7 Other partial indicators

Key points

- The complexity of hospital services means that indicators additional to those reported in chapters 5 and 6 are necessary to compare the performance of public and private hospital systems. In broad terms, these indicators cover *partial productivity*, *access* and *quality and patient safety*.
- The Commission observed a paucity of reliable published data with which to compare the hospital sectors.
- Best available partial productivity data suggest that private hospitals operate leaner staffing levels and have shorter average lengths of stay per episode of care.
- The shorter average lengths of stay are due to:
  - private hospitals (on average) having relatively shorter lengths of stay for the same surgical procedures
  - private hospitals undertaking relatively more surgical procedures.
- In terms of access, the number of accident and emergency department visits grew from 5.8 to 7.1 million between 2002-03 and 2007-08. The proportion of patients being seen within their triage benchmarks is reported to have improved. However, there are some questions about the veracity of available data.
- More people are on public hospital elective surgery waiting lists and they are waiting longer to be admitted into public hospitals than in 2002-03.
  - Yet, public hospitals were observed to be meeting their hospital waiting time targets. Data manipulation is alleged to have occurred with elective surgery waiting lists in Victoria, and data need to be collected on a consistent basis across Australia.
- Bed occupancy rates are a more comparable measure of timely access to hospitals. Public hospitals have average bed occupancy rates that are above or near the levels where regular bed shortages can occur.
- The reporting of national quality and patient safety indicators is still at a formative stage, and few data can provide a comparison between public and private hospitals.
- The best available data on the percentage of hospital separations that involve an adverse event have many shortcomings, but suggest a lower incidence of adverse events in private hospitals.

The terms of reference ask the Commission to examine and report on the relative performance of the public and private hospital systems. In doing so, the Commission is to consider other performance indicators, including the ability of

such indicators to inform comparisons of hospital performance and efficiency, and to propose any developments that would improve the feasibility of future comparisons.

Many partial indicators of hospital performance have been reported in other publications (for example, DOHA 2009f; SCRGSP 2009; AIHW 2008c, 2009a). The Commission has included such indicators to provide as complete a picture as possible of the performance and efficiency of the public and private hospital systems, and the accessibility and quality of care each system provides. Some well-established indicators of the performance of the public hospital system, such as waiting times, are not available for the private sector. The Commission nevertheless considers that such indicators provide useful information on the performance of the public hospital system.

Chapters 5 and 6 reported on average costs per separation and hospital-acquired infection rates. To identify additional indicators of system performance, the Commission reviewed a number of existing performance indicator frameworks, as well as frameworks under development such as the proposed National Healthcare Agreement indicator set. The partial indicators covered in this chapter (as well as those reported earlier) are summarised in box 7.1.

In choosing the indicators, the Commission was guided by three overarching principles. The indicators should be:

- outcome and output based — they should reflect how hospitals are improving health outcomes, or if that is not possible, how well they are providing services
- hospital-wide — they should reveal the overall performance of hospitals and hospital sectors rather than specific aspects of clinical care
- based on the best available data — except for those data that are manifestly inadequate, the best available data should be reported and their known deficiencies documented.

There are four implications that arise from the choice of indicators and data. First, a number of input or process-oriented indicators are not reported here, even though they are found in other frameworks. For example, indicators on the workforce sustainability of hospitals are excluded because their interpretation is ambiguous. A high proportion of an older nursing workforce, for example, may indicate insufficient recruitment of junior nurses, or it can indicate a more effective, experienced workforce.

Box 7.1 **Summary of partial indicators**

- Costs (chapter 5)
  - cost per casemix-adjusted separation
  - average cost of individual DRGs
- Productivity
  - labour productivity
  - bed productivity
  - drug, medical and surgical supplies productivity
  - relative stay index
- Access to hospital services
  - emergency department waiting times
  - elective surgery waiting lists and times
  - occupancy rates
  - private hospital insurance costs
  - rates of separation for elective surgery
- Quality and patient safety
  - hospital-acquired infections (chapter 6)
  - accreditation of hospitals and hospital beds
  - unplanned readmissions and returns
  - adverse events
  - obstetric indicators.

Second, much of the data presented in this chapter are publicly available and have well-known deficiencies, such as the data published by the Australian Council on Healthcare Standards (ACHS). The Commission has also made a number of suggestions that would improve the availability and comparability of data in the future.

Third, as with average costs and hospital-acquired infection rates, each of the indicators in box 7.1 are partial measures of hospital performance. This means that it is potentially misleading to interpret the results of any one indicator without regard to others.

Finally, most of the partial indicators presented in this chapter are drawn from published sources and are averages for each sector. The Australian Health Service Alliance (AHSA) cautioned that:

> While overall sector information is useful when comprehensive and robust, such aggregate information may conceal the existence of a small number of hospitals with particularly low quality. (sub. DR53, p. 6)

As noted in chapters 2, 3 and 4, public hospitals differ considerably from each other in size and location and private hospitals have a range of operational motives. These differences are not captured in the partial indicators presented in this chapter.

7.1 Productivity

An important policy objective is whether hospitals are making economical use of their resources. Wasted resources can mean a lost opportunity to improve health outcomes. A measure of the efficiency of resource use is technical efficiency (chapter 1). A hospital is said to be technically efficient if, in the provision of a service, it is not feasible to reduce any input without also decreasing the service and without increasing any other input.

The preferred measure of technical efficiency is total factor productivity (TFP). TFP indicates how effectively hospitals are able to transform all of their inputs (labour, capital, and pharmaceutical, medical and surgical supplies) to provide all of their services (inpatient and outpatient services and emergency department visits).

TFP, however, is difficult to measure for hospitals. This is because some of the information needed to calculate TFP, such as measures of capital and revenue, are not available for hospitals. Instead, this section reports four partial measures of productivity:

- labour productivity
- bed productivity
- drug, medical and surgical supplies productivity
- relative stay index.

Care must be exercised when interpreting these measures. First, each of the partial productivity measures need to be read together. Second, except for casemix adjustment, none of them account for a range of factors that can affect a hospital's performance, such as:

- the range of non-inpatient services hospitals provide (such as accident and emergency departments)
- the patient risks hospitals manage
- other factors outside the control of hospitals.

Labour productivity

Labour productivity is a measure of the extent to which non-medical staff (all hospital staff except doctors and surgeons) contribute to a hospital's services.[1] Labour costs are a significant component of hospital costs, and hospitals with high labour productivity are likely to be more technically efficient in their use of labour. Two measures of labour productivity of inpatient services were used:

- patient days per non-medical staff — defined as the number of days for which a hospital provides lodging to patients divided by the number of non-medical staff
- casemix-adjusted separations per non-medical staff — defined as casemix-adjusted separations divided by the number of non-medical staff.

It is difficult to draw accurate comparisons of labour productivity between public and private hospitals because, as noted earlier, no account was made for teaching and research functions or for the non-inpatient services provided by many public hospitals. Valid comparisons can be made over time, however. These trends suggest that both patient days per non-medical staff member and separations per non-medical staff member have been declining in public hospitals and increasing for private hospitals between 2002-03 and 2007-08 (table 7.1).

There are three other limitations to this indicator. First, hospital establishment data do not count the number of doctors and surgeons exercising their rights of private practice in private and public hospitals (AIHW 2009a; ABS 2008f). As a result, to improve comparability between sectors, private practice and salaried doctors and surgeons were excluded from the count of staff for both private and public hospitals.[2]

Second, high labour productivity may not always be desirable. Catholic Health Australia said that measuring the numbers of separations per doctor or nurse:

> … could send signals that use of fewer than clinically appropriate numbers of clinical staff is to be encouraged. (sub. 20, p. 13)

A relatively high ratio of medical and nursing staff to patients may provide a higher level of personal care to patients at levels that are clinically appropriate.

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1 The reasons for excluding medical staff from this calculation of labour productivity are detailed below.

2 Despite this general exclusion, it was not possible to fully exclude from the data the few salaried medical officers employed in private hospitals. Their inclusion does not materially affect the results.

Finally, labour productivity estimates include psychiatric hospitals. Data for private acute and psychiatric hospitals were not available separately, so for comparability, psychiatric hospitals were included in the public hospital dataset.

Table 7.1 **Labour productivity, 2002-03 and 2007-08[a]**

	Patient days per non-medical staff member		*Casemix-adjusted separations per non-medical staff member[b]*	
	2002-03	*2007-08[c]*	*2002-03*	*2007-08[c]*
Public hospitals				
NSW	92	89	22	23
Vic	91	78	24	23
Qld	94	77	23	22
SA	106	96	26	24
WA	86	79	21	22
Tas	100	87	24	23
NT	105	103	26	25
ACT	84	82	23	25
Australia	93	84	23	22
Private hospitals				
NSW	154	149	49	55
Vic	145	151	44	52
Qld	149	159	44	53
SA	150	150	49	56
WA	145	138	42	40
Tas, NT and ACT[d]	138	156	np	np
Australia	148	151	44	52

a ABS data for private hospitals do not exclude psychiatric hospitals. For comparability, psychiatric hospitals have been included in both hospital samples. **b** Excludes newborns with no qualified days, hospital boarders and posthumous organ donors. **c** 2006-07 data for private hospitals. Includes a small number of salaried medical officers. **d** Data on private hospitals in Tasmania, the Northern Territory and the ACT are aggregated to protect the confidentiality of the small number of hospitals in each of these jurisdictions. **np** Not published.

Source: AIHW (2004, 2009a); ABS (*Private Hospitals, Australia*, Cat. no. 4390.0); Productivity Commission estimates.

