	0.69	3.46	77	85	80
	2000	46	86	1,220	7.05	2.24	4.85	58	52	41
	2001	59	46	1,061	4.34	2.33	3.36	21	20	14
	2002	52	22	1,303	1.69	1.38	2.70	4	7	7
	2003	43	66	1,401	4.71	3.12	4.69	22	52	38

CI. 2.1 The rate of re-admissions (related to the operated eye) within 28 days following glaucoma surgery.

The overall rates were between 1.2% and 3.7%. In the last two years the overall rates were similar to the lower rates. Two large specialist hospitals reported statistically significantly higher rates of between 4% and 10% several times during the six year period. These high rates may be consistent with differences in casemix. These two HCOs accounted for more than two thirds of the unplanned readmissions following this surgery and more than half of the patients and hence contributed substantially to the differences in rates between public and private HCOs (Table 2.1)

Table 2.1 Glaucoma surgery – unplanned readmissions within 28 days

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2002	12	19	492	3.71	0.36	15
	2003	14	34	498	6.28	0.62	29
Private	2002	43	10	1,622	0.66	0.20	–
	2003	31	8	2,988	0.35	0.25	–

CI. 2.2 The rate of re-admission within 28 days following glaucoma surgery due to infection in the operated eye.

The overall rates have been low, less than 0.2% in all years since 1998 with the exception of 2001. In 2001 there were 10 re-admissions and nine of these were to one major metropolitan specialist hospital. When that HCO was excluded for 2001 there was no variation between HCOs and all rates were less than 0.2% in all years.

CI. 2.3 The rate of patients having LOS greater than three days following glaucoma surgery.

The rates were between 1.7% and 7.1% during the period 1998 to 2003. In 2002 and 2003 the differences between the overall rates and the better rates were relatively small. The public/private differences in 2003 (Table 2.3) were primarily due to a single specialist hospital, which had rates between 22% and 41% from 1999 onwards.

Table 2.3 Glaucoma surgery – LOS greater than three days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	15	63	492	11.7	1.17	52
Private	2003	28	3	909	1.14	0.86	–

Area 3 Retinal Detachment Surgery

Rationale

This is a commonly performed operation, which should be associated with a low morbidity and a short length of stay. Retinal detachment surgery is defined as all retinal detachment operations and includes ACHI codes (as outlined in the ACHS Clinical Indicator Users' Manual 2003).

Unplanned re-admission refers to an unexpected admission for:

- further treatment of the condition for which the patient was previously hospitalised
- treatment of a condition related to one for which the patient was previously hospitalised
- a complication of the condition for which the patient was previously hospitalised

The indicators are:

CI 3.1 The rate of unplanned re-admissions within 28 days of discharge following retinal detachment surgery

CI 3.2 The rate of patients having an unplanned re-admissions within 28 days of discharge following retinal detachment surgery, due to infection in the operated eye

CI 3.3 The rate of patients with a LOS greater than four days, following retinal detachment surgery

CI 3.4 The rate of patients having a revision of the operated eye within 28 days, following retinal detachment surgery

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	14	35	1,344	2.60	1.24	2.57	18	–	–
	1999	20	177	2,724	6.50	2.38	5.42	112	122	19
	2000	21	81	2,387	3.39	1.75	7.24	39	45	3
	2001	21	128	2,511	5.10	1.39	4.20	93	99	30
	2002	24	105	2,134	4.92	3.23	5.66	35	15	–
	2003	22	86	2,454	3.50	1.18	3.81	57	31	13
3.2	1998	12	3	1,287	0.23	0.23	0.23	–	–	–
	1999	17	1	2,442	0.04	0.04	0.04	–	–	–
	2000	18	4	2,198	0.18	0.18	0.18	–	–	–
	2001	16	2	2,268	0.09	0.08	0.15	–	–	–
	2002	19	4	1,999	0.20	0.20	0.20	–	–	–
	2003	20	2	2,399	0.08	0.01	0.08	1	–	–
3.3	1998	16	48	1,332	3.60	4.03	18.9	–	–	9
	1999	22	93	2,721	3.42	2.00	8.48	38	–	30
	2000	22	49	2,311	2.12	1.71	6.32	9	–	18
	2001	24	55	2,726	2.02	1.08	6.43	25	38	17
	2002	23	49	2,003	2.45	1.86	6.24	11	32	13
	2003	22	57	2,315	2.46	1.51	7.87	22	34	6
3.4	2003	18	68	1,872	3.63	1.21	3.67	45	57	29

CI 3.1 The rate of unplanned re-admissions within 28 days of discharge following retinal detachment surgery.

The overall rates were between 2.6% and 5.1%. The public rate was twice the private rate in 2003 (Table 3.1). The better rate was less than half the overall rate and there was considerable variation within both the public and private sectors indicating that the rates could be improved.

Table 3.1 Retinal detachment surgery – unplanned readmissions within 28 days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	9	63	1,391	4.48	0.66	31
Private	2003	13	23	1,063	2.24	0.76	–

CI 3.2 The rate of unplanned re-admissions within 28 days of discharge following retinal detachment surgery, due to infection in the operated eye.

The overall rates were low, less than 0.2% since 1999. The data provide no evidence of differences between HCOs.

CI. 3.3 The rate of patients with a LOS greater than four days, following retinal detachment surgery.

The overall rates have decreased from 3.6% in 1998 to 2.5% in 2003. The rates for the poorer performing HCOs decreased from 19% in 1998 to around 7% in subsequent years (Figure 3.3). The public HCO rate was three times the private rate in 2003 (Table 3.3).

Figure 3.3 Retinal detachment surgery – LOS greater than four days.

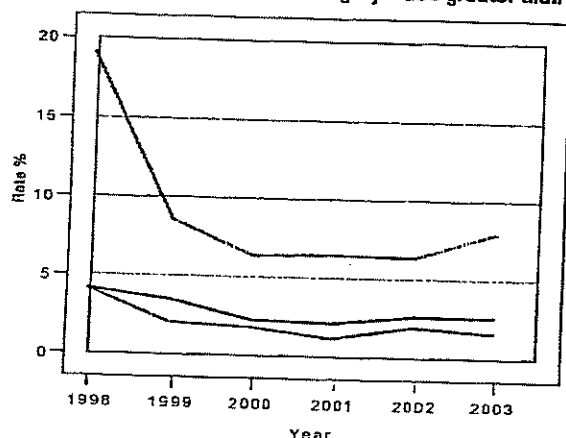


Table 3.3 Retinal detachment surgery – LOS greater than four days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	10	51	1,427	3.39	0.46	34
Private	2003	12	6	888	0.97	0.58	–

CI. 3.4 The rate for a revision of the operated eye within 28 days, following retinal detachment surgery.

The overall rate was 3.6% in 2003. The public HCO was ten times the private rate in 2003 (Table 3.4), largely due to a major specialist HCO, which had more than nine tenths of the revisions and more than two thirds of the patients.

Table 3.4 Retinal detachment surgery –revision within 28 days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	6	65	1,021	6.17	0.50	56
Private	2003	12	3	851	0.59	0.55	–

Area 4 Treatment Adequacy

Rationale

This indicator is a general index of the overall success of excimer laser surgery in achieving the desired refractive correction

Re-treatment is defined as a repeat treatment (in the same eye) by the same surgeon or the same excimer laser facility within two years of the initial treatment

The indicators are:

CI 4.1 The rate of surface ablation re-treatment

CI 4.2 The rate of non-surface ablation re-treatment

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1999	2	14	668	2.10	2.10	2.10	—	—	—
	2000	6	84	824	10.2	1.52	9.69	71	—	—
	2001	3	24	365	6.58	6.58	6.58	—	—	—
	2002	3	9	109	8.26	3.05	6.11	5	—	4
	2003	3	3	55	5.45	5.45	5.45	—	—	—
4.2	1999	3	278	5,206	5.34	1.81	5.12	183	—	—
	2000	4	174	1,645	10.6	2.55	13.5	132	—	26
	2001	4	183	1,938	9.44	5.27	11.1	80	—	—
	2002	4	185	2,162	8.56	2.79	18.3	124	—	54
	2003	3	67	785	8.54	0.32	13.2	64	—	—

CI 4.1 The rate of surface ablation re-treatment

A small proportion of HCOs reported this indicator on a small proportion of patients in both 2002 and 2003. In 2003 the overall rate was 5.5% and there was no evidence of differences between HCOs. In 2002 one private HCO contributed eight of the re-treatments in less than one third of the patients. Consequently the remaining HCOs had one re-treatment in the remaining 79 patients, a rate of less than 1% for 2002.

CI 4.2 The rate of non-surface ablation re-treatment

A small proportion of HCOs reported this indicator on few patients in 2003. Since 1998 the overall rates have ranged between 5% and 10%. In 2002, one private HCO had more than half the re-treatments in approximately one quarter of the patients. The rate of the remaining HCOs in 2002 was 4%.

Area 5 Post – Operative Complication

Rationale

Corneal infection is a sight threatening complication with infection defined as a patient with corneal haze or discharge after surgery, which is more than the expected amount from excimer laser surgery and for which the patient receives a change in treatment for presumed infection (eg change in drug used or frequency of drug).

The indicator is:

CL 5.1 The rate of infection in the operated eye within 28 days of excimer laser surgery

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1999	12	10	9,995	0.10	0.04	0.31	6	7	4
	2000	11	35	3,856	0.91	0.05	0.50	32	–	23
	2001	15	16	9,160	0.17	0.03	0.11	13	12	8
	2002	16	7	5,037	0.14	0.05	0.14	4	–	1
	2003	10	2	2,969	0.07	0.02	0.05	1	–	1

CL 5.1 The rate for which patients are treated for infection in the operated eye within 28 days of excimer laser surgery. For all years between 1999 and 2003 except 2000 the rates were low, being less than 0.2%.

Oral Health Indicators – Version 1

Area 1 Unplanned Returns to the Dental Centre

Rationale

Unplanned returns to the dental centre may cause patient inconvenience and decrease patient satisfaction. As well, returns decrease cost effectiveness and efficiency. The purpose of these indicators are to identify patients attending for relief of pain or emergency treatment where care has failed to resolve the initial dental problem.

The indicator is:

CI 1.1 Rate of unplanned return attendances within 28 days

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2002	6	120	3,893	3.08	3.09	3.09	—	—	—
	2003	6	97	3,469	2.80	1.42	3.16	47	—	—

CI 1.1 The rate of unplanned return following acute care attendance.

The rates were close to 3% in both 2002 and 2003. Six HCOs submitted data in both years.

Re-treatment following restorative treatment

Rationale

Failure of restorative care to solve the patient's dental problems in the medium term reflects a poorer outcome. Re-treatment may include replacement of the original restoration, replacement of a restoration with a crown, endodontic treatment or extraction of the tooth.

The indicator is:

CI 1.2 Rate of re-treatment within 12 months of an episode of restorative treatment

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.2	2002	4	444	10,790	4.11	0.29	6.56	413	—	157
	2003	8	1,096	21,382	5.13	0.69	6.53	947	—	214

CI 1.2 The rate for re-treatment of teeth within 12 months of restorative treatment.

The rate in 2003 was 5.1%. Eight public HCOs submitted data in 2003 and there was considerable differences in the rates: a lower rate of 0.7% compared to 6.5% for the higher rate.

Return following simple extraction

Rationale

Complications generally occur within seven days of extraction and can be identified at the postoperative review if the patient does not seek treatment earlier.

Complications following simple extractions can be minimised by pre-, peri- and post-operative actions taken by the dental team. Such measures as checking the medical history, minimising operative trauma, giving the patient post-operative hygiene instructions and prescribing antibiotics and/or analgesics can reduce the incidence of post-operative complications.

The indicator is:

CI.1.3 Rate of attendances for complications within seven days of routine extraction

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.3	2002	4	58	2,818	2.06	2.06	2.06	–	–	–
	2003	10	248	14,629	1.70	0.22	2.36	215	–	48

CI.1.3 The rate of return for complications within seven days of routine extraction.

The overall rates in both years were close to 2%. The ten HCOs that submitted in 2003 were public and had significant differences in their rates.

Return following surgical extractions

Rationale

As for simple extractions, complications from surgical extraction are usually identified within seven days of treatment. Complications following surgical removal of teeth can be minimised by actions taken by the dental team.

The indicator is:

CI.1.4 Rate of attendances for complications within seven days of surgical extraction

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.4	2002	2	1	113	0.88	0.89	0.89	–	–	–
	2003	4	34	675	5.04	2.97	3.82	13	–	–

CI.1.4 The rate of return with complications within seven days of surgical extraction.

Only two HCOs submitted data in 2002. The four public HCOs that submitted in 2003 had a combined rate of 5%.

Extraction following completed endodontic treatment

Rationale

Extraction within 12 months of endodontic treatment can be considered as a poor outcome of care. Extraction may be due to poor case selection, poor endodontic technique, or failure of the restoration placed after completion of the endodontic treatment.

The indicator is:

CI.1.5 Rate of extraction of teeth within 12 months of completing a course of endodontic treatment

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.5	2002	3	3	680	0.44	0.31	1.60	–	–	–
	2003	5	7	489	1.43	1.43	1.43	–	–	–

CI.1.5 The rate of extraction of teeth within 12 months of endodontic treatment.

