5 Public hospitals

Public hospitals are important providers of government funded health care services in Australia. This chapter reports on the performance of States' and Territories' public hospitals, with a focus on acute care services. The chapter also reports on a significant component of the services provided by public hospitals — maternity services.

Public hospital systems, including provision by public hospitals of maternity services, are described in section 5.1. A framework of performance indicators and the key performance indicator results for public hospitals are outlined in section 5.2. The performance indicator framework and key results for maternity services provided by public hospitals are discussed in section 5.3. Future directions in reporting are discussed in section 5.4. Terms and definitions are summarised in section 5.5.

This year, improvements have been made in the reporting of public hospital efficiency to facilitate comparisons across hospitals providing similar services. Descriptive data on non-government sources of funding for public hospitals are also presented to aid interpretation of the efficiency data. This is consistent with the focus of the Review on services provided by government. In addition, national averages compiled by the Commonwealth National Hospital Cost Data Collection are provided for the costs of emergency department visits and occasions of service to outpatients. Reporting on hospital services to non-admitted patients is hampered by the lack of a nationally agreed classification system for these data. Lastly, the maternity services indicator framework has been expanded to include four new performance indicators which are reported for the first time this year.

In line with the Review's focus on improving reporting for Indigenous Australians, a number of new Indigenous data are reported this year: hospitalisation ratios for circulatory diseases, injury and poisoning, respiratory diseases, diabetes, tympanoplasty for otitis media, and mental disorders. These are similar to data included in previous reports, but rely on new definitions endorsed by the Australian Health Ministers' Advisory Council (AHMAC). These data do not reflect the performance of public hospitals, but have been included in the chapter to expand information on the utilisation of public hospitals by Indigenous people.

Supporting tables

Supporting tables for chapter 5 are provided on the CD-ROM enclosed with the Report. The files are provided in Microsoft Excel 97 format as \Publications\Reports\2002\Attach5A.xls and in Adobe PDF format as \Publications\Reports\2002\Attach5A.pdf.

Supporting tables are identified in references throughout this chapter by an 'A' suffix (for example, table 5A.3 is table 3 in the electronic files). They may be subject to revision. The most up-to-date versions of these files can be found on the Review's web page (www.pc.gov.au/gsp). Users without Internet access can contact the Secretariat to obtain up-to-date versions of these tables (see details on the inside front cover of the Report).

5.1 Profile of public hospital systems

Definition

A key objective of government is to provide public hospital services to ensure the population has access to cost effective health services, based on clinical need and within clinically appropriate times, regardless of geographic location. Public hospitals provide a range of services, including:

- acute care services to admitted patients;
- sub-acute and non-acute services to admitted patients (for example, rehabilitation or palliative care, or long stay maintenance care);
- emergency, outpatient and other services to non-admitted patients;[1]
- mental health services, including services provided to admitted patients by designated psychiatric/psychogeriatric units;
- public health services; and
- teaching and research activities.

This chapter focuses on acute care services provided to admitted patients and emergency services provided to non-admitted patients, and subsequently, admitted patients in public hospitals. These services comprise the bulk of public hospital activity, and in the case of acute care services to admitted patients, have the most

[1] Other services to non-admitted patients include community health services such as baby clinics and immunisation units, district nursing services and other outreach services. Definitions are provided in AIHW (2001a).

reliable data available. Some data in the chapter include sub-acute and non-acute care services where they cannot yet be separately identified from acute care. In some instances, stand-alone psychiatric hospitals are also included, although their role is diminishing in accordance with the National Mental Health Strategy. Under the strategy, the provision of psychiatric treatment is shifting away from specialised psychiatric hospitals to mainstream public hospitals and the community sector. The performance of psychiatric hospitals and psychiatric units of public hospitals is examined more closely in chapter 7. Some common health terms relating to hospitals are defined in box 5.1.

Box 5.1 **Some common health terms**

Patients

admitted patient: a patient who has formally undergone an admission process into a public hospital to begin an episode of care. Admitted patients may receive acute, sub-acute or non-acute care services.

non-admitted patient: a patient who has not undergone a formal admission process, but who may receive care through an emergency department, outpatient or other hospital service.

Types of care

Classification of care depends on the principal clinical intent of the care received.

acute care: clinical services provided to patients, including managing labour, curing illness or treating injury, performing surgery, relieving symptoms and/or reducing the severity of illness or injury, and performing diagnostic and therapeutic procedures. Most episodes involve a relatively short hospital stay.

ambulatory services: services provided by hospitals to non-admitted patients.

sub-and non-acute care: clinical services provided to patients suffering from chronic illnesses or recovering from such illnesses. They include rehabilitation, planned geriatric care, palliative care, geriatric care evaluation and management, and services for nursing home-type patients. Clinical services delivered by designated psychogeriatric units, designated rehabilitation units and mothercraft services are considered to be non-acute.

Hospital outputs

separation: the discharge, transfer, death or change of episode of care of an admitted patient. For measuring a hospital's activity, separations are used in preference to admissions because diagnoses and procedures can be more accurately recorded at the end of a patient's stay and patients may undergo more than one separation from the time of admission. Admitted patients who receive same day procedures (for example, renal dialysis) are recorded in separation statistics.

(Continued on next page)

Box 5.1 **(Continued)**

casemix-adjusted separations: the number of separations is often adjusted to account for differences across hospitals in the complexity of their episodes of care. Casemix-adjustment is an important step to achieving comparable measures of efficiency across hospitals and jurisdictions.

non-admitted occasions of service: clinical services provided by hospitals to non-admitted patients. Services may include emergency department visits, outpatient services (such as pathology, radiology and imaging, allied health services, including speech therapy and family planning) and other services to non-admitted patients. Hospital non-admitted occasions of service are not yet recorded consistently across States and Territories and relative differences in the complexity of services provided are not yet documented.

Other common health terms

comorbidity: the simultaneous occurrence of two or more diseases or health problems that affect the care of the patient.

AR-DRG v4.1 (Australian Revised Diagnosis Related Group, version 4.1): a patient classification system that hospitals use to match their patient services (hospital procedures and diagnoses) with their resource needs. AR-DRG v4.1 is based on the ICD-10-AM classification and replaces the earlier AN-DRG v3.0/3.1.

ICD-10-AM: a classification of diseases and injuries, the Australian Modification (AM) of the International Standard Classification of Diseases and Related Health Problems, Revision 10 (ICD–10). ICD-10-AM replaces the earlier ICD-9-CM (Australian Version of the International Classification of Diseases, Revision 9, Clinical Modification).

Sources: AIHW (2001a); DHAC (1998); National Centre for Classification in Health (1998).

Funding

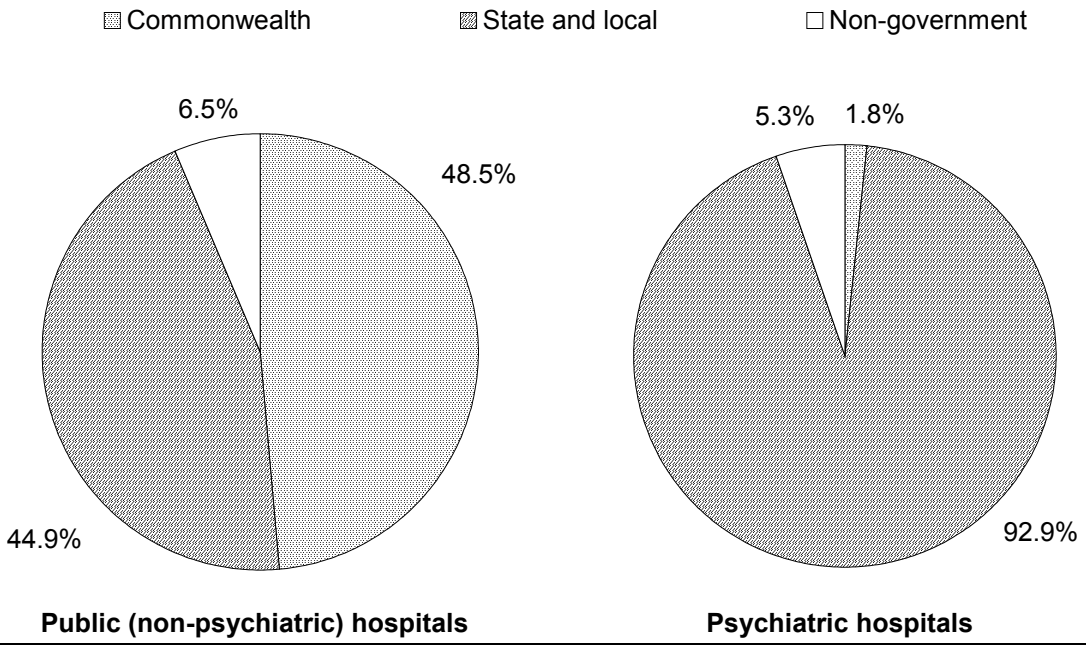
Total recurrent expenditure on public hospitals (excluding depreciation) was $14.4 billion in 1999-2000 (1999-2000 dollars) (table 5A.1).[2] In real terms, expenditure increased 2.6 per cent in 1999-2000 (in 1998-99 dollars) (AIHW 2001b).

Commonwealth, State and Territory governments, health insurance funds, individuals, workers' compensation and compulsory motor vehicle third party insurance cover, finance the expenditure on public hospitals. The most recent comparative data available on hospital expenditure by source of funds are for

[2] This figure includes spending on patient transport.

1998-1999.[3] In that year, around $13.7 billion was spent on public (non-psychiatric) hospitals and $397 million was spent on public psychiatric hospitals (AIHW 2001c). Governments contributed about 93.5 per cent of funding for public (non-psychiatric) hospitals and 94.7 per cent of funding for public psychiatric hospitals (figure 5.1).

Figure 5.1 **Recurrent expenditure on public hospitals, by source of funds, 1998-1999 (per cent)**



Source: AIHW (2001c); table 5A.54.

Public hospitals accounted for 69.3 per cent of recurrent expenditure on health services by State and Territory governments in 1998-99. In contrast, public hospitals accounted for only 32.5 per cent of Commonwealth Government recurrent spending on health services (table 5A.54).[4]

For selected public hospitals, expenditure on admitted patients (based on the inpatient fraction) comprised 70–80 per cent of total recurrent expenditure in 1999-2000 (table 5A.27). Acute non-psychiatric admitted patients accounted for

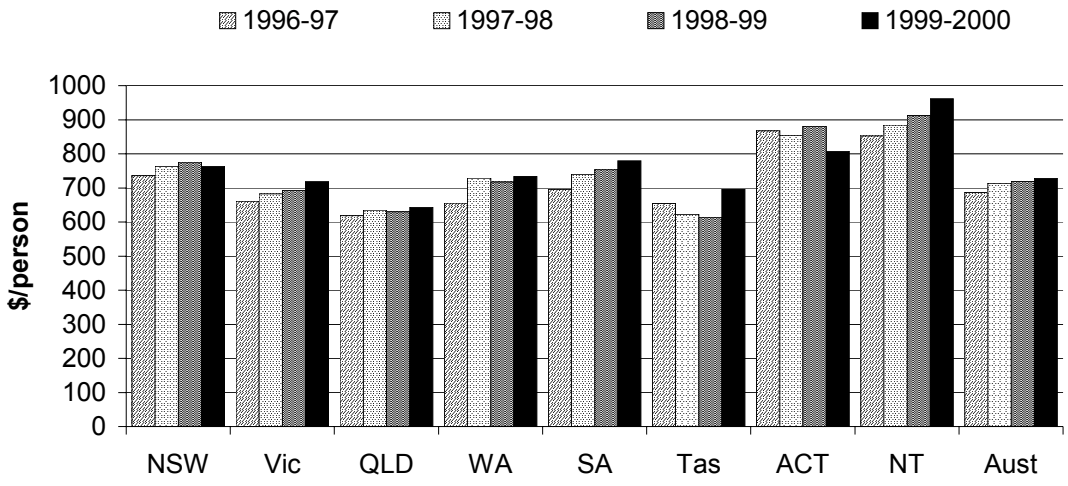
[3] The 1998-99 expenditure data (figure 5.1) are from the AIHW's *Health Expenditure Bulletin* and are not directly comparable with the 1999-2000 expenditure data which are drawn from the AIHW's *Australian Hospital Statistics*. The *Health Expenditure Bulletin* data have a broader scope. The *Australian Hospital Statistics* data exclude expenditure for population health, primary and community based services administered by NSW hospitals and trust fund expenditure (AIHW 2001).

[4] Excludes expenditure on nursing homes and ambulance services as these are discussed elsewhere in the Report.

66.8 per cent of hospital expenditure in NSW and 61.6 per cent in Victoria (table 5A.29).

In 1999-2000, per capita government recurrent expenditure on public hospitals was $729 for Australia, ranging from $962 in the NT to $643 in Queensland (1998-99 dollars). Real expenditure per head across Australia increased over time, from $686 to $729 between 1996-97 and 1999-2000 (figure 5.2). Not all jurisdictions followed this trend.

Figure 5.2 **Recurrent expenditure per person, public hospitals (1998-99 dollars)[a, b]**

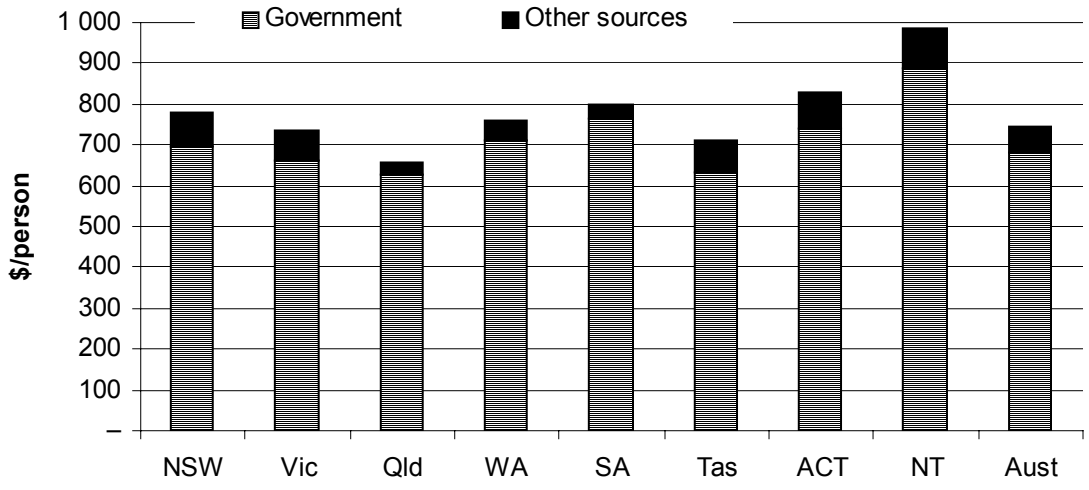


[a] Data include psychiatric hospitals. [b] Depreciation and interest payments excluded.

Source: AIHW (2001b, 2001c); table 5A.2.

In 1999-2000, public hospitals received $1.2 billion revenue from non-government sources, which accounted for 8.5 per cent of all recurrent expenditure. Total revenue in each State and Territory comprised patient revenues (including income from private and compensable patients), recoveries (including fees from private practitioners treating private patients in public hospitals, staff meals and accommodation) and other revenue (investment income, charities and bequests). It should be noted that some Commonwealth health insurance subsidy payments are indirectly included in total income via health insurance payments received as part of patient revenue. The proportion of hospital expenditure from non-government sources varies across jurisdictions (figure 5.3).

Figure 5.3 **Source of funds per person, public hospitals, 1999-2000 (current prices)[a]**



[a] Data include psychiatric hospitals.

Source: AIHW (2001b); tables 5A.30 and 5A.1.

Size and scope of sector

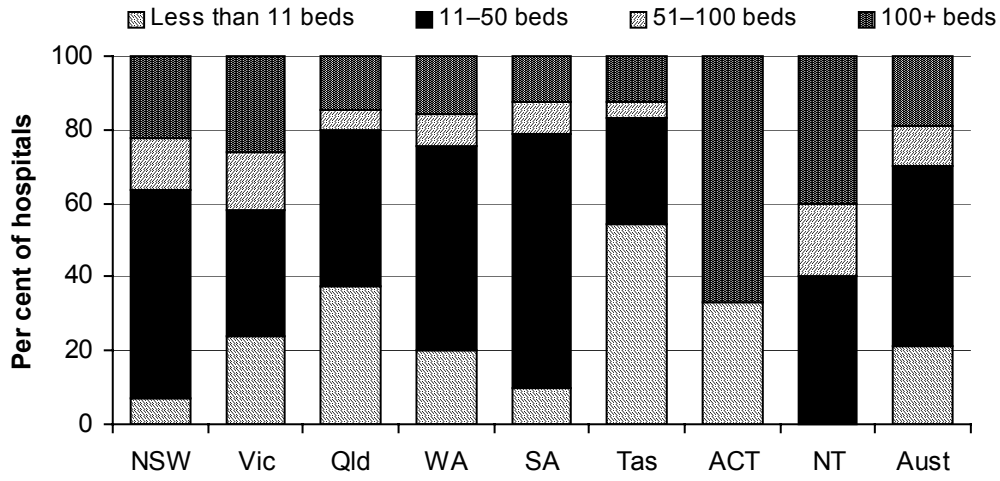
Hospitals

In 1999-2000, Australia had 748 public hospitals (including 24 psychiatric hospitals) with 52 947 beds (AIHW 2001b). There were 679 fewer beds in public (non-psychiatric) hospitals in 1999-2000 than in 1998-99. Although 69.9 per cent of hospitals had fewer than 50 beds, these smaller hospitals represented only 18.5 per cent of total available beds (figure 5.4).

Beds

On average, there were 2.9 beds per 1000 people in 1999-2000 (figure 5.5). The number of beds per 1000 people was highest in SA (3.4) and lowest in the ACT (2.2). More beds were available per 1000 people in remote areas, however, this does not provide an indication of regional access to particular types of service or the distance required to travel to access these services. These data should be viewed in the context of the age and sex structure of the population in each jurisdiction. This information is included in appendix A.

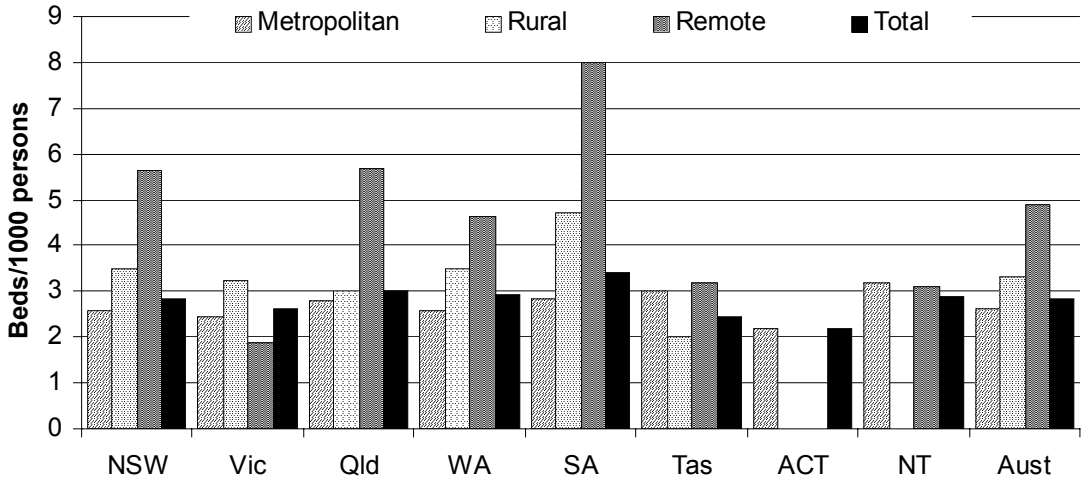
Figure 5.4 **Public hospitals by size, 1999-2000[a, b, c]**



a The number of hospitals reported can be affected by administrative and/or reporting arrangements, and is not necessarily a measure of the number of physical hospital buildings or campuses. **b** Size is based on the number of available beds. **c** The count of hospitals in Victoria is a count of the campuses that separately report data to the Victorian Admitted Episodes Database.

Source: AIHW (2001b); table 5A.3.