Bed productivity

Capital productivity is a measure of the extent to which a hospital's capital stock (buildings, plant and equipment) contributes to the provision of hospital services. There are various difficulties associated with quantifying the capital stock of hospitals in dollar terms (chapter 5), and so the number of licensed or available beds is used here as a proxy. Two measures of bed productivity were used:

- patient days per bed — the number of days for which a hospital provides lodging to patients divided by the number of licensed or available beds

- casemix-adjusted separations per bed — casemix-adjusted separations divided by the number of licensed or available beds.

Hospitals with high rates of bed productivity are likely to be more technically efficient in their use of capital.

Hospital bed productivity measures are relatively more comparable measures of inpatient services than labour productivity. This is because beds, unlike labour, are used exclusively for inpatient services. Public hospitals recorded more patient days per bed (316) than private hospitals (279) in 2007-08, although there was considerable variability for both public and private hospitals in each state and territory (table 7.2). Nationally, the rate of bed utilisation declined slightly for public hospitals and increased for private hospitals between 2002-03 and 2007-08. Separations per bed were similar between public and private hospitals in 2002-03, but by 2007-08, private hospital bed productivity had grown relatively larger.

Table 7.2 **Bed productivity, 2002-03 and 2007-08**

	Patient-days per bed		*Casemix-adjusted separations per bed*[a]	
	2002-03	*2007-08*	*2002-03*	*2007-08*
Public hospitals				
NSW	337	311	79	79
Vic	357	351	93	102
Qld	295	281	73	79
SA	330	324	81	81
WA	301	302	73	83
Tas	336	302	82	78
NT	362	423[b]	90	104
ACT	322	326	88	98
Australia	330	316	81	85
Private hospitals				
NSW	264	308	86	115
Vic	281	279	87	95
Qld	280	298	83	101
SA	282	302	92	115
WA	260	215	79	79
Tas, NT and ACT[c]	np	199	np	np
Australia	264	279	82	99

a Excludes newborns with no qualified days, hospital boarders and posthumous organ donors. **b**Patient days per bed may exceed 365 since beds may have more than one same-day patient. **c**Data on private hospitals in Tasmania, the Northern Territory and the ACT are aggregated to protect the confidentiality of the small number of hospitals in each of these jurisdictions. **np** Not published.

Source: AIHW (2004, 2009a); ABS (*Private Hospitals, Australia*, Cat. no. 4390.0); Productivity Commission estimates.

The use of beds as a proxy for capital costs is not without its limitations. While bed productivity is acceptable for comparing across hospitals of similar peer groups in a given year, it is less appropriate for comparing across different types of hospitals (as beds do not reflect differences in specialisations) or for considering trends over time (as it does not capture the gradual uptake of new technologies).

Another limitation of the bed productivity indicator is that high bed productivity (utilisation) is not unambiguously desirable. Some spare capacity is necessary to manage the unpredictable workload associated with emergency admissions and to provide timely access to elective surgery (see section 7.2).

Drug, medical and surgical supplies productivity

Drug, medical and surgical supplies represent a significant component of hospital operating costs. The Steering Committee for the Review of Government Service Provision (SCRGSP 2009) reported that about 15 per cent of public hospital recurrent (non-capital related) expenditure was attributable to drug, medical and surgical supplies. Hospitals with high productivity in the use of drug, medical and surgical supplies are likely to be more technically efficient in that area.

Two measures of drug, medical and surgical supplies productivity are used in this chapter:

- patient days per $1000 of expenditure on drug, medical and surgical supplies — the number of days for which a hospital provides lodging to patients divided by $1000 of constant price expenditure on drug, medical and surgical supplies
- casemix-adjusted separations per $1000 of expenditure on drug, medical and surgical supplies — casemix-adjusted separations divided by $1000 of constant price expenditure on drug, medical and surgical supplies.

Drug, medical and surgical supply productivity is not easily comparable between public and private hospitals due to the different prices paid by the sectors for their supplies. A given sector's productivity, however, is more comparable over time. Both the patient-days and separations per $1000 spent on drug, medical and surgical supplies declined for both public and private hospitals (table 7.3). Given that prices are held constant, the 'productivity decline' represents an increase in the intensity of the use of drug, medical and surgical supplies in the delivery of services.

To the extent that public hospitals pay less for their drug, medical and surgical supplies than private hospitals, actual public hospital productivity will be lower than indicated by the rates reported in table 7.3.

Table 7.3 **Drug, medical and surgical supplies productivity, 2002-03 and 2007-08[a]**

	Patient-days per $1000 drug, medical and surgical supplies		*Separations per $1000 drug, medical and surgical supplies[b]*	
	2002-03	*2007-08[c]*	*2002-03*	*2007-08[c]*
Public hospitals				
NSW	6.4	4.0	1.4	0.9
Vic	7.3	3.9	2.0	1.2
Qld	6.5	3.4	1.6	0.9
SA	10.0	5.7	2.4	1.3
WA	6.8	4.2	1.7	1.2
Tas	6.7	3.2	1.5	0.8
NT	6.6	5.4	2.2	1.9
ACT	5.8	4.0	1.7	1.2
Australia	6.9	4.0	1.7	1.1
Private hospitals				
NSW	4.6	3.4	1.4	1.2
Vic	5.7	4.0	1.8	1.4
Qld	6.2	4.2	1.8	1.4
SA	5.5	3.9	1.7	1.3
WA	6.0	3.5	2.0	1.2
Tas, NT and ACT[d]	2.0	4.0	0.7	1.5
Australia	5.3	3.8	1.7	1.3

[a] Deflator is constructed from drug (imported and domestic) indices, and medical and surgical supply (imported and domestic) indices. ABS data for private hospitals do not exclude psychiatric hospitals. For comparability, psychiatric hospitals have been included in both hospital samples. [b] Excludes newborns with no qualified days, hospital boarders and posthumous organ donors. [C] 2006-07 data for private hospitals. [d] Data on private hospitals in Tasmania, the Northern Territory and the ACT are aggregated to protect the confidentiality of the small number of hospitals in each of these jurisdictions.

Source: AIHW (2004, 2009a); ABS (*Private Hospitals, Australia*, Cat. no. 4390.0); Productivity Commission estimates.

Relative stay index

Hospital length of stay is sometimes used as a measure of hospital efficiency. It is an indirect measure of technical efficiency because hospitals that have shorter lengths of stay for a patient are presumed to be able to spread the total cost of fixed overheads and capital assets across a greater number of patients.

The average length of stay (ALOS) is a useful indicator in this regard, and is commonly used to compare hospital performance for individual procedures (AIHW 2009a). However, it is a poor indicator when comparing the performance of hospitals across all of their inpatient activity. This is because a hospital's reported ALOS does not adjust for its composition of services.

A more appropriate measure of a hospital's ALOS is its relative stay index (RSI). The RSI is defined as the actual number of acute care patient days divided by the *expected* number of acute care patient days, adjusted for casemix. RSI differs from ALOS in two respects:

- the length of stay is standardised using a reference composition of procedures (in much the same way as age standardisation)
- each DRG is adjusted for its relative cost weight (AIHW 2009a; SCRGSP 2009).

Public hospitals exhibited relatively shorter lengths of stay than private hospitals for medical DRGs (with an RSI of 0.94 compared to 1.20) in 2007-08 (table 7.4). Private hospitals exhibited shorter lengths of stay for surgical DRGs than public hospitals (0.98 compared to 1.03) in 2007-08.

Table 7.4 **Relative stay index, public and private hospitals, by DRG procedure partitions, 2002-03 and 2007-08[a]**

	Medical		*Surgical*		*Other*	
	2002-03	*2007-08*	*2002-03*	*2007-08*	*2002-03*	*2007-08*
Public hospitals						
NSW	1.03	1.01	1.08	1.05	1.19	1.16
Vic	0.91	0.86	0.99	1.01	1.00	1.01
Qld	0.92	0.89	0.99	0.98	1.04	1.09
SA	0.94	0.97	1.01	1.04	1.00	1.03
WA	1.03	0.97	1.04	1.04	1.00	0.99
Tas	1.01	0.95	1.07	1.02	1.09	1.10
NT	np	1.08	np	1.44	np	1.4
ACT	np	0.88	1.07	0.94	1.10	0.91
Australia	0.96	0.94	1.03	1.03	1.07	1.07
Private hospitals						
NSW	1.26	1.31	0.93	0.96	0.87	0.96
Vic	1.13	1.17	0.97	0.99	0.95	0.97
Qld	1.16	1.18	0.98	0.95	0.98	0.98
SA	1.13	1.16	0.96	0.97	0.91	0.97
WA	1.19	1.18	1.04	1.07	0.98	0.98
Tas, NT and ACT[b]	np	np	np	np	np	np
Australia	1.17	1.2	0.97	0.98	0.93	0.97

a Under the direct standardisation method, RSI is calculated by multiplying the ALOS for each sub-group of hospital by total number of separations undertaken by all hospitals, divided by the total patient days for all hospitals. **b** Owing to commercial-in-confidence restrictions on ABS data, it was not possible to estimate the RSI of private hospitals in Tasmania, the ACT and the Northern Territory, though their contributions are included in the Australian total. **np** Not published.

Source: AIHW (2004, 2009a).

It follows that the relatively low ALOS observed for private hospitals is due to a combination of their lower RSI for surgical and other DRGs (compared to public hospitals), and their tendency to undertake relatively more separations in the surgical and other DRG partitions than public hospitals (chapter 4).