The five public HCOs that submitted data in 2003 had a combined rate of 1.4%.

Crown and bridge returns

Rationale

An unplanned return following crown and bridge treatment may reflect any of the following: patient unhappy with shade; food trap under pontic; crown/bridge has become loose/fallen out; occlusion is high; pulpitis in abutment tooth; porcelain or tooth has fractured

The indicator is:

CI 1.6 The rate of unplanned return within 12 months after having crown and bridge treatment

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.6	2002	1	18	532	3.38	3.38	3.38	–	–	–

CI 1.6 The rate of unplanned return within 12 months after having crown and bridge treatment.

One private HCO submitted data in 2002 and had a rate equal to 3.4%. No HCOs reported in 2003.

Denture remakes

Rationale

The purpose of this indicator is to identify cases where the patient is unable to wear the current denture due to functional problems or aesthetic failure and the denture is replaced. It is important to exclude from this indicator cases where the remake is planned, e.g. after immediate denture or after recent full clearance.

The indicator is:

CI 1.7 The rate of denture remakes within 12 months

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.7	2002	3	14	839	1.67	1.35	2.27	2	–	–
	2003	5	60	3,143	1.91	1.25	2.21	20	–	–

CI 1.7 The rate of denture remakes within 12 months

Public HCOs alone submitted data for this indicator. The rates were similar, 1.7% in 2002 and 1.9% in 2003.

Area 2 Mode of Treatment

Rationale

Third molar teeth may be removed under local anaesthesia alone, local anaesthesia supplemented with nitrous oxide sedation, local anaesthesia supplemented with intravenous sedation or under general anaesthesia. The mode of treatment has a direct bearing on cost, patient compliance and patient satisfaction.

The indicators are:

CI.2.1 The rate of third molar surgery under local anaesthesia alone

CI.2.2 The rate of third molar surgery under local anaesthesia supplemented with sedation

CI.2.3 The rate of third molar surgery under general anaesthesia

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	2002	1	100	205	48.8	49.2	49.2	—	—	—
	2003	1	0.0	41	0.00	0.00	0.00	—	—	—
2.2	2002	1	105	205	51.2	50.8	50.8	—	—	—
	2003	1	0.0	41	0.00	0.00	0.00	—	—	—
2.3	2002	1	0.0	205	0.00	0.00	0.00	—	—	—
	2003	1	41	41	100	100	100	—	—	—

CI.2.1 – 2.3 Modes of treatment.

In 2002 a single private HCO submitted data for 205 patients 100 had anaesthesia alone, and 105 were supplemented with sedation.

In 2003, a public HCO provided data on 41 patients who all had general anaesthesia.

Area 3 Endodontic Treatment

Rationale

Endodontic treatment may fail for a proportion of reasons including: poor initial prognosis; accompanying periodontal disease; split/fractured root associated with post crown or poor technique resulting in perforation/over instrumentation. The first indicator identifies failure in the short term, and the second indicator identifies failure or complication of endodontic treatment in the medium term.

The indicators are:

CI 3.1 The rate of completed courses of endodontic treatment on the same tooth within six months of initial treatment

CI 3.2 The rate of re-treatment of teeth within 12 months of completing a course of endodontic treatment

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	2002	2	7	634	1.10	0.01	23.7	6	—	5
	2003	1	0	15	0.00	0.00	0.00	—	—	—
3.2	2002	3	0	687	0.00	0.00	0.00	—	—	—
	2003	3	1	166	0.60	0.60	0.60	—	—	—

CI 3.1 The rate of completed courses of endodontic treatment on the same tooth within six months of initial treatment.

Two HCOs, one private, submitted data in 2002 and their combined rate was 1.1%. The private HCO had no re-treatments within six months. The public HCO rate in 2002 was 27%. In 2003, a different HCO had a rate of 0%.

CI 3.2 The rate of re-treatment of teeth within 12 months of completing a course of endodontic treatment.

The two public and one private HCO in 2002 had no returns. There was a single return from one of the three public HCOs in 2003.

Paediatric Indicators – Version 3

Area 1 Immunisation Status

Rationale

All children admitted to hospital should have their immunisation status documented and be offered or given immunisation if this is not up-to-date, particularly infants less than two years old

The indicators are:

CI. 1.1 The rate of infants admitted as inpatients having documented current immunisation status

CI. 1.2 The rate of catch-up immunisation (or planning thereof) in inpatient infants whose immunisations are not up-to-date

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	40	6,649	7,502	88.6	70.1	98.5	738	442	301
	1999	34	7,108	8,586	82.8	69.5	96.6	1,186	—	574
	2000	42	9,766	11,627	84.0	65.5	95.8	1,372	370	697
	2001	44	9,988	12,448	80.2	74.0	97.1	2,093	1,389	1,148
	2002	36	11,184	12,303	90.9	82.6	97.6	819	109	248
	2003	39	9,589	11,983	80.0	80.9	97.4	2,082	1,392	1,135
1.2	1998	29	301	1,416	21.3	5.26	51.7	431	—	123
	1999	28	239	935	25.6	6.55	38.5	121	—	39
	2000	38	505	1,034	48.8	33.1	67.6	194	—	34
	2001	34	1,239	1,942	63.8	22.3	62.6	—	162	174
	2002	27	382	890	42.9	21.6	64.6	193	108	33
	2003	29	431	1,125	38.3	27.2	55.2	189	117	63

CI. 1.1 The rate of infants admitted as inpatients having documented current immunisation status.

The overall rates have not improved since 1998 and range from 80% to 91%. However, the better rates have been consistently greater than 95% since 1998 which indicates that there is potential to improve the rate of documenting immunisation status. New South Wales and Queensland reported the highest rates in 2002 and 2003.

Table 1.1 Paediatric inpatients – documented immunization status.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	19	7,606	8,260	92.1	1.09	—
	2003	17	6,135	6,725	91.2	2.98	—
QLD	2002	10	2,348	2,584	90.7	1.94	—
	2003	11	1,324	1,421	92.9	6.49	—
VIC	2003	5	420	488	86.3	11.1	—
Other	2002	7	1,230	1,459	84.5	2.59	109
	2003	6	1,710	3,349	51.3	4.23	1,392

CI. 1.2 The rate of catch-up or planning for immunisation in inpatient infants whose immunisations are not up-to-date.

The rates have increased from 21% in 1998 to approximately 40% in 2002 and 2003. During the period from 1998 the poorer rates have increased from 6% to more than 20% whereas the better rates have varied around 60% since 2000. These results are extremely low given that immunisation is one of the health priorities in Australia, and rates of 90% are obtained by GPs. The differences in the higher and lower rates indicate that the rates could be improved.

In 2003, the metropolitan HCOs and Queensland had low rates (Table 1.2)

Table 1.2 Paediatric inpatients - catch up immunisation.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	13	156	462	34.6	5.25	108
	2003	13	229	457	49.2	4.17	–
QLD	2002	9	149	251	58.0	7.13	–
	2003	10	111	478	24.6	4.08	117
Other	2002	5	77	177	43.3	8.49	–
	2003	6	91	190	46.6	6.46	–
Metropolitan	2003	9	198	615	32.2	4.13	82
Rural	2003	20	233	510	45.7	4.53	–

Area 2 Asthma

Rationale

Asthma is a common childhood condition, the severity and frequency of which may be decreased by careful management

Clinical indicator 2.2 refers to those children re-admitted to the same organisation within 28 days

The indicators are:

CI 2.1 The average length of stay (ALOS) in all children admitted with a primary diagnosis of asthma

CI 2.2 The average length of stay in children admitted with a primary diagnosis of asthma, excluding same day admissions

CI 2.3 The rate of children with a primary diagnosis of asthma, having a readmission to hospital for asthma within 28 days

Results

CI	Year	No HCOs	Mean	Std	20 th centile	Median	80 th centile
2.1	1998	65	2.00	0.56	1.50	1.91	2.50
	1999	61	1.83	0.44	1.50	1.78	2.11
	2000	63	1.80	0.47	1.46	1.73	2.11
	2001	69	1.77	0.41	1.41	1.70	2.10
	2002	66	1.74	0.43	1.40	1.70	2.00
	2003	65	1.67	0.42	1.32	1.62	1.92
2.2	2001	64	1.85	0.40	1.41	1.86	2.15
	2002	64	1.89	0.51	1.48	1.81	2.17
	2003	63	1.83	0.54	1.40	1.73	2.28

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.3	1998	61	302	7,974	3.79	2.68	4.73	88	98	39
	1999	58	367	7,741	4.74	3.68	4.68	81	61	31
	2000	64	321	7,233	4.44	3.30	4.82	82	36	15
	2001	66	278	9,026	3.08	2.09	3.78	89	64	24
	2002	62	289	7,307	3.96	2.82	4.17	82	31	16
	2003	64	323	8,057	4.01	2.85	4.58	93	82	11

CI 2.1 The average length of stay in all children admitted with a primary diagnosis of asthma.

The average length of stay, ALOS, has decreased from 2.0 days in 1998 to 1.7 days in 2003. A similar trend in the median occurred. Twenty percent of HCOs had ALOS exceeding 2.5 days in 1998 and in 2003 twenty percent had ALOS above 1.9 days. Western Australia reported the highest average length of stay in 2003 (Table 2.1)

Table 2.1 Average length of stay for children admitted for asthma

State	No HCOs	ALOS
NSW	28	1.71
QLD	20	1.59
SA	6	1.70
TAS	5	1.63
VIC	18	1.52
WA	12	2.05
ACT, NT, NZ	6	1.50

CL 2.2 The average length of stay in children admitted with a primary diagnosis of asthma, excluding same day admissions.
 The average length of stay when same day admissions are excluded has remained about 1.85 days since 2001. Twenty percent of HCOs had ALOS exceeding 2.2 days between 2001 and 2003. Western Australia reported the highest average length of stay in 2003 (Table 2.2)

Table 2.2 Average length of stay for children admitted for asthma: excluding same day admissions

State	No HCOs	ALOS
NSW	27	1.84
QLD	17	1.89
SA	6	1.78
TAS	5	1.67
VIC	17	1.70
WA	9	2.12
ACT, NT, NZ	6	1.77

CL 2.3 The rate of children with a primary diagnosis of asthma, having a readmission to hospital for asthma within 28 days.
 The rates were 4.0% in 2002 and 2003 and the poorer rates were 4.2% and 4.6% in those years. Since 1998 the better rates have been approximately 1% lower than the average rates. The lack of trend or a low centile suggests that it may be hard to reduce this rate. Western Australia had the highest readmission rates in 2002 and 2003.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	23	98	2,883	3.49	0.22	~
	2003	21	115	2,664	3.98	0.28	26
QLD	2002	12	37	1,003	3.77	3.37	—
	2003	17	31	1,442	2.99	0.38	—
SA	2002	6	58	1,179	4.48	0.35	11
VIC	2002	9	34	1,032	3.50	0.37	—
	2003	10	56	1,267	4.27	0.40	16
WA	2002	6	49	724	6.20	0.44	19
	2003	5	48	921	4.91	0.47	17
Other	2002	6	13	486	3.44	0.54	—
	2003	11	73	1,763	4.23	0.34	22

Pathology Indicators – Version 2

Area 1 Chemical Pathology

Rationale

Abnormal potassium levels constitute a threat to patient well being. They may require constant monitoring in ill patients and rapid correction where abnormal.

Intra-laboratory turn-around-time, for both on site and off site laboratories, refers to the time between receipt of the specimen in the laboratory and the time of first validation of the report of results.

The indicators are:

CI. 1.1 The rate of urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, during normal working hours.

CI. 1.2 The rate of urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, out-of-hours.

CI. 1.3 The rate of non-urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, during normal working hours.

CI. 1.4 The rate of non-urgent serum/plasma potassium results validated with a turn-around-time less than 60 minutes, out-of-hours.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	2003	30	77,064	99,264	77.6	61.2	86.5	8,827	10,092	6,025
1.2	2003	28	75,586	90,933	83.1	71.9	92.0	8,080	7,192	4,332
1.3	1998	14	74,449	157,058	47.4	30.5	82.4	54,982	24,539	15,810
	1999	14	132,827	222,264	59.8	42.1	82.4	50,284	–	20,074
	2000	20	212,867	351,661	60.5	17.1	81.6	73,974	34,272	29,310
	2001	21	210,377	371,465	56.6	26.3	80.0	86,743	16,661	29,365
	2002	24	196,126	356,854	55.0	27.8	79.0	85,932	61,802	36,750
	2003	28	207,788	334,480	62.1	34.6	77.2	50,557	32,350	31,489
1.4	1998	13	47,189	64,342	73.3	47.4	81.8	5,431	–	2,903
	1999	14	63,395	82,618	76.7	69.4	89.4	10,503	4,975	3,388
	2000	18	106,187	141,622	75.0	50.1	85.6	15,097	8,144	5,872
	2001	20	102,387	145,510	70.4	51.5	90.7	29,528	21,751	10,505
	2002	23	102,087	142,510	71.6	48.9	90.4	26,683	23,199	11,114
	2003	25	76,734	110,349	69.5	55.5	87.3	19,552	16,325	8,099

CI. 1.1 The rate of urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, during normal working hours.

The rate was 77.6% in 2003, with the better rates being 86.5%. Twenty-seven of the thirty HCOs were public and they represented 99% of the urgent validated reports during normal working hours. The better rate was 25 percentage points above the poorer rate. The variation between HCOs suggests that there is potential to increase the rates to close to 90%. Victoria had the lowest rates in 2003 (Table 1.2).