Figure 5.5 **Number of available beds by region, public hospitals, 1999-2000[a]**



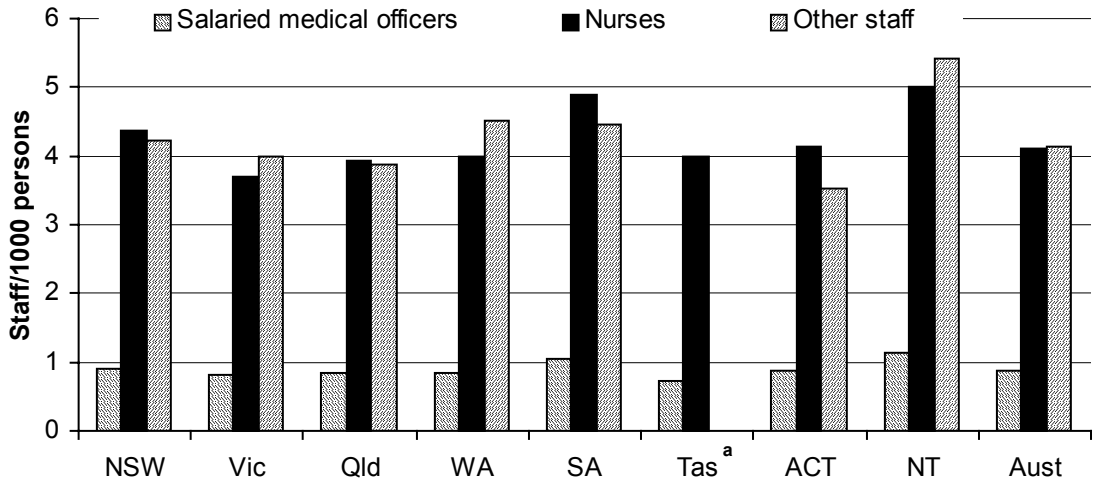
a An 'available bed' is immediately available to be used by an admitted patient. A bed is immediately available if located in a suitable place for care, with nursing and auxiliary staff available within a reasonable period. Surgical tables, recovery trolleys, delivery beds, cots for normal neonates, emergency stretchers/beds not normally authorised or funded, and beds designated for same day non-admitted patient care are excluded (AIHW 2001a).

Source: AIHW (2001b); table 5A.4.

Staff

There were 175 291 full time equivalent (FTE) staff employed in Australian public hospitals in 1999-2000 (based on the average number of staff available for the year). This represents a reduction of 244 since 1998-99. Nurses comprised 45.1 per cent and salaried medical officers represented 9.5 per cent of FTE staff. Other staff (diagnostic and allied health professionals, other personal care staff, administrative and clerical staff, and domestic and other staff) made up the remaining 45.4 per cent (AIHW 2001b). The NT had the most FTE staff per 1000 people (11.6) while Victoria and the ACT had the least (8.5) (figure 5.6). It is important to note that the collection of data by staffing category is not consistent across jurisdictions — for some jurisdictions, best estimates only are reported. In some jurisdictions there has been an increase in the outsourcing of services with a large labour related component (for example, food services and domestic services). Increased outsourcing may explain some of the apparent decline in full time equivalent staff in some staffing categories and also some of the differences between the jurisdictions (AIHW 2000a).

Figure 5.6 **Average full time equivalent staff, public hospitals, 1999-2000**



a Data for the 'other' staff category for Tasmania were not available.

Source: AIHW (2001b); table 5A.5.

Admitted patient care

There were around 3.9 million acute, sub-acute and non-acute separations in public hospitals in 1999-2000 (table 5A.6). Of these, acute separations accounted for 95.7 per cent, newborns with some qualified days 1.1 per cent, and rehabilitation care 1.8 per cent (see table 5A.8). (Palliative care, non-acute care and other care made up the residual.) Public psychiatric hospitals accounted for around 0.5 per cent of total separations in public hospitals. Of the total number of separations in public (non-psychiatric) hospitals, 45.8 per cent were for same day patients (table 5A.6).

Table 5.1 shows the 10 AR-DRGs with the highest number of acute separations in public hospitals (excluding same day separations) for 1999-2000. These 10 AR-DRGs accounted for 16.1 per cent of all acute separations nationally. In the NT, which reported the highest jurisdictional percentage, these 10 AR-DRGs accounted for around 19.3 per cent. If same day separations were included, renal dialysis and chemotherapy would form a large proportion (15.6 per cent) of the total national number of separations. In 1999-2000, 1.7 million same day separations occurred in Australia (AIHW 2001b). Renal dialysis accounted for 26.9 per cent of these and chemotherapy 6.7 per cent.

Table 5.1 **Ten AR-DRGs with the highest number of non-same day acute separations, public hospitals, 1999-2000 (per cent)[a, b, c]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*	*Aust*
Vaginal delivery W/O CD	5.5	5.5	5.7	4.6	3.8	5.1	6.1	5.7	5.3
Chest pain	1.5	1.3	1.7	1.0	1.4	0.9	1.1	1.4	1.4
Oesophagitis, gastroenteritis and miscellaneous digestive system disorders Age>9 W/O Cat/Sev CC	1.5	1.2	1.5	1.5	1.5	1.2	0.7	0.8	1.4
Bronchitis and asthma aged<50 W/O CC	1.4	1.2	1.4	1.5	1.6	0.8	1.0	1.0	1.3
Cellulitis aged>59 W/O Cat/Sev CC	1.2	1.0	1.5	1.5	0.9	1.0	0.8	3.8	1.2
Caesarean delivery W/O CD	1.1	1.2	1.3	1.0	1.0	1.0	1.2	1.1	1.1
Vaginal delivery W Sev CD	1.2	1.1	1.0	1.0	0.8	1.0	1.3	1.3	1.1
Heart failure and shock W/O Cat CC	1.2	1.0	1.0	1.1	1.1	1.0	0.8	0.8	1.1
Unstable angina W/O Cat/Sev CC	1.2	1.1	1.3	0.6	0.9	1.2	0.8	1.0	1.1
Respiratory infection/inflammation W/O CC	1.1	0.9	1.0	1.2	0.7	0.9	1.2	2.5	1.1
Per cent of acute separations accounted for by 10 AR-DRGs with most acute separations	16.8	15.6	17.3	15.0	13.9	14.1	15.0	19.3	16.1
Total acute separations (non same day) ('000)	**706**	**478**	**368**	**187**	**183**	**40**	**29**	**28**	**2019**

[a] Cat=Catastrophic, CC=complications and comorbidities, CD=complicating diagnosis, Sev=Severe, W/O=without, W=with. [b] Separations for which the type of episode of care was reported as acute or was not reported and the length of stay was less than 366 days. [c] Totals may not add as a result of rounding.

Source: AIHW (2001b); table 5A.9.

Table 5.2 lists the 10 AR-DRGs that accounted for the largest number of patient days for overnight stays in 1999-2000. These account for 17.4 per cent of all patient days recorded. Vaginal delivery without complicating diagnosis accounted for the largest number of patient days, followed by schizophrenic disorders and major affective disorders.

Table 5.2 **Ten AR-DRGs with the most patient days, excluding same day separations, public hospitals, 1999-2000 (per cent)[a, b]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*	*Aust*
Vaginal delivery W/O CD	3.1	3.1	3.2	2.7	2.2	2.7	2.9	3.8	3.0
Schizophrenic disorders W/O legal status	3.4	1.5	1.2	1.2	1.5	3.1	2.9	1.6	2.2
Major affective disorder Aged<70 W/O Cat/Sev CC	1.8	1.8	2.3	3.1	3.0	2.5	5.1	1.1	2.2
Tracheostomy, any age, any condition	1.9	2.2	2.0	1.7	1.9	2.0	2.1	2.0	2.0
Schizophrenia disorders W legal status	0.1	2.8	3.1	3.1	1.8	0.6	1.9	0.0	1.7
Chronic obstruction airway Disorder W Cat/Sev CC	1.6	1.4	1.6	1.2	1.3	1.7	0.5	1.3	1.4
Dementia and chronic disturb Crbrl Fn	1.0	1.5	0.9	2.8	1.8	1.1	0.4	0.2	1.3
Heart failure and shock W/O Cat CC	1.5	1.2	1.2	1.2	1.3	1.3	0.8	0.9	1.3
Stroke with Sev CD/proc	1.2	1.3	1.0	1.6	1.3	1.2	1.1	0.5	1.2
Respiratory infection/inflammation W Smcc	1.2	1.1	0.9	0.8	0.9	1.0	0.7	2.8	1.1
Total patient days accounted for by top ten AR-DRGs (%)	16.6	17.9	17.4	19.6	17.1	17.2	18.6	14.2	17.4
Total days (excluding same day separations) ('000)	**3940**	**2622**	**1805**	**1047**	**985**	**250**	**177**	**153**	**10 981**

a Cat=Catastrophic, CC=complications and comorbidities, CD=complicating diagnosis, Sev=Severe, W/O=without, W=with. **b** Separations for which the type of episode of care was reported as acute or was not reported and the length of stay was less than 366 days.

Source: AIHW (unpublished); table 5A.31.

Non-admitted patient services

There is no agreed classification system for services to non-admitted patients, so activity is difficult to measure and cannot be compared across jurisdictions. In particular, SA hospitals reported non-admitted patient services using a different set of categories than those used by other States and Territories. Differing admission practices will lead to variation among jurisdictions in the services reported. In addition, States and Territories may also differ in the extent to which these types of services are outsourced or provided in non-hospital settings (such as community health centres) (AIHW 2000a). Over the past few years, NSW, Queensland, WA, SA and Tasmania have all made changes in the reporting arrangements used for non-admitted occasions of service (AIHW 2000a). The complexity of the occasion of service is also not taken into account (for example, simple urine glucose test treated equally with complete biochemical analysis of all body fluids) (AIHW

2001a). Table 5.3 presents data from the AIHW Australian Hospital Statistics publication and can be considered a 'best available estimate' of activity in this area.

A total of 33.7 million occasions of service were provided to individual non-admitted patients in public hospitals in 1999-2000 (table 5A.10). In addition to services provided to individuals, 473 449 group sessions were also delivered by public hospitals during this time (where a group session is defined as a service provided to two or more patients, but excludes services provided to two or more family members). In public hospitals in 1999-2000, accident and emergency services comprised 15.5 per cent of all occasions of service to non-admitted patients. Pathology services and other medical, surgical and obstetric services were the most common types of outpatient care.

Table 5.3 **Seven most common types of non-admitted patient care, public hospitals, 1999-2000 (per cent)[a, b]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*	*Aust*
Accident and emergency	13.4	16.0	15.5	17.3	19.3	13.5	23.3	28.6	15.5
Outpatient services									
Other medical/ surgical/ obstetric [c]	50.9	19.5	28.9	14.6	40.3	29.1	45.2	23.0	34.2
Pathology	16.2	9.6	13.4	9.1	..	24.8	8.4	19.7	12.4
Radiology and organ imaging	6.7	6.9	11.0	9.1	9.5	11.6	14.6	20.6	8.4
Pharmacy	3.5	4.7	10.3	4.9	..	6.2	0.1	4.3	5.2
Allied health [d]	..	14.3	8.4	18.4	11.1	12.6	2.4	3.9	7.8
Other non-admitted									
Community health [e]	7.4	7.2	2.5	17.0	..	..	..	..	6.5
Seven most common as a per cent of total (%)	98	78	90	90	80	98	94	100	90
Total occasions of service ('000)	**11 993**	**6994**	**7380**	**3540**	**2397**	**678**	**365**	**337**	**33 684**

[a] The count of pathology occasions of service in WA is considerably lower than last year due to a changed method of counting at a major hospital. [b] Non-admitted patient occasions of service data are not reliable, and in addition, significant differences occur between States and Territories due to different counting methods. The overall comparability of these data is poor. [c] Other medical/surgical/obstetric refers to occasions of service to non-admitted patients not covered by other National Health Data Dictionary categories for outpatient services (dialysis, pathology, radiology and organ imaging, endoscopy and related procedures, mental health, drug and alcohol, dental pharmacy and allied health). [d] Allied health includes services to non-admitted patients where services are provided at clinics or units providing treatment or counselling such as physiotherapy, speech therapy etc [e] Community health refers to services provided by designated community health units within the establishment such as baby clinics, immunisation units, aged care assessment teams and so on. **..** Not applicable.

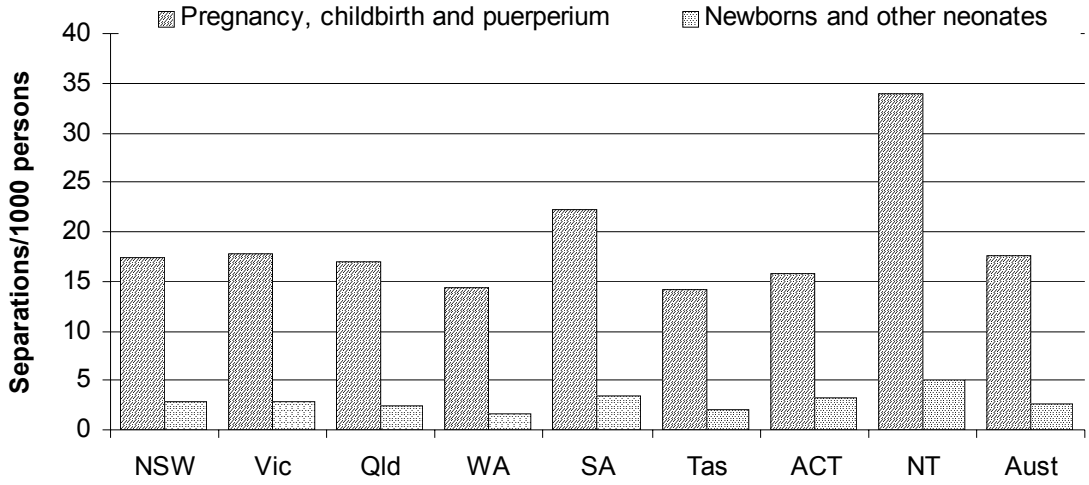
Source: AIHW (2001b); table 5A.10.

Maternity services

Maternity services (specifically, AR-DRGs relating to pregnancy, childbirth and the puerperium) accounted for the third highest number of separations in public hospitals in Australia in 1999-2000 after diseases and disorders of the kidney and urinary tract, and diseases and disorders of the digestive system (AIHW 2001b). Maternity services separations accounted for 9.0 per cent of total acute separations in public hospitals (table 5A.37) and contributed around 7.9 per cent to the total cost of all acute separations in public hospitals in 1999-2000 (table 5A.37).

Figure 5.7 shows that the NT had the highest number of acute separations per 1000 persons for pregnancy, childbirth and the puerperium (33.9) in 1999-2000 and Tasmania had the lowest (14.1).

Figure 5.7 **Separation rates for maternity services in public hospitals, 1999-2000[a, b, c]**



a The puerperium refers to the period of confinement immediately after labour (around six weeks). **b** Newborns and other neonates include babies aged less than 28 days or babies aged less than one year with admission weight less than 2500 grams. **c** Separations for which the type of episode of care was reported as acute, or newborn with qualified patient days.

Source: AIHW (2001b); table 5A.38.

Vaginal deliveries without complicating diagnosis accounted for a substantial proportion of the separations for pregnancy, childbirth and the puerperium (31.8 per cent) in 1999-2000. Excluding same day separations, vaginal deliveries without complicating diagnosis accounted for the largest number of acute separations and patient days in public hospitals (table 5.1 and table 5.2) and the second highest cost in 1999-2000 ($254.7 million) (table 5A.39) (AIHW 2001b).

The complexity of cases across jurisdictions for maternity services is in part related to the mother's age at the time of giving birth. On average, women in the ACT reported the oldest mean birthing age (29.0) and NT the youngest (27.1) (table 5.4).

Table 5.4 **Mean age of mothers at time of first, second and third births in public hospitals, 1998 (years)**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*
Mean age of mothers at the following:								
First birth	26.7	26.7	24.9	25.6	25.9	na	27.0	25.0
Second birth	29.2	29.1	27.4	27.9	28.5	na	29.0	27.5
Third birth	30.7	30.8	29.2	29.8	30.1	na	31.0	28.7
All confinements	28.9	28.9	27.2	27.7	28.2	na	29.0	27.1

na Not available.

Source: State and Territory governments (unpublished).

5.2 Public hospitals

Framework of performance indicators

The performance indicator framework is based on the shared government objective for public hospitals (box 5.2).

Box 5.2 Objective for public hospitals

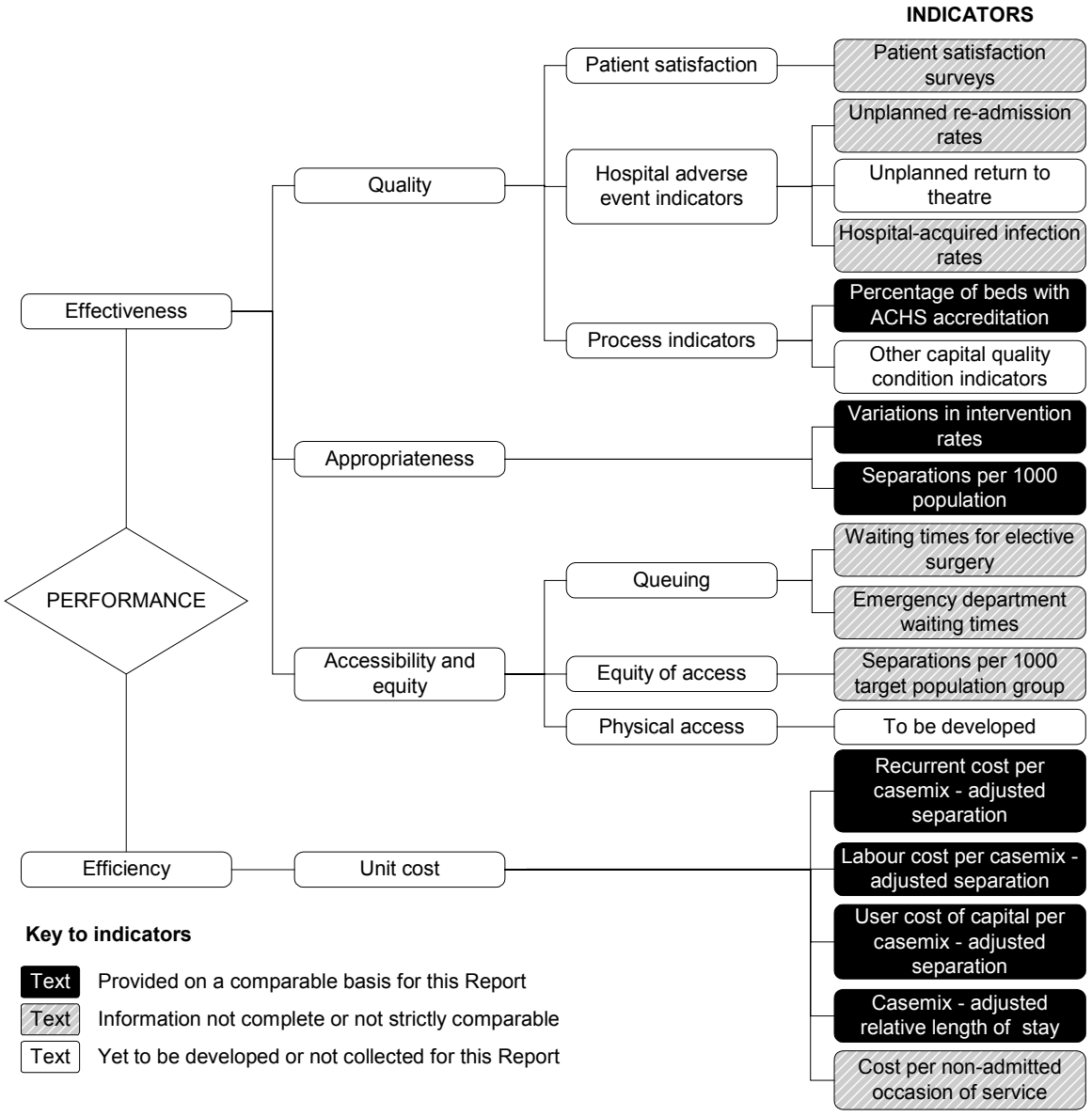
The common government objective for public hospitals is to provide cost effective acute and specialist services that are:

- safe and of high quality;
- responsive to individual needs;
- accessible and equitable; and
- efficiently delivered.

The framework captures general aspects of the performance of public hospitals in providing health care services (figure 5.8). The effectiveness of services provided is reflected in terms of quality (as indicated by patient satisfaction, hospital infections and re-admissions and accreditation), appropriateness (as indicated by the total separation rate and the rate for certain procedures) and access and equity (as indicated by emergency department and elective surgery waiting times and by

information on access by Indigenous people to services provided by public hospitals). Efficiency indicators include the cost per casemix-adjusted separation, the cost per non-admitted occasion of service and the casemix-adjusted relative length of stay. The framework is subject to regular review. Ongoing work to improve reporting on public hospitals is discussed in section 5.4.

Figure 5.8 **Performance indicators for public hospitals**



Key performance indicator results

Different delivery contexts, locations and types of client may affect the effectiveness and efficiency of health services. Appendix A of the Report contains short statistical profiles on each State and Territory, which may assist in interpreting the performance indicators presented in this chapter.

As discussed in section 5.1, public hospitals provide a range of services to admitted patients, including some non-acute services, such as rehabilitation and palliative care. The extent to which these non-acute treatments can be identified and excluded from the analysis differs across jurisdictions. Similarly, psychiatric treatments are being transferred to public hospitals at rates that differ across jurisdictions.

Quality

All Australian governments and users of health care services are interested in assessing and improving quality of care. There is no single definition of quality in health care, but the Institute of Medicine in the United States defines quality as 'the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge' (Lohr and Shroeder 1990). No single indicator can measure quality across all providers; an alternative strategy is to identify and report on *aspects* of quality of care.

There has been considerable debate and research to develop suitable indicators of the quality of health care both in Australia and overseas. The Steering Committee reports data on the accreditation of public hospital beds, patient satisfaction and unplanned re-admission rates and hospital-acquired infection rates.