Even though the RSI represents an improvement on simply reporting hospital-level ALOS, both indicators have their limits. Neither reports the actual resources used in the delivery of an episode of care — TFP is a better measure in this regard. Two hospitals, for example, that exhibit the same RSI or ALOS might still differ in technical efficiency if one hospital employs more staff and other resources than the other.

Labour intensity of hospitals

Labour intensity is a measure of how many staffing resources hospitals employ relative to other inputs. Labour intensity is a useful descriptor of the way a hospital manages its workload. A high (or low) labour intensity is not necessarily desirable, but it can illustrate some of the drivers behind the productivity measures described above.

Public hospitals employed more allied health workers, nursing and other personal care staff per bed than did private hospitals over the period 2002-03 to 2007-08 (table 7.5). This is understandable, given that public hospitals are more likely to provide accident and emergency departments and outpatient clinics than private hospitals.

The number of administration and clerical workers per bed is likely to be more comparable, although this depends on the extent to which clerical and administration staff are part of a hospital's 'overheads' and do not vary substantially with its activities. In broad terms, public hospitals employed twice as many administration and clerical staff than did private hospitals over the period 2002-03 to 2007-08 (table 7.5). The administration and clerical staff reported here do not include off-campus staff (such as head-office staff), and no account has been made of differences in the provision of emergency departments and outpatient services.

Public hospitals reduced the number of allied health, nursing and other personal care workers per bed between 2002-03 and 2007-08, while both hospital sectors increased the number of administration and clerical staff per bed during the same period.

Table 7.5 **Labour intensity of public and private hospitals, 2002-03 and 2007-08[a]**

	Allied health, nursing and other care workers per bed[b]		*Administration and clerical staff per bed*	
	2002-03	*2007-08*[c]	*2002-03*	*2007-08*[c]
Public hospitals				
NSW	3	2.93	0.65	0.56
Vic	3.2	3.63	0.73	0.85
Qld	2.63	3.05	0.5	0.58
SA	2.53	2.77	0.59	0.62
WA	2.84	3.09	0.65	0.75
Tas	2.87	2.93	0.47	0.52
NT	2.81	3.42	0.63	0.68
ACT	3.05	3.26	0.78	0.72
Australia	3.05	2.84	0.6	0.65
Private hospitals				
NSW	1.53	1.67	0.22	0.3
Vic	1.72	1.67	0.23	0.31
Qld	1.55	1.46	0.34	0.35
SA	1.59	1.43	0.28	0.27
WA	1.6	1.79	0.26	0.34
Tas, NT and ACT[d]	np	1.08	0.25	0.21
Australia	1.6	1.58	0.26	0.31

a All staff measured in full-time equivalents. **b** Includes a small number of salaried medical officers for private hospitals because these could not be separated from the data. **c** 2006-07 data for private hospitals. **d** Data on private hospitals in Tasmania, the Northern Territory and the ACT are aggregated to protect the confidentiality of the small number of hospitals in each of these jurisdictions. **np** Not published.

Source: AIHW (2004, 2009a); ABS (*Private Hospitals, Australia*, Cat. no. 4390.0); Productivity Commission estimates.

FINDING 7.1

Private hospitals appear to operate relatively leaner staffing levels than public hospitals, although it is not clear how much of this difference can be explained by the higher provision of emergency department and outpatient clinic services by public hospitals.

FINDING 7.2

Private hospitals exhibit shorter lengths of stay than public hospitals. This is due to private hospitals exhibiting relatively shorter lengths of stay for surgical procedures and undertaking relatively more surgical procedures than public hospitals.

7.2 Access to hospital services

The timeliness of access to hospital care can have a profound influence on clinical outcomes. As the Victorian Auditor-General remarked:

> Timely access to hospital care is important. For patients requiring emergency care or elective surgery, the time taken to receive services can significantly affect clinical outcomes. (Victorian Auditor-General 2009, p. 1)

The ability of patients to access medical and surgical services is thus an important policy objective of governments and an important motivator for private hospital insurance.

Under the National Healthcare Agreement (NHA), state and territory governments have agreed to provide free public hospital services based on:

- clinical need within a clinically appropriate time period
- equitable access regardless of a patient's geographic location.

The NHA, like the Australian Health Care Agreements which preceded it, requires states and territories to collect data on waiting times for emergency treatment and elective surgery in public hospitals. These access measures are widely available and well-established indicators of public hospital performance.

In contrast to the regular reporting of public sector waiting times, few measures of timely access to private hospitals are available. The Commission has only been able to directly compare the accessibility of care between the public and private systems for a small number of indicators relating to equitable access to elective surgery.

Timely access to emergency treatment

Emergency medicine is concerned with addressing the injury or illness that poses an immediate risk to a patient's life or long-term health. The Australian Triage Scale recognises that the most urgent (resuscitation) patients need to be seen immediately and the least urgent emergency patients need to be seen within two hours of presentation to a hospital emergency department (ACEM 2000).

Public hospitals

Public hospitals (including privately-owned hospitals that provide public hospital services) are required by each state and territory health department to collect and report data on the number of persons presenting to emergency departments, the

assignment of clinical urgency, the time at which the person was seen by a medical officer, and the outcomes of the emergency care.

Data are reported to the Australian Government Department of Health and Ageing (DOHA) and the Australian Institute of Health and Welfare (AIHW) under the National Non-Admitted Emergency Department Care Data Collection and are widely published (AIHW 2009a; SCRGSP 2009; DOHA 2009f).

Between 2002-03 and 2007-08, the number of recorded visits to public hospital accident and emergency departments grew from 5.8 million to 7.1 million, or at about 4.1 per cent per year. In most states, the proportion of patients that were seen within their prescribed benchmark times improved in recent years (table 7.6). The greatest improvements were observed for urgent and semi-urgent cases. For example, the proportion of semi-urgent patients that were seen within their benchmark times increased from 61 to 66 per cent between 2002-03 and 2007-08. Public hospitals in the ACT and the Northern Territory, however, experienced significant declines in the proportion of non-resuscitation patients that were seen within their benchmark times (AIHW 2009a).

Care needs to be exercised when interpreting waiting-time data for emergency departments. There appears to be a significant variation between hospitals in how waiting times are measured, including the assignment of clinical urgency categories (SCRGSP 2009).

Potentially more serious, however, is the suggestion that data manipulation has occurred in at least one and possibly more Victorian public hospitals. The Victorian Auditor-General found that the quality of Victorian emergency department waiting-time data had 'fundamental flaws both with data accuracy and the rigour of data capture processes' (Victorian Auditor-General 2009, p. v). In particular:

> … hospitals inconsistently interpreted reporting rules, data capture methods were susceptible to error, and the accuracy of some data was impossible to check. This means incorrect data can go undetected. In one hospital, data manipulation had occurred. (Victorian Auditor-General 2009, p. 3)

Dr Stephen Parnis, an emergency physician at St Vincent's Hospital and vice president of the Victorian Branch of the Australian Medical Association (AMA), in giving evidence to a Victorian parliamentary inquiry, expressed doubts over the credibility that all Victorian resuscitation patients were seen on time (Medew 2009).

Table 7.6 **Public hospital emergency department waiting times, 2002-03 and 2007-08**

	NSW	*Vic*	*Qld*	*SA*	*WA*	*Tas*	*NT*	*ACT*	*Aust*
Number of accident and emergency department occasions of service (thousands of visits)									
2002-03	1 982	1 261	1 223	472	571	97	94	96	5 796
2007-08	2 418	1 523	1 471	544	778	143	125	98	7101
Rate of change	4.1	3.8	3.8	3.8	-0.9	8.1	5.9	0.5	4.1
Proportion of resuscitation patients seen on time									
2002-03	100	100	99	99	94	92	100	100	99
2007-08	100	100	98	100	99	99	100	100	100
Rate of change	0.0	0.0	-0.3	0.3	1.0	1.6	0.0	0.1	0.2
Proportion of emergency patients seen on time									
2002-03	77	84	73	66	73	55	60	82	75
2007-08	81	79	69	72	69	74	59	81	76
Rate of change	1.1	-1.2	-1.0	1.9	-1.2	6.1	-0.5	-0.3	0.2
Proportion of urgent patients seen on time									
2002-03	57	76	55	47	64	61	64	74	61
2007-08	69	71	56	54	56	54	47	52	63
Rate of change	3.7	-1.4	0.3	2.9	-2.8	-2.4	-6.0	-6.8	0.7
Proportion of semi-urgent patients seen on time									
2002-03	62	65	55	49	68	60	59	67	61
2007-08	75	65	61	60	59	58	47	51	66
Rate of change	3.7	-0.1	1.9	4.0	-2.9	-0.5	-4.3	-5.4	1.6
Proportion of non-urgent patients seen on time									
2002-03	87	86	80	85	87	90	88	79	85
2007-08	90	86	87	80	86	86	86	78	87
Rate of change	0.8	0.1	1.7	-1.1	-0.3	-0.9	-0.4	-0.3	0.4
Proportion of all patients seen on time									
2002-03	65	73	60	53	73	64	65	74	66
2007-08	76	71	63	61	61	60	52	58	69
Rate of change	3.1	-0.5	1.1	3.0	-3.6	-1.4	-4.5	-4.8	0.9

Source: AIHW (2004, 2009a); Productivity Commission estimates.