For years 1998 to 2002 this indicator was defined in terms of turn around time less than 45 minutes. The rates obtained were about 65%.

Table 1.1 Urgent serum/plasma potassium within 60 minutes, in working hours

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	12	31,044	38,418	80.8	2.50	2,695
VIC	2003	9	18,183	29,146	62.4	2.87	7,396
Other	2003	9	27,837	31,700	87.8	2.75	–

CL 1.2 The rate of urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, out-of-hours.

The rate was 83.1% in 2003, with the better rates being 92.0%. Twenty six of the twenty eight HCOs were public and they represented 99% of the urgent validated results out of hours. The better rate was 20 percentage points above the poorer rate. The variation between HCOs suggests that there is potential to increase the rates to over 90%. Victoria had the lowest rates in 2003 (Table 1.2).

For years 1998 to 2002 this indicator was defined in terms of turn around time less than 45 minutes. The rates obtained were about 73%.

Table 1.2 Urgent serum/plasma potassium within 60 minutes, out of hours

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	11	21,771	24,821	87.7	2.67	–
VIC	2003	8	29,343	39,602	74.1	2.12	7,192
Other	2003	9	24,472	26,510	92.3	2.59	–

CL 1.3 The rate of non-urgent serum/plasma potassium validated report results with a turn-around-time less than 60 minutes, during normal working hours.

Since 1999 the rates have varied around 55% while the better rates have varied around 80% (Figure 1.3). The poorer rates have been very low at about 30%. Twenty five of the twenty eight HCOs were public and they represented 99% of the non-urgent validated reports. A proportion of HCOs had statistically significantly low rates in three or more of the years since 1998. Victoria had the lowest rates in 2002 and 2003 (Table 1.3).

Figure 1.3 Non-urgent serum/plasma potassium within 60 minutes, in working hours.

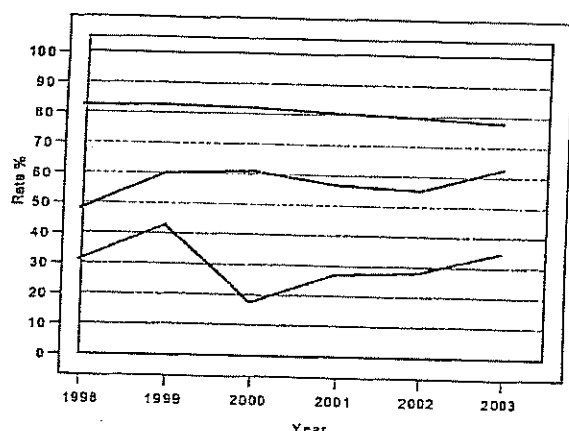


Table 1.3 Non-urgent serum/plasma potassium within 60 minutes, in working

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	9	120,406	172,573	69.8	4.27	–
	2003	11	99,490	138,869	71.6	4.87	–
VIC	2002	10	29,976	69,001	43.5	6.75	18,139
	2003	9	56,761	124,397	45.6	5.14	32,350
Other	2002	5	45,744	115,280	39.7	5.22	34,683
	2003	8	51,537	71,214	72.4	6.80	–

CL 1.4 The rate of non-urgent serum/plasma potassium results validated with a turn-around-time less than 60 minutes, out-of-hours.

The rates have varied around 70% while the better rates have varied around 85% (Figure 1.4). The poorer HCOs have validated the results for only 50% requests. Twenty four of the twenty five HCOs were public and they represented 99% of the non-urgent validated reports. A proportion of HCOs have had statistically significantly low rates in three or more of the years since 1998. Victoria had the lowest rates in 2002 and 2003 (Table 1.4).

The large differences in rates between HCOs for all four indicators suggests that turn around times could be significantly improved if the methods used in the better HCOs were applied to all organisations.

Figure 1.4 Non-urgent serum/plasma potassium within 60 minutes, out of hours

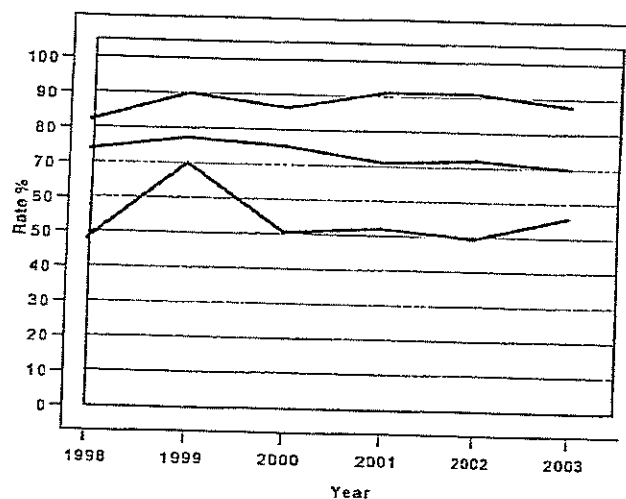


Table 1.4 Non-urgent serum/plasma potassium within 60 minutes, out of hours

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	8	55,139	64,895	85.0	3.47	—
	2003	9	32,918	39,027	84.3	4.29	—
VIC	2002	10	14,588	24,710	59.1	5.62	6,390
	2003	8	31,811	52,039	61.1	3.72	12,066
Other	2002	5	32,360	52,905	61.2	3.84	12,589
	2003	8	12,005	19,283	62.2	6.11	4,258

Area 2 Haematology

Rationale

Timely knowledge of haemoglobin provides valuable information on the causation and management of certain disorders

The indicators are:

CI. 2.1 The rate of urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, during normal working hours

CI. 2.2 The rate of urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, out-of-hours

CI. 2.3 The rate of non-urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, during working hours

CI. 2.4 The rate of non-urgent haemoglobin results validated with a turn-around-time less than 60 minutes, out-of-hours

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	2003	30	110,893	126,496	87.7	81.3	95.8	10,300	–	5,028
2.2	2003	28	85,942	93,323	92.1	86.2	95.4	3,112	–	1,481
2.3	1998	13	129,046	184,615	69.9	44.8	90.1	37,313	–	13,796
	1999	14	163,248	214,202	76.2	54.9	90.7	30,996	–	9,472
	2000	19	255,796	329,089	77.7	47.3	89.7	39,402	27,535	18,801
	2001	21	280,051	364,204	76.9	56.7	85.8	32,352	–	14,983
	2002	23	256,984	366,844	70.1	65.5	85.3	56,064	46,077	28,682
	2003	27	294,323	396,571	74.2	65.9	89.0	58,480	–	23,505
2.4	1998	12	55,009	66,244	83.0	44.6	91.2	5,394	–	2,934
	1999	14	57,584	68,510	84.1	61.5	90.9	4,695	–	1,589
	2000	17	105,718	125,049	84.5	71.4	92.8	10,302	7,575	4,678
	2001	20	108,790	126,022	86.3	63.5	95.1	11,039	–	3,559
	2002	22	104,816	131,605	79.6	67.0	94.3	19,244	17,122	7,398
	2003	25	106,915	126,474	84.5	80.3	92.9	10,526	–	5,203

CI. 2.1 The rate of urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, during normal working hours.

The rate was 88% in 2003 and the better rate was 96%. Twenty-eight of the thirty HCOs were public and they represented 99% of the urgent validated results during normal working hours. The variation between HCOs is relatively small, with the lower rate being 81% or seven percent below the overall rate.

For years 1998 to 2002 this indicator was defined in terms of turn around time less than 45 minutes. The rates obtained were about 86%.

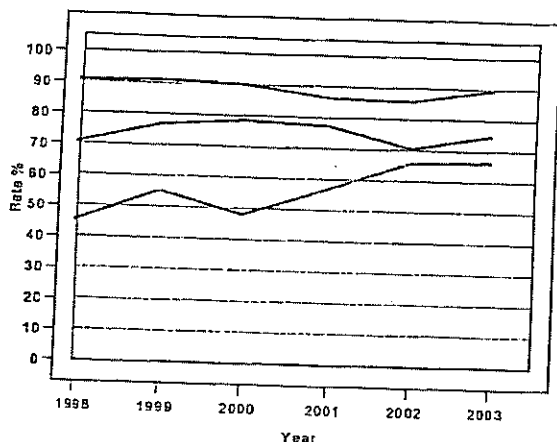
CI. 2.2 The rate of urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, out-of-hours.

The rate was 92% in 2003, with the better rates being 95%. The lower rate was relatively high being 81%. Twenty-seven of the twenty eight HCOs were public and they represented 99% of the urgent validated results out of hours.

CI. 2.3 The rate of non-urgent haemoglobin validated report results with a turn-around-time less than 60 minutes, during working hours.

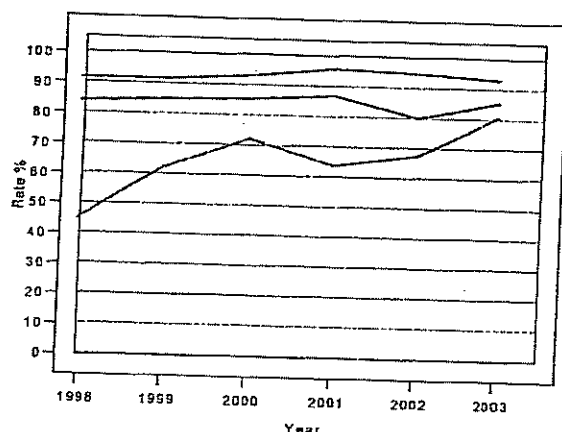
Since 1998 the rates have varied around 74% while the better rates have varied around 87% (Figure 2.3). The lower rates were less than 66%. Twenty five of the twenty seven HCOs were public and they represented 99% of the non-urgent validated reports. A proportion of HCOs have had statistically significantly low rates in three or more of the years since 1998. There is potential to increase the overall rate.

Figure 2.3 Non-urgent haemoglobin within 60 minutes, in working hours



CI.24 The rate of non-urgent haemoglobin results validated with a turn-around-time less than 60 minutes, out-of-hours. The rates have varied around 83% while the better rates have varied around 92%. The poorer rates have made significant improvements reaching 85% in 2003 (Figure 2.4). Twenty four of the twenty five HCOs were public and they represented 99% of the non-urgent validated reports. A proportion of HCOs have had statistically significantly low rates in three or more of the years since 1998.

Figure 2.4 Non-urgent haemoglobin within 60 minutes, out of hours



Area 3 Anatomical Pathology

Rationale

Timely information on the results of biopsies is important for patient management, quality control and cost effectiveness

The indicators are:

CI. 3.1 The rate of validated small biopsy results from the gastro-intestinal tract with a turn-around-time less than 48 hours

CI. 3.2 The rate of validated large biopsy results from the gastro-intestinal tract with a turn-around-time less than 96 hours

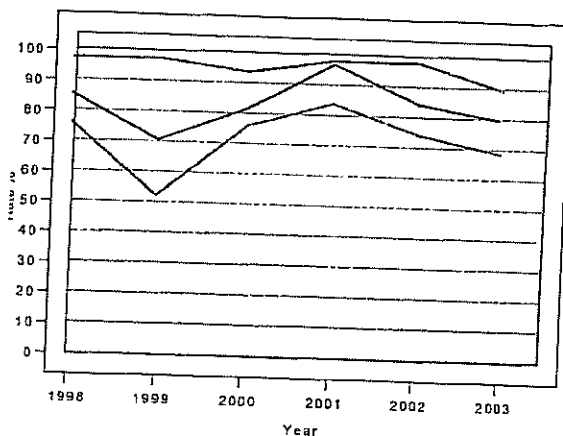
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	12	7,945	9,538	83.3	67.5	98.4	1,440	–	711
	1999	12	13,102	18,222	71.9	74.6	96.9	4,559	–	899
	2000	14	9,972	12,369	80.6	67.0	97.6	2,099	–	857
	2001	12	7,125	8,552	83.3	69.2	99.1	1,349	–	836
	2002	14	15,622	19,379	80.6	74.7	98.9	3,545	–	1,200
	2003	18	26,450	31,875	83.0	57.6	91.9	2,847	–	1,912
3.2	1998	10	1,216	1,437	84.6	75.1	96.9	175	–	87
	1999	11	264	378	69.8	51.8	96.8	102	–	54
	2000	13	1,825	2,247	81.2	75.4	93.4	273	–	160
	2001	11	1,269	1,320	96.1	83.3	97.3	15	15	21
	2002	13	1,929	2,302	83.8	73.7	97.4	313	–	158
	2003	18	3,317	4,193	79.1	68.2	88.8	407	–	80

CI. 3.1 The rate of validated small biopsy results from the gastro-intestinal tract with a turn-around-time less than 48 hours. The rates have varied around 82% since 2000. The better rates were in excess 96% between 1998 and 2002 indicating that there is potential to increase the overall rate by approximately 10%. Seventeen of the eighteen HCOs were public.