The value of clinical indicators, such as re-admissions and infection rates, was evaluated in a research project undertaken in 1998 (box 5.3). The Steering Committee acknowledges the limitations of the current indicators, particularly given non-representative samples and other caveats for interpretation of the indicators outlined below, and agrees with the project's recommendations for improving these indicators. Until improved data are available, the Steering Committee has decided to continue to report collected data on these indicators at the jurisdiction level, on the understanding that doing so is better than reporting nothing at all. As Boyce *et al.* (1997, p. 3) state:

> Most existing quality and outcome indicators are imperfect. …We see the current generation of indicators as stepping stones to future better indicators. It will only be by their application in the health sector that indicators will improve.

The quality indicators presented here are also reported elsewhere, including in the annual reports of the WA and Tasmanian health departments (Health Department of WA 1998; Tasmanian Department of Health and Human Services 1998). The ACT Department of Health and Community Care has included a range of clinical indicators in its purchase agreements with its major public hospitals.

Accreditation

Public hospitals may seek accreditation through the Australian Council on Healthcare Standards (ACHS) Evaluation and Quality Improvement Program, ISO 9000 Quality Management System or other equivalent programs. Jurisdictions apply specific criteria to determine which accreditation programs are suitable. The ACHS requires hospitals to demonstrate continual adherence to quality improvement standards to gain and retain accreditation. Accreditation is not limited to the ACHS process, but comparable data on proportions of hospital beds with ACHS accreditation are one of the few nationally available indicators of hospital quality.

Accreditation is an imperfect indicator of quality for several reasons. While it indicates that accredited parties have passed a series of quality tests, it is not possible to draw conclusions about the quality of care in those hospitals that do not have accreditation. Public hospital accreditation is voluntary in all jurisdictions except Victoria, where it is now mandatory for all public hospitals (excluding those which provide dental or mothercraft services). The costs of preparing a hospital for accreditation are significant, so a low level of accreditation may reflect cost constraints rather than indicate poor quality. Also, the cost of accreditation may not rise proportionally with hospital size. This would be consistent with larger hospitals being more active in seeking ACHS accreditation (because it is relatively less costly for them) than actually offering superior care. That said, accreditation provides some information about the proportion of hospital beds in institutions that have been subject to some independent evaluation.

Seventy-nine per cent of public hospital beds were in ACHS accredited hospitals at 30 June 2000. Across jurisdictions, the proportion ranged from 98.5 per cent in the ACT to 47.1 per cent in the NT (figure 5.9). In some jurisdictions, hospitals sought (and obtained) alternative forms of accreditation not reflected in figure 5.9.

Box 5.3 The Pilot Hospital-wide Clinical Indicators Project

The Commonwealth Department of Health and Family Services funded the Pilot Hospital-wide Clinical Indicators Project as part of the National Hospital Outcomes Program in 1998. The project investigated the link between the selected clinical indicators (used in this Report) and an overall assessment of all aspects of the quality of clinical care, as determined by a panel of medical experts. The indicators evaluated were:

- the rate of unplanned hospital re-admission within 28 days of separation;
- the rate of hospital-acquired bacteraemia;
- the rates of post-operative wound infection following clean and contaminated surgery; and
- the rate of unplanned return to an operating room.

The last indicator could not be extracted from available databases easily, so was not included in the project's more detailed analysis.

The project set a high standard for each indicator, requiring it to reflect hospital-wide medical care accurately. The final report concluded that a clinically weak and statistically insignificant relationship existed between the indicators and the overall assessment of quality of care, and therefore that the indicators were unsuited as national performance measures of hospital quality. Thus, the indicators were not validated as measures of hospital-wide care.

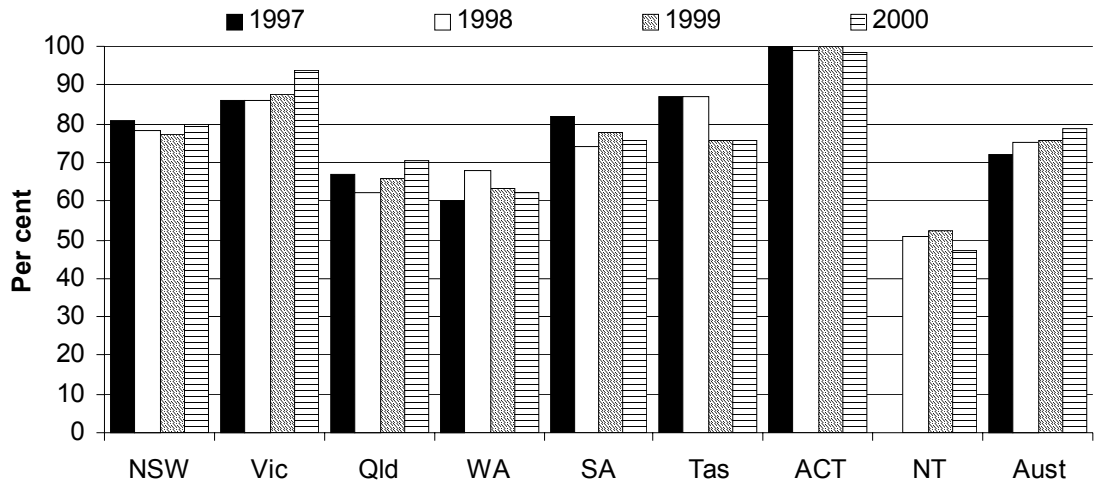
Questions remain about whether the indicators reflect the quality of more limited aspects of care — for example, do unplanned re-admissions reflect discharge planning procedures? Do wound infection rates reflect the standards of wound care during and immediately after surgery?

The project report recommended that 'there is a strong rationale for individual institutions to continue to monitor these indicators as part of a quality improvement program' (Ibrahim *et al.* 1998). It urged caution in using these indicators for benchmarking purposes, but suggested that the indicators may be useful for identifying outliers or comparing the performance of hospitals with similar patient mix, rather than making close comparisons. The final report concluded that '(a) low incidence of surgical wound infection is highly desirable … wound infection rates should continue to be monitored …. Institutions whose rates are very high compared with the average should seek an explanation for this' (Ibrahim *et al.* 1998, p. 43).

The project identified the lack of appropriate and widely recognised definitions and the absence of structured data collections as significant shortcomings of the indicators. The final report recommended that ideally, future indicators should be constructed from planned collections of clinical data and that clinical data collection within hospitals should be improved.

Source: Ibrahim *et al.* (1998).

Figure 5.9 **Proportion of ACHS accredited public hospital beds, public hospitals[a, b, c]**



a At 30 June. **b** The NT commenced accreditation in September 1997. **c** Includes public psychiatric hospitals.

Source: AIHW (2001b); table 5A.11.

Patient survey results

Patient surveys have been used to assess the performance of hospitals in their delivery of clinical and non-clinical services. In the absence of other comparable indicators of quality, they provide a useful means of assessing the outcomes of hospital care. There is no agreement among jurisdictions on the best method of undertaking patient surveys and reporting the results. The timing and scope of patient satisfaction surveys also differ, so it is not possible to compare results across jurisdictions. Table 5.5 reflects the years in which patient satisfaction data have been provided by jurisdictions to the Review.

Table 5.5 **Patient satisfaction data provided by jurisdictions to each edition of the *Report on Government Services***

Report edition	*NSW*	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*
1995	✓	✓	✓	✓	✗	✗	✓	✗
1999	✗	✓	✗	✓	✗	✓	✓	✓
2000	✓	✓	✓	✓	✗	✓	✓	✗
2001	✓	✗	✗	✓	✗	✓	✓	✗
2002	✗	✓	✗	✓	✓	✓	✓	✗

Source: SCRSCCP (1995, 1999, 2000 and 2001a).

Jurisdictions reported the following developments this year.

- The Victorian Government is conducting a State-wide Patient Satisfaction Monitor in all public hospitals over three years. Patients completed a total of 18 000 questionnaires in the first 12 months of surveying. This is an overall response rate of 46 per cent. The survey indicated 95 per cent of all patients were either very or fairly satisfied, with 72 per cent indicating that they were very satisfied with their hospital treatment (Victorian Department of Human Services 2001).
- Queensland Health has commenced a mail out patient satisfaction survey of the 60 largest hospitals around the State. It is anticipated that results of the survey will be available by late 2001 and an evaluation of the survey is planned for early 2002.
- Annual State-wide patient surveys are conducted in WA. The 2001 survey covered admitted and non-admitted patients in public hospitals and public patients in private hospitals in both metropolitan and rural areas. Overnight admitted patients, maternity patients, outpatients, emergency patients were asked to assess clinical outcomes. The results are outlined in table 5A.77.
- In 2001, SA undertook a telephone based survey of 2079 discharged patients from all major teaching hospitals and two country regions in SA. The overall response rate for the survey was 70.9 per cent, with 85.2 per cent of the respondents rating the health care provided by the hospital as excellent or good.
- Tasmania conducted a mail-out survey of 1300 hospital patients during 2000-01. The response rate for the mail-out was 52.6 per cent. Overall, 93 per cent of hospital patients were either very or mostly satisfied, with 61 per cent reporting that they were very satisfied with the care and treatment they received (table 5A.82).
- The ACT surveyed its inpatients, emergency and day surgery patients using mail-out surveys. A total of 1646 patients completed a survey representing a 54 per cent response rate for inpatients, a 39 per cent rate for emergency patients, and a 69 per cent rate for day surgery patients. Inpatients reported an overall satisfaction rate of 86 per cent, emergency patients an overall satisfaction rate of 76 per cent and day surgery patients an 86 per cent overall satisfaction rate (ACT Department of Health and Community Care unpublished, 2001).
- No NT-wide patient satisfaction data are collected. Hospitals conduct their own hospital-specific patient satisfaction surveys. Development of a Territory-wide survey is planned for 2003.

Unplanned re-admission rates

The unplanned re-admission rate is the total number of unplanned and unexpected re-admissions within 28 days of separation as a percentage of the total number of separations (excluding patient deaths) (table 5.6). (There is a more detailed definition of this indicator in table 5.18.)

The data for this indicator are sourced from the ACHS Comparative Report Service (Clinical Indicators). The data are collected for the purposes of internal clinical review by individual hospitals. State-wide conclusions cannot be drawn from the data as participation in the Comparative Report Service (Clinical Indicators) is voluntary and so the data are not necessarily drawn from representative samples. Sample sizes for each jurisdiction are contained in the attachment (table 5A.12). In 2000, 167 public and 182 private health care organisations Australia-wide contributed unplanned re-admissions data.

There are a number of caveats for the interpretation of this indicator. First, it is not clear to what extent differences between jurisdictions are due to casemix of hospitals or patient risk factors (ACHS 2000a). Second, there are some difficulties in identifying re-admissions that were unplanned (Ibrahim *et al.* 1998). A re-admission is considered 'unplanned' or 'unexpected' if there was no documentation to verify that the re-admission was 'planned' and if the re-admission occurred through the accident and emergency department of a hospital (Ibrahim *et al.* 1998). Third, this indicator identifies only those patients re-admitted to the same hospital, which may not always be the case. Box 5.3 outlines some limitations to this indicator.

Data for the NT, and in some cases the ACT and Tasmania, were not provided by the ACHS because of the small number of hospitals in those jurisdictions. South Australia requested that its data not be published because as mentioned above, the data are drawn from samples that do not necessarily reflect all hospitals in each jurisdiction. Among all organisations participating in the ACHS Service in 2000, the mean rate of unplanned re-admissions was 2.3 per cent (table 5A.12). While the rate was highest among organisations participating in Victoria (2.51) and lowest in organisations participating in WA (1.93), these estimates should be viewed in the context of the statistical (standard) errors (table 5.6).

Table 5.6 **Unplanned re-admissions, all hospitals, per 100 admissions[a]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*[b]	*NT*[b]	*Public*	*All*
1998										
Rate	2.27	3.06	2.55	1.41	na	0.98	2.85	na	3.23	2.50
Standard error	0.15	0.18	0.22	0.22	na	0.43	0.47	na	0.11	na
1999										
Rate	2.22	2.10	2.24	1.99	na	1.68	2.86	na	2.97	2.20
Standard error	0.12	0.14	0.22	0.32	na	0.41	0.39	na	0.09	na
2000										
Rate	2.27	2.51	1.79	1.93	na	2.41	na	na	na	2.30
Standard error	0.20	0.16	0.27	0.37	na	0.44	na	na	na	0.01

a Health organisations contribute data voluntarily to the ACHS and the samples are not therefore necessarily representative of all hospitals in each jurisdiction. SA requested its data be removed for this reason. **b** ACT and NT data are not available for some years because of the small number of hospitals. **na** Not available.

Source: ACHS (unpublished); table 5A.12.

Hospital-acquired infection rates

Three measures of hospital-acquired infection rates are reported here. Rates of post-operative wound infection are defined for both clean and contaminated surgery. They are derived by dividing the number of inpatients with evidence of wound infection on or after the fifth post-operative day following clean (or contaminated) surgery, by the number of inpatients undergoing clean (or contaminated) surgery with a post-operative stay of at least five days. The 'rate of hospital-acquired bacteraemia' is the number of inpatients who acquired bacteraemia during the period under study, as a percentage of the total number of separations with a hospital length of stay of 48 hours or more during the time period under study. (There is a more detailed definition of this indicator in table 5.18). This indicator does not reflect infections that do not become apparent until post-discharge.

The infections data, like the unplanned re-admissions data, are sourced from the ACHS Comparative Report Service (Clinical Indicators) and are collected for the purposes of internal clinical review by individual hospitals. State-wide conclusions cannot be drawn from the data as health care organisations contribute to the ACHS on a voluntary basis and so the data are not necessarily drawn from representative samples. Sample sizes for each jurisdiction are contained in the attachment (table 5A.13) and in 2000 ranged from 188 to 259 health care organisations across Australia. It should be noted that the data are not adjusted for differences across cases in the risk of infection or differences across hospitals in casemix. Box 5.3 outlines limitations associated with this indicator.

Data for the ACT, the NT and in some cases Tasmania, were not provided by the ACHS because of the small number of hospitals in those jurisdictions. South

Australia requested that its data not be published because the data are drawn from samples that do not necessarily reflect all hospitals in each jurisdiction. Estimated infection rates for the other jurisdictions are shown in table 5.7 and should be viewed in the context of the statistical (standard) errors.

Data are also disaggregated by region (metropolitan and rural) — although again may be affected by the potential for samples to be non-representative (table 5A.13). Among organisations participating in the ACHS Service, those in rural areas generally experienced higher levels of post-operative infection rates, but lower levels of bacteraemia infection.

Appropriateness

Two indicators are presented for the appropriateness of care provided by public hospitals: the number of separations per 1000 people (also known as the separation rate) and separation rates for certain procedures. Both indicators, however, are problematic. First, the measures do not reflect differences in casemix across jurisdictions. Second, there is no benchmark as to the appropriate share of same day separations. Third, the appropriate mix/level is unclear (for example, a relatively high level of separations may reflect better access *or* over-servicing). Fourth, variations in admission rates also reflect different practices in classifying patients as either admitted same day patients or outpatients. This is a particular issue for non-surgical same day admissions. States that apply lower thresholds for treating a patient as an admitted patient will tend to have higher separation rates. Comparisons are also complicated by different access to substitutable services (for example, private hospitals). Jurisdictional comparisons, therefore, are most useful for highlighting differences, noting that more detailed analysis may be required.

Total separation rates

There were approximately 3.9 million separations from public hospitals in 1999-2000 (table 5A.7). Nationally, this translated into 196.5 separations per 1000 people, ranging from 360.3 per 1000 in the NT to 154.3 per 1000 in Tasmania (figure 5.10).

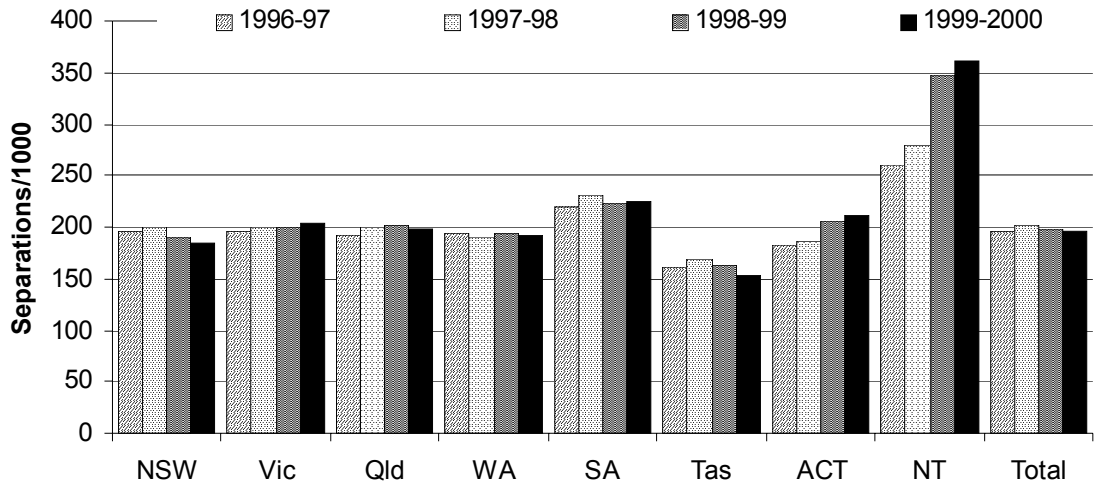
Table 5.7 **Hospital-acquired infection, per 100 separations[a]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*[b]	*ACT*[b]	*NT*[b, c]
Post-operative infection, following clean surgery								
1999								
Public hospitals								
Rate	1.99	1.88	3.02	2.38	na	na	na	na
Standard error	0.18	0.18	0.32	0.46	na	na	na	na
All hospitals								
Rate	1.19	0.71	1.67	1.14	na	1.00	na	na
Standard error	0.11	0.09	0.17	0.33	na	0.37	na	na
2000								
All hospitals								
Rate	0.92	0.69	1.47	1.01	na	na	na	na
Standard error	0.09	0.08	0.17	0.28	na	na	na	na
Post-operative infection, following contaminated surgery								
1999								
Public hospitals								
Rate	2.98	1.94	3.36	2.17	na	na	na	na
Standard error	0.23	0.19	0.37	0.50	na	na	na	na
All hospitals								
Rate	1.66	1.56	2.43	1.60	na	3.05	na	na
Standard error	0.13	0.13	0.21	0.44	na	0.67	na	na
2000								
All hospitals								
Rate	1.54	1.48	2.56	2.01	na	na	na	na
Standard error	0.16	0.14	0.22	0.52	na	na	na	na
Hospital-acquired bacteraemia								
1999								
Public hospitals								
Rate	0.49	0.48	0.30	0.25	na	na	na	na
Standard error	0.04	0.05	0.06	0.13	na	na	na	na
All hospitals								
Rate	0.41	0.29	0.28	0.22	na	0.31	0.39	na
Standard error	0.03	0.04	0.05	0.10	na	0.12	0.13	na
2000								
All hospitals								
Rate	0.35	0.16	0.27	0.25	na	0.26	na	na
Standard error	0.03	0.02	0.03	0.07	na	0.08	na	na

a Health organisations contribute data voluntarily to the ACHS and the samples are not therefore necessarily representative of all hospitals in each jurisdiction. SA requested its data be removed for this reason. **b** Not all data for Tasmania and the ACT are available and no data are available for the NT because of the small number of hospitals. **c** The NT government provided public hospital data for post-operative wound infection following clean surgery (0.84 per cent), contaminated surgery (4.87 per cent) and hospital-acquired bacteraemia (0.33 per cent). **na** Not available

Source: ACHS (unpublished); table 5A.13.

Figure 5.10 **Separation rates in public hospitals, 1999-2000[a]**



a 1998-99 and 1999-2000 figures directly age standardised to the Australian population at 30 June 1991. Pre-1998-99 data are not standardised, and so should not be compared with the more recent data.

Source: AIHW (2001b); table 5A.7.

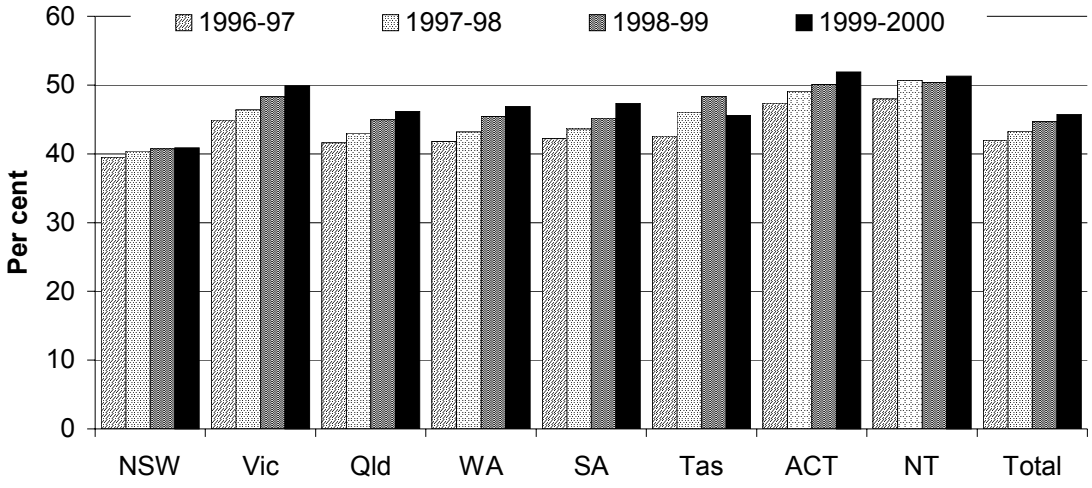
Nationally, 45.8 per cent of separations were same day separations in 1999-2000. The ACT reported the highest percentage rate of same day separations (51.9) and NSW reported the lowest (40.9) (figure 5.11). As indicated previously, variations between States in the thresholds applied for classifying patients as either same day admitted patients or outpatients will affect this indicator. New South Wales reports that over recent years there have been changes in this threshold. These issues apply mainly to non-surgical same day admissions and a better indicator of appropriateness may be the percentage of surgical separations performed on a same day basis.