Private hospitals

A number of privately operated hospitals provide emergency departments, with some serving public patients. The Australasian College for Emergency Medicine (ACEM, sub. 14) argued that waiting times at privately-operated emergency departments were generally less than their public hospital counterparts. According to statistics supplied by the ACEM for three private hospitals in different states (one of which was contracted to provide public hospital emergency department services) in 2007-08:

- 96 per cent of resuscitation patients were seen on time (though this was based on a very small sample of patients)
- 79 per cent of emergency patients were seen on time
- 70 per cent of urgent patients were seen on time
- 72 per cent of semi-urgent patients were seen on time (though there was a large range, 46 to 99 per cent)
- 93 per cent of non-urgent patients were seen on time (sub. 14; pers. comm.).[3]

The ACEM (sub. 14) claimed that some of the main reasons why private hospital emergency departments were able to achieve shorter waiting times were because they had:

- relatively more senior staff in decision-making positions
- incentive-based payments that are aligned with patient throughput
- efficient department sizes
- processes and systems designed to reduce waiting times and improve efficiency.

Timely access to elective surgery

Elective surgery is any form of surgery that a patient's doctor or health professional considers to be necessary but which can be delayed by at least 24 hours (DOHA 2009f).

The two hospital systems have different approaches to providing access to elective surgery. In the public hospital system, the decision to grant a patient access is made by the hospital, reflecting its judgement about the patient's clinical needs as well as its resourcing and performance targets. The decision to access private hospital services, by comparison, is usually made by the patient and their consulting physician. The decision reflects the patient's willingness to pay for the expected benefits of the hospital care, where there is a know out-of-pocket cost.

The AHSA observed that these different approaches have implications for comparing timely access between public and private hospitals:

> [Timely access] is an area where one can anticipate the private sector will produce better results than the public sector. This is because in the private sector funding is uncapped which means there is an incentive and additional resources to facilitate the treatment of additional patients. In the public sector funding and throughput are capped

[3] Pers. comm., Dr Yusuf Nagree, Chair Private Practice Committee, Australasian College for Emergency Medicine, 28 August and 14 September 2009.

> by finite levels of funding and this will reduce access to public hospitals. The comparison and anticipated differences are thus primarily driven not by the hospitals but the differing funding conditions in the two sectors. (sub. 1, p. 8)

Despite uncapped funding to the private sector, some patients may experience difficulties gaining access to private hospitals. The Doctors Reform Society of Australia (sub. DR50) referred to a survey conducted by the Victorian Branch of the AMA. The survey found that private hospitals sometimes refuse to admit patients, with those aged 75 and over most commonly refused admission (AMA Victoria 2001).

Many study participants noted that the need to divert resources to emergencies can interrupt and constrain the delivery of elective surgery. In contrast, the NSW Health Surgical Services Taskforce submitted that:

> … emergency surgical admissions [are] entirely predictable and could be managed more effectively with a planned approach thereby minimising disruption to elective surgical services.(sub. DR43, p. 1)

The Commission examined two measures of timely access to elective surgery:

- public hospital waiting times
- occupancy rates.

Consideration of waiting times was limited to the public sector because private hospital operators do not maintain elective surgery waiting list data. Even though hospital operators maintain detailed morbidity data for each admitted patient (which include a record of the date of admission), such data do not typically record the date of the consultation during which it was decided to admit the patient, so it is not possible to calculate the time taken to receive treatment at a private hospital.

Public hospital waiting times

Public hospitals are required by each state and territory health department to collect data on the number of patients on their waiting lists, the clinical categories assigned to those patients, and the time it has taken from listing to admission for elective surgery. State and territory health departments routinely publish statistics about the performance of public hospitals against performance targets (for example, NSW Department of Health nd; DHS (Victoria) 2009).

Elective surgery waiting times data are collected under the National Elective Surgery Waiting Times Data Collection, and are widely published (AIHW 2008e; SCRGSP 2009; DOHA 2009f). Three elective surgery waiting list indicators are presented:

- net growth (change) in the number of people on waiting lists
- average number of days waited for an admission
- proportion of people being admitted from a waiting list within the benchmark times, by clinical urgency.

The number of people seeking elective surgery grew by 4.8 per cent per year between 2002-03 and 2007-08, with particularly significant growth in 2006-07 and 2007-08 (table 7.7). In contrast, the number of elective surgery admissions only grew by 1.8 per cent per year. After allowing for 'removals', there was a net increase in the number of people waiting for elective surgery between 2002-03 and 2007-08.

The reasons why people were removed from a waiting list is also instructive. The number of people who were taken off the waiting list because they were admitted as an emergency patient, sought treatment outside the public hospital system or could not be contacted (or were presumed to have died) grew *more quickly* than the number of patients being admitted to public hospitals for elective surgery (table 7.7).

Table 7.7 **Additions and removals from public hospital elective surgery waiting lists, 2002-03 to 2007-08**

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*	*Rate of change*
	no.	*no.*	*no.*	*no.*	*no.*	*no.*	*%*
Total additions	586 744	608 680	621 015	638 904	734 715	740 952	4.8
Total removals	601 972	618 180	645 340	657 401	650 973	661 275	1.9
Elective admission	517 503	528 949	549 746	556 953	556 770	565 501	1.8
Emergency admission	3 541	3 985	6 757	6 154	5 909	5 650	9.8
Not contactable/died	7 142	6 832	8 488	9 792	9 036	9 514	5.9
Treated elsewhere	14 217	15 842	22 537	26 565	21 015	22 520	9.6
Other removals	59 569	62 572	57 812	57 937	58 243	58 090	-0.5
Net change to list	-15 228	-9 500	-24 325	-18 497	83 742	79 677	..

.. Not applicable

Source: AIHW (2004, 2005, 2006, 2007a, 2008b, 2009a); Productivity Commission estimates.

The second indicator reports how long people waited before being admitted for elective surgery. The average number of days waited between 2002-03 and 2007-08 increased from 28 to 34 days for the 50th percentile patient and from 197 days to

235 days for the 90th percentile patient (table 7.8). The proportion of admitted patients that had to wait longer than a year declined from 4 per cent to 3 per cent, though it increased in South Australia, the Northern Territory and the ACT (AIHW 2004, 2009a). Study participants suggested that policy decisions to focus efforts on reducing the number of people waiting longer than a year may have led to the observed increases in average waiting times.

Table 7.8 **Elective surgery waiting times, public hospitals, 2002-03 and 2007-08**

	NSW	*Vic*	*Qld*	*SA*	*WA*	*Tas*	*NT*	*ACT*	*Aust*
Days waited at 50th percentile[a]									
2002-03	29	28	21	34	27	42	45	48	28
2007-08	39	33	27	42	30	36	43	72	34
Average growth rate[b]	6.1	3.3	5.2	4.3	2.1	-3.0	-0.9	8.4	4.0
Days waited at 90th percentile[a]									
2002-03	227	197	113	181	207	389	305	300	197
2007-08	278	221	137	208	206	369	337	372	235
Average growth rate[b]	4.1	2.3	3.9	2.8	-0.1	-1.1	2.0	4.4	3.6
Percentage waited more than 365 days									
2002-03	4.2	4.2	2.6	3.0	3.9	10.9	7.0	7.1	4.0
2007-08	1.8	3.6	2.3	3.9	3.0	10.1	8.6	10.3	3.0
Average growth rate[b]	-15.6	-3.0	-2.4	5.4	-5.1	-1.5	4.2	7.7	-5.6

[a] Average wait in days. [b] Average annual rate of growth between 2002-03 and 2007-08.

Source: AIHW (2004, 2005, 2006, 2007a, 2008b, 2009a); Productivity Commission estimates.

The length of waiting lists, however, does not provide an indication of how long a patient actually waited for elective surgery. Waiting times do not take into account the time waited between the referral to the surgeon and the appointment with the surgeon, or the time between the appointment and being placed on the waiting list (AIHW 2008e; Victorian Auditor-General 2009).

The third indicator is a measure of how well hospitals met their respective targets to reduce waiting lists for each of three clinical urgency categories. The three generally accepted urgency categories for elective surgery are:

- category 1 (urgent) — admission is desirable within 30 days
- category 2 (semi-urgent) — admission is desirable within 90 days
- category 3 (non-urgent) — admission at some time in the future is acceptable.

There is no national benchmark for admitting non-urgent cases but the term 'extended wait' is used for patients waiting longer than 12 months and some jurisdictions do set targets for non-urgent cases (SCRGSP 2009).

The data suggest that the proportion of:

- patients still on waiting lists who have waited longer than their recommended times in all clinical urgency categories declined (improved) between 2002-03 and 2006-07 for all jurisdictions (except the Northern Territory which increased, and Queensland and Tasmania for which there was little change)
- patients admitted after having waited longer than their recommended times increased in most jurisdictions (except for NSW, for which this proportion decreased, and Tasmania, for which there was little change) (table 7.9).