CI. 3.2 The rate of validated large biopsy results from the gastro-intestinal tract with a turn-around-time less than 96 hours. The rates do not appear to have improved since 1998. The better rates were in excess 93% between 1998 and 2002 indicating that there is potential to increase the overall rate by approximately 10%. Seventeen of the eighteen HCOs were public.

Figure 3.2 GIT large biopsy in less than 96 hours



Radiation Oncology Indicators – Version 2

Area 1 Waiting Time

Rationale

Undue delay in radiation treatment for some cancers may adversely influence the outcome

Waiting time refers to the time elapsed between, the Radiation Oncologist's decision that treatment should commence, i.e. when the patient is 'ready for care', to the first treatment being delivered. Waiting time for treatment is measured in consecutive days (weekends, public holidays etc, are included)

The indicator is:

CL 1.1 The rate of patients waiting more than 21 days, from the date 'ready for care', to the date of commencing radiotherapy treatment

Waiting time excludes;

- a post operative healing phase and/or a post-chemotherapy phase, before which the Radiation Oncologist believes treatment should not commence;
- any delay requested by the patient;
- the time necessary to treat any intercurrent morbidities;
- other delays outside the control of the radiation treatment department

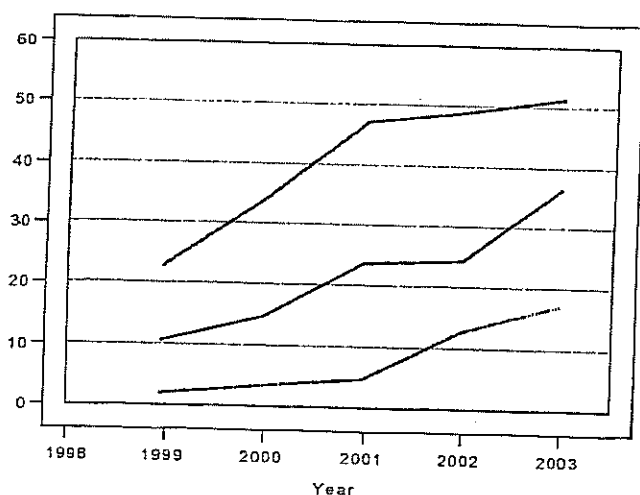
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1999	10	1,073	10,431	10.3	1.63	22.5	903	–	379
	2000	9	1,526	10,559	14.5	3.27	34.1	1,180	–	606
	2001	11	2,760	11,778	23.4	4.35	46.9	2,247	–	642
	2002	9	2,742	11,414	24.0	12.3	48.7	1,336	–	608
	2003	12	4,753	13,102	36.3	16.9	51.2	2,534	–	800

CL 1.1 The rate of patients waiting more than 21 days, from the date 'ready for care', to the date of commencing radiotherapy treatment.

The overall rates have increased from 10% in 1998 to 36% in 2003. The better rates have also deteriorated from 2% to 17%, while the poorer rates are now over 50%. There was no relationship between the numbers of patients and the rates. All reports were from metropolitan public HCOs. In 1999 one in ten ready for care patients and in 2003 one in three waited for more than 21 days to the commencement of radiotherapy. This worsening rate also reflects a shortage of supply. It was estimated that in Australia in 2002, there were approximately 15,000 patients who could have benefited from radiotherapy but were unable to access it.⁷

Figure 1.1 Wait more than 21 days after ready for care.



⁷ Kenny, Liz & Lehman, Margot (2004) Sequential audits of unacceptable delays in radiation therapy in Australia and New Zealand. *Australasian Radiology* 48 (1), 29-34

Area 2: CT Planning rate

Rationale

Poor access to Computerised Tomography (CT) Planning facilities will lead to delays and inferior treatment.

CT Planning refers to any CT or Computed Tomography simulator (CTSim or SimCT) capable of scanning in the treatment position and interfacing with a Radiotherapy Treatment Planning system. A treatment course refers to each new, non-sequential episode of care (linear accelerator based only).

The indicator is:

CI. 2.1 The rate of treatment courses provided, where CT planning was utilised

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	2003	7	2,738	3,893	70.3	57.2	86.7	637	—	270

CI. 2.1 The rate of treatment courses provided, where CT planning was utilised during the period under study.

The rate of CT planning was 70% in 2003. One HCO reported a rate of 100%, another 81%. There is potential to increase the rate. All HCOs were public metropolitan.

Area 3 Clinical trial participation rate

Rationale

Entry of patients onto prospective clinical trials may improve future treatments and patient outcomes and the quality of care. Patients treated refers to each separate course of mega-voltage external beam radiotherapy treatment.

The indicator is:

CL 3.1 The rate of patients entered on prospective clinical trials

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	2003	5	376	3,196	11.8	0.08	5.13	—	—	264

CL 3.1 The rate of patients entered on prospective clinical trials.

The rate was rather low, being 11.8%. All HCOs were public metropolitan.

Area 4 Follow Up After Glottic Cancer, Laryngectomy-free survival

Rationale

Complete or near complete follow up after cancer treatment is essential to assess the quality and effectiveness of radiotherapy. Early larynx cancer is usually treated with radiotherapy alone to cure the cancer and preserve speech. Poor quality radiotherapy may result in recurrence of the cancer or necrosis. Either outcome would require laryngectomy. Laryngectomy free survival is therefore an indicator of high quality radiotherapy.

Complete follow up refers to the documentation of the status of all those patients treated during the study period;

- who survived three years and those who died within the three years;
- whether or not a total laryngectomy was performed

The indicator is:

CL 4.1 The rate of patients who had radiotherapy treatment for glottic cancer (T1-2 N0 M0), having complete follow up

(T1-2 N0 M0 signifies Tumour stage 1 or 2, no metastasis to regional lymph nodes and no distant metastases)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1999	7	55	71	77.5	75.9	93.0	11	—	4
	2000	7	60	64	93.8	93.7	93.7	—	—	—
	2001	6	74	84	88.1	86.4	92.2	3	—	—
	2002	7	47	70	67.1	65.9	75.7	6	—	—
	2003	6	20	32	62.5	63.7	69.1	2	—	—

CL 4.1 The rate of patients who had radiotherapy treatment for glottic cancer (T1-2 N0 M0), having complete follow up.

The rates have varied between 63% and 94% but the numbers of patients were small, varying between 32 and 84. All HCOs were public metropolitan. There was little variation between HCOs in 2003.

Area 5 Follow Up After Prostate Cancer, Proctitis-free survival

Rationale

Complete or near complete follow up after cancer treatment is essential to assess long term side effects. Early prostate cancer is treated with radiotherapy alone to cure the cancer and preserve continence. Poor quality radiotherapy may result in recurrence of the cancer or rectal bleeding (proctitis). Grade 3 proctitis free survival is therefore an indicator of high quality radiotherapy.

Complete follow up refers to the documentation of the status of all those patients treated during the study period:

- who survived three years and those who died within the three years;
- the presence or absence of proctitis occurring at least three months after treatment

The indicator is:

CL 5.1 The rate of patients who had radiotherapy treatment for prostate cancer (T1-4 N0/Nx) having complete follow up

(T1-4 N0/Nx signifies tumour stage 1 to 4, no metastasis to regional lymph nodes or unable to assess)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1999	6	458	639	71.7	75.5	97.4	164	–	90
	2000	6	502	618	81.2	77.6	92.4	69	–	28
	2001	5	220	266	82.7	81.9	97.0	37	–	11
	2002	7	144	207	69.6	52.0	87.4	36	–	–
	2003	7	236	314	75.2	55.4	95.7	64	–	9

CL 5.1 The rate of patients who had radiotherapy treatment for prostate cancer (T1-4 N0/Nx) having complete follow up.

The rates for complete follow up in these patients did not change since 1998, varying around 75%. The rates of the better performing HCOs remained close to 90%. There is considerable variation between the better and poorer performing HCOs and consequently, the rate could be improved.

Area 6 Follow up after breast conserving radiotherapy

Rationale

Complete or near complete follow up after cancer treatment is essential to assess the quality and effectiveness of radiotherapy. Early breast cancer is usually treated with radiotherapy alone to cure the cancer and preserve cosmesis (the appearance of the breast following treatment). Poor quality radiotherapy may result in recurrence of the cancer or necrosis. Either outcome would require mastectomy. Mastectomy free survival is therefore an indicator of high quality radiotherapy.

Complete follow up refers to the documentation of the status of all those patients treated during the study period:

- who survived five years and those who died within the five years;
- whether or not a total mastectomy was performed

The indicator is:

CL 6.1 The rate of patients who had radiotherapy treatment for breast conservation (T1-3 N0-1 M0), having complete follow up

(T1-3 N0-1 M0 signifies tumour stage 1 to 3, no metastasis regional lymph nodes or metastasis to movable ipsilateral axillary node(s) and no distant metastases)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.1	2003	4	220	349	63.0	39.6	76.0	45	—	14

CL 6.1 The rate of patients who had radiotherapy treatment for breast conservation (T1-3 N0-1 M0), having complete follow up. The rate of complete follow up in these patients was 63%. The better rate was 76%. All HCOs were public metropolitan.

Radiology Indicators – Version 2

Area 1 Report Availability

Rationale

If a radiological study is to have a timely impact on management, it should be available to the referring clinician within 24 hours

The indicator is:

CI. 1.1 The rate of reports on non-procedural non-urgent plain radiographs not available in the form defined above within 24 hours

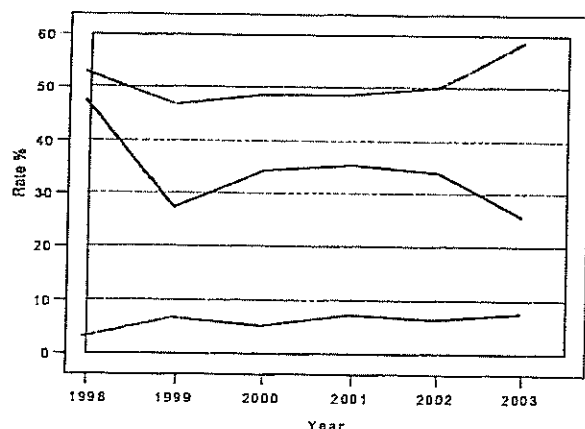
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	59	51,590	109,104	47.3	2.97	52.5	48,352	36,819	12,929
	1999	45	8,328	30,683	27.1	6.41	46.6	6,361	3,262	3,092
	2000	61	40,364	118,545	34.0	4.95	48.5	34,494	—	9,542
	2001	56	18,012	51,291	35.1	6.99	48.3	14,426	10,541	3,865
	2002	51	17,755	52,568	33.8	6.07	49.9	14,563	—	4,805
	2003	56	18,217	71,318	25.5	7.42	58.4	12,927	—	6,407

CI. 1.1 The rate of reports on non-procedural non-urgent plain radiographs not available in the form defined above within 24 hours.

The rates have improved, decreasing from 47% in 1998 to around 30% in subsequent years (Figure 1.1). Public HCOs accounted for 95% of radiographs covered by this indicator. There was considerable variation between HCOs and the better rates were 7% or less. Hence there is potential to increase the proportion of non-urgent plain radiographs that are available within 24 hours from 75% to about 95%.

Figure 1.1 Nonprocedural non-urgent plain radiographs not available within 24 hours



Area 2 Morbidity of Radiological Procedures

Rationale

Cerebral angiography is a highly invasive procedure, which may be associated with significant morbidity

The indicators are:

CI. 2.1 The rate of patients undergoing cerebral angiography having documented evidence of a temporary neurological deficit following the procedure

CI. 2.2 The rate of patients undergoing cerebral angiography having documented evidence of stroke within 24 hours of the procedure

CI. 2.3 The rate of patients undergoing cerebral angiography who die within 24 hours of the procedure

CI. 2.4 The rate of patients undergoing percutaneous trans pleural biopsy of the lung or mediastinum, having documented evidence of pneumothorax and/or haemothorax requiring intervention following the procedure

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	19	20	1,224	1.63	1.63	1.63	–	–	–
	1999	20	24	1,460	1.64	1.33	2.07	4	9	–
	2000	24	30	1,667	1.80	1.76	1.92	–	1	–
	2001	23	12	1,258	0.95	0.82	1.03	1	–	1
	2002	24	19	1,484	1.28	1.03	2.14	3	6	–
	2003	23	22	1,734	1.27	0.87	2.85	6	–	2
2.2	1998	18	6	1,149	0.52	0.52	0.52	–	–	–
	1999	19	9	1,443	0.62	0.51	0.84	1	–	–
	2000	24	4	1,596	0.25	0.25	0.25	–	–	–
	2001	22	6	1,200	0.50	0.39	0.62	1	–	–
	2002	24	3	1,499	0.20	0.20	0.20	–	–	–
	2003	24	13	1,787	0.73	0.53	0.76	3	–	–
2.3	1998	18	5	1,149	0.44	0.32	0.40	1	–	–
	1999	18	2	1,435	0.14	0.14	0.14	–	–	–
	2000	22	3	1,582	0.19	0.08	0.39	1	–	–
	2001	22	6	1,200	0.50	0.16	0.79	4	–	2
	2002	24	0	1,499	0.00	0.00	0.00	–	–	–
	2003	24	4	1,787	0.22	0.22	0.22	–	–	–
2.4	1999	34	194	959	20.2	13.8	25.3	61	–	7
	2000	39	195	1,257	15.5	9.37	18.4	77	56	30
	2001	40	130	1,121	11.6	6.66	17.0	55	–	15
	2002	37	96	1,037	9.26	5.04	14.4	43	–	3
	2003	38	138	1,113	12.4	4.07	18.7	92	–	17

CI. 2.1 The rate for patients undergoing cerebral angiography to have documented evidence of a temporary neurological deficit following the procedure.