Separation rates for certain procedures

Separation rates for certain procedures are used to indicate the appropriateness of hospital care, with procedures selected for their frequency and for being elective and discretionary (given the availability of alternative treatments) (table 5.8). Care needs to be taken when interpreting the differences in the separation rates of the selected procedures. Variations in rates may be attributable to variations in the prevalence of the conditions being treated or to differences in clinical practice among States and Territories. Higher/lower rates are not necessarily associated with inappropriate care. Higher rates may be acceptable for certain conditions and not for others. For example, higher rates of angioplasties and lens insertions may represent appropriate levels of care, whereas higher rates of hysterectomies or tonsillectomies

may represent an over-reliance on procedures, and no clear inference can be drawn on the basis of higher rates of arthroscopies or endoscopies.

Figure 5.11 **Proportion of separations that were same day, public hospitals**



Source: AIHW (2001b); table 5A.7.

The data reported includes all hospitals, so are reflective of the activities of both public and private health systems.[5] For the first time in this Report, all States and Territories are using the latest version of disease classification (the International Statistical Classification of Diseases and Related Health Problems, Revision 10, Australian Modification — ICD-10-AM) so that data can be compared across jurisdictions without any definitional caveats.

The most common procedures in 1999-2000 were endoscopies, lens insertions and arthroscopic procedures (table 5.8). Separation rates for all procedures varied across jurisdictions, in some cases considerably (for example, endoscopy and myringotomy). Table 5A.14 outlines which State or Territory separation rates are statistically significantly different to the collective separation rate for all other jurisdictions.

Some of the selected procedures, such as angioplasty and coronary artery bypass graft, are alternative treatment options for people diagnosed with similar conditions. Statistically significant and material differences in the separation rates for these procedures may highlight variations in treatment methods across jurisdictions.

[5] Data include public acute, public psychiatric, private acute, private psychiatric and private free standing day hospital facilities. Some private hospitals are excluded resulting in underreporting of some procedures, particularly those more likely to be performed in private hospitals. Thus, these types of procedure will be undercounted for some jurisdictions (AIHW 2000a).

Statistically significant differences from the average rate for procedures of interest for all jurisdictions are contained in table 5A.14.

Table 5.8 **Separations per 1000 people, public and private hospitals by selected procedure, 1999-2000[a, b, c]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*	*Total*[d]
Angioplasty	0.97	1.14	0.81	1.02	1.02	1.00	1.13	0.79	1.00
Coronary artery bypass	0.97	0.83	0.85	0.63	0.66	0.74	0.74	0.58	0.84
Hip replacement	1.01	1.09	0.87	1.22	1.15	1.19	1.31	0.36	1.04
Lens insertion	6.05	5.27	6.58	6.32	4.64	4.04	3.96	4.97	5.76
Hysterectomy	1.51	1.55	1.69	1.89	1.96	2.06	1.61	0.81	1.63
Tonsillectomy	1.73	1.92	1.81	2.10	2.13	1.36	1.40	0.60	1.83
Myringotomy	1.65	2.29	1.69	2.41	2.94	1.44	1.40	0.61	1.96
Caesarean section separation rate	2.96	3.03	3.54	3.27	3.37	2.95	2.40	2.41	3.13
Caesarean section separations per 100 in-hospital births	20.75	23.02	24.51	24.09	24.37	29.40	18.80	19.59	
Appendicectomy	1.33	1.42	1.61	1.69	1.36	1.46	1.21	0.89	1.44
Cholecystectomy	2.19	2.18	2.32	2.16	2.41	2.06	1.90	1.32	2.21
Arthroscopic procedures (includes arthroscopies)	4.89	5.63	4.42	7.10	8.42	4.95	5.28	3.49	5.47
Diagnostic gastrointestinal endoscopy	24.52	26.16	27.71	25.05	21.64	17.63	11.80	12.32	24.87

[a] The procedures are defined using ICD-10-AM codes. Procedures include National Health Ministers' Benchmarking Working Group sentinel procedures and additional procedures requested by States and Territories. [b] Some private hospitals are not included. [c] Rate per 1000 population was directly age- and sex-standardised to the Australian population at 30 June 1991. [d] Includes Other Territories.

Source: AIHW (2001b); table 5A.14.

Accessibility and equity

Emergency department waiting times

This indicator measures the proportion of patients seen within the time limits set according to the urgency of treatment required. Waiting times measure the time elapsed from presentation to the emergency department to commencement of service by a treating medical officer or nurse. A 1997 study recommended two emergency department waiting time indicators for national reporting (Whitby *et al*. 1997). One of these indicators relates waiting times to the urgency of treatment required (the triage category):

- triage category 1: patients needing resuscitation — seen immediately;

- triage category 2: emergency — patients seen within 10 minutes;
- triage category 3: urgent — patients seen within 30 minutes;
- triage category 4: semi-urgent — patients seen within 60 minutes; and
- triage category 5: non-urgent — patients seen within 120 minutes.

Data for all jurisdictions for 1999-2000 are presented in table 5.9. The data include both public and private patients. There are nationally agreed definitions but, as with the elective surgery data, differences in how the data are collected may exist, and great care needs to be taken in interpreting these data. Data may vary across jurisdictions as a result of differences in clinical practices (for example, the allocation of cases to urgency categories).

Other data issues to be investigated include any differences in when the elapsed time commences (for example, when the patient arrives at the triage desk, or when a triage category is allocated) and the precision with which the starting time of treatment is recorded. States have also adopted different approaches to identifying when a patient has been seen. A new national standard has now been adopted that allows being seen by either a nurse or a doctor to be used in this measure. For 1999-2000 data, however, NSW and Queensland have reported only on the basis of time to being seen by a doctor. Other issues arise with the use of benchmarks. A patient in triage category 2 who waits 11 minutes, for example, would be recorded the same as one waiting 18 minutes, even though the latter event may be of much greater concern.

In 1999-2000, Victoria and the NT had the highest proportion of patients seen within the triage timeframe for category 1 (100.0 per cent) and Tasmania had the lowest proportion (87.6 per cent). For triage category 2, the ACT had the highest proportion of patients seen with the relevant timeframe (88.9 per cent) and the NT had the lowest (47.9 per cent) (table 5.9).

Waiting times for elective surgery

The three generally accepted urgency categories for elective surgery are:

- category 1, for which admission is desirable within 30 days;
- category 2, for which admission is desirable within 90 days; and
- category 3, for which admission at some time in the future is acceptable.

Table 5.9 **Emergency department waiting time to service delivery, 1999-2000 (per cent of patients seen within triage category)[a]**

Triage category	*NSW*[b]	*Vic*	*Qld*[b]	*WA*[c]	*SA*[d]	*Tas*	*ACT*	*NT*[e]
1 – Resuscitation	98	100	95	99	99	88	98	100
2 – Emergency	76	77	68	75	71	63	89	48
3 – Urgent	63	71	61	64	65	59	82	62
4 – Semi-urgent	67	60	68	60	66	66	75	50
5 – Non-urgent	89	86	89	83	91	88	89	67
Data coverage								
Estimated proportion of emergency visits (per cent)	79	100	80	100	64	100	100	55
Hospitals (number)	51	29	20	4	8	4	2	2

[a] Care needs to be taken in interpreting these data. Nationally agreed definitions exist but there may be differences in how data are collected. Data may vary across jurisdictions as a result of differences in clinical practices (for example, on the allocation of cases to urgency categories). States have also adopted different approaches to identifying when a patient has been seen. A new national standard has now been adopted that allows being seen by either a nurse or a doctor to be used in this measure. For 1999-2000 data, however, NSW and Queensland have reported on the basis of time to being seen by a doctor only. [b] Waiting time is measured from arrival to time seen by a doctor (not a doctor or a nurse). [c] Data provided for metropolitan teaching hospitals. [d] Data provided for metropolitan hospitals only. [e] Category 2 rate is the result of a data entry issue which has now been rectified. 2000-2001 data for the NT show that 68.9 per cent of Category 2 patients were seen within 10 minutes.

Source: State and Territory governments (unpublished); table 5A.15.

A complete definition of these categories is provided in table 5.18. Category 1 and category 2 patients waiting longer than desirable are usually described as 'overdue', while category 3 patients waiting longer than one year are subject to an 'extended wait' (AIHW 1999a). For simplicity, the term 'extended wait' is also used here to describe 'overdue' patients. There is no specified or agreed desirable wait for category 3 patients, so the term 'extended wait' is used for patients waiting for longer than 12 months. Under the 1998–2003 Australian Health Care Agreements, the States and Territories report to the Commonwealth the number of category 3 patients who, on admission, have waited longer than 12 months for elective surgery.

Where patients experience a change in their clinical condition leading to a review of their urgency category, waiting times are recorded as the period in the most recent urgency category and in any previous more urgent categories. South Australia records waiting times in the most recent urgency category only.

Elective surgery waiting times are difficult to measure objectively, and the data can be complex to interpret. The two widely accepted measures of waiting times are the proportion of patients on waiting lists with extended waits (at a census date) and the proportion of patients admitted after extended waits (based on throughput data). Both present conceptual and data issues.

From a patient's perspective, the relevant question is, 'If I need surgery, what is the likelihood that I will have to wait longer than is considered desirable?' To develop strictly comparable data to answer this question, clinical judgements about need for surgery, and allocations by surgeons into the three categories of urgency, would need to be consistent across jurisdictions. Current data collections assume there is some standardisation across Australia in how these ratings are allocated, but the definitions remain relatively broad (Clover *et al.* 1998). As a result, systematic differences in clinical practices across jurisdictions (such as differences in the complexity of cases) and in the judgements applied by clinicians about the urgency of particular cases, as well as in the performance of hospital systems, may affect reported results. Differences in the scope of the collections (including the proportion of hospitals and elective admissions covered) may also affect comparisons across jurisdictions. In a recent appraisal of waiting lists, the AIHW noted that, while there has been some harmonisation of definitions and waiting list management practice across jurisdictions, the issue of medical staff putting similar cases into different urgency categories due to differing practices would not be easily resolved (Healthdata Services 2001).

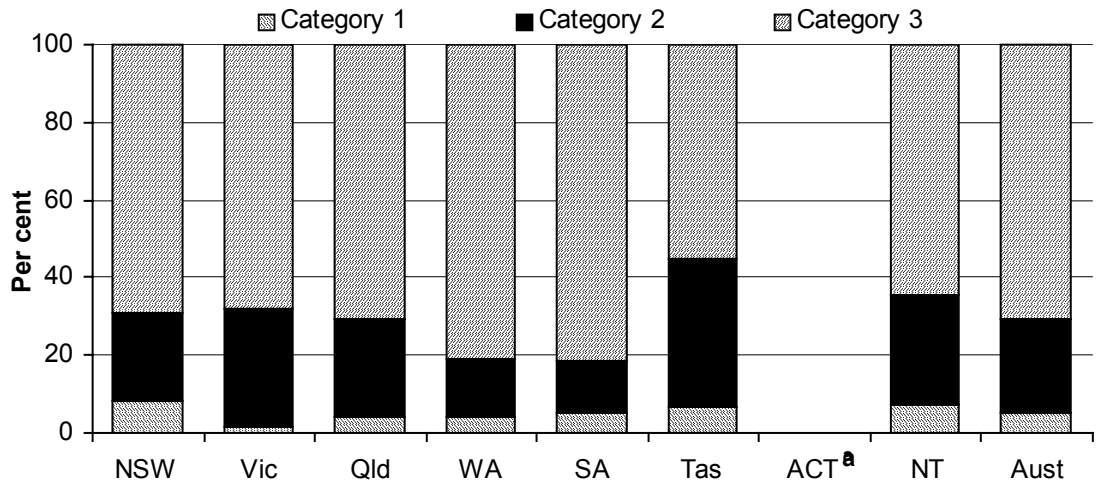
Figures 5.12 and 5.13 illustrate these differences across jurisdictions in the classification of patients to urgency categories. On 30 June 1999, NSW had the highest proportion of patients on waiting lists allocated to category 1 and Victoria the lowest (figure 5.12). For patients admitted from waiting lists in 1998-99, Tasmania had the highest proportion in category 1 and Victoria the lowest (figure 5.13). States and Territories with large proportions of patients in category 1 are also the States and Territories that have relatively large proportions of patients 'not seen on time'. Thus, the apparent variation in performance is likely to be significantly due to variation in the classification practices employed. There have also been substantial differences in the proportion of hospitals in each jurisdiction that contribute data to the Report. This may introduce systematic biases into the data. Finally, there have been variations between States in the measurement of waiting times, with several different methods applied (AIHW 2001e).

In light of these important issues, work is currently being undertaken under the auspices of AHMAC to improve this indicator. The Steering Committee will modify reporting in future according to the outcomes of the AHMAC work. Indeed, it is likely that more comparable data will be available for the 2003 Report.

Elective surgery waiting time data provide some information on access, but public hospital services are provided on the basis of clinical need, and elective surgery is only one aspect of the care they provide. Therefore, the assessment of access would not be based on only the waiting lists for elective surgery because these do not

capture the needs of patients requiring services for acute and chronic medical conditions (Hall 1999).

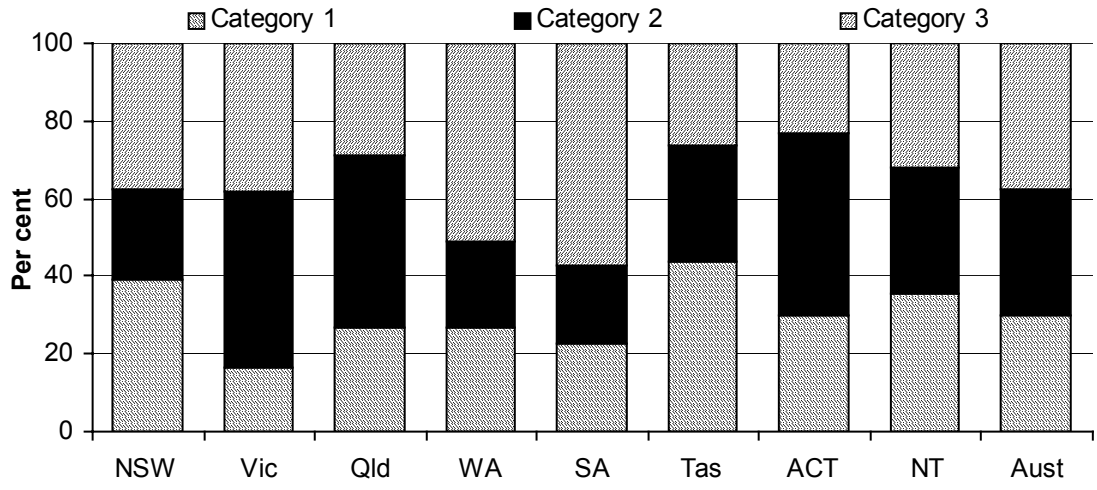
Figure 5.12 **Patients on waiting lists by clinical urgency, 30 June 1999[b]**



[a] No ACT data available. [b] Category 1=admission is desirable within 30 days; Category 2=admission is desirable within 90 days; and Category 3=admission at some time in the future is acceptable.

Source: AIHW (2001e); table 5A.17.

Figure 5.13 **Admissions from waiting lists by clinical urgency, 1998-1999[a]**



[a] Category 1=admission is desirable within 30 days; Category 2=admission is desirable within 90 days; and Category 3=admission at some time in the future is acceptable.

Source: AIHW (2001e); table 5A.18.

The proportion of patients subject to extended waits for elective surgery at public hospitals is reported for each urgency category in table 5.10. It indicates the proportion of those patients waiting on that date, who have been waiting an

extended time. Generally, it will overstate the likelihood of an extended wait, because patients who wait for long periods are more likely to be counted at census points (Moon 1996).

Table 5.10 **Proportion of elective surgery patients with extended waits, 1999-2000**[a]

Clinical urgency category	*NSW*[b]	*Vic*	*Qld*	*WA*	*SA*[c]	*Tas*[d]	*ACT*[e]	*NT*[f]
Per cent of patients on waiting lists with extended waits, 30 June 2000								
Category 1	na	0.0	2.7	40.0	24.8	na	8.7	40.0
Category 2	na	38.1	8.3	41.0	23.3	na	41.4	38.8
Category 3	na	27.3	32.4	26.0	14.2	na	19.7	14.5
All patients	na	32.9	25.0	29.0	15.9	na	28.3	23.0
Per cent of patients admitted from waiting lists with extended waits, 1999-2000								
Category 1	na	0.0	5.3	15.0	12.6	na	na	8.9
Category 2	na	18.4	8.2	25.0	14.7	na	na	15.3
Category 3	na	9.4	11.1	10.0	3.7	na	na	3.7
All patients	na	12.1	8.2	15.0	7.9	na	na	9.3
Data coverage								
% of elective admissions	na	71.0	95.0	69.0	15.0	na	100.0	16.9

[a] These data should be viewed with caution as systematic differences in clinical practices across jurisdictions (such as differences in the complexity of cases), in the judgements applied by clinicians about the urgency of particular cases, and in the performance of hospital systems, may affect reported results. Figures 5.12 and 5.13 show differences across jurisdictions in classification to urgency categories. There are also substantial differences in the proportion of hospitals in each jurisdiction that contribute data to the Report. This may introduce systematic biases into the data. Finally, there have been variations between States in the measurement of waiting times, with several different methods applied. In light of these issues, work is currently being undertaken under the auspices of AHMAC to improve this indicator. The Steering Committee will modify reporting in future according to the outcomes of the AHMAC work. [b] NSW did not provide data for this indicator because of concerns that the data are not comparable across jurisdictions. [c] Data from Department of Human Services Booking List Information System data (BLIS); data created through an ad hoc report. Unknown categories are included with category 3. Cosmetic surgery is excluded. Data from Department of Human Services Integrated South Australian Activity Collection (ISAAC). Per cent of acute admissions is calculated as: number of elective surgery booking list separations in 1999-2000 divided by total number of acute (including qualified newborns) separations in 1999-2000 for all hospitals. An alternative calculation may be the total number of acute (including qualified newborns) separations in 1999-2000 for the seven booking list hospitals / total number of acute (including qualified newborns) separations in 1999-2000 for all hospitals. This figure is 69.5 per cent. The seven major metropolitan hospitals maintain elective surgery waiting lists. These are: Women's and Children's Hospital, Flinders Medical Centre, The Queen Elizabeth Hospital, Lyell McEwin Health Service, Modbury Hospital, Repatriation General Hospital and Royal Adelaide Hospital. [d] Tasmania was unable to provide data in time for publication. [e] One of the two hospitals in the ACT was unable to provide these data. Data were not therefore submitted for the other hospital as it would be identifiable. [f] NT data may not reflect reality. A project has been established to undertake an administrative and clinical audit of NT waiting time data.

Source: State and Territory governments (unpublished); table 5A.16.

An alternative indicator based on admissions data — that is, the proportion of patients admitted with extended waits — also has some shortcomings. Those who were on a waiting list but were never admitted (because they became emergency cases, decided to be treated in a private hospital or died) are not counted (Moon

1996). In addition, some waiting patients may not be admitted because their condition improved sufficiently to make treatment unnecessary, or because they declined treatment for other reasons (Lee *et al.* 1987).

Victoria, Queensland, WA, SA, the ACT and the NT provided data on patients on waiting lists by clinical speciality for 1999-2000 (tables 5A.73, 5A.76, 5A.78, 5A.80, 5A.84 and 5A.86). Victoria, Queensland, WA, SA and the NT also provided data on elective surgery waiting lists at time of admission by clinical speciality for this period (tables 5A.73, 5A.76, 5A.78, 5A.80 and 5A.86).

Separations by target group

Equity of access to hospital services is another measure of accessibility and hence, of the effectiveness of the health sector. Without appropriate access to hospital services, the consequences of any injury or illness are more likely to be either permanent disability or premature death for a patient. Equity of access has been measured using data on Indigenous and non-Indigenous separations.