Table 7.9 **Elective surgery waiting times by clinical category, public hospitals, 2002-03 and 2006-07[a]**

	NSW	*Vic*	*Qld*	*SA*	*WA*	*Tas*	*NT*	*ACT*
Percentage of patients on waiting lists with extended waits								
2002-03								
Category 1 – 30 day	38.9[b]	–	2.3	17.0	39.2	52.0[c]	57.8	6.6
Category 2 – 90 day	40.2[b]	39.1	5.3	22.1	48.0	66.0[c]	52.0	55.8
Category 3	10.6[b]	27.1	38.2	18.3	29.7	31.0[c]	26.5	32.5
Total	22.7[b]	31.1	26.0	18.8	34.8	49.0[c]	35.8	41.5
2006-07								
Category 1 – 30 day	5.1	–	6.4	21.6	26.2	39.7	53.7	6.8
Category 2 – 90 day	28.9	34.0	20.5	16.8	46.2	64.8	51.7	54.0
Category 3	0.2	10.5	32.5	11.3	6.5	32.0	39.3	24.3
Total	8.5	20.5	25.6	13.5	21.9	48.8	45.9	38.7
Percentage of admitted patients with extended waits								
2002-03								
Category 1 – 30 day	38.9[b]	–	9.3	13.5	15.3	28.0[c]	14.5	8.8
Category 2 – 90 day	40.2[b]	20.5	11.8	15.6	23.5	43.0[c]	24.0	47.1
Category 3	10.6[b]	8.8	13.0	4.9	6.4	23.0[c]	14.6	18.1
Total	22.7[b]	12.4	11.1	10.1	13.6	32.0[c]	17.9	26.6
2006-07								
Category 1 – 30 day	12.9	–	13.2	22.5	28.8	25.0	19.2	7.2
Category 2 – 90 day	25.5	25.3	17.7	22.1	44.0	46.1	43.0	49.1
Category 3	4.4	8.5	11.7	9.5	24.3	22.6	39.9	30.4
Total	14.2	14.5	14.9	17.4	31.6	32.4	31.1	32.4

a Care must be taken when comparing between jurisdictions because of differences in how patients are assigned to clinical categories. **b** 2004-05 data for NSW. **c** 2005-06 data for Tasmania. – Nil or rounded to zero.

Source: SCRGSP (2005, 2009).

The AIHW commented that there 'is evidence of considerable variation in the assignment of clinical urgency categories' (AIHW 2008e, p. 3), and that the lack of

comparability of clinical urgency categories means that indicators are 'not meaningful or comparable across jurisdictions' (AIHW 2008e, p. 4).

The Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals (the Garling Review) was mindful of the quality of waiting list data, and recommended:

> NSW Health should institute an audit program of waiting lists kept for each hospital in NSW, conducted by staff who *are not associated with the relevant area health service or the hospital*. The audits should examine all paperwork that the hospital is required to maintain for the waiting lists including correspondence with referring doctor, and should include the auditing of any reclassification of patients' clinical urgency category. (emphasis added) (Garling Review 2008, Recommendation 82, p. 54)

Occupancy rates

The demand for hospital services — like fire, ambulance and police services — is highly variable and is often difficult to predict. In the presence of this unpredictability, a common strategy among these services is to ensure that the service has sufficient spare capacity. Even though increases in capacity utilisation are sometimes desirable from a productivity perspective, too high a capacity utilisation for a hospital can lead to problems with timeliness of access.

A measure of the capacity of a hospital to provide timely access is its occupancy rate, which is the number of patient days per bed divided by 365 times 100. An occupancy rate of 85 per cent has been suggested as an optimal target (for example, Baghurst, Place and Posnett 1999; Sprivulis et. al 2006). Forero and Hillman (2008) observed:

> There is clear evidence that occupancy rates in most urban public hospitals are greater than 85 per cent. When occupancy rates exceed 85 per cent, regular bed shortages and periodic bed crises are expected. If average bed occupancy rises to 90 per cent or more, access block crises are routinely expected. Spare bed capacity is essential for the effective management of emergency admissions and to have surge capacity. (Forero and Hillman 2008, p. 1)

Occupancy rates are greater than 85 per cent for public hospitals in most jurisdictions, although these have been declining in recent years. Conversely, relative occupancy rates for private hospitals were less than 85 per cent and have been increasing in recent years (table 7.10).

Table 7.10 **Occupancy rates, 2002-03 to 2007-08[a]**

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*
Public hospitals						
NSW	92	87	82	88	88	85
Vic	98	99	100	98	98	96
Qld	81	77	81	78	80	77
SA	83	82	81	83	82	83
WA	91	93	91	94	95	89
Tas	92	90	85	90	87	83
NT	88	94	92	94	91	89
ACT	99	103	108	118	118	116
Australia	90	88	87	89	89	87
Private hospitals[b]						
NSW	72	71	73	76	80	84
Vic	77	76	75	78	84	76
Qld	77	78	80	78	79	82
SA	71	73	74	65	67	59
WA	77	75	77	68	70	83
Tas, NT and ACT	np	np	np	53	53	55
Australia	72	71	72	74	76	76

a It is possible for a hospital to have an occupancy rate of more than 100 per cent because beds may have more than one same-day separation, and same-day separations are counted as having a length of stay of one day. **b** Includes private acute and psychiatric hospitals. **np** Not published.

Source: Productivity Commission estimates based on AIHW (2004, 2005, 2006, 2007a, 2008b, 2009a).

Care, however, needs to be exercised when interpreting occupancy rates. Hospitals that specialise in same-day separations will be observed to have higher rates since beds may have more than one same-day occupant, and same-day separations are usually counted as having a length of stay of one day. As a result, the occupancy rates for the private sector as a whole are likely to be relatively high. Similarly, occupancy rates are likely to be higher in jurisdictions that classify people receiving same-day treatments (such as chemotherapy and renal dialysis) as admitted patients rather than outpatients.[4]

Also, a benchmark of 85 per cent occupancy rate was applied for all hospitals, including those that did not operate emergency departments. Hospitals that have a more predictable patient flow can, arguably, operate to higher capacity levels. However, effective management of emergency surgical admissions can minimise

4 Victoria admits patients for treatments that other jurisdictions may administer as non-admitted (outpatient) services, such as chemotherapy and dialysis, and so a disproportionate share of Victorian separations may be categorised as admitted-patient services (Victorian Department of Health, pers. comm., 30 September 2009).

disruption to elective surgical services (NSW Health Surgical Services Taskforce, sub. DR43, p. 1).

Equitable access to elective surgery

The Commission examined two measures of equity of access to elective surgery:

- the affordability of private hospital insurance
- elective surgery separation rates of public and private hospitals.

Affordability of private hospital insurance

Two measures of the affordability of private hospital services are:

- the costs of private hospital insurance
- the proportion of the population with private hospital insurance.

In the case of the first indicator, the higher is the out-of-pocket cost of private hospital insurance the lower is the financial accessibility of private hospital services. The out-of-pocket cost for private hospital insurance rose from $957 to $1311 per policy or $451 to $631 per insured person between 2002-03 and 2007-08, after deducting for the private health insurance rebate (table 7.11). Since the average price of private hospital insurance rose slightly more quickly than average weekly earnings, the relative cost of private hospital insurance also rose slightly.

Drawing on data published by the Private Health Insurance Administration Council, the proportion of the Australian population that was covered by private hospital insurance (with or without ancillary cover) grew from 43.4 per cent of the population in 2002-03 to 44.7 per cent in 2007-08 (table 7.11).

The data indicate that even though financial accessibility slightly worsened during this period, the accessibility of private hospital services improved with the increased take-up of private hospital insurance.

Table 7.11 **Average cost and population coverage of private hospital insurance, 2002-03 to 2007-08[a]**

		2002-03	*2003-04*	*2006-07*	*2007-08*	*Average annual change*
Cost per policy						%
Current prices[b]	$	957	1 053	1 274	1 311	6.5
Share of earnings[c]	%	2.6	2.7	2.9	2.8	2.2
Cost per insured person						
Current prices[b]	$	451	497	608	631	6.9
Share of earnings[c]	%	1.2	1.3	1.4	1.4	2.6
Population coverage[d]						
No. of persons covered	'000	8 639	8 627	9 145	9 534	2.0
Share of population	%	43.4	42.9	43.5	44.7	..

[a] Hospital-only insurance, excludes ambulance and general (ancillary) care. [b] After deducting for private health insurance rebate. The deduction for the rebate is allocated on a pro-rata basis between hospital and general (ancillary) health insurance components. [c] Average annual earnings, all persons, full time and non-full-time workers. [d] Includes hospital-only and hospital and ancillary cover. .. Not applicable

Source: PHIAC (2003, 2004, 2007a, 2008); ABS (*Average weekly earnings*, Cat. no. 6302.0); Productivity Commission estimates.

Elective surgery separation rates

Separation rates for public and private hospitals is an indirect measure of hospital usage and therefore equity of access. Its advantage is that it provides a consistent basis for comparing levels of equity of access across sub-populations such as socioeconomic status, Indigenous status, gender, and remoteness status of the patient, as well as the hospital.

Separation rates are defined as the number of separations per 1000 population and are standardised for age. This approach 'incorporates an assumption that levels of "need" are the same, on average, for different populations, or that variation in need can be accounted for using data analysis (such as age standardisation)' (AIHW 2008e, p. 6).

Australian hospitals provided approximately 1.6 million elective surgery separations in 2004-05 (the latest year for which the AIHW published these statistics). Private hospitals undertook more elective surgery separations (48.3 separations per 1000 population, age-standardised) than public hospitals (31.0 separations per 1000 population) (table 7.12).