The overall rates have declined from about 1.6% to 1.2%. There was no major variation between the rates for HCO. In 2003, two thirds of the angiographies were from public HCOs. In 2003 half of the HCOs reported no cases.

CI. 2.2 The rate of patients undergoing cerebral angiography having documented evidence of stroke within 24 hours of the procedure.

The overall rates were small and did not change substantially since 1998. In 2003, two thirds of the angiographies were from public HCOs and three quarters of the HCOs reported no cases. For all years, there was little variation in rates between the HCOs.

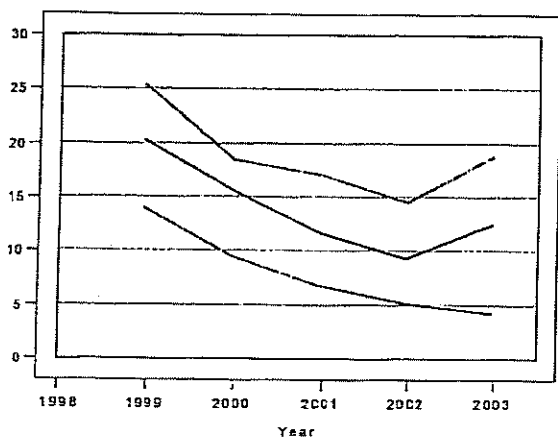
CI. 2.3 The rate of patients undergoing cerebral angiography who die within 24 hours of the procedure.

This is also a rare event, the rates being no more than 0.5% since 1998. There was no evidence of differences between HCOs in 2002 and 2003.

CI. 2.4 The rate of patients undergoing percutaneous trans pleural biopsy of the lung or mediastinum, having documented evidence of pneumothorax and/or haemothorax requiring intervention following the procedure.

The rates have decreased from 20% in 1998 to around 12% in subsequent years (Figure 2.4). The better rates have decreased from 14% to 4% during the period. There is considerable variation between HCOs that is not accounted for by stratum differences. This suggests that the rates could continue to improve.

Figure 2.4 Percutaneous trans pleural biopsy lung/mediastinum – pneumothorax/haemothorax



Rehabilitation Medicine Indicators – Version 3

Area 1 Functional Assessment

Rationale

The implementation of an effective rehabilitation program is dependent upon the early assessment of patient function. Assessment of function should include both cognitive and physical function through the use of a standardised instrument such as Functional Independence Measure (FIM), Barthels Index, Kertzke, Australian Activities Index, Mini-Mental State Examination (MMSE) or Manual for the Assessment of Schizophrenia (MAS)

The indicators are:

CL 1.1 The rate for patients admitted to a rehabilitation unit/facility having no documented evidence of a functional assessment within seven (7) working days of patient admission

CL 1.2 The rate for patients having no documented evidence of a functional assessment prior to cessation of an active inpatient rehabilitation program

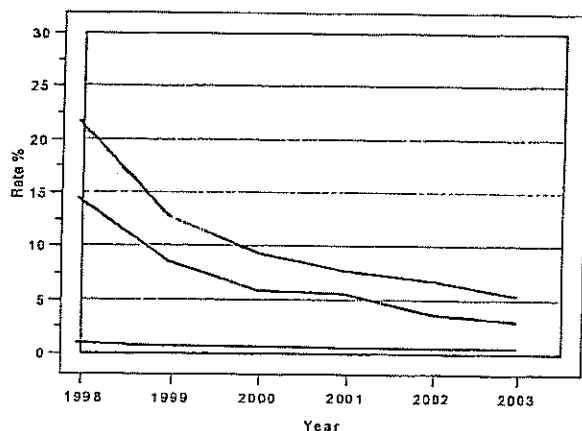
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	71	2,011	14,031	14.3	0.89	21.6	1,885	—	1,083
	1999	74	1,637	19,425	8.43	0.54	12.6	1,531	—	805
	2000	91	1,229	21,354	5.76	0.47	9.28	1,129	—	525
	2001	85	1,311	24,270	5.40	0.41	7.59	1,211	726	656
	2002	84	912	25,959	3.51	0.34	6.67	823	—	465
	2003	90	899	31,377	2.87	0.32	5.28	798	—	461
1.2	1998	65	2,854	13,747	20.8	1.10	28.6	2,702	1,159	1,608
	1999	74	2,051	19,244	10.7	0.64	18.8	1,927	—	1,066
	2000	85	1,783	21,136	8.44	0.40	11.7	1,697	777	843
	2001	80	1,655	23,033	7.19	0.28	11.9	1,589	1,057	868
	2002	85	1,533	26,220	5.85	0.33	13.1	1,447	—	769
	2003	85	1,319	31,302	4.21	0.21	9.67	1,251	635	685

CL 1.1 The rate for patients admitted to a rehabilitation unit/facility having no documented evidence of a functional assessment within seven working days of patient admission.

The rates have decreased from 14% in 1998 to 3% in 2003 (Figure 1.1). The proportion of HCOs having no patients without documented evidence of functional assessment has increased from 21% in 1998 to 46% in 2003. This represents a significant improvement and since the better HCOs have rates of 0% there is potential to improve further.

Figure 1.1 No functional assessment documented within seven working days



CI. 1.2 The rate of patients having no documented evidence of a functional assessment prior to cessation of an active inpatient rehabilitation program.

The rates have decreased from 21% in 1998 to 4% in 2003 (Figure 1.2). The proportion of HCOs providing a functional assessment on all their patients has increased from 16% in 1998 to 44% in 2003. As with CI 1.1 above, this represents a significant improvement and the rates should continue to improve. NSW had the lowest rate in 2003.

Figure 1.2 No functional assessment documented prior to cessation of program

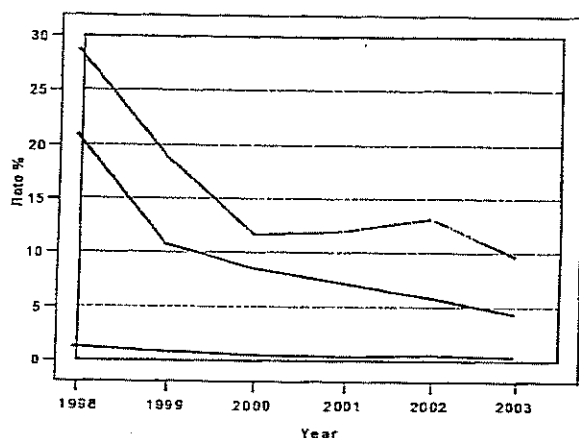


Table 1.2 No functional assessment documented prior to cessation of program

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	38	245	13,270	1.97	0.86	—
QLD	2003	12	120	1,920	6.07	2.25	—
SA	2003	5	147	2,434	6.08	2.00	100
VIC	2003	22	557	11,609	4.81	0.91	330
Other	2003	8	250	2,069	11.9	2.17	205

Area 2 Rehabilitation Plan I

Rationale

The establishment of a rehabilitation plan with regular review is necessary for effective patient rehabilitation. Rehabilitation plan refers to a series of documented and agreed initiatives/treatment (specifying program goals, actions and time frames), which has been established through multi-disciplinary consultation (including the patient/relatives where appropriate).

The indicator is:

CL 2.1 The rate of patients admitted to a rehabilitation unit/facility having *no* documented established multi-disciplinary rehabilitation plan within seven working days of admission

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.1	1998	68	1,880	13,677	13.7	0.19	16.9	1,853	–	1,250
	1999	74	1,381	19,162	7.21	0.18	11.6	1,347	–	851
	2000	83	1,202	19,909	6.04	0.42	12.4	1,117	–	699
	2001	82	1,195	23,292	5.13	0.21	5.26	1,146	–	781
	2002	85	819	25,827	3.17	0.12	3.99	789	–	508
	2003	85	862	30,192	2.86	0.07	3.50	840	613	535

CL 2.1 The rate of patients admitted to a rehabilitation unit/facility having *no* documented established multi-disciplinary rehabilitation plan within seven working days of patient admission.

The rates have decreased from 14% in 1998 to 3% in 2003 (Figure 2.1). The proportion of HCOs having documented rehabilitation plan on all their patients has increased from 40% in 1998 to 58% in 2003. This represents a significant improvement and Figure 2.1 suggests that further improvement is likely. The public rate of 5% was significantly higher than the private rate in 2003 (Table 2.1).

Figure 2.1 No documented multi-disciplinary rehabilitation plan within seven working days.

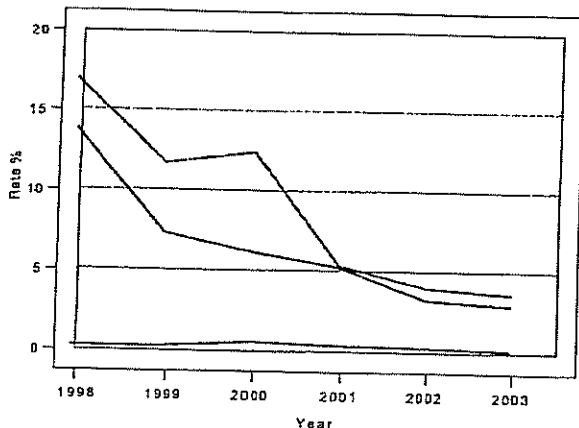


Table 2.1 No documented multi-disciplinary rehabilitation plan within seven working days.

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	46	740	14,900	4.94	0.70	613
Private	2003	39	122	15,292	0.82	0.69	–

Area 2 Rehabilitation Plan II

Rationale

An effective rehabilitation program should continue post discharge to maximise the potential for fullest possible recovery

An appropriate discharge plan is defined as a documented program of rehabilitation activity in the community, as an outpatient or at home, and includes an indication of notification to the patient's general practitioner. The plan should be established prior to separation in consultation with the patient and/or care providers and be available at the time of patient separation

The indicator is:

CI. 2.2 The rate of patients having no appropriate discharge plan on separation

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.2	1998	63	2,474	13,593	18.2	0.54	17.6	2,399	1,439	1,572
	1999	69	1,564	18,191	8.60	0.45	14.8	1,481	—	875
	2000	77	1,340	19,842	6.75	0.30	11.8	1,279	—	775
	2001	83	1,019	23,753	4.29	0.42	5.77	919	—	584
	2002	85	1,022	26,895	3.80	0.25	8.43	953	584	573
	2003	84	921	31,743	2.90	0.13	6.44	878	435	572

CI. 2.2 The rate of patients having no appropriate discharge plan on separation.

The rates have decreased from 18.2% in 1998 to 2.9% in 2003 (Figure 2.2). The proportion of HCOs having a documented rehabilitation plan on all their patients has increased from 40% in 1998 to 58% in 2003. This represents a significant improvement and there is potential to improve further. NSW reported the lowest rate in 2002 and 2003 (Table 2.2).

Figure 2.2 No discharge plan on separation

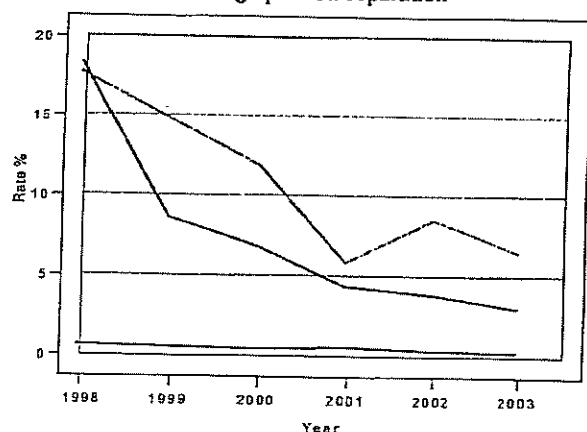


Table 2.2 No discharge plan on separation

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2002	39	188	12,879	1.60	0.77	—
	2003	38	194	13,647	1.49	0.72	—
QLD	2002	12	48	1,853	2.64	2.03	—
	2003	12	55	2,539	2.16	1.67	—
VIC	2002	23	539	8,911	6.04	0.92	395
	2003	23	367	11,693	3.12	0.78	190
Other	2002	11	247	3,252	7.41	1.53	188
	2003	11	305	3,864	7.81	1.35	244

Area 3 Program Interruption

Rationale

Achievement of a patient's rehabilitation goals may be dependent upon the consistency of treatment. Any unplanned interruption may significantly impact upon treatment outcomes. It is recognised that there may be a proportion of reasons for interruption to a rehabilitation program. This indicator serves as a flag for interruption to a rehabilitation program and also serves as a flag for further analysis.

Unplanned interruption refers to an unexpected requirement to suspend the rehabilitation program either for greater than 48 hours or complete suspension.