Data on Indigenous people are limited by the extent to which Indigenous people are identified in hospital records and completeness is likely to vary across States and Territories. The Australian Bureau of Statistics (ABS) (2000a) noted that studies of a limited number of individual hospitals suggest that the proportion of Indigenous people correctly identified in hospital records ranges from less than 50 per cent to close to 100 per cent. It found that for 1998-99, the quality of data on Indigenous hospitalisations was considered acceptable only in the NT, SA and WA (ABS 2000a). National reporting on data quality in hospitals is expected in 2002. In the meantime, few jurisdictions have data of consistent quality — with the exception of the NT (ABS 2000a, *Condon et al.* 1998). In addition, difficulties in estimating the size of the Indigenous population limits the comparability of data over time.

Descriptive data on Indigenous and non-Indigenous separations in public hospitals in 1999-2000 are provided in table 5.11. Indigenous separations accounted for around 3 per cent of total separations in 1999-2000, although Indigenous people represented around 2 per cent of the total population in 1998 (AIHW 2001b). Most Indigenous separations occurred in public hospitals (97 per cent). The low proportion of private hospital separations for Indigenous people may be partly due to a lower proportion of Indigenous patients being correctly identified in private hospitals and partly to a lower use of private hospitals (ABS 2000). Data in table 5.11 need to be interpreted with care.

Table 5.11 **Separations by Indigenous status, 1999-2000[a]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT* [b]	*NT* [c]	*Aust*
Number of public hospital separations ('000)									
Indigenous	30	7	47	34	12	1	1	34	166
Non-Indigenous	1216	997	637	326	338	70	59	23	3665
Not reported	0	0	25	0	10	5	1	0	41
Total	1246	1004	708	360	360	76	61	58	3872
Number of private hospital separations ('000)									
Indigenous	3	0	1	1	0	0	0	na	5
Non-Indigenous	601	520	362	214	152	43	23	na	1915
Not reported	0	0	90	0	8	8	0	na	106
Total	604	520	452	215	160	51	23	na	2026
Separations in public hospitals as a proportion of separations in all hospitals (%)									
Indigenous	91	97	99	98	99	99	100	na	97
Non-Indigenous	74	66	64	60	69	62	72	na	66

[a] Identification of Indigenous patients is not considered to be complete and completeness varies across jurisdictions. [b] Rates reported for the Aboriginal and Torres Strait Islander population in the ACT are subject to variability due to the small population of Aboriginal and Torres Strait Islanders in the jurisdiction. [c] Includes only public hospitals.

Source: AIHW (2001b); table 5A.19.

A performance indicator of Indigenous access to hospitals is given by the rate of separations per 1000 people. Data on separation rates for Indigenous people and all people by State and Territory for all public hospitals are presented in table 5.12. Data regarding private hospital separation rates are contained in table 5A.20. This is a change from the 2001 Report when data for public hospitals were not available separately and so data for all hospitals were presented.

In 1999-2000, on an age-standardised basis, 592 separations (including same day separations) for Indigenous patients were reported per 1000 Indigenous population in Australian public hospitals. This was markedly higher than the corresponding figure for the total population of 199 per 1000. Excluding the ACT data which fluctuate markedly over time because of the small Indigenous population, Indigenous separation rates were highest in the NT (963 separations per 1000 Indigenous people) and lowest in Tasmania (132). The Australian Institute of Health and Welfare (AIHW) has revised the data for private hospitals in table 5A.20. The new data were not available in time for publication but will be placed on the Review web page early in 2002.

Table 5.12 **Estimates of separations per 1000 people by reported Indigenous status, public hospitals[a, b]**

	NSW	*Vic*	*Qld*	*WA*[c]	*SA*	*Tas*	*ACT*[d]	*NT*	*Aust*
1997-98									
Indigenous people	316	340	503	na	604	153	369	828	505
Total population	195	191	193	192	214	162	204	326	195
1998-99									
Indigenous people	336	331	590	na	673	23	33	887	550
Total population	194	201	205	198	224	165	208	352	201
1999-2000									
Indigenous people	344	380	631	na	771	132	1815	963	592
Total population	187	205	201	196	227	156	215	365	199

[a] The rates were directly age-standardised to the Australian population at 30 June 1991. [b] Identification of Aboriginal and Torres Strait Islander patients is not considered to be complete and completeness varies across jurisdictions. [c] WA data for Indigenous people were revised by the AIHW and were not available in time for publication of this Report. [d] Rates reported for the Aboriginal and Torres Strait Islander population in the ACT are subject to variability due to the small population of Aboriginal and Torres Strait Islanders in the jurisdiction.

Source: AIHW (unpublished); table 5A.20.

The reporting of Indigenous separations for selected conditions has changed this year. Data are presented for one of the refined national health performance indicators for Aboriginal and Torres Strait Islanders endorsed by AHMAC in 2000 — Standardised Hospital Separation Ratios. It should be noted, however, that the ratios are included in this chapter for descriptive purposes only. The data do not signal the performance of hospitals, but reflect a range of factors, such as the spectrum of public, primary care and post hospital care available; Indigenous access to these as well as hospital services, social and physical infrastructure services for Indigenous people; and differences in the complexity, incidence and prevalence of disease between the Indigenous and non-Indigenous populations.

The Standardised Hospital Separation Ratios are calculated by dividing Indigenous separations by 'expected' separations. Expected separations are calculated as the product of the all Australian separation rate and the Indigenous population. They therefore illustrate differences between the rates of Indigenous hospital admissions and those of the total Australian population, taking into account differences in age distributions. Ratios are presented for six major conditions — circulatory diseases, injury and poisoning, respiratory diseases and lung cancer, diabetes, tympanoplasty associated with otitis media and mental health conditions and selected associated ICD-9 and ICD-10 codes (tables 5A.21 and 5A.22).

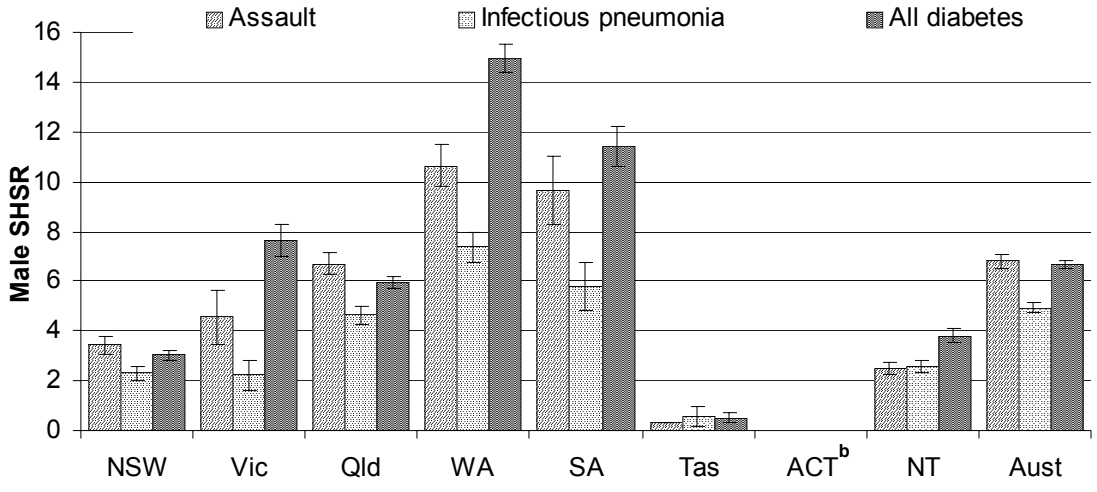
There was variation across jurisdictions in the proportion of Indigenous people who were identified as such in the hospital morbidity data collections and/or in the total

population. The data should, therefore, be used with care as only the NT and SA data were considered of acceptable quality by the AIHW.

In 1999-2000, for all causes and across all hospitals, Indigenous people were close to twice as likely to be hospitalised as all Australians. For males, there was a marked difference between Indigenous separation rates and those of the total population for assault (Indigenous separation rates were 6.8 times higher than for all Australians), all diabetes (Indigenous separation rates were 6.7 times higher than for all Australians), and infectious pneumonia (Indigenous separation rates were 4.9 times higher than for all Australians) (figure 5.14). (While the standardised rates for Indigenous males for rheumatic heart disease and tympanoplasty associated with otitis media also appear markedly higher than for the Australian population, the number of separations for these conditions was very small [table 5A.21].)

The AIHW has revised these data, but the new data were not available in time for publication. The new data will be placed on the Review web page early in 2002.

Figure 5.14 **Indigenous males: standardised hospital separation ratios for selected conditions, 1999-2000[a, c]**



a The ratios were indirectly age-standardised to the Australian population 0–74 years at 30 June 1999. **b** The ACT data are not of high enough quality to be published. **c** It should be noted that these data do not signal the performance of hospitals, but reflect a range of factors such as the spectrum of public, primary care and post hospital care available; Indigenous access to these as well as hospital services, social and physical infrastructure services for Indigenous people; and differences in the complexity, incidence and prevalence of disease between the Indigenous and non-Indigenous populations.

Source: AIHW (unpublished); table 5A.21.

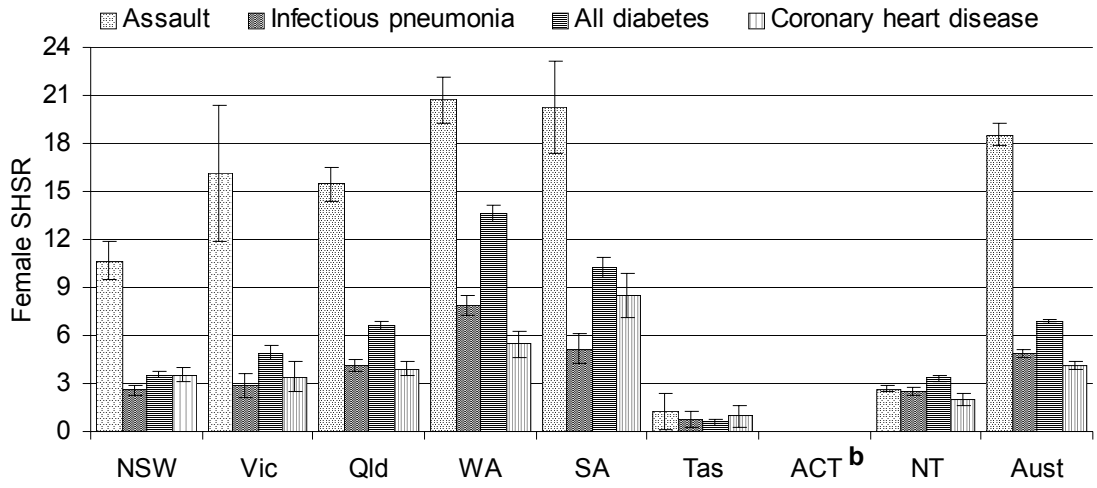
Indigenous females' separation rates were markedly higher than those for all females for assault (the rate for Indigenous females was 18.5 times the rate for all females), all diabetes (the rate for Indigenous females was 6.9 times the rate for all females), infectious pneumonia (the rate for Indigenous females was 4.9 times the

rate for all females) and coronary heart disease (the rate for Indigenous females was 4.1 times the rate for all females) (figure 5.15). (While the standardised rates for Indigenous females for rheumatic heart disease and tympanoplasty associated with otitis media also appear markedly higher than for the Australian population, the number of separations for these conditions was very small [table 5A.22].)

The AIHW have revised these data, but the new data were not available in time for publication. The new data will be placed on the Review web page early in 2002.

By way of completeness, Indigenous separation rates for selected conditions are also presented in the format used in the 2001 Report. These data can be found in table 5A.23.

Figure 5.15 **Indigenous females: standardised hospital separation ratios for selected conditions, 1999-2000[a, c]**



a The ratios were indirectly age-standardised to the Australian population 0–74 years at 30 June 1999. **b** The ACT data are not of high enough quality to be published. **c** It should be noted that these data do not signal the performance of hospitals, but reflect a range of factors such as the spectrum of public, primary care and post hospital care available; Indigenous access to these as well as hospital services, social and physical infrastructure services for Indigenous people; and differences in the complexity, incidence and prevalence of disease between the Indigenous and non-Indigenous populations.

Source: AIHW (unpublished); table 5A.22.

Efficiency

Two approaches to measuring the efficiency of public hospital services are used in this Report. One is the cost per casemix-adjusted unit of output (the unit cost) and the other is the casemix-adjusted relative length of stay index, because costs are

correlated with the length of stay at aggregate levels of reporting. Both indicators represent marked improvements since efficiency indicators were first reported in the 1995 Report.

The Review's approach is to report the full costs of a service where they are available. Where the full costs of a service cannot be measured accurately, the Review seeks to report estimated costs that are comparable. Where differences in comparability remain, the differences are documented.

The Review has identified a range of financial reporting issues that have affected the accuracy and comparability of unit costs for acute care services. These include the treatment of payroll tax, superannuation, depreciation and the user cost of capital associated with buildings and equipment. A number of issues remain to further improve the quality of these estimates.

Costs associated with non-current physical assets (such as depreciation and the user cost of capital) are potentially important components of the total costs of many services delivered by government agencies. Differences in the techniques for measuring non-current physical assets (such as valuation methods) may reduce the comparability of cost estimates across jurisdictions.

In response to concerns regarding data comparability, the Steering Committee initiated a study, *Asset Measurement in the Costing of Government Services* (SCRCSSP 2001b). The aim of the study was to examine the extent to which differences in asset measurement techniques applied by participating agencies affect the comparability of reported unit costs.

The results reported in the study for public hospitals, indicate that different methods of asset measurement could lead to quite large variations in reported capital costs. Considered in the context of total unit costs, however, the differences created by these asset measurement effects were relatively small as capital costs represent a relatively small proportion of total cost — although the differences may affect cost rankings between jurisdictions. A key message from the study was that the adoption of national uniform accounting standards across all service areas would be a desirable outcome from the perspective of the Review. The results are discussed in more detail in chapter 2.

Thus, care needs to be taken in comparing the available indicators of efficiency across jurisdictions. Differences in counting rules, the treatment of various expenditure items (for example, superannuation) and the allocation of overhead costs have the potential to hinder such comparisons. In addition, differences in the use of salary packaging may allow hospitals to lower their wage bills (and thus State or Territory government expenditure) while maintaining the after-tax income

of their staff. No data were available for reporting on the effect of salary packaging and any variation in its use across jurisdictions.

Differences in the scope of services being delivered by public hospitals may also reduce the comparability of efficiency measures. Some jurisdictions admit patients who may be treated as non-admitted patients in other jurisdictions (AIHW 2000a).

Recurrent costs per casemix-adjusted separation

The recurrent cost per casemix-adjusted separation is an indicator of hospitals' cost performance for admitted patients. This indicator measures the average cost of providing care for an admitted patient (whether overnight stay or same day), adjusted for the relative complexity of the patient's clinical condition and of the hospital services provided (AIHW 2000a).

While all admitted patient separations and their costs are included in the calculations, cost weights are not available for non-acute admitted patients which now comprise approximately 3 per cent of total admitted patient episodes. An approximation of the cost per separation for the acute separations is therefore applied to the non-acute patients. Average cost weights for acute patients typically underestimate the costs of non-acute separations, however, as these patients typically have very long lengths of stay (AIHW 2001b).

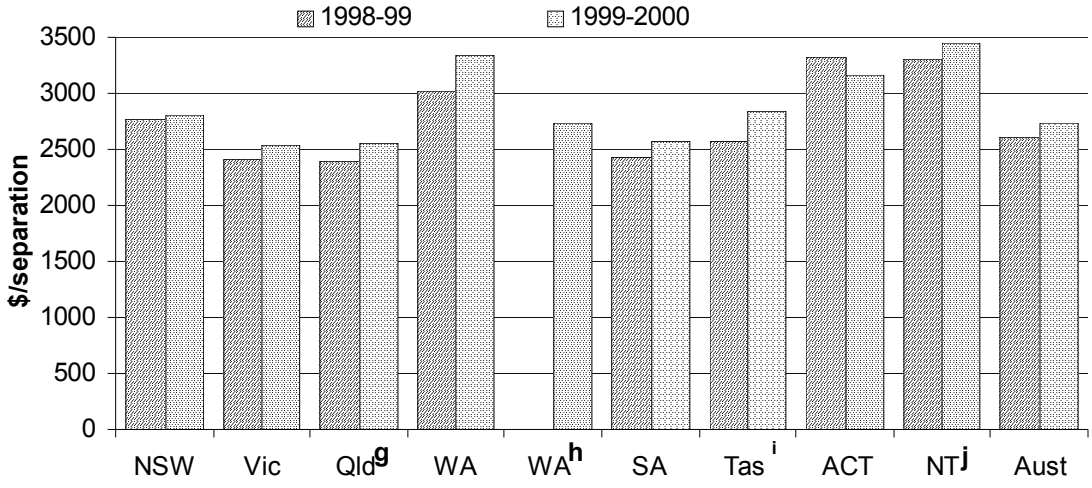
The AIHW (2001d) has shown that hospital recurrent expenditures on Indigenous and non-Indigenous people may differ (box 5.4). This may also influence unit cost outcomes.

The data exclude spending on non-admitted patient care, the user cost of capital and depreciation, research costs and payroll tax. Overnight stays, same day separations and private patient separations in public hospitals and private patient recurrent costs are included. The institutional scope excludes psychiatric hospitals, drug and alcohol services, mothercraft hospitals, unpeered and other hospitals, hospices, rehabilitation facilities, small non-acute and multi-purpose services. Separations in the excluded hospitals comprised 3.5 per cent of separations (on average) in 1998-99 and 1999-2000 — although the proportion of separations excluded varies across jurisdictions (table 5A.27).

Recurrent cost per casemix-adjusted separation for each jurisdiction for 1998-99 and 1999-2000 is presented in figure 5.16. It should be noted that the data for 1999-2000 are based on 1998-99 cost weights, rather than 1999-2000 cost weights. These data are currently being revised by the AIHW and the new data will be placed on the Review web page in early 2002.

The additional data for 1999-2000 for WA in figure 5.16 were provided by the WA Department of Health and do not correspond with the estimates for WA for that year calculated by the AIHW. For the other States and Territories, in 1999-2000, recurrent cost per casemix-adjusted separation was highest in the NT ($3444) and lowest in Victoria ($2529) (figure 5.16). The NT Government advise that the apparent high unit cost for the NT may reflect inclusion of some non-admitted patient services and that work is currently being undertaken to clearly identify the inpatient fraction of recurrent hospital cost.

Figure 5.16 **Recurrent cost per casemix-adjusted separation (current prices)[a, b, c, d, e, f]**



[a] Excludes depreciation. [b] Psychiatric hospitals, drug and alcohol services, mothercraft hospitals, unpeered and other hospitals, hospices, rehabilitation facilities, small non-acute and multi-purpose services are excluded from the data. [c] Separations from the National Hospital Morbidity Database whose type of episode of care is acute, newborn with qualified days or unspecified. [d] Average cost weight from the National Hospital Morbidity Database, based on acute and unspecified separations and newborn episodes of care with qualified days, using the 1998–99 AR-DRG v 4.0/4.1 combined cost weights (DHAC unpublished). [e] Casemix-adjusted separations are the product of total separations and average cost weight. [f] Estimated private patient medical costs calculated as the sum of salary/sessional and VMO payments divided by the number of public patient days multiplied by the number of private patient days. This is a notional estimate of the medical costs for all non-medical costs. [g] Queensland pathology services are now being purchased from the State-wide pathology service rather than being provided by each hospitals' employees. [h] Revised WA data provided by WA Department of Health. These data do not accord with the Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics 1999-00*. WA used a morbidity extract of September 2001 for 1999-2000 data, and changed the inpatient fraction. Excluded hospitals are those with <200 separations; all MPSs and drug and psychiatric hospitals. Weights are NHCDC round 3 population weights for public hospitals. WA data for 1998-99 were not revised unlike the data for 1999-2000, thus, any apparent drop in average cost is the result methodological differences rather than fluctuations in cost. [i] Tasmania is the only jurisdiction with a significant payroll tax burden. As a result, payroll tax has been estimated at 6.7 per cent of salary plus superannuation and removed from the above. [j] These figures need to be interpreted in conjunction with the consideration of cost disabilities associated with hospital service delivery in the NT.

Sources: AIHW (2001b); WA Department of Health; table 5A.27.

Box 5.4 **Admitted patient costs for Indigenous people, 1998-99**

The AIHW (2001d) notes that there are a number of factors driving differences in admitted patient expenditures between Indigenous people and non-Indigenous people.

- The average DRG cost weight for Indigenous patients is lower than for non-Indigenous patients due to their higher numbers of low-cost DRGs, such as dialysis, and lower numbers of high cost surgical DRGs.
- The average length of hospital stay for Indigenous people tends to be longer than for non-Indigenous people within the same DRG. This leads to higher costs per episode and can be attributed to case complexity, hospital and regional cost variations, differences in clinical practice and post-discharge support.
- A high proportion of Indigenous people live in areas where the hospitals are relatively high-cost, such as those in remote parts of Australia. On the other hand, in some cases, a high proportion of Indigenous people live in the vicinity of lower cost hospitals, such as small non-remote rural hospitals and remote Queensland hospitals.[6]
- In addition, there is evidence that cost per separation for Indigenous people is higher due to the higher costs of caring for patients with greater comorbidities. These costs are in addition to those associated with longer lengths of stay. The AIHW (2001d) added a five per cent cost loading for Indigenous admitted patients to account for this affect.