Table 7.12 **Elective surgery separation statistics, 2007-08**[a]

	Public elective surgical separations	*Private elective surgical separations*	*All elective surgical separations*
By patient's remoteness category[b]			
Major cities	26.0	54.1	80.1
Inner regional	34.3	49.1	83.4
Outer regional	36.7	40.5	77.2
Remote	35.3	32.5	67.8
Very remote	30.3	20.5	50.8
All patients	29.0	52.0	81.0
By patient's socioeconomic status[c]			
Most disadvantaged	37.9	37.9	75.7
Second most disadvantaged	34.0	45.0	79.0
Middle quintile	30.6	51.0	81.6
Second most advantaged	24.9	55.7	80.6
Most advantaged	16.9	69.1	86.0
All patients	29.0	52.0	81.0
By patient's Indigenous status			
Indigenous Australians	38.1	9.9	47.9
Other Australians	27.7	50.2	77.9
All persons	27.8	49.6	77.4
By patient's gender[d]			
Male	27.3	42.8	70.1
Female	34.9	54.6	89.4
All patients	31.0	48.3	79.2

[a] Rates of separation per 1000 people, age-standardised to the estimated resident population 30 June 2001. [b] Australian Standard Geographical Classification, Remoteness Areas. Coverage of the linked data by remoteness areas ranged from 60 per cent in Remote areas to 100 per cent in Major cities. [c] Socio-Economic Indexes for Areas (SEIFA) classification. Coverage by quintile of socioeconomic advantage/disadvantage ranged from 85 per cent for the Middle quintile to 100 per cent for the Most advantaged quintile. [d] 2004-05.

Source: AIHW (2008e, 2009a).

As a broad generalisation, patients from the most disadvantaged socio-economic areas and regional and remote areas were more likely to use public hospitals. Conversely, patients who were from more advantaged socio-economic areas, non-Indigenous or from the major cities were more likely to use private hospitals (table 7.12).

Consequences of hospital congestion

Hospitals operate a number of units and wards. The ability of a unit or ward to treat patients depends in part on its ability to refer them from one area of the hospital to another. For example, the ability of an emergency department to admit a patient

depends on the availability of a ward bed. Similarly, the ability of a patient to be transferred from an emergency department or general ward to an intensive-care unit (ICU) bed depends on the availability of an ICU bed.

The ACHS reports several statistics that describe the extent of congestion (or 'bed blocking') within a hospital. As noted in chapter 6, the ACHS data are based on relatively few hospitals (between 30 and 60 hospitals for these statistics). The collection is voluntary, so there is a risk of sample selection bias. Finally, the statistics do not account for differences in casemix. The ACHS (sub. 13) noted that its data are not intended for benchmarking purposes but rather internal review processes.

The ACHS (2008) reported that the percentage of emergency department patients who waited longer than eight hours to be admitted increased from 25 per cent to 33 per cent between 2002 and 2007.[5] Except for 2006, there were no statistically significant differences between public and private hospitals.

The ACHS collects and reports three statistics on the accessibility to and from ICU and high-dependency unit (HDU) beds. These are the proportion of:

- patients who could not be admitted to an ICU because of a lack of ICU resourcing
- elective surgery deferred or cancelled due to lack of ICU or HDU bed
- patients who were transferred to another facility or area due to unavailability of ICU or HDU bed (ACHS 2008).

Even with the relatively small sample, there were statistically significant differences between public and private hospitals. For example, the percentage of patients that were not admitted to an ICU because of a lack of resourcing in public hospitals was 8.6 per cent compared to 1.2 per cent in private hospitals.

The ACHS also reported on the extent of delays on discharge from the ICU or HDU of more than 12 hours (ACHS 2008). Approximately 16 per cent of patient transfers from ICU or HDU to hospital beds were delayed in 2007, across the 38 reporting public and private hospitals. There was a statistically significant difference between public and private hospitals. The rate for private hospitals was 3.5 per cent compared to 18.4 per cent for public hospitals.

[5] Including patients who waited longer than eight hours and were planned for admission but discharged from an emergency department without reaching an inpatient bed, were transferred to another hospital for admission, or died in the emergency department.

Timely access to elective surgery is less likely in public hospitals than in private hospitals. The relatively high bed occupancy rates in public hospitals restrict their ability to manage their unpredictable workload. Equity of access is more likely in public hospitals than private hospitals, since public hospitals provide relatively more elective surgery to patients from poor socioeconomic areas and from more remote areas of Australia.

7.3 Quality and patient safety

Hospital-acquired infections, an important aspect of quality and patient safety, were discussed in chapter 6. This section examines a selection of other quality and patient safety indicators of hospital care. The Melbourne Institute of Applied Economic and Social Research noted that measuring quality and patient safety is complex and that there is no concise measure:

> … hospital quality is a multifaceted concept that covers aspects such as effectiveness of treatment, timeliness of service delivery, quality of amenities, technological sophistication, incidences of in-hospital adverse events and so on. Constructing, comparing and synthesizing measures across different quality dimensions are a challenging task …
>
> The difficulty is compounded by the fact that often within a given quality dimension there exist multiple measures and/or outcomes. For example, in the case of in-hospital adverse events, there are more than 20 common measures covering four different aspects: hospital-acquired infections, operative and post-operative complications, sentinel events and obstetrics … (sub. 16, p. 6)

The Australian Commission on Safety and Quality in Health Care (ACSQHC) has worked with the AIHW to develop a set of indicators that can be used to measure hospital quality and patient safety (AIHW 2009g). Such a framework is intended to be useful for public and for private hospitals. In addition, there are indicator frameworks used for the NHA (appendix B); by the National Health Performance Committee and the SCRGSP (appendix C); and by the Women's and Children's Hospitals associations, the Australian Healthcare and Hospitals Association, the Australian Private Hospitals Association, and state and territory health departments.

Given the potentially very large number of possible indicators, the Commission has selected those indicators that best indicate whole-of-hospital performance. That is, the indicators that can be widely applied and are not disease or injury specific. In addition, the Commission has reported only those indicators for which data are published for both public and private hospitals (box 7.2).

Box 7.2 **Quality and patient safety indicators**

Indicators for which the Commission has reported publicly available data include:

- accreditation
  - the proportion of hospitals and beds that are accredited
- readmission and returns
  - the rates of unplanned readmissions to hospital within 28 days of a surgical admission
  - the rates of unplanned return to theatre or operating room during an admission
  - the rates of unplanned return to an ICU within 72 hours of discharge
- adverse events
  - patient falls
  - pressure ulcers
  - complications of blood transfusion
  - adverse drug events
- intentional self-harm (and suicide)
- obstetrics
  - foetal, neonatal and perinatal mortality rates
  - caesarean section rates

Accreditation

Accreditation indicates that a hospital regularly reviews its programs, services and organisation to ensure processes are in place to support quality of care to patients (ACSQHC 2008). Accreditation does not mean that errors do not occur, but that processes are in place to support quality care and that those processes are checked regularly.

Hospital accreditation is currently available through a number of providers, with most public and private hospitals seeking accreditation as members of the ACHS. In January 2008, 95 per cent of public hospitals and day procedure facilities and 97 per cent of private hospitals and day procedure facilities were accredited (ACSQHC 2008). Since June 2008, the Private Health Insurance (Accreditation) Rules 2008 (Cwlth) have required hospitals that provide privately insured services to be accredited.

The ACSQHC noted that it is currently developing an alternative model for safety and quality accreditation (ACSQHC 2008).

Unplanned readmissions and returns

The three indicators of unplanned readmissions and returns include:

- unplanned readmissions after 28 days of a surgical admission
- unplanned return to ICU (or HDU) within 72 hours of discharge
- unplanned return to operating room during an admission.

An indicator of whether a hospital's care is clinically effective is the extent to which a discharged patient is subsequently readmitted for the same or substantially similar clinical condition in a relatively short space of time (SCRGSP 2009). One such measure is the unplanned (and unexpected) readmission to hospital within 28 days of a surgical admission. Unplanned/unexpected readmissions are included in the reporting structure for the NHA (COAG 2008d).

There is currently only one national collection that reports this indicator. The ACHS reported that unplanned and unexpected hospital readmissions within 28 days declined from 2 per cent in 2003 to 1.2 per cent in 2007 (ACHS 2008). From a sample of between 310 and 334 hospitals, of which approximately 170 were private, there were no statistically significant differences observed between public and private hospitals between 2003 and 2005, though private hospitals reported lower rates of readmission in 2006 and 2007.

A high rate of unplanned readmission into an ICU may reflect less than optimal management of a patient (including ward management), or a patient's early discharge to accommodate other ICU admissions (ACHS 2008). The rate of unplanned readmission to ICU is defined as the number of unplanned readmissions into an ICU within 72 hours of discharge from an ICU divided by the number of admissions into an intensive care unit.

The rate of unplanned readmissions to an ICU was 1.7 per cent in 2007 (ACHS 2008). This rate has been relatively constant since 2001. Though some jurisdictions exhibited statistically significant different rates relative to the group average, there were no statistically significant differences reported for public and private hospitals.

A related indicator is the extent to which patients are unexpectedly returned to an operating room (theatre) after surgery during the same admission. Unplanned return to theatre has been proposed by the AIHW for inclusion in a national set of safety and quality indicators (AIHW 2009g).

As with unplanned readmission to hospital, there is only one national data collection that reports this indicator. The ACHS reported that 0.41 per cent of patients

experienced an unplanned return to theatre in 2007 (ACHS 2008). From a sample of between 274 and 291 hospitals, the rate remained largely unchanged between 2003 and 2007, and there were no statistically significant differences between public and private hospitals during this period.

Limitations of indicators

There are four limitations to the reported statistics on readmissions and returns to theatre.