The indicator is:

CL 3.1 The rate of patients having an unplanned interruption to their rehabilitation program

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	67	1,141	15,287	7.46	3.43	10.6	616	–	190
	1999	68	1,454	20,742	7.01	3.01	11.0	829	–	253
	2000	78	1,635	21,610	7.57	3.98	10.0	775	302	205
	2001	82	2,200	25,662	8.57	3.93	12.2	1,191	–	366
	2002	84	2,275	29,531	7.70	4.36	11.5	987	429	226
	2003	86	2,188	34,149	6.41	4.13	10.8	776	372	239

CL 3.1 The rate of patients having an unplanned interruption to their rehabilitation program.

The rates have varied around 7.5% since 1998 and there was no trend. The public rate, 7.8%, was higher than the private rate of 5.3%.

Figure 3.1 Unplanned interruption to program

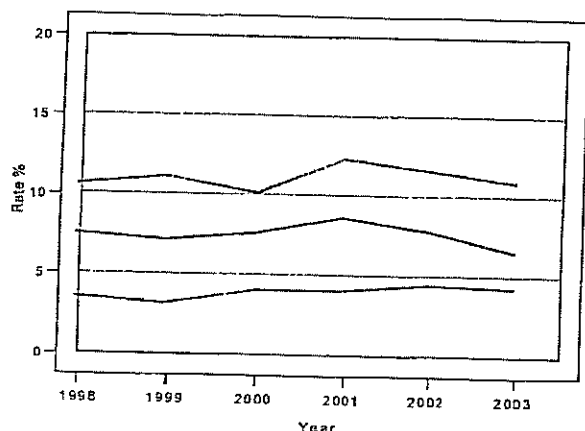


Table 3.1 Unplanned interruption to program

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	44	1,199	15,106	7.78	0.44	372
Private	2003	42	989	19,043	5.32	0.39	–

Area 4 Inpatient Mortality

Rationale

Patients admitted to a rehabilitation unit/facility would not normally be expected to die (unless as a consequence of a normal disease process). All inpatient deaths should be addressed through an internal audit process/quality improvement study.

Audit refers to a formal quality review process, which includes a committee of appropriate care providers.

The indicators are:

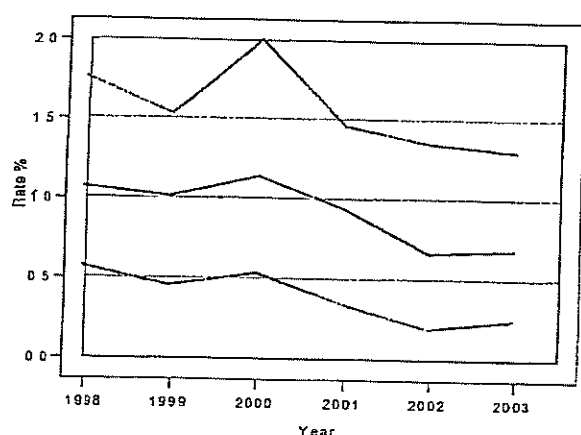
CL 4.1 The rate of rehabilitation patient deaths within the rehabilitation unit/facility

CL 4.2 The rate of addressing rehabilitation patient deaths within an audit process/quality improvement study

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	66	198	18,661	1.06	0.57	1.75	91	89	11
	1999	65	211	20,989	1.01	0.45	1.53	117	79	41
	2000	87	271	23,865	1.14	0.52	1.99	146	90	32
	2001	85	264	28,152	0.94	0.34	1.45	168	137	58
	2002	86	203	31,120	0.65	0.18	1.35	145	90	41
	2003	90	241	35,510	0.68	0.23	1.30	159	161	47
4.2	1998	39	138	222	62.2	37.9	95.2	73	60	28
	1999	38	138	165	83.6	92.1	96.9	21	13	14
	2000	50	165	225	73.3	91.7	96.7	52	–	26
	2001	43	172	183	94.0	95.7	98.4	8	–	5
	2002	37	157	186	84.4	96.3	98.6	26	22	15
	2003	48	198	208	95.2	95.4	98.0	5	–	3

Figure 4.1 Rehabilitation patient deaths



CL 4.1 The rate of rehabilitation patient deaths within the rehabilitation unit/facility.

The rates have decreased from more than 1% to approximately 0.7% in 2003. Both the better and the poorer rates have also decreased during that period (Figure 4.1). There were significant differences between the higher rates of 1.3% and the lower rates of 0.2%. Also, some organisations had rates that were statistically high and the proportion of outlier deaths in 2003 was 47. The rates were lowest in South Australia and Victoria in 2003.

Table 4.1 Rehabilitation patient deaths

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	42	55	15,652	0.43	0.08	31
QLD	2003	13	37	2,899	1.07	0.20	24
SA	2003	5	3	2,311	0.23	0.22	–
VIC	2003	24	88	12,874	0.69	0.09	60
Other	2003	6	58	1,774	2.74	0.25	44

CL 4.2 The rate of addressing rehabilitation patient deaths within an audit process/quality improvement study.

The rates have increased from 62% in 1998 to 95% in 2003. The proportion of HCOs reporting rates of 100% has increased from 69% to 85% over the period. In 2003, ten out of 208 cases were not formally reviewed.

Surgical Indicators – Version 3

Area 1 Paediatric Surgery

Rationale

Skilful surgery should avoid mucosal perforation during pyloromyotomy, which may give rise to other complications, such as wound infection. This indicator focuses on patients having a pyloromyotomy for pyloric stenosis only.

The indicator is:

CI.1.1 The rate of patients having a pyloromyotomy in which mucosal perforation occurs and is detected at the time of operation or later.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.1	1998	6	2	43	4.65	4.66	4.66	—	—	—
	1999	6	4	62	6.45	6.45	6.45	—	—	—
	2000	6	3	56	5.36	5.36	5.36	—	—	—
	2001	10	0	118	0.00	0.00	0.00	—	—	—
	2002	9	2	127	1.57	1.58	1.58	—	—	—
	2003	10	2	107	1.87	1.87	1.87	—	—	—

CI. 1.1 The rate of patients having a pyloromyotomy in which mucosal perforation occurs and is detected at the time of operation or later.

The proportion of pyloromyotomy patients reported has more than doubled since 1998 and the rates of mucosal perforation have declined from more than 4% in 1998 to less than 2% in 2003. Since 1998 there has been no statistically significant difference between HCOs in any year.

Appendicectomy

Rationale

Appendicectomy is a commonly performed operation in childhood. Good management should achieve a low rate of negative (normal) histology.

Acute appendicitis excludes interval and incidental appendicectomy. Significant other intra abdominal pathology includes findings such as perforated Meckel's diverticulum, torsion of an ovarian cyst, but excludes mesenteric adenitis.

The indicators are:

CI.1.2 The rate of children with a pre-operative diagnosis of acute appendicitis, who undergo appendicectomy having normal histology.

CI.1.3 The rate of children with a pre-operative diagnosis of acute appendicitis who undergo appendicectomy with normal histology, but have significant other intra abdominal pathology.

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
1.2	1999	49	183	854	21.4	18.4	26.5	26	13	—
	2000	61	199	953	20.9	15.7	26.0	49	—	—
	2001	78	236	1,583	14.9	13.9	21.1	16	—	—
	2002	78	210	1,428	14.7	11.4	19.1	47	—	11
	2003	62	232	1,440	16.1	11.7	22.0	64	47	4
1.3	1998	43	38	753	5.05	3.44	6.79	12	11	—
	1999	46	44	767	5.74	3.08	7.24	20	8	4
	2000	54	42	797	5.27	2.69	6.37	20	—	2
	2001	69	86	1,332	6.46	2.69	6.80	50	43	15
	2002	72	69	1,284	5.37	3.99	7.81	17	—	1
	2003	56	59	1,322	4.46	2.83	7.50	21	21	2

CI.1.2 The rate of children with a pre-operative diagnosis of acute appendicitis, who undergo appendicectomy having normal histology.

The rates have decreased from 21% in 1998 to 16% in 2003 (Figure 1.2). The rates for both the better and the poorer performing HCOs have decreased. There is considerable variation between HCOs; the rates of the poorer performing HCOs were almost twice the rates of the better performing HCOs. The lower rate of 12% suggests that further improvement of approximately 4% could be obtained. Western Australia had the highest rate in 2003 of 22% (Table 1.2).

Figure 1.2 Paediatrics – pre-operative diagnosis of acute appendicitis

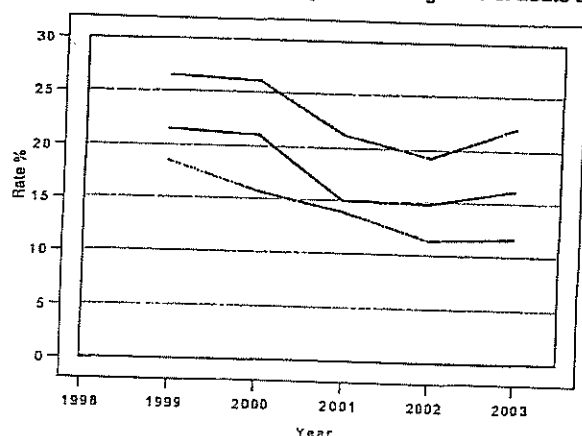


Table 1.2 Paediatrics – pre-operative diagnosis of acute appendicitis

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	19	58	400	15.5	1.36	12
QLD	2003	17	44	257	17.3	1.69	12
TAS	2003	6	18	106	16.5	2.64	–
VIC	2003	9	29	254	13.4	1.70	–
WA	2003	6	59	218	22.3	1.84	21
Other	2003	5	24	205	12.3	1.90	–

CL 1.3 The rate of children with a pre-operative diagnosis of acute appendicitis who undergo appendicectomy with normal histology, but have significant other intra abdominal pathology.

The average rates have varied around 5% and the rates of the better performing HCOs have remained below 4% Queensland has a higher rate of 7.1% (Table 1.3)

Figure 1.3 Paediatrics – appendicectomy normal histology but pathology

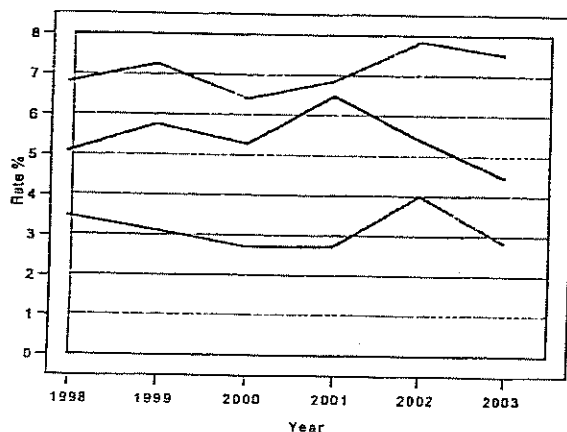


Table 1.3 Paediatrics – appendicectomy normal histology but pathology

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	16	18	308	4.76	0.58	7
QLD	2003	16	22	239	7.09	0.66	11
TAS	2003	6	7	106	6.20	0.99	3
VIC	2003	8	3	253	2.99	0.64	–
WA	2003	5	7	215	3.84	0.69	–
Other	2003	5	2	201	2.48	0.72	–

Area 2 Urology Transurethral Resection (TUR)

Rationale

This is a commonly performed procedure. Compliance in these indicators would be a reasonable measure of the care provided in a urological service.

The indicators are:

- CI. 2.1 The average operating time (minutes) in patients undergoing TUR for benign prostaticomegaly
- CI. 2.2 The average length of stay (days) following TUR for benign prostaticomegaly
- CI. 2.3 The average weight of tissue (grams) removed from patients undergoing TUR for benign prostaticomegaly
- CI. 2.4 The rate of patients having a blood transfusion following TUR for benign prostaticomegaly, (intra-operatively or post-operatively)
- CI. 2.5 The rate of patients having an unplanned readmission within 28 days of discharge following TUR for benign prostaticomegaly

Results

CI	Year	No HCOs	Numerator	Denominator	Mean	Std	20th centile	Median	80th centile
2.1	1998	62	110,558	2,240	49.4	12.7	38.8	49.1	61.7
	1999	60	106,514	2,215	48.1	11.2	37.0	48.8	61.8
	2000	70	133,536	2,792	47.8	10.2	37.5	47.0	55.0
	2001	91	183,374	3,728	49.2	13.3	36.4	49.9	61.6
	2002	87	162,970	3,498	46.6	12.3	34.2	45.8	58.3
	2003	72	135,541	2,741	49.4	12.5	39.8	49.0	61.9
2.2	1998	81	12,267	3,258	3.77	1.08	2.79	3.68	4.51
	1999	76	11,532	3,169	3.64	1.14	2.70	3.50	4.44
	2000	84	12,572	3,607	3.49	1.08	2.50	3.29	4.29
	2001	84	12,193	3,544	3.44	1.15	2.40	3.27	4.00
	2002	78	10,328	3,030	3.41	1.20	2.35	3.21	4.42
	2003	76	9,232	2,823	3.27	0.99	2.20	2.98	3.94
2.3	1998	54	31,182	1,626	19.2	5.19	13.1	18.7	23.5
	1999	55	34,576	1,825	18.9	4.21	13.9	18.4	23.2
	2000	58	44,206	2,226	19.9	5.67	14.7	17.9	23.7
	2001	52	35,503	1,812	19.6	4.97	14.9	18.9	24.0
	2002	50	35,218	1,772	19.9	4.71	15.2	19.6	24.9
	2003	53	39,394	1,920	20.5	4.35	16.0	19.6	23.6

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
2.4	1998	82	172	3,787	4.54	3.00	5.78	58	47	—
	1999	83	135	3,450	3.91	2.67	5.22	42	—	3
	2000	96	180	4,172	4.31	2.63	5.44	70	—	2
	2001	114	220	5,596	3.93	2.97	4.64	54	40	10
	2002	109	160	5,241	3.05	2.47	3.70	30	—	—
	2003	101	182	5,000	3.64	2.94	4.15	34	—	—
2.5	1998	84	172	3,929	4.38	3.51	4.99	33	—	—
	1999	83	187	3,908	4.79	4.46	5.46	12	—	—
	2000	92	206	4,539	4.54	3.57	5.31	43	16	2
	2001	108	275	5,452	5.04	4.04	6.35	54	—	—
	2002	106	198	4,917	4.03	3.66	4.42	17	—	—
	2003	95	232	4,897	4.74	3.65	6.02	53	—	—

CI. 2.1 The average operating time (minutes) in patients undergoing TUR for benign prostaticomegaly.

The average and median operating time for TUR have remained close to 49 minutes since 1998. The variation between HCOs has not changed with 60% of HCOs patients having average operation times between 40 and 60 minutes.