Overall, after adjusting for length of stay and differences in hospital costs due to locational factors, costs per separation within DRGs for Indigenous patients were 6 per cent higher than for non-Indigenous patients. This varied across jurisdictions. Costs per separation for Indigenous patients in NSW were 4 per cent lower and Queensland costs 6 per cent lower, whereas, WA, SA and NT costs per separation for Indigenous patients were respectively 5 per cent, 13 per cent and 6 per cent higher. Higher costs in SA were the result of treatment of Indigenous patients that are many hundreds of kilometres from home. Many of the high-cost NT patients are treated in SA hospitals.

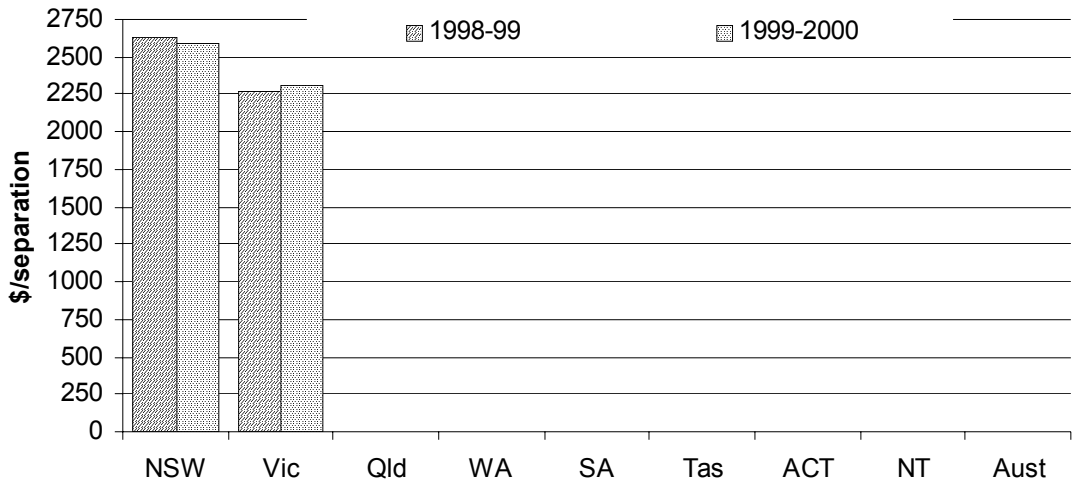
Source: AIHW (2001d).

To address the problem associated with a lack of cost weights for non-acute admitted patients, Victoria and NSW also report recurrent cost per casemix-adjusted separation for acute patients only. Psychiatric care days in designated psychiatric units in acute hospitals are also removed from these calculations because the AR-DRG casemix classification is recognised to be a poor predictor of the cost of psychiatric episodes. Capital costs (the user cost of capital and depreciation expenses), research costs and payroll tax are excluded from these estimates of unit

6 In 1998-99, over a quarter of the Indigenous population (27.5 per cent) lived in remote areas, compared with only 2.6 per cent of the total Australian population (AIHW 2001d).

costs (figure 5.17). Other jurisdictions are expected to also be able to isolate acute care costs in the near future.

Figure 5.17 **Recurrent cost per casemix-adjusted acute non-psychiatric separation (current prices)[a, b, c, d, e]**



[a] Excludes psychiatric; mothercraft; hospices; small non-acute, unpeered and other hospitals; rehabilitation facilities; and multi-purpose services. [b] Acute separations are separations where the type of episode of care is acute, newborn with qualified days, or unspecified. Psychiatric unit separations are those psychiatric separations with at least some days in designated psychiatric units. [c] The acute non-psychiatric admitted patient fraction is that portion of recurrent costs which are for acute admitted patients and which exclude the costs of psychiatric care in a designated psychiatric unit. [d] Average cost weight from the National Hospital Morbidity Database, based on acute and unspecified separations and newborn episodes of care with qualified days, using the 1998–99 AR-DRG version 4.0/4.1 combined cost weights. [e] The cost per non-acute separation and including psychiatric unit separations is $5769 for NSW and $6347 for Victoria.

Source: AIHW (2001b); table 5A.29 and table 5A.28.

Comparisons across jurisdictions are affected by differences in the mix of outputs (or admitted patient services) produced by hospitals in each jurisdiction. Hospitals have therefore been categorised according to a set of 'peer groups' — developed by the National Health Performance Committee (and its predecessor, the National Health Ministers' Benchmarking Working Group) — to enable hospitals with similar activities to be compared. The data by peer group are presented in detail in table 5A.32. The dominant peer classification is the principal referral and specialist women's and children's category. In 1999-2000, these hospitals accounted for 66 per cent of public hospital expenditure and 63 per cent of separations (AIHW 2001b). The data for principal referral hospitals (excluding specialist women's and children's) are presented in table 5.13. Australia-wide, recurrent cost per casemix-adjusted separation for principal referral hospitals in 1999-2000 was $2789 — highest in NSW ($2940) and lowest in Victoria ($2577). It should be noted that the data for 1999-2000 are based on 1998-99 cost weights, rather than 1999-2000 cost

weights. These data are being revised by the AIHW and the new data will be placed on the Review web page in early 2002.

Table 5.13 **Recurrent cost per casemix-adjusted separation, principal referral hospitals (public), 1999-2000[a, b, c]**

	NSW	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*[d]	*Aust*
No. of hospitals	18	11	11	3	3	2	1	1	50
Av. beds per hospital	418	771	421	593	461	364	503	268	506
Separations per hospital	36 615	65 590	35 514	58 394	55 466	30 939	48 368	32 046	45 102
Av. cost weight	1.08	1.01	1.07	1.00	1.05	1.06	0.89	0.75	1.04
Cost per casemix-adjusted separation ($)	**2940**	**2577**	**2703**	**na**	**na**	**2608**	**na**	**na**	**2789**
Expenditure									
Principal referral hospitals ($m)	2780	2618	1330	na	na	249	na	na	8554
Total ($m)	**5071**	**3507**	**2348**	**1442**	**1197**	**334**	**259**	**197**	**14 354**

[a] Principal referral hospitals are classified as metropolitan hospitals with greater than 20 000 acute casemix-adjusted separations and rural hospitals with greater than 16 000 acute casemix-adjusted separations per annum. [b] Expenditure data exclude depreciation. [c] Average cost weight from the National Hospital Morbidity Database, based on acute and unspecified separations and newborn episodes of care with qualified days, using the 1998–99 AR-DRG v 4.0/4.1 combined cost weights (DHAC unpublished). [d] The NT average cost weight of 0.75 reflects the high number of patients receiving renal dialysis treatments and the low average cost of this treatment compared with other DRGs. If treatment for renal dialysis is excluded, the NT average cost weight is 1.11.

Source: AIHW (2001b); table 5A.32.

Inclusion of capital costs

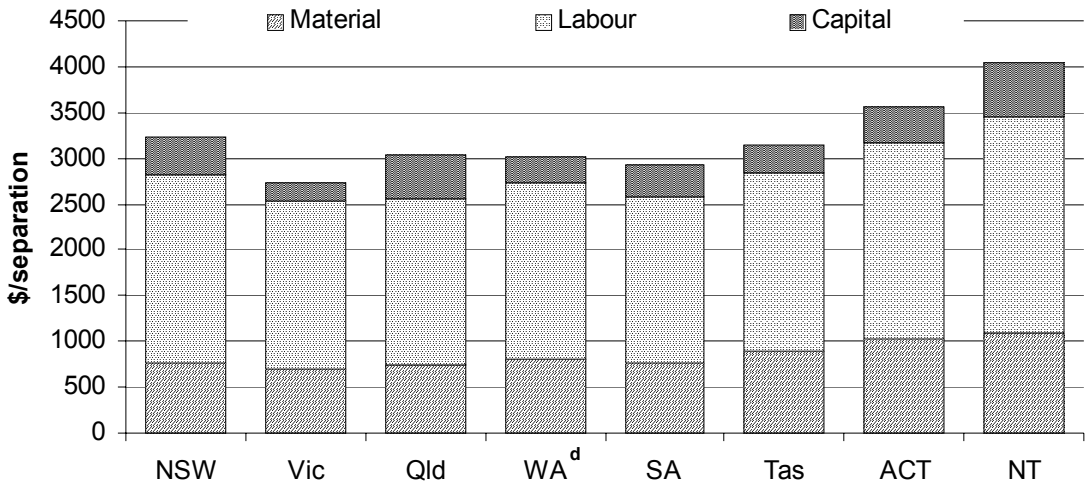
The estimated unit cost of admitted care services inclusive of capital costs is reported below. Total cost per casemix-adjusted separation is defined as the recurrent cost per casemix-adjusted separation plus the capital costs (depreciation and the user cost of capital of buildings and equipment) per casemix-adjusted separation. The indicator is reported only for admitted patients.

Depreciation is defined as the cost of consuming an asset's services, and is measured by the reduction in value of an asset over the financial year. The user cost of capital is the opportunity cost of the capital and is equivalent to the return forgone from not using the funds to deliver other government services or to retire debt. Interest payments represent a user cost of capital and so should be excluded from recurrent expenditure where user costs of capital are calculated separately and added to recurrent costs. Interest payments were not separately identified in the data

for the select group of hospitals included in this indicator. For all public hospitals in 1999-2000, however, reported interest expenses were effectively zero for all jurisdictions except WA (where interest expenses were 1.6 per cent of recurrent expenditure) and the NT (where they were not reported) (AIHW 2001b). Interest expenses were therefore deducted directly from capital costs in WA to avoid double counting.

Total cost per casemix-adjusted separation by jurisdiction (including capital costs) are presented in figure 5.18. *It is important to note that all of the material and labour costs data were calculated by the AIHW, except the data for WA — its data were provided by the WA Department of Health and do not correspond with the estimates for WA calculated by the AIHW (2001b) (see figure 5.16).* When the revised data for casemix-adjusted separations based on 1999-2000 cost weights are available from the AIHW, total cost per casemix-adjusted separation will be re-calculated. The new data will be placed on the Review web page early in 2002.

Figure 5.18 **Total cost per casemix-adjusted separation, 1999-2000**[a, b, c, e]



[a] 'Labour' includes medical and non-medical labour costs. 'Material' includes other non-labour recurrent costs. 'Capital' is defined to include the user cost of capital plus depreciation associated with the delivery of inpatient services in the public hospitals described in the data for recurrent cost per casemix-adjusted separation. [b] Excludes the user cost of capital associated with land. This is reported in table 5A.24. [c] Variation across jurisdictions in the collection of capital related data suggests that the data should be treated as indicative. [d] WA data for material and labour costs are based on data provided by the WA Department of Health and do not correspond with the estimates for WA calculated by the AIHW (2001b) (see figure 5.16). For other jurisdictions, these data were calculated by the AIHW. [e] Data based on 1998-99 cost weights.

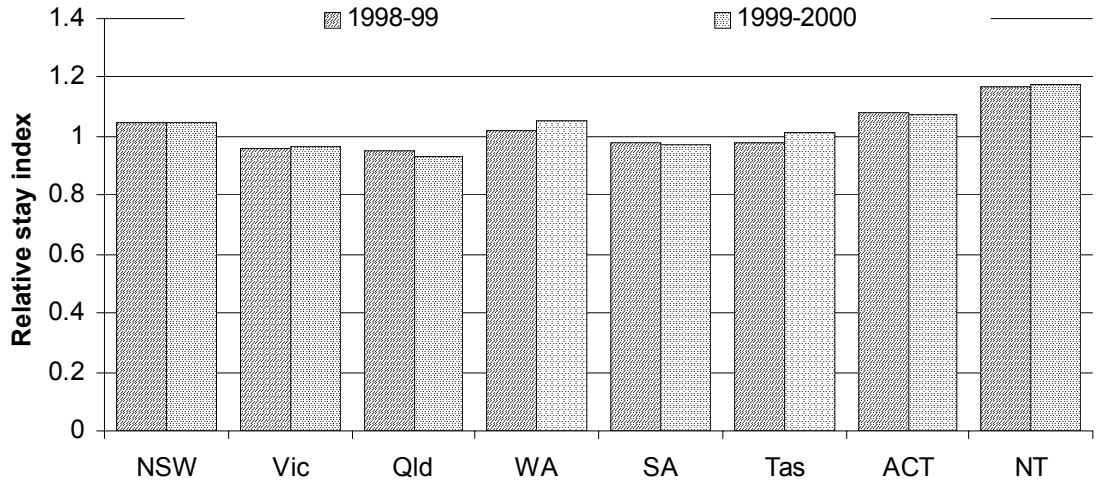
Source: AIHW (2001b); State and Territory governments; table 5A.24 and table 5A.27.

Casemix-adjusted relative stay index

The casemix-adjusted length of stay — or 'relative stay index' — is defined as the actual number of acute bed days divided by the expected number of acute bed days adjusted for casemix. Casemix-adjustment is important, since hospitals with more complex patients will appear to have relatively higher lengths of stay, and may erroneously appear less efficient. As indicated, States and Territories vary in the thresholds applied for classifying patients as either same day admitted patients or outpatients. These variations will affect this indicator.

The relative length of stay for Australia is one. A relative stay index greater than one indicates that an average patient's length of stay is higher than would be expected given the jurisdiction's casemix distribution. A relative stay index of less than one indicates that the number of bed days used was less than would have been expected. Same day dialysis and chemotherapy patients have been excluded from the calculations for this indicator. The relative stay index for acute patients in public hospitals in 1999-2000 was highest in the NT (1.17) and lowest in Queensland (0.93) (figure 5.19).

Figure 5.19 **Casemix-adjusted relative stay index, public hospitals[a]**



a Stays of 200 days and over are excluded. Index includes acute patients only (including unknowns and newborns with qualified days). Same day dialysis and chemotherapy are excluded.

Source: AIHW (unpublished); table 5A.26.

Recurrent cost per non-admitted occasion of service

The cost per non-admitted occasion of service is the proportion of expenditure allocated to patients who were not admitted, divided by the total number of non-admitted patient occasions of service in public hospitals. Occasions of service

include examinations, consultations, treatments or other services provided to patients in each functional unit of a hospital.

These data are not comparable across jurisdictions because, to date, there is no agreed non-admitted patient classification system. There is variation in reporting categories across jurisdictions and inconsistencies arise because of differences in outsourcing practices. (In some cases, for example, outsourced occasions of service may be included in expenditure on non-admitted services, but not in the count of occasions of service.) In addition, this indicator does not adjust for complexity of service — for example, a simple urine glucose test is treated equally with a complete biochemical analysis of all body fluids (AIHW 2000b).

Jurisdictions able to supply 1999-2000 data for this indicator reported the following results:

- in NSW, emergency department cost per occasion of service was $83 for 7.7 million occasions of service, and outpatient cost per occasion of service was $160 for 1.6 million occasions of service (table 5A.72).
- in WA, emergency department cost per occasion of service was $92; outpatient cost per occasion of service was $104; and overall, cost per occasion of service was $95. In total, there were 3.6 million occasions of service (table 5A.79).
- in SA in 1999-2000, emergency department cost per occasion of service was $214; outpatient cost per occasion of service was $147; and overall, cost per occasion of service was $149. In total, there were 283 514 occasions of service (table 5A.81).
- in Tasmania, emergency department cost per occasion of service was $178 for 72 501 occasions of service and outpatient cost per occasion of service was $165 for 260 567 occasions of service (table 5A.83).
- in the ACT, emergency department cost per occasion of service was $138; outpatient cost per occasion of service was $42 and overall, cost per occasion of service was $59. In total, there were 496 304 occasions of service (table 5A.85).

Victoria collects data on the basis of cost per encounter. An encounter includes the clinic visit and all ancillary services provided within a 30-day period either side of the clinic visit. Based on cost data from 13 major hospitals in 1999-2000, the average cost per encounter was $109, compared with $104 in 1998-99. This compared with an average cost per encounter of $105 in 1997-98 (based on cost data from nine major hospitals) and $104 in 1996-97 (based on cost data from seven major hospitals) (table 5A.74).

In light of the difficulties associated with the lack of a nationally consistent non-admitted patient classification system, the Review has included national data from

the Commonwealth Department of Health and Aged Care, National Hospital Cost Data Collection (NHCDC) for cost per emergency department visit (table 5.14) and cost per occasion of service for outpatients (table 5.15) for the first time in this Report. The NHCDC collects data on a consistent basis across a sample of hospitals which is expanding over time. The samples for each jurisdiction are, however, not necessarily representative since hospitals contribute data on a voluntary basis. The emergency department data are based on figures provided by 128 hospitals across Australia, whereas the outpatient (tier 1) data are based on figures provided by 17 hospitals. (Outpatient tier 2 data are included in the attachment and were contributed by 27 hospitals (attachment table 5A.36).) The NHCDC data are affected by differences in costing and admission practices across jurisdictions and hospitals.

Table 5.14 **Emergency department average cost per presentation by triage class, public sector, Australia, 1999-2000[a, b, c, d, e, f, g]**

	Population estimated	*Actual*
Triage category	*Average cost per presentation ($)*	*Average cost per presentation ($)*
Admitted triage 1	539	562
Admitted triage 2	358	369
Admitted triage 3	335	345
Admitted triage 4	290	302
Admitted triage 5	188	218
Non-admitted triage 1	399	448
Non-admitted triage 2	310	317
Non-admitted triage 3	265	275
Non-admitted triage 4	191	202
Non-admitted triage 5	116	138
Did not wait[h]	70	79
Total	**211**	**233**

[a] Population estimates are derived as not all hospitals submit emergency department data to the NHCDC. The emergency department national database differs from the acute national database in that acute hospitals without emergency department cost and activity are excluded from this database. [b] Based on data from 128 hospitals across Australia. [c] Cost and activity emergency department (ED) data for Victoria was only captured for cost-modelled sites representing approximately 10 per cent of the available ED data for that State. [d] The NT did not submit emergency department data. [e] Queensland data are incomplete. Queensland did not report cost and activity data for the emergency department component of admitted triage category for eight major costing sites. [f] Costing and admission practices vary across jurisdictions and hospitals. [g] Depreciation and interest costs are included. [h] 'Did not wait' means those presentations to an emergency department who were triaged but did not wait until the completion of their treatment, at which time they would have been either admitted to hospital or discharged home.

Source: DHAC, National Hospital Cost Data Collection, Round 4; table 5A.33.

Table 5.15 **Non-admitted clinic occasions of service for tier 1 clinics, actual results, public sector, 1999-2000[a, b]**

Tier 1 clinic	*Occasions of service (no.)*	*Average cost per occasion of service ($)*
Allied health and/or clinical nurse spec.	830 464	58
Dental	62 171	93
Medical	706 229	196
Obstetrics and gynaecology	264 332	137
Paediatric	48 542	204
Psychiatric	69 623	260
Surgical	533 180	108
Total	**2 514 541**	**125**

[a] Depreciation and interest costs are included. [b] A total of 17 hospitals contributed tier one data.

Source: DHAC, National Hospital Cost Data Collection, Round 4; table 5A.35.

5.3 Maternity services performance framework

Framework of performance indicators

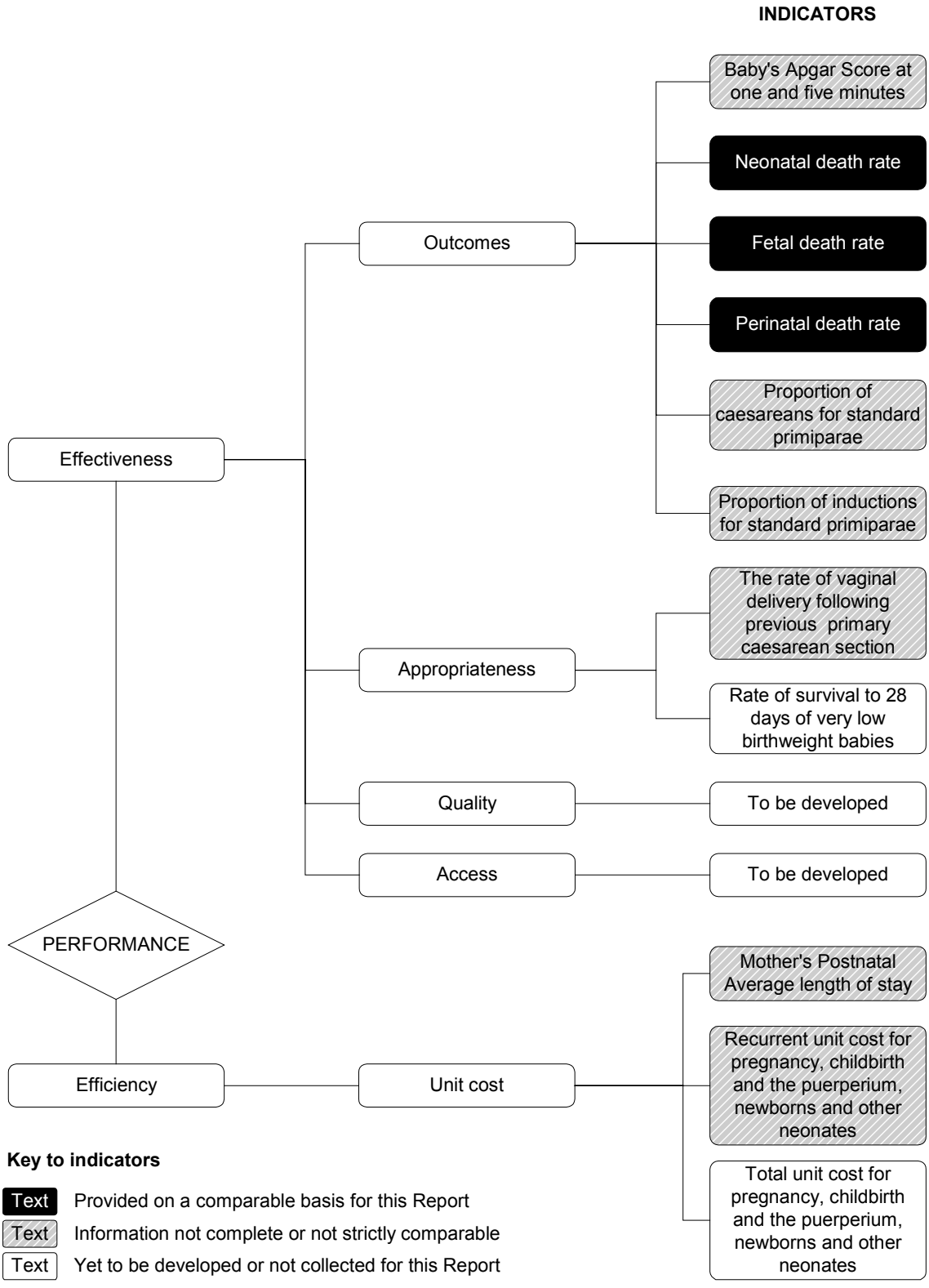
The performance framework for maternity services is outlined in figure 5.20, and has the same objectives as for public hospitals in general. The framework is under development by the Steering Committee and, as is the case with all the performance indicator frameworks, will be subject to regular review.