First, no account has been made for the considerable differences between hospitals in the policy environments in which they operate, the diseases they treat, and their geographic locations. To ensure that indicators meaningfully reveal the underlying characteristics of a hospital rather than those of its external operating environment, it is important that there is some process for standardising or adjusting for such differences. The meaningfulness of these statistics would be improved if they were adjusted for:

- hospital casemix (for example, specific diagnostic categories such as chronic heart failure and chronic obstructive pulmonary disease are believed to be at higher risk of readmission)
- patient-risk characteristics, such as age, gender and comorbidities
- the extent to which the patient receives ongoing support outside of hospital after discharge (such as from outpatient clinics, community and family support services)
- the extent to which the patient complies with the prescribed self-management strategies (Hasan 2001; SCRGSP 2009).

Second, while 300 or so hospitals represent a relatively large sample of public and private hospitals, given the voluntary nature of the ACHS Clinical Indicator Program, it is likely that there is an element of self-selection in the data. Statistics based on a census would provide a more accurate measure of the differences between public and private hospitals.

Third, for readmission rates to be meaningful, care must be taken to distinguish between a readmission and the recurrence of a chronic condition (such as asthma) (AHSA, sub. 1).

Fourth, the reported readmission rates are likely to be understated, since a number of patients are admitted to another hospital and those admissions are not counted towards the readmission rates. The Commission sees merit in using linked datasets,

such as the Western Australian Data Linkage System and the NSW and ACT Centre for Health Record Linkage, to establish more reliable estimates of readmissions to hospital.

Adverse events

According to the Royal Australasian College of Surgeons (RACS 2008, p. 13), 'an adverse event is defined as the unintentional harm arising from an episode of healthcare and not due to the disease process itself'. According to the AIHW (2009a, p. 53), adverse events:

> … include infections, falls resulting in injuries, and medication and medical device problems. Some of these adverse events may be preventable.

There are several data collections that provide data on the prevalence, causes and consequences of adverse events. These include:

- National Hospital Morbidity Data Collection (NHMD) — a national data collection of episodes of hospital care that include information on the diagnoses and treatments for adverse events
- state- and territory-based incident reporting systems — which cover the extent, seriousness, causes and consequences of a variety of incidents, as reported by healthcare staff. A well-known example is the Australian Incident Monitoring System (AIMS)
- sentinel event reporting — which is the reporting of a very limited range of serious adverse events, in which death or serious harm to a patient has occurred
- mortality reviews — such as those undertaken by medical peer committees (such as by surgeons and anaesthetists), in specific contexts (such as maternal mortality review committees) and coronial inquiries (which establish the cause of death).

A fifth source of data is the detailed clinical information compiled by physicians during the course of surgical and medical care for use in detailed audit reports. An example is the Australian Orthopaedic Association's *National Joint Replacement Registry*.

National Hospital Morbidity Data Collection

The NHMD is one of two national collections of adverse events that can provide insights into public and private hospitals. The AIHW regularly publishes data on the

percentage of hospital separations for which there were associated adverse events (AIHW 2009a) (table 7.13).

Table 7.13 **Hospital separations with an adverse event, 2002-03 to 2007-08**[a, b]

Per cent

	2002-03	*2003-04*	*2004-05*	*2005-06*	*2006-07*	*2007-08*
Public hospitals						
External cause codes[c]						
Adverse drug, medicament or biological substance effects	1.4	1.6	1.7	1.8	1.8	1.8
Misadventures to patients	0.2	0.2	0.2	0.2	0.2	0.2
Procedures causing abnormal reactions/complications	3.1	3.3	3.4	3.4	3.4	3.2
Other external causes	0.1	0.1	0.1	0.1	0.1	0.1
Place of occurrence codes[d]	4.4	4.7	5.0	5.3	5.4	5.2
Diagnosis codes[e]	5.1	5.4	5.6	5.8	5.9	5.6
Private hospitals						
External cause codes[c]						
Adverse drug, medicament or biological substance effects	0.6	0.7	0.7	0.7	0.7	0.6
Misadventures to patients	0.1	0.1	0.1	0.1	0.1	0.1
Procedures causing abnormal reactions/complications	2.6	2.6	2.7	2.8	2.8	2.7
Other external causes	–	–	–	–	–	–
Place of occurrence codes[d]	3.1	3.3	3.4	3.6	3.6	3.5
Diagnosis codes[e]	3.6	3.6	3.7	3.9	3.8	3.7

[a] Separations for which the care type was reported as *Newborn* with no qualified days, and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded. [b] Percentages are not equal because multiple diagnoses and external causes can be recorded for each separation and external cause codes can be used together to describe an adverse event. [c] Includes ICD-10-AM categories Y40 to Y59, Y60 Y82, Y83-Y84, Y88 and Y95. [d] Includes ICD-10-AM codes Y92.22. [e] Includes ICD-10-AM codes E89, G97, H59, H95, I97, K91, M96, N99, T81.0, T81.4, T82-T85, and others included above (T80 to T88 and T98.3). – Nil or rounded to zero.

Source: AIHW (2004, 2005, 2006, 2007a, 2008b, 2009a).

The data are categorised by ICD-10-AM codes for diagnoses, places of occurrence, and external causes of injury and poisoning. These codes indicate that an adverse event was treated and *may* have occurred during hospitalisation (AIHW 2009a). The data do not, however, provide any indication of the seriousness and therefore consequences of the events.

An adverse event may be recorded for one classification but not for another, so the aggregates for the external cause, place of occurrence and diagnosis codes may not

be equal. For example, the rates for place of occurrence tend to be lower than the diagnosis codes, indicating that not all diagnosed adverse events occurred in a health-care setting.

It would appear from these data that the incidence of adverse events was higher in public hospitals than for private hospitals. For example, adverse events were coded as having occurred in over 5 per cent of separations for public hospitals and between 3.4 and 3.7 per cent of separations for private hospitals in 2007-08 (table 7.13).

However, there are three reasons to treat these estimates with great care. First, the AIHW noted that the estimates probably under-represent the incidence of adverse events because other ICD-10-AM codes may indicate the occurrence of an adverse event or its treatment (AIHW 2009a). Second, the data do not distinguish between events that occurred in hospitals and those that did not. Third, as noted, the data do not directly measure the consequences of the adverse events.

Wilson et al. (1995) and Jackson (2008) have each estimated a higher prevalence of adverse events than those reported above. Wilson et al. (1995) reviewed the medical records of over 14 000 admissions to 28 hospitals in NSW and South Australia. They estimated that approximately 8.3 per cent of all separations involved in-hospital adverse events. About 4.9 per cent of adverse events resulted in mortality and 13.7 per cent resulted in a permanent disability.

Jackson (2008) used Victorian and Queensland data (which contained a flag to indicate if a condition arose during hospitalisation) to develop a method for quantifying and classifying hospital-acquired diagnoses, for the purpose of estimating the cost of adverse events. Jackson (2008) found that adverse events occurred in 12.3 per cent of separations. The introduction of a condition-onset flag in the NHMD from 2008-09 (DOHA sub. 32) should greatly improve the availability and reliability of the coded data on adverse events and hospital-acquired diagnoses.

Incident reporting data

State and territory governments have adopted a variety of incident monitoring systems for public hospitals (see for example, NSW Department of Health 2005b; DHS 2008; LAOS Victoria 2008; SA Department of Health 2006; OSQHC 2006), and many private hospitals have adopted their own systems. Data reported in ACHS (2008) draw on incident monitoring systems. Reported indicators include:

- adverse drug events

- adverse transfusion events
- patient falls
- pressure ulcers
- intentional self-harm (including attempted and actual suicide).

An examination of ACHS (2008) data suggests that there are no statistical differences between public and private hospitals for any of these indicators. However, there are also four reasons to be cautious about using incident reporting data such as those published by the ACHS. First, these data are self-reported by doctors and nurses. Although doctors and nurses are encouraged to record adverse events, the self-reporting nature of these collections means that there is likely to be a degree of under-reporting and differences in reporting rates between professions. For example, in a report on adverse events, the Office of Safety and Quality in Health Care (Western Australia) (2006) noted that 91 per cent of AIMS events were reported by nurses. The majority of these were patient falls, medication errors and behaviour-related incidents. The Auditor-General for Western Australia (2007) estimated that only about one-third of all adverse events are reported.

Second, the ACHS data are based on a voluntary survey of between 150 and 350 hospitals. Third, the data are not adjusted for possible differences arising out of casemix. Finally, adverse event data rely on the self-reporting of incidents as part of a hospital's incident reporting system.

Mortality ratios

Mortality statistics are regularly published by the AIHW (2007b). However, in-hospital mortality rates, with the exception of foetal, neonatal and perinatal mortality rates (SCRGSP 2009), are not generally reported.

Mortality statistics are potentially useful partial indicators of the quality and patient safety of hospitals. This is primarily because death is 'unequivocal and generally accurately reported' (Ben-Tovim et al. 2009, p. 1).

The Commission explored the possibility of calculating and reporting it own estimates of hospital standardised mortality ratios (HSMRs) based on data extracted from the NHMD. However, the absence of reliable hospital-level establishment identifiers in the NHMD meant that HSMRs could not be calculated.[6] Inclusion of

[6] The majority of states do not use the private hospital identifier field to identify actual hospitals. In some states, each private hospital identifier denotes several private hospitals within some kind

individual hospital establishment identifiers in all data submitted by jurisdictions to the NHMD would greatly enhance the utility of these data.

Obstetric indicators

Obstetric services represent a significant aspect of hospital services. There were over 500 000 pregnancy, childbirth and puerperium separations in Australia in 2006-07, of which about 350 000 took place in public hospitals and the remainder in private hospitals. Yet, unlike other hospital separations, pregnancy and childbirth are not injuries or diseases, and thus many of the quality and patient safety indicators described above are not relevant for this area of hospital activity.