CI. 2.2 The average length of stay (days) following TUR for benign prostatomegaly.

The average length of stay has declined from 3.8 days in 1998 to 3.3 days in 2003. One in five HCOs had average length of stay less than 2.2 days in 2003 whereas in 1998 one in five HCOs had average length of stay less than 2.8 days. Four HCOs reported average length of stay in excess of 5 days for a total of 112 patients.

CI. 2.3 The average weight of tissue (grams) removed from patients undergoing TUR for benign prostatomegaly.

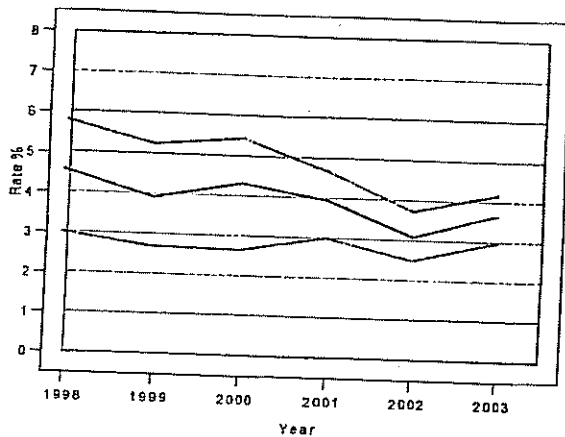
The average weight of tissue removed has increased from 19 grams in 1998 to 20.5 grams in 2003. In 1998 four in five HCOs had average weights greater than 13 grams whereas in 2003 four in five HCOs had weights greater than 16 grams.

CI. 2.4 The rate of patients having a blood transfusion following TUR for benign prostatomegaly, (intra-operatively or post-operatively).

The rates have decreased from 4.5% in 1998 to 3.6% in 2003 (Figure 2.4). The higher rates have decreased from 5.8% to 4.2%. Since 1998 40% of HCOs reported no transfusions. There are small potential gains.

There were 8,144 public and 12,079 private TUR prostatectomy procedures in 2003. If the average rate is applied to these procedures then the estimated number blood transfusions annually is 736. If the overall rate could be reduced to the better rate the number would decrease by 141.

Figure 2.4 TUR for benign prostatomegaly – blood transfusion

**CI. 2.5 The rate of patients having an unplanned readmission within 28 days of discharge following TUR for benign prostatomegaly.**

The rates have remained between 4% and 5% since 1998. During that period more than one third of HCOs reported no readmissions within 28 days. The lower rates have remained at or below 4% since 2000.

Area 3 Orthopaedic Surgery Total Hip Joint Replacement

Rationale

If infection occurs following primary Total Hip Joint Replacement (THJR) the risk of removal of the prosthesis is considerable.

The indicator is:

C.I. 3.1 The rate of a post-operative in-hospital infection in primary THJ replacement

Results

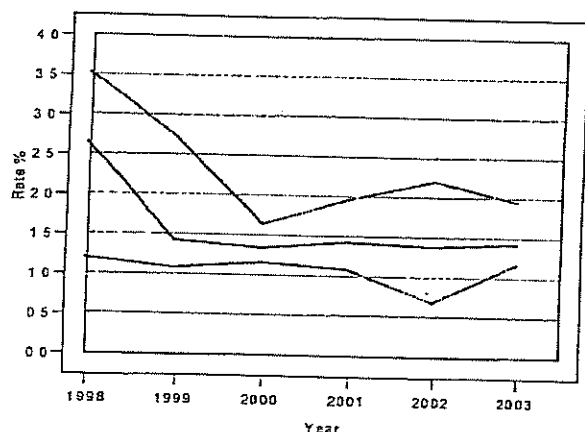
CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
3.1	1998	75	108	4,115	2.62	1.20	3.51	58	—	—
	1999	87	61	4,340	1.41	1.06	2.70	14	—	4
	2000	103	71	5,305	1.34	1.15	1.64	9	—	—
	2001	129	101	7,191	1.40	1.08	1.96	23	—	—
	2002	134	118	8,651	1.36	0.67	2.20	59	—	15
	2003	124	110	7,786	1.41	1.15	1.96	20	—	1

CI 3.1 The rate of a post-operative in-hospital infection in primary THJ replacement.

The rate in 1998 was 2.6% and has remained around 1.4% since then (Figure 3.1). The rates for the better performing HCOs have remained at around 1%, half the rate of the poorer performing HCOs. This variation between HCOs indicates that a reduction in the proportion of infections may be achievable.

If the above rate is applied to the 30,496 separations (including 3,267 revisions) in Australia for hip prosthesis procedures, then the estimated proportion of infections in Australia is 430 per year.

Figure 3.1 THJR – post-operative in-hospital infection



Area 4 Plastic Surgery Malignant Skin Tumour Excision

Rationale

Good surgical practice should achieve a low incidence of incomplete excisions. A completely excised malignant skin tumour is defined as a histopathology report indicating all margins clear of tumour. All excised malignant skin tumours are included.

The indicator is:

CI. 4.1 The rate of completely excised malignant skin tumours

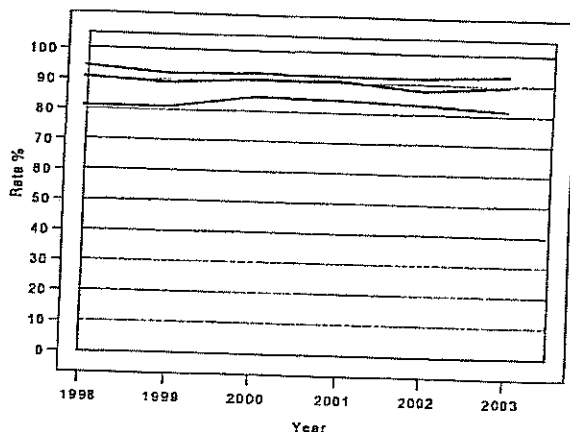
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
4.1	1998	58	6,053	16,718	90.1	80.4	93.7	239	—	48
	1999	56	7,201	8,134	88.5	80.8	91.8	267	117	71
	2000	66	9,419	10,486	89.8	84.4	92.3	264	—	91
	2001	64	10,375	11,490	90.3	83.9	91.9	179	—	74
	2002	59	9,548	10,927	87.4	82.4	91.4	443	198	169
	2003	57	9,879	11,082	89.1	81.0	92.5	370	—	108

CI. 4.1 The rate of completely excised malignant skin tumours.

The rates have remained close to 90% (Figure 4.1). The rates for the poorer performing HCOs have remained about 10% lower than the rates of the better performing HCOs. In 2003 there were 9 HCOs with statistically significantly low rates, all of which were non-metropolitan. This may reflect differences in surgical practice or severity of patient skin tumour; however rural rates have been less than five percentage points below the metropolitan rates since 2000. One non-metropolitan HCO had statistically significantly high rates in both 2002 and 2003 and should review its procedures.

Figure 4.1 Plastic surgery – completely excised malignant skin tumours



Area 5 Cardiothoracic Surgery Coronary Artery Grafts

Rationale

Coronary Artery Graft Surgery (CAGS) is a commonly performed cardiac operation in adults. Low mortality is now achievable. Patients less than 16 years of age are excluded.

The indicators are:

CI. 5.1 The rate of patients who die in the same admission as having CAGS

CI. 5.2 The rate of elective patients who die in the same admission as having CAGS

CI. 5.3 The rate of patients aged 71 years or greater who die in the same admission as CAGS

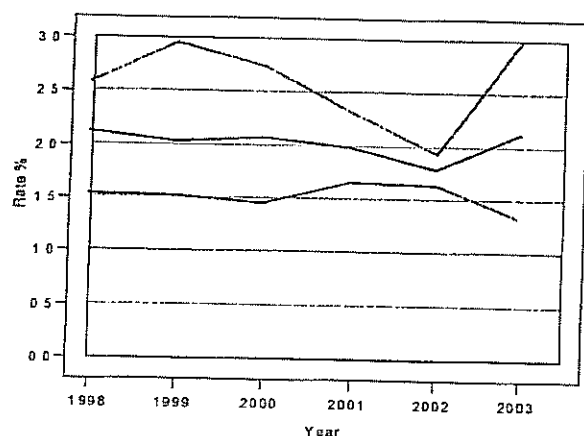
Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
5.1	1998	32	176	8,326	2.11	1.53	2.57	48	—	6
	1999	37	197	9,800	2.01	1.51	2.95	48	—	3
	2000	40	215	10,417	2.06	1.45	2.73	64	—	—
	2001	35	196	9,904	1.98	1.64	2.30	33	—	—
	2002	38	160	8,997	1.78	1.63	1.93	13	12	—
	2003	36	184	8,754	2.10	1.33	2.97	67	—	9
5.2	1998	22	68	5,119	1.33	1.24	1.54	4	6	—
	1999	27	92	5,949	1.55	1.54	1.55	—	—	—
	2000	33	99	6,212	1.59	1.25	2.20	21	12	—
	2001	27	90	5,488	1.64	1.22	2.10	23	—	—
	2002	30	73	5,187	1.41	1.41	1.41	—	—	—
	2003	27	82	5,056	1.62	1.24	2.25	19	9	—
5.3	1998	25	85	2,457	3.46	3.06	3.79	9	—	—
	1999	30	96	2,842	3.38	2.71	4.78	19	—	—
	2000	39	133	3,764	3.53	3.05	4.32	18	—	—
	2001	33	108	3,616	2.99	2.51	3.89	17	—	—
	2002	37	97	3,506	2.77	2.84	2.86	—	—	—
	2003	35	114	3,315	3.44	1.95	5.05	49	—	—

CI. 5.1 The rate of patients who die in the same admission as having CAGS.

The rates have remained at around 2% and the rates of the better performing HCOs at around 1.5%. The extent to which differences in case-mix have contributed to the differences between HCOs cannot be determined. In 2003 there was an outlier HCO accounting for nine deaths. For most years there have been no outlier HCOs.

Figure 5.1 CAGS – death



CI. 5.2 The rate of elective patients who die in the same admission as having CAGS.

Since 1998 the rates have remained around 1.5% and the rates of the better performing HCOs have remained around 1.3%. The rates of the poorer performing HCOs has been more variable. There is a small difference between the public and private rates for this indicator (Table 5.2).

Table 5.2 CAGS – death (elective)

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
Public	2003	12	35	2,760	1.44	0.11	–
Private	2003	15	47	2,296	1.84	0.12	9

CI. 5.3 The rate of patients aged 71 years or greater who die in the same admission as CAGS.

The rates have changed little since 1998 and remain at about 3.4% and were higher than the rates for all CAGS. In 2003 there was considerable variation between HCOs, the rates for the poorer performing HCOs being twice the rates of the better performing HCOs. One in five HCOs has a rate exceeding 5%.

Area 6 Neurosurgery

Neurosurgical infection

Rationale

The occurrence of infection following neurosurgery may have undesirable effects. Neurosurgical infection is defined as a wound infection, meningitis or shunt infection. For the purpose of these indicators (CI No: 6.1 – 6.2) only intracranial and spinal operations should be included as neurosurgery procedures.

The indicator is:

CI 6.1 The rate of patients having a neurosurgical infection in hospital excluding superficial wound infections

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.1	2001	13	39	3,108	1.25	0.97	2.24	8	–	–
	2002	16	56	3,495	1.60	0.96	2.36	22	–	5
	2003	19	78	5,651	1.38	0.57	2.31	46	49	12

CI 6.1 The rate of patients having a neurosurgical infection in hospital excluding superficial wound infections.

The rate of infection was 1.38% in 2003, little different from the previous two years. There was considerable variation between HCOs, which suggests that the proportion of infections could be reduced. The Queensland rate was the highest in 2003 (2.4%) and the public rate as statistically significantly higher than the private rate (Table 6.1).