Key performance indicator results

Outcomes

Six maternity service outcome indicators are included in the Report this year: the Apgar score (which indicates a baby's wellbeing soon after birth); fetal, perinatal and neonatal death rates; and caesarean and induction rates for standard primiparae.

Figure 5.20 **Proposed performance framework for maternity services**



Apgar score

The Apgar score is a numerical score used to evaluate a baby's condition shortly after birth. It is based on an assessment of the baby's heart rate, breathing, colour, muscle tone and reflex irritability. Between zero and two points are given for each of these five characteristics, and the total score may vary between zero and 10. The Apgar score is routinely assessed at one and five minutes after birth, and subsequently at five-minute intervals if it is still low at five minutes (Day *et al.* 1999). Low Apgar scores of less than four are strongly associated with babies' birthweights.

This year, jurisdictions provided Apgar scores by birth weight (table 5A.40) for the first time. The Review will clarify the definitions underlying the data over time. Table 5.16 illustrates the relationship between low birth weight and low Apgar score. In 1999, Victoria had the highest proportion of babies weighing 0–1499 grams reporting an Apgar score of three or less five minutes after delivery (17.6 per cent) while SA reported the smallest proportion (7.7 per cent). For babies weighing 1500–1999 grams, NSW reported the highest proportion of babies with Apgar scores of three or less (8.1 per cent) and Victoria reported the lowest (0.8 per cent). For other birthweights, Apgar scores of three or less were relatively rare and the proportion was fairly similar across jurisdictions.

Table 5.16 **Number of live births and proportion of babies with an Apgar score of three or less, five minutes post-delivery, public hospitals, 1999[a]**

Birthweight (grams)	*Unit*	*NSW*	*Vic*	*Qld*	*WA*	*SA*	*Tas*	*ACT*	*NT*
0–1499	No. live births	815	556	485	244	194	na	na	51
	%	15.9	17.7	14.6	10.6	7.7	na	na	10.0
1500–1999	No. live births	933	611	464	255	198	na	na	71
	%	8.1	0.8	1.7	1.6	1.5	na	na	0.0
2000–2499	No. live births	2 857	2 034	1440	711	604	na	na	150
	%	0.4	0.5	0.4	0.4	0.2	na	na	0.0
2500 and over	No. live births	66 185	43 047	33 614	15 720	13 255	na	na	2 524
	%	0.2	0.1	0.2	0.1	0.2	na	na	0.0

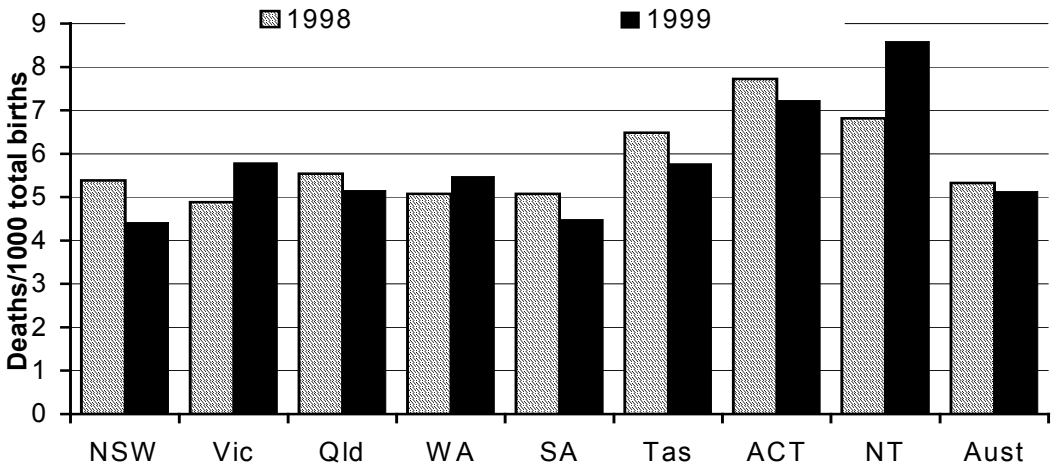
a There are minor discrepancies in the data provided by Victoria and WA. The Review will clarify the definitions underlying the data over time. **na** Not available.

Source: State and Territory governments (unpublished); table 5A.40.

Fetal deaths

The fetal death rate is presented for the first time in this Report. Fetal death (stillbirth) is the delivery of a child who did not at any time after delivery breathe or show any other evidence of life, such as heartbeat. Fetal deaths by definition only include infants weighing at least 400 grams or of a gestational age of at least 20 weeks. The rate of fetal deaths is expressed per 1000 total births. In 1999, the national rate was 5.1 per 1000 births. This rate was slightly lower than the 1998 rate (5.3). In 1999, the fetal death rate was highest in the NT (8.6 deaths per 1000 births) and lowest in NSW (4.4 deaths per 1000 births) (figure 5.21).

Figure 5.21 **Fetal death rate[a]**



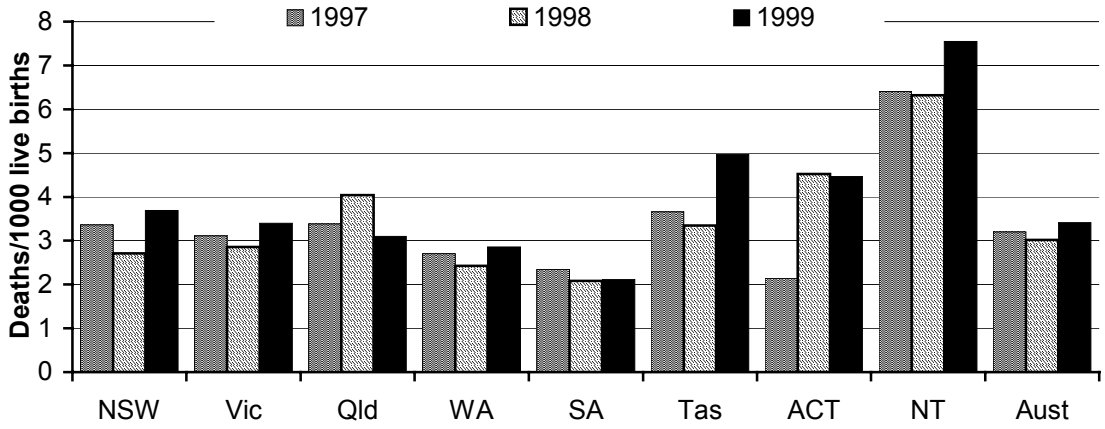
a Rate expressed as a proportion of total births in Australia.

Source: ABS (2000); table 5A.44.

Neonatal deaths

Neonatal death is the death of a live born infant within 28 days of birth. The rate of neonatal deaths is expressed per 1000 live births. In 1999, the national rate was 3.4 deaths per 1000 live births. This was higher than the 1998 rate (3.0). In 1999, the neonatal death rate was highest in the NT (7.6 deaths per 1000 live births) and lowest in SA (2.1 deaths per 1000 live births) (figure 5.22).

Figure 5.22 **Neonatal death rate[a]**



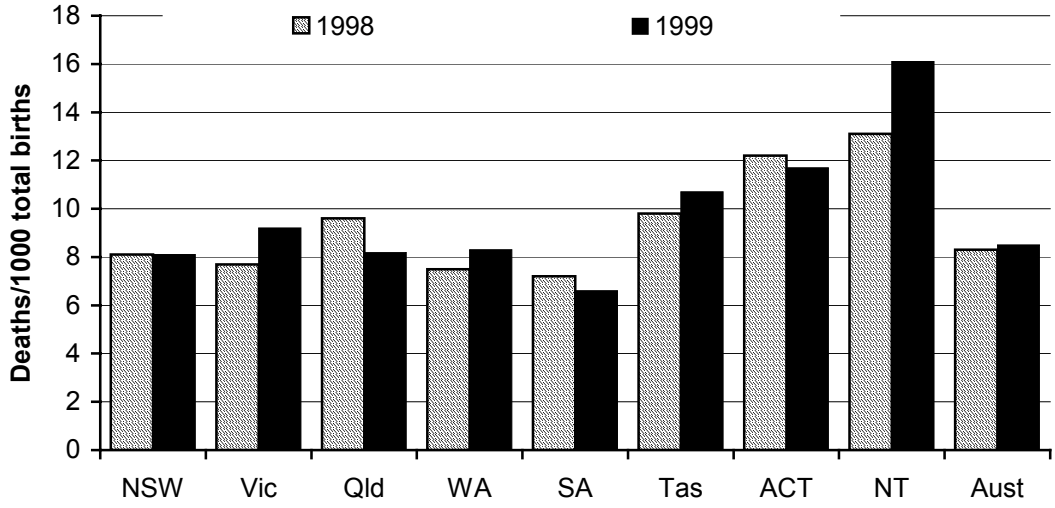
[a] Rate expressed as a proportion of live births in Australia.

Source: ABS (2000); table 5A.42.

Perinatal deaths

A perinatal death is a fetal death or neonatal death of an infant weighing at least 400 grams or of gestational age of at least 20 weeks. The rate of perinatal deaths is expressed per 1000 total births. In 1999, the perinatal death rate Australia-wide was 8.5 deaths per 1000 total births — highest in the NT (16.1 deaths per 1000 total births) and lowest in SA (6.6 deaths per 1000 total births) (figure 5.23).

Figure 5.23 **Perinatal death rate[a]**



[a] Rate expressed as a proportion of total births in Australia.

Source: ABS (2000); table 5A.43.

Intervention rates for standard primiparae

Caesarean and induction rates for standard primiparae are being developed as an indicator by the Review and preliminary data are presented for the first time in this Report. It is important to note that at present, there is no nationally agreed definition of standard primiparae so the data are not comparable across jurisdictions. Standard primiparae are by definition considered low risk parturients.[7] Intervention (caesarean or induction) rates should therefore be low in this population. High rates may indicate a need for investigation. A general definition (provided by Victoria) refers to standard primiparae as mothers of between 20–34 years of age, babies that are not small for gestational age (greater than the 10th percentile), singleton pregnancy, at term (37–41 weeks gestation), with a cephalic presentation and free of medical complications of pregnancy. This definition, however, leaves scope for differences in application across States and Territories.

Preliminary data for induction and caesarean rates for standard primiparae for the jurisdictions supplying data are outlined below. As stated earlier, the data are not comparable across jurisdictions. The data are for public hospitals and definitions are included where they differ to that provided by Victoria.

- NSW defined standard primiparae as mothers between 20–34 of years of age, not small for gestational age, singleton pregnancy, at term, cephalic presentation and without hypertension (essential or pregnancy induced), and without diabetes (pre-existing or gestational). The 2000 rate of inductions for standard primiparae was 18.3 per cent. The 2000 rate of caesareans for standard primiparae was 12.9 per cent (table 5A.45).
- Data for 2000 for WA were not provided. The 1999 rate of inductions for standard primiparae was 22.7. The 1999 rate of caesareans for standard primiparae was 13.7 (table 5A.46).
- Victoria's 2000 rate of inductions for standard primiparae was 19.1. The 2000 rate of caesareans for standard primiparae was 13.9 (table 5A.47).
- The 2000 rate of inductions for standard primiparae for SA was 20.1. The 2000 rate of caesareans for standard primiparae was 15.9. (South Australia used the Victorian definition, taking medical complications to include obstetric complications as well.) (Refer to table 5A.48.)
- The NT defined a standard primipara as a mother between 20–34 years of age, with no previous pregnancies resulting in a live or still birth, singleton birth, carrying a child whose gestational age was between 37 and 41 weeks, where the

[7] Parturient means 'about to give birth'. Primipara refers to a pregnant woman, who has had no previous pregnancy resulting in a live birth or stillbirth (AIHW 1998).

presentation is vertex, there are no medical complications, and where there are no indicators for intrauterine growth retardation. The NT was not able to provide a rate for 2000. The 1999 rate of inductions for standard primiparae was 19.1. The 1999 rate of caesareans for standard primiparae was 12.4 (table 5A.49).

- The ACT provided some data for 1998. The 1998 rate of caesareans for standard primiparae was 10.5 (table 5A.50).

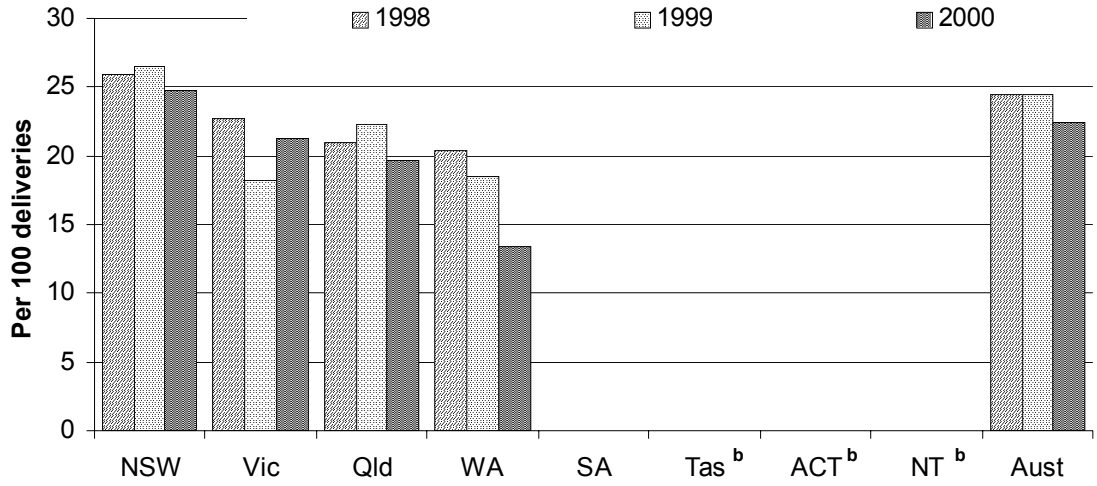
Appropriateness

One appropriateness indicator is reported this year: the rate of vaginal delivery following previous primary caesarean section. Variations in rates across jurisdictions may highlight differences in intervention rates that require more detailed analysis. The rate of vaginal delivery following primary caesarean section is defined as the number of patients delivering vaginally following a previous primary (first) caesarean section, as a proportion of the total number of patients delivering who have had a previous primary caesarean section and no intervening pregnancies of greater than 20 weeks gestation (ACHS 2000b).

The data are sourced from the ACHS Comparative Report Service (Clinical Indicators) and are collected for the purposes of internal clinical review by individual hospitals. State-wide conclusions cannot be drawn from the data as health care organisations contribute to the ACHS on a voluntary basis and so the data are not necessarily drawn from representative samples. Sample sizes for each jurisdiction are contained in the attachment (table 5A.51). Across Australia, 139 health care organisations contributed data in 2000.

Data for the ACT, the NT and in some cases Tasmania were not provided by the ACHS because of the small number of hospitals in those jurisdictions. South Australia requested that its data not be published because the data are drawn from samples that do not necessarily reflect all hospitals in each jurisdiction. Estimated rates for the other jurisdictions are shown in figure 5.24 and should be viewed in the context of the statistical (standard) errors. Data are also disaggregated by region (metropolitan and rural) — although again, may be affected by the potential for samples to be non-representative (table 5A.51).

Figure 5.24 **Rate of vaginal delivery following primary caesarean (all hospitals)[a, c]**



a Defined as the number of patients delivering vaginally following a previous primary caesarean section divided by the total number of patients delivering who have had a previous primary caesarean section and no intervening pregnancies of greater than 20 weeks gestation. **b** Data for Tasmania, the ACT and the NT are not available because of the small number of hospitals. **c** Health organisations contribute data voluntarily to the ACHS and the samples are not therefore necessarily representative of all hospitals in each jurisdiction. SA requested its data be removed for this reason.

Source: ACHS (unpublished); table 5A.51.

Efficiency

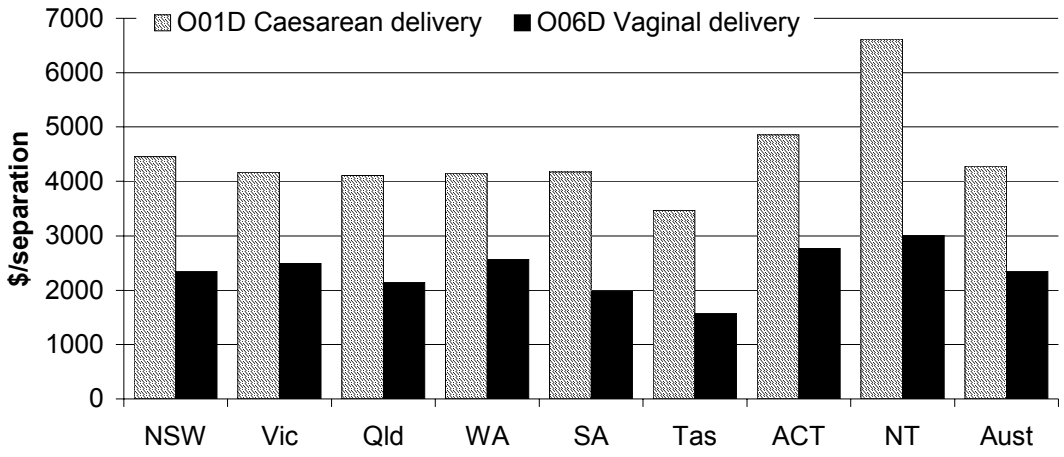
Two efficiency indicators are reported for maternity services — the cost per separation and the average length of stay. Figures 5.25 and 5.26 present data for the two largest DRGs that account for the largest number of maternity separations. Data for a number of other delivery-related DRGs are shown in table 5A.52.

Data are sourced from the NHCDC and are based on the AR–DRG classification version 4.1. The NHCDC is a voluntary annual collection coordinated by the Commonwealth Department of Health and Aged Care hospital cost and activity data — including national and jurisdiction cost weights — covering the financial year prior to the collection period. Survey respondents comprise mostly larger hospitals, and as such, cost estimates may tend to underestimate the real costs to a jurisdiction because of their scale economies. Since participation in the NHCDC collection is voluntary, the samples are not necessarily representative of the set of hospitals in each jurisdiction.

The average cost per separation for caesarean delivery without complications was $4278 for Australia in 1999-2000 (figure 5.25). The highest average cost was in the NT ($6615) and the lowest was in Tasmania ($3466). The average cost per

separation for a vaginal delivery without complications was $2349 for Australia. The highest average cost was in the NT ($3010) and the lowest cost was in Tasmania ($1582).