The Commission examined the reporting frameworks of the SCRGSP (2009) and Women's Hospitals Australasia (2007), and concluded that there were some indicators that would be useful to report, including:

- episiotomy rates for all first births — the rate at which there is an incision of the perineum
- third and fourth degree tears for all first births
- foetal, neonatal and perinatal death rates
- rates of caesarean section for selected first births
- rates of significant blood loss within 24 hours following a vaginal birth.

The ACHS (2008) published some of these data for public and private hospitals. Its data suggest that the proportion of primiparous patients with an intact lower genital tract declined between 2001 and 2007 from 30.5 per cent to 26.3 per cent. While the incidence of second and third degree tears among primiparous patients was observed to have increased during this period, there is no consistent evidence to suggest a statistically significant difference between public and private hospitals.

Robson, Laws and Sullivan (2009) used 2001–2004 data from the National Perinatal Data Collection to study the outcomes of women delivering a single baby. They found that the rate of third and fourth degree perineal injury was 1.4 per cent in public hospitals and 0.8 per cent in private hospitals. Likewise, after adjusting for risk factors — such as maternal age, smoking status and number of previous pregnancies — babies born in public hospitals were more likely to have low Apgar scores, need high-level resuscitation or be admitted to a special care or neonatal intensive care nursery.

of health administrative or organizational boundary, while in other states the aggregation is at a much higher level, with very many hospitals merged together.

However, Pesce (2009) cautioned that it is not possible to extrapolate the findings made by Robson, Laws and Sullivan to conclude that private care provided by obstetricians, with its increased intervention rates, prevents perinatal mortality and morbidity in Australia. Tracy et al. (2009) and Chambers (2009) questioned the findings of the Robson, Laws and Sullivan study, considering that failure to account for the effects of low birthweight undermines its conclusions. Likewise, Evans, Malcolm and Gordon (2009) noted that less than 10 per cent of stillbirths occur during delivery, suggesting that differences in perinatal death rates are not related to hospital care or interventions performed during labour. Nevertheless, Coory et al. (2009) considered that:

> … the results from [Robson, Laws and Sullivan's] article might be due to confounding, but they should not be dismissed and should be investigated with more detailed clinical data.

The AIHW (2008d) reports foetal, neonatal and perinatal mortality rates for public and private hospitals. Each of these rates is lower in the private sector (table 7.14). However, caution should be exercised in interpreting these rates, as they have not been adjusted for different patient-risk characteristics, such as age, gender and comorbidities. The lack of risk adjustment is particularly problematic as there are few level III neonatal intensive care units located in private hospitals, suggesting that most of the sickest infants are treated in the public hospital sector.

Table 7.14 **Rates of foetal, neonatal and perinatal deaths by hospital sector, rate per 1000 births[a], 2006**

	Foetal deaths	*Neonatal deaths*[b]	*Perinatal deaths*[b]
Public	8.5	3.2	11.8
Private	6.7	2.7	9.5

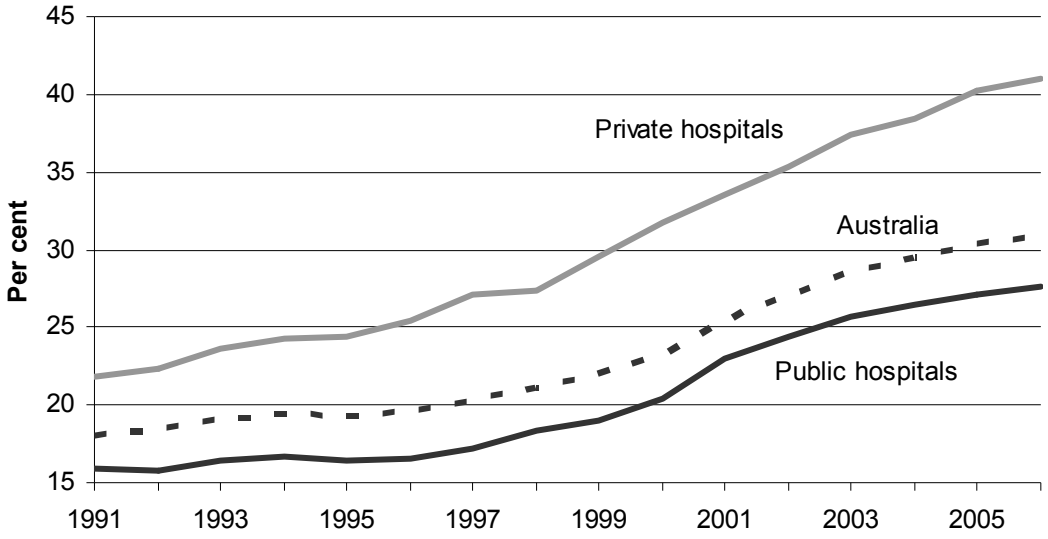
[a] Foetal and perinatal death rates were calculated using all births (live births and foetal deaths). Neonatal death rates were calculated using all live births. [b] Numerators exclude neonatal deaths in NT. Denominators exclude live births in NT. Except in WA, these may exclude neonatal deaths within 28 days of birth for babies transferred to another hospital or readmitted to hospital, and those dying at home.

Source: AIHW (2008d).

There are no national data on rates of caesarean section for selected first births in public and private hospitals. The AIHW reports caesarean section rates for all births in public and private hospitals, although these rates are not adjusted for different patient-risk characteristics, such as age, gender, previous pregnancies and comorbidities. There has been a steady growth in the proportion of caesarean births in both public and private hospitals (figure 7.1). In 1991, 16 per cent of births in public hospitals and 22 per cent of births in private hospitals were caesarean births. By 2006, 28 per cent of births in public hospitals and 41 per cent of births in private hospitals were by caesarean section. Although the appropriate caesarean section rate

is not known, the rise in caesarean section rates has prompted considerable concern (for example, Dietz and Peek 2004).

Figure 7.1 **Rates of caesarean section by hospital sector, 1991–2006**



Source: AIHW (2008d and previous issues).

The Commission approached the states and territories about obtaining unpublished data on episiotomy rates for all first births, third and fourth degree tears for all first births, and rates of significant blood loss. The data were not able to be provided in time for this study.

7.4 Developments to improve future comparisons

There are a large number of potential indicators that could be used to assess the performance of public and private hospital sectors. Most of these indicators are specific to particular illnesses, injuries and medical care, so they are not generally applicable for assessing the performance of hospital sectors. There remain, nonetheless, a large number of indicators that can be used for this purpose, as the Commission has found.

The Commission, however, encountered a paucity of comparative public and private hospital-level statistics. Many that are published have significant limitations, such as relatively small samples and problems surrounding the self-reporting of data. Where the Commission has sought to obtain unpublished hospital-level data, it faced considerable obstacles to accessing them in a timely manner. Many of these

obstacles did not appear reasonable on privacy or confidentiality grounds, given the Commission's intended use and reporting of the data.

There are some initiatives underway that will lead to wider availability of hospital performance indicators. For example, implementation of the NHA, under which governments have agreed to report nationally-consistent 'progress measures' through the COAG Reform Council, should improve the reporting of partial productivity and access indicators for the public sector. It would be useful if the same methodologies were used when such data are collected from private hospitals.

There has also been progress towards national safety and quality indicators, with the Australian Health Ministers' Conference agreeing on 13 November 2009 to fast-track the implementation and reporting of a core set of nine national indicators of safety and quality for public hospitals (DOHA sub. DR69). Another set of hospital performance indicators is being prepared for the National Healthcare Agreement (appendix B). Additionally, the recent introduction of the condition-onset flag in the NHMD should greatly improve the availability and reliability of data on adverse events and hospital-acquired diagnoses.

Some of the quality and patient safety indicators proposed to the Commission are comparatively new for Australia, such as the open disclosure of adverse events. Open disclosure refers to the open discussion of incidents that result in harm to a patient while receiving health care. A successful open disclosure regime, as promoted by the Centre for Health Communication (University of Technology, Sydney), could yield significant benefits to the community, because the absence of such disclosure has been identified 'as a major reason for patients and family members to file complaints and pursue legal action' (Centre for Health Communication, sub. 3, pp. 1-2).

Yet developing quality and patient safety indicators alone is not sufficient. Long-term improvements to health outcomes need comprehensive public reporting of quality and patient safety by all hospitals. The ACSQHC (sub. 24), for example, argued for the reporting of safety and quality by both public and private hospitals.

The reporting of data should not be confined to jurisdictional or sectoral level data, as is the case with this report, but should be principally at the hospital level. Hospitals vary significantly, and reporting broad statistics masks the major variation that can occur between hospitals, as observed by the ACSQHC (sub. 24). It is hospital-level data, not jurisdictional, that health care consumers, providers, funders (private health insurers and governments), regulators and policy makers need to inform their decisions.

The Commission notes that the introduction of market mechanisms, like activity-based funding, may provide an incentive to expand the role for quality and patient safety data — particularly where quality and patient safety outcomes are tied to funding. Yet the hospital sector is likely to remain highly regulated, so there will remain a role for governments to facilitate this information provision.

FINDING 7.4

The work of the Australian Commission on Safety and Quality in Health Care and the Australian Institute of Health and Welfare to develop a national set of safety and quality indicators could provide a basis for future comparisons between public and private hospitals. However, the paucity of published, comparable and reliable hospital-level data severely limits these comparisons, and will continue to limit such comparisons in the future. Making consistent hospital-level data available to all interested parties would assist with future comparisons between hospital sectors and contribute to improvements in care.