Table 6.1 Neurosurgery – neurosurgical infection

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	9	43	2,788	1.53	0.31	22
QLD	2003	5	22	863	2.42	0.56	14
Other	2003	5	13	2,000	0.73	0.37	–
Public	2003	14	75	4,392	1.63	0.25	49
Private	2003	5	3	1,259	0.51	0.48	–

Neurological deficit following a neurological procedure**Rationale**

Neurological deficit after surgery may imply a less than optimal technique

The indicator is:

CI. 6.2 The rate of patients with a new neurological deficit following a neurosurgery procedure

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
6.2	1998	14	189	3,985	4.74	1.06	9.22	146	–	95
	1999	15	99	4,941	2.00	0.86	2.29	56	–	23
	2000	11	97	4,916	1.97	0.86	2.28	54	–	21
	2001	8	34	2,841	1.20	0.48	2.41	20	–	6
	2002	13	66	3,621	1.82	1.30	2.26	18	–	–
	2003	15	92	5,545	1.66	1.05	2.39	33	26	7

CI. 6.2 The rate of patients with a new neurological deficit following a neurosurgery procedure.

The rates have decreased from 4.7% in 1998 and appears to have stabilised to about 1.6%. The NSW rate was the highest in 2003. A single HCO had a significantly high rate of 4.2%.

Figure 6.2 Neurosurgery – neurological deficit following procedure

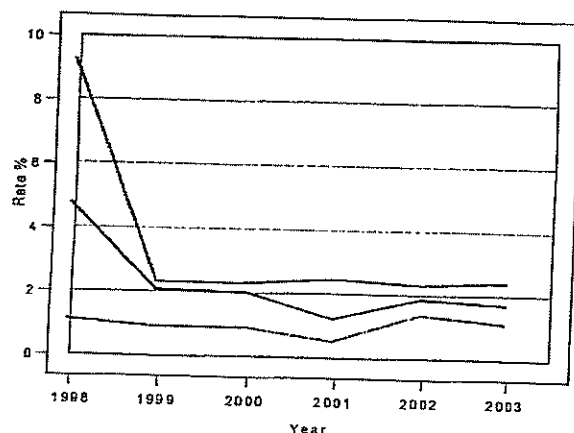


Table 6.2 Neurosurgery – neurological deficit following procedure

Stratum	Year	No HCOs	Numerator	Denominator	Stratum rate %	Standard error	Stratum gains
NSW	2003	8	74	3,547	1.92	0.20	26
Other	2003	7	18	1,998	1.18	0.27	–

Area 7 General Surgery – Laparoscopic Cholecystectomy

Rationale

Laparoscopic cholecystectomy is a relatively new procedure, which is associated with an increased risk of injury to the extra hepatic biliary system. Only a bile duct injury requiring operative (open, laparoscopic or endoscopic) intervention is included.

The indicator is:

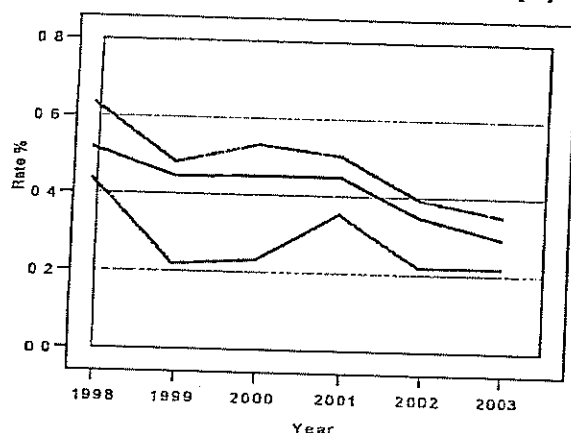
C.I. 7.1 The rate of patients having bile duct injury requiring operative intervention during laparoscopic cholecystectomy

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
7.1	1998	110	46	8,976	0.51	0.43	0.63	7	—	—
	1999	118	42	9,527	0.44	0.22	0.43	21	—	—
	2000	143	73	16,294	0.45	0.23	0.53	35	—	9
	2001	167	70	15,676	0.45	0.41	0.46	5	—	22
	2002	176	55	15,898	0.35	0.22	0.33	20	—	—
	2003	155	45	15,436	0.29	0.22	0.29	11	—	3

CL 7.1 The rate of patients having bile duct injury requiring operative intervention during laparoscopic cholecystectomy. The rates have decreased from 0.5% in 1998 to 0.3% in 2003 (Figure 7.1). The proportion of HCOs having no cases of bile duct injury requiring operative intervention has increased from 70% in 1998 to 82% in 2003. In the last three years the difference between the better and the poorer performing HCOs has been reduced.

CL 7.1 Laparoscopic cholecystectomy – bile duct injury requiring operative intervention.



Area 8 Vascular Surgery

Abdominal Aortic Aneurysm

Rationale

Abdominal aortic aneurysm repair is major surgery and is associated with a significant mortality

The indicator is:

CI.8.1 The rate of death following elective AAA repair (within the same admission)

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
8.1	1998	39	25	845	2.96	2.72	3.62	2	6	—
	1999	39	14	619	2.26	2.20	2.28	—	—	—
	2000	42	17	666	2.55	2.04	2.71	3	—	—
	2001	56	30	945	3.17	3.17	3.18	—	—	—
	2002	56	25	776	3.22	3.22	3.22	—	—	—
	2003	50	32	668	4.79	4.79	4.79	—	—	—

CI.8.1 The rate of death following elective AAA repair (within the same admission).

The rates were highest in 2003, although there was no evidence of any differences in outcomes between HCOs. Since 1999 more than two thirds of HCOs had no deaths and the differences between the better performing and the poorer performing HCOs is negligible

Carotid endarterectomy

Rationale

Carotid endarterectomy is undertaken as a prophylactic measure to reduce the occurrence of stroke. A minimal rate of post-operative stroke is desirable.

The indicator is:

CI. 8.2 The rate of stroke following carotid endarterectomy (within the same admission).

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
8.2	1998	39	28	1,202	2.33	2.33	2.33	–	–	–
	1999	43	17	1,319	1.29	1.05	1.23	3	2	–
	2000	46	18	1,112	1.62	1.62	1.62	–	–	–
	2001	65	30	1,759	1.71	1.45	2.05	4	–	–
	2002	68	25	1,661	1.51	1.51	1.51	–	–	–
	2003	52	18	1,309	1.38	0.93	1.40	5	–	–

CI. 8.2 The rate of stroke following carotid endarterectomy (within the same admission).

The rates have declined from 2.3% in 1998 and then remained around 1.5%. Since 1999 more than two thirds of HCOs had no strokes following carotid endarterectomy. The difference between the better and poorer performing HCOs remains small.

Area 9 Otolaryngology Tonsillectomy

Rationale

Tonsillectomy is a commonly performed discretionary procedure with a low, but definite, morbidity

Significant reactionary haemorrhage is defined as haemorrhage within 24 hours after tonsillectomy, requiring a return to operating room for its management

The indicator is:

CI.9.1 The rate of significant reactionary haemorrhage following tonsillectomy

Results

CI	Year	No HCOs	Numerator	Denominator	Rate %	Rate (20)%	Rate (80)%	Centile gains	Stratum gains	Outlier gains
9.1	1998	75	86	6,506	1.32	0.81	1.45	33	26	12
	1999	86	51	6,421	0.79	0.31	1.28	30	–	7
	2000	98	58	7,175	0.81	0.64	0.94	12	–	2
	2001	124	44	9,060	0.49	0.47	0.48	1	2	–
	2002	132	71	10,298	0.69	0.48	0.67	21	8	–
	2003	116	57	9,039	0.63	0.59	0.74	3	–	–

CI.9.1 The rate of significant reactionary haemorrhage following tonsillectomy.

The rate was 1.3% in 1998 but has been around 0.7% for the subsequent years. Since 1998, two thirds of HCOs had no cases of reactionary haemorrhage. In 2003, the difference between the better and poorer performing HCOs was small.

The proportion of tonsillectomy / adenotomies in Australian was 61,000, and applying the above rate to these suggests that they were about 420 cases of significant reactionary haemorrhage.

Appendix – Statistical Methods

The methods that have been used to report the results for each indicator were illustrated in detail in the first report⁸. The methods used in this report are similar.

In determining the trends over time, we have used the results for 1998 to 2003 and not included the 1997⁹ published data, as we wish to focus on the recent changes.

In this report we have used the terms proportion and rate interchangeably. The proportion is always presented as a percentage, and the rate must be read as the rate per 100 cases.

Firstly, we calculate an overall rate for all HCOs.

The **overall rate** (mean rate) is calculated as –

$$\text{Overall rate} = \frac{\text{Sum of numerators}}{\text{Sum of denominators}}$$

The overall rate or proportion is also the weighted mean of the individual rates of the HCOs. This mean may not be the same as the unweighted mean of the rates, especially if a few HCOs with large denominators have different rates (extremely high or low) from the other HCOs.

Next, estimates of the individual HCO rates are derived using the shrinkage estimation method. From these rates we then calculate the 20th centile defined as the rate below which 20% of the HCOs lie and 80% are above. Similarly, the 80th centile is calculated, which is the rate such that 20% of HCOs lie above and 80% below. The mean rate, and the 20th and 80th centile rates provide a measure of the central value and a measure of the variation in rates between HCOs. In undertaking quality improvement, both of these measures are important: better quality may mean lowering the mean rate, but the difference between the mean and the centiles may indicate to what extent this is possible.

Since the 20th and 80th centiles are based on the shrunken rates, it is possible that the centiles will not contain the mean rate. This usually indicates that there are extreme values, or that the rate depends on the size of the denominator and hence the size of the HCO.

HCOs are encouraged to consider how they can achieve the 20th centile rate, rather than the average rate, and thus improve practice.

To quantify the potential gains that could be achieved by reducing the overall rate to the 20th centile (or the 80th centile if a high rate is desirable), we calculate the change in the numerator that would occur when the mean is equal to the 20th centile. This is reported as centile gains. The calculation enables the results of a number of indicators to be compared and priorities determined for further investigating the indicator results. In the indicator results section the 20th and 80th centile rates are referred to as the 'better' and 'poorer' rates, depending on which is the most desirable.

The **centile gains** are calculated as –

When the desirable level is **low**

$$\text{Centile gains} = \text{Sum of denominators} \times (\text{overall rate} - 20^{\text{th}} \text{ centile rate})$$

When the desirable level is **high**

$$\text{Centile gains} = \text{Sum of denominators} \times (80^{\text{th}} \text{ centile rate} - \text{overall rate})$$

The mean rates for metropolitan/rural, public/private and for each Australian state and New Zealand are calculated from the shrunken rates. A weighted mean is used so that larger HCOs contribute more to the mean and the weight is the number of admissions (denominator). These are stratum specific rates, and if a stratum explains 10% or more of the variation in rates and is statistically significant, it is reported as a possible explanatory variable for the variation in rates. Assuming that, in most cases, such differences are not desirable, we can calculate the gains that would be made if the mean were shifted to the stratum with the lowest or a lower mean. These gains are referred to as stratum gains. The calculation is only made when the requirements as outlined above are satisfied and the lowest stratum mean chosen is one that is statistically significantly different from the overall rate.

The **stratum gains** are calculated as:

$$\text{Stratum gains} = \text{Sum of denominators} \times (\text{overall rate} - \text{lowest stratum overall rate})$$

8 Determining to Improve the Quality of Care in Australian Health Care Organisations: Results from the ACHS Clinical Indicator Data 1998 and 1999

9 The Australian Council of Health Care Standards (ACHS) Volume 4: Measurement of Health Care in Australian Hospitals, 1997

Finally, the observed numerator is compared to the expected numerator, based on the shrunken estimates for each HCO. The expected numerator is the number of events that would have occurred if the HCO has the same rate as the overall rate. The observed minus expected provides a measure of how different each HCO is from the overall mean. A value of zero implies that the HCO has the same mean as the mean of all the HCOs. If the observed minus the expected is more than three standard deviations from zero, then there is evidence of a systematic difference between this HCO and the other HCOs. If this difference is clinically important, a quality improvement team should determine the possible causes. If the causes can be removed, we can quantify the gains thereby obtained as the sum of the observed minus expected above the three standard deviations (assuming that a low rate represents better quality). The outlier observations are summed across all outlier HCOs.

The **outlier gains** are calculated as

Outlier gains = Sum of (observed – expected) for outlier HCOs

Effect of shrinkage

The distribution of results for indicator CI 2.1, AMI – thrombolysis within one hour are shown in the Figure 2.1a below. The crude rates for the 184 reports range from 0% to 100%, and the shrunken rates range from 39% to 96%. This indicator reveals the problem associated with reporting the actual HCO rates they are based on small numbers. The HCOs with rates of 0% and 100% had denominators that were less than or equal to 7 and 41 respectively. The shrinkage estimators adjust the HCO's observed rate using the HCO's numerator and denominator together with the summary results from the other HCOs, (the mean and standard deviation), and provide a more precise estimate of the individual HCO's true rates.

Figure 2.1a. Distribution of rates for CI 2.1 AMI – thrombolysis within one hour