Figure 5.25 **Average cost per separation for selected DRGs public hospitals, 1999-2000[a]**

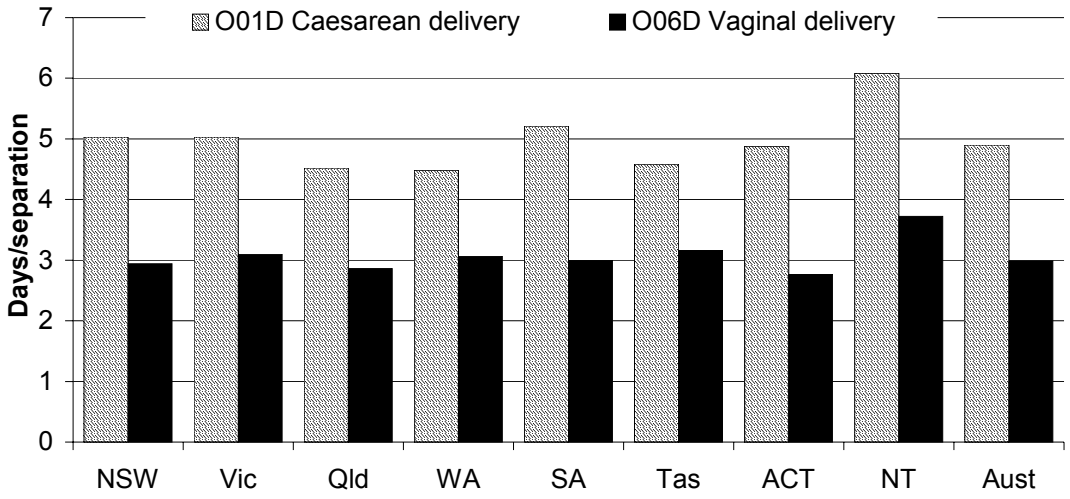


[a] Includes O01D caesarean delivery without complicating diagnosis and O060D vaginal delivery without complicating diagnosis.

Source: DHAC, National Hospital Cost Data Collection, Round 4; table 5A.52

The average length of stay for caesarean delivery without complications was 4.90 days for Australia — the longest stay in the NT (6.08 days) and the shortest in WA (4.48 days). The average length of stay for vaginal delivery without complications was 2.99 days for Australia. The longest length of stay was in the NT (3.72) and the shortest in the ACT (2.77) (figure 5.26).

Figure 5.26 **Average length of stay per DRG, public hospitals, 1999-2000[a]**



[a] Includes O01D caesarean delivery without complicating diagnosis and O060D vaginal delivery without complicating diagnosis.

Source: DHAC, National Hospital Cost Data Collection, Round 4; table 5A.52

5.4 Future directions in performance reporting

Key challenges for the Steering Committee in future years are to:

- continue to improve the reporting of hospital services (including maternity services) delivered to special needs groups, particularly Indigenous people;
- improve the reporting of indicators in the performance frameworks for public hospitals and maternity services where data are not complete or not strictly comparable; and
- continue to improve the frameworks for reporting.

Quality

Reporting on quality in previous years has been constrained by a paucity of data, creating an important gap in information. Policy developments, in particular the establishment of the Australian Council for Safety and Quality in Health Care (ACSQHC) in 2000, are likely to create scope for improved reporting in this area in the medium to long term.

Patient safety monitoring

As discussed in previous reports, patient safety is an important policy issue for the health system, including public hospitals. A number of studies have indicated that the incidence of adverse events (sometimes referred to as 'iatrogenic harm'[8]) is potentially high (Brennan *et al*. 1991, Wilson *et al.* 1995, Thomas *et al.* 2000). The costs of adverse events can be considerable (Kohn *et al.* 1999).

Estimating the prevalence of adverse events is hampered by difficulties with recognising when such events have occurred and determining what is preventable, taking the risk of a given outcome into account. Reliability of reporting can also be a problem (McNeil *et al.* 2000). The ACSQHC examined sources of data about adverse events in acute health care settings in Australia and found that there is no single system that provides comprehensive quantitative measurement of the nature and frequency of preventable adverse events (ACSQHC 2001b).

Estimates of hospital separations associated with an adverse event were produced by Hargreaves (2001) (table 5.17). The data are affected by changes in scope and coverage of the collection and improvements to the quality of data recording and coding over time, so it cannot be concluded that the rate of adverse events increased over time. The data in table 5.17 underestimate the number of separations associated with adverse events as they are based on the International Classification of Disease (ICD) codes specific to adverse events. There are other ICD categories that can be used to reflect both adverse events and non-adverse events (for example, 'accidental poisoning by drugs, medicaments and biologicals' may reflect both medical mistakes and a drug taken inadvertently by a child). These have been excluded from the data (Hargreaves 2001). Comparisons across States and Territories are affected by differences across jurisdictions in the capacity of data systems to record the necessary codes for adverse events.

The ACSQHC (2001b) concluded that:

> Hospital separations data in their current form cannot be used to estimate the number of patient days or levels of disability attributable to the injuries, nor the proportion of injuries that may be amenable to preventive measures. Nor can the data at present reliably distinguish those events occurring during the episode of care from those present on admission (ACSQHC 2001b, p. 22).

[8] 'Iatrogenic harm' refers to harm arising from health care, rather than from the patient's underlying disease or injury.

Table 5.17 **Hospital separations with an adverse event, 1993-94 to 1997-98**

Year	*Misadventures*	*Complications*	*Drug adverse events*	*Total*[a]	*Per cent of all separations*
1993-94	2 898	133 516	28 890	182 858	3.97
1994-95	3 582	152 584	35 816	209 305	4.29
1995-96	3 928	164 181	41 714	226 563	4.38
1996-97	4 532	178 837	48 202	246 948	4.64
1997-98	4 877	190 739	53 388	264 347	4.75

a The data are affected by changes in scope and coverage of the collection and improvements to the quality of data recording and coding over time, so it cannot be concluded that the rate of adverse events increased over time. **b** Total includes separations with no external cause.

Source: ACSQHC (2001b).

The Council has foreshadowed further work on promoting better use of data to identify, learn from, and prevent error and system failure as a priority (ACSQHC 2001a). In particular, it plans to lead the development of a more comprehensive national approach to monitoring incidents and adverse events in order to provide a stronger information base to support coordinated and consistent action for improving patient safety (ACSQHC 2001a).

Victoria has established a State-wide system for reporting of a subset of adverse events, called 'sentinel events'. Sentinel events are defined as relatively infrequent clear-cut events that occur independently of a patient's condition, commonly reflect hospital system and process deficiencies and result in unnecessary outcomes for patients (DHS [Victoria] 2001).[9] Data collection commenced in 2001-02. Given the relative infrequency of sentinel events, data collected will not be used as a measure of hospital performance to compare hospitals or be reported publicly. Any future release of sentinel event information is subject to review and analysis of data received and to consultation with hospitals and other stakeholders, but would be likely to be descriptive rather than statistical in nature.

The ACT is also investigating patient safety initiatives that may be suitable for inclusion in future reports. The ACT, for example, has implemented the Australian

9 The specified events to be reported are: procedures involving the wrong patient or body part; unexpected/unexplained serious neurological damage following spinal procedures (anaesthetic/surgical/medical) that is likely to be permanent; inadvertent perforation of a viscus during endoscopic procedure; inadvertent perforation or ligation of duct or major vessel during laparoscopic procedure; intravascular gas embolism resulting in serious neurological damage or mortality; haemolytic blood transfusion reaction resulting from ABO incompatibility; patient suicide in hospital; retained instruments or other material after surgery requiring re-operation or further surgical procedure; hypoxic brain damage probably attributable to anaesthesia, airway management or ventilation techniques; post-partum haemorrhage requiring hysterectomy.

Patient Safety Foundation Australian Incident Monitoring System (AIMS) as a Territory-wide initiative. The AIMS is an incident monitoring system established by the Australian Patient Safety Foundation. It uses a standardised reporting instrument and classification scheme. Reporting is voluntary and anonymous if desired. In addition to the ACT, the AIMS has been or is being introduced across the public health care system in SA, WA, and the NT. It is also used in some health services in other states and New Zealand. There are approximately 50 000 records in the AIMS database. A recent analysis of the AIMS database of incidents routinely reported by the health care facilities found that falls were the main type of event recorded (28.9 per cent) followed by injuries other than falls (13.0 per cent) and medication errors (11.6 per cent). Several examples of use of the data in studies to improve services have been published.

Appropriateness

As foreshadowed in the 2001 Report, reporting of appropriateness is another area with scope for improvement. Acute care services are increasingly delivered in non-hospital settings (box 5.5). For any given procedure, alternative forms of delivery may better suit certain types of patients. For example, Caplan *et al.* (1999) found that hospital-in-the-home may be preferable for older people. Changing the delivery environment can increase the patient's welfare and/or lead to improved cost effectiveness without affecting outcomes for patients.

Box 5.5 **Selected service delivery alternatives to hospital care**

hospital-in-the home: provision of acute care in non-hospital accommodation, such as the patient's own residence.

step-down facilities: patients are transferred out of the acute ward into an adjacent facility where their progress can be monitored in a less intensive setting.

coordinated care programs: recognise patients at high risk of hospital admission (for example, asthmatics, diabetics, patients with heart disease) and intervene to lower hospital admission rates by providing strategies for better patient management.

Source: DHAC (1999).

In addition, the performance of acute care services is influenced by the operation of pre- and post-acute health care, such as health prevention and promotion, primary care, rehabilitation and chronic illness management. Developing an appropriate mix of services across the spectrum of health and community care has the potential to enhance outcomes for patients and possibly, efficiency. Experiments to test the scope of different service delivery and funding arrangements to improve health care outcomes within existing resources were undertaken as part of the Coordinated Care

Trials (box C.6 in the Health preface). The Review is developing long term strategies to address these issues.

Efficiency

Non-admitted patient classification

National data for cost per visit for emergency departments and cost per occasion of service for outpatients are reported this year as an initial step towards reflecting these data consistently across jurisdictions. While there is significant scope for improvement in reporting for non-admitted patients, progress depends on the development of a non-admitted patient classification system. Several States are working on systems for improved reporting of non-admitted patients. National agreement on definitions, such as those for acute admitted patients with AN-DRGs, will be needed before comparable reporting can commence. The Australian Health Care Agreements specify that the Commonwealth, State and Territory governments will develop and implement a non-admitted patient morbidity data set by 30 June 2003.

Maternity services

Two of the new outcomes indicators for maternity services reported this year — the proportion of caesareans and the proportion of inductions for standard primiparae — are not able to be compared across jurisdictions as a result of differences in the definition of standard primiparae. It is an aim of the Review to contribute to the development of a nationally consistent definition for these indicators in conjunction with the AIHW, the ACHS and Women's Hospitals Australia. In addition, the Review plans to work on development of an indicator reflecting appropriateness of service delivery for maternity services in public hospitals.

5.5 Definitions

Table 5.18 **Terms**

Term	*Definition*
Aboriginal concept of health	'Not just the physical wellbeing of an individual, but … the social, emotional and cultural wellbeing of the whole community in which each individual is able to achieve their full potential as a human being, thereby bringing about the total wellbeing of their community. It is a whole-of-life view and includes the cyclical concept of life-death-life (NACCHO 1997).
Aboriginal concept of community control	'A process which allows the local Aboriginal community to be involved in its affairs in accordance with whatever protocols or procedures are determined by the Community' (NACCHO 1997).
Accessibility index	A measure of hospital access equity, primarily for Indigenous people.
Acute care episode	Clinical services provided to patients, including performing surgery, relieving symptoms and/or reducing the severity of illness or injury, and performing diagnostic and therapeutic procedures. Most episodes involve a relatively short hospital stay, although acute care services may also be provided to non-admitted patients.
Admission	The process by which an admitted patient commences an episode of care.
Allied health (non-admitted)	All occasions of service to non-admitted patients where services are provided at units/clinics providing treatment/counselling to patients. These include units primarily concerned with physiotherapy, speech therapy, family planning, dietary advice, optometry, occupational therapy.
Ambulatory services	Services provided by an acute care hospital to non-admitted patients
Apgar score	Numerical score used to evaluate a baby's condition after birth. The definition of the indicator is the number of babies born with an Apgar score of four or below at five minutes post-delivery as a proportion of the total number of babies born. Foetal death in utero prior to commencement of labour is excluded.
Average length of stay	Equal to the arithmetic mean of the length of stay for all patient episodes, estimated by dividing total occupied bed days by total episodes.
Bulk billed services	Attendances for which the medical practitioner bills the Commonwealth Government directly.
Caesarean section	Operative birth through an abdominal incision.
Casemix-adjustment	Adjustment of data on cases treated to account for the number and type of cases. Cases are sorted into diagnosis related groups (AN-DRGs) which represent a category of patients with similar clinical conditions requiring similar hospital services.
Catastrophic	An acute or prolonged illness usually considered to be life threatening or with the threat of serious residual disability. Treatment may be radical and is frequently costly.
Case weight	The relative costliness of a particular AN-DRG, determined so that the average case weight for all AN-DRGs is 1.00.

(Continued on next page)

Table 5.18 **(Continued)**

Term	*Definition*
Comorbidity	The simultaneous occurrence of two or more diseases or health-problems.
Community health services	Health services for individuals and groups delivered in a community setting, rather than via hospitals or private facilities.
Community health (non-admitted)	Occasions of service to non-admitted patients provided by designated community health units within the establishment. Such units include baby clinics, immunisation units, aged care assessment teams etc. Some community health care may involve a hospital employee providing a service away from his or her hospital establishment.
Complication	Additional medical problems that develop following a procedure, treatment or illness. Complications are usually directly or indirectly related to a procedure (risk of the procedure), treatment (side effect or toxicity) or illness.
Condition of capital	Ratio of depreciated replacement value to total replacement value.
Cost per casemix-adjusted separation	Recurrent expenditure * inpatient fraction/total number of casemix-adjusted separations + estimated private patient medical costs.
Cost per non-admitted occasion of service	Recurrent expenditure * (1–inpatient fraction)/total number of non-admitted occasions of service.
Elective surgery waiting times	The time elapsed for a patient on the elective surgery waiting list, from the date he or she was added to the waiting list for a procedure to a designated census date.
Emergency department waiting times to service delivery	The time elapsed for each patient from presentation to the emergency department to commencement of service by a treating medical officer or nurse.
Emergency department waiting times to admission	The time elapsed for each patient from presentation to the emergency department to admission to hospital.
Fetal death	Delivery of a child who did not at any time after delivery breathe or show any other evidence of life, such as heartbeat. Excludes infants weighing less than 400 grams or of gestational age less than 20 weeks.
Fetal death rate	Fetal deaths (400 grams/20 weeks) by usual residence divided by the total number of births (ie. live births registered and fetal deaths combined).
General practice	The organisational structure in which one or more GPs provide and supervise health care for a 'population' of patients. This definition includes medical practitioners who work solely with one specific population, such as women's health and Indigenous health.
Hospital-acquired infection — bacteraemia	The total number of inpatients who acquire bacteraemia during the time period under study, divided by the total number of separations with a length of stay of 48 hours or more during the time period under study. Hospital-acquired bacteraemia is defined as positive blood culture for inpatients who were afebrile on admission — that is, those with a temperature less than 37.4 degrees Celsius, who become febrile 48 hours or more after admission.

(Continued on next page)

Table 5.18 **(Continued)**

Term	*Definition*
Hospital-acquired infection — wound infection	The number of inpatients having evidence of wound infection on or after the fifth post-operative day following clean (contaminated) surgery during the time period under study, divided by the total number of inpatients undergoing clean (contaminated) surgery with a post-operative length of stay equal to or greater than five days. All endoscopies are excluded, as are intra-cavity procedures such as oral, aural, nasal, urethral, vaginal and anal operations. Clean surgery refers to those operations performed in a sterile field. Contaminated surgery, includes traumatic wounds and those operations which breach the gastro-intestinal, respiratory and genito-urinary tracts or where a break in aseptic technique occurs.
Inpatient fraction (IFRAC)	The ratio of inpatient costs to total hospital costs.
Labour cost per casemix-adjusted separations	([Salary and wages]*[inpatient fraction] + visiting medical officer payments)/total number of casemix-adjusted separations.
Length of stay	The period from admission to separation less any days spent away from the hospital (leave days).
Live birth	Birth of a child who after delivery breathes or shows any other evidence of life, such as a heartbeat. All registered live births regardless of birthweight.
Medicare	The Commonwealth Government funding of private medical and optometrical services (Medicare Benefits Schedule). Some users use the term to include other forms of Commonwealth Government funding: selected pharmaceuticals (Pharmaceutical Benefits Scheme) and public hospital funding (Australian Health Care Agreements), which provide public hospital services free of charge to public patients.
Mortality rate	The number of deaths per 100 000 people.
Neonate	A live birth less than 28 days old. The neonatal period is exactly 28 completed days commencing on the date of birth (day 0) and ending on the completion of day 27.
Neonatal death	Death of a live born infant within 28 days of birth (defined in Australia as deaths of infants weighing at least 400 grams or of gestational age of at least 20 weeks).
Neonatal death rate	Neonatal deaths (400 grams/20 weeks) by usual residence, divided by the number of live births registered.
Non-acute episode of care	Involves clinical services provided to admitted and non-admitted patients, including planned geriatric respite, palliative care, geriatric evaluation and management and services for nursing home-type patients. Clinical services delivery by designated psychiatric or psychogeriatric units, designated rehabilitation units and mothercraft services are also considered non-acute.
Non-admitted patient services	Services provided to non-admitted patients of the kind defined in the *National Health Data Dictionary* version 6, data element no. 231 ‘Type of non-admitted patient care’. Services include: emergency services; outpatient services; and other non-admitted patient services.

(Continued on next page)

Table 5.18 **(Continued)**

Term	*Definition*
Opportunity cost	The return forgone on the next best investment, calculated as eight per cent of depreciated replacement value of buildings, equipment and land.
Overdue patient	A patient whose wait has exceeded the time determined as clinically desirable in relation to the urgency category to which he or she has been assigned for elective surgery.
Percentage of facilities accredited with the Australian Council on Healthcare Standards	The ratio of accredited beds to all hospital beds in the jurisdiction.
Perinatal death	Fetal death or neonatal death of infant weighing at least 400 grams or of gestational age of at least 20 weeks.
Perinatal death rate	Perinatal deaths (400 grams/20 weeks) by usual residence divided by the total number of births (that is live births registered and fetal deaths combined).
Primary care	Essential health care based on practical, scientifically sound and socially acceptable methods made universally accessible to individuals and families in the community.
Primipara	Pregnant woman who has had no previous pregnancy resulting in a live birth or a still birth.
Private patient medical costs (estimated)	The sum of salary/sessional and visiting medical officer payments divided by the number of public patient days multiplied by the number of private patient days.
Public hospital	A hospital that provides free treatment and accommodation to eligible admitted persons who elect to be treated as public patients. It also provides free services to eligible non-admitted patients and may provide (and charge for) treatment and accommodation services to private patients. Charges to non-admitted patients and admitted patients on discharge may be levied in accordance with the Australian Health Care Agreements (for example, aids and appliances).
Puerperium	The period or state of confinement after labour.
Qualified/unqualified newborn	A newborn patient day is qualified if the infant: is the second or subsequent live born infant of a multiple birth whose mother is an admitted patient; is admitted to an intensive care facility in a hospital; or is admitted to, or remains in, hospital without its mother. A newborn patient day is unqualified if the infant does not meet any of these three criteria. Unqualified patient days are excluded from measurement of patient days for newborn episodes of care.
Real expenditure	Actual expenditure adjusted for changes in prices.
Same day patients	A patient whose admission date is the same as the separation date.
Sentinel procedures	Procedures that are the most common surgical operations, provided by acute care hospitals during a given period of time.
Separation	The discharge, transfer or death of a patient admitted to hospital.
Separations per 1000 population	The rates of hospital separations per 1000 population.
Spontaneous vertex	Vaginal birth without intervention in which the baby's head is the presenting part.

(Continued on next page)

Table 5.18 **(Continued)**

Term	*Definition*
Standard primipara	Victoria defines this as follows: 20–34 years of age, not small for gestational age (SGA greater than the 10th percentile), singleton pregnancy, at term (37–41 weeks gestation), with a cephalic presentation and free of medical complications of pregnancy.
Triage category	The urgency of the patient's need for medical and nursing care: category 1 — resuscitation (immediate within seconds) category 2 — emergency (within 10 minutes) category 3 — urgent (within 30 minutes) category 4 — semi-urgent (within 60 minutes) category 5 — non-urgent (within 120 minutes).
Unplanned hospital re-admissions	The total number of unplanned and unexpected re-admissions within 28 days of separation, during the time period under study, divided by the total number of separations (excluding deaths) for the same time period. Unplanned hospital re-admission refers to an unexpected admission for further treatment of the same condition for which the patient was previously hospitalised; an unexpected admission for treatment of a condition related to one for which the patient was previously hospitalised; or an unexpected admission for a complication of the condition for which the patient was previously hospitalised. Day stay patients are included in both the numerator and the denominator. This indicator addresses patients readmitted to the same organisation.
Unreferred attendances	GP services, emergency attendances after hours, other prolonged attendances, group therapy and acupuncture.
Urgency category for elective surgery	category 1 patients — admission within 30 days is desirable for a condition that has the potential to deteriorate quickly to the point that it may become an emergency. category 2 patients — admission desirable within 90 days for a condition causing some pain, dysfunction or disability, but that is not likely to deteriorate quickly or become an emergency. category 3 patients — admission at some time in the future acceptable for a condition causing minimal or no pain, dysfunction or disability, that is unlikely to deteriorate quickly and that does not have the potential to become an emergency.
User cost of capital per casemix-adjusted separation	(Depreciation + opportunity cost)/casemix-adjusted separations.
Vaginal delivery following primary caesarean section	The number of patients delivering vaginally following a previous primary (first) caesarean section as a proportion of the total number of patients delivering who have had a previous primary caesarean section and no intervening pregnancies greater than 20 weeks gestation.