



## 7.9 Safety and quality of hospital care

The safety and quality of the care provided in Australia's hospitals are of utmost importance to all patients, their families and carers. It is a key focus for Australian governments, service providers and health professionals.

This article summarises how the safety and quality of hospital care are measured and reported in Australia and presents data on selected measures. The future of safety and quality measurement in hospitals is also discussed, particularly in the context of patient centred care—where the patient is empowered and encouraged to be an active participant in their care.

### What is meant by safety and quality?

Informally, the term 'safety and quality' is often summarised as: the right care, in the right place, at the right time and cost. Formal definitions vary slightly, depending on the source. The Australian Commission on Safety and Quality in Health Care (the Commission) defines safety as 'reducing the risk of unnecessary harm associated with health care to an acceptable minimum' (ACSQHC 2017a). The Australian Health Performance Framework (AHPF) defines safety as 'the avoidance or reduction to acceptable limits of actual or potential harm from health care management or the environment in which health care is delivered' (NHIPPC 2017).

The Commission 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' (ACSQHC 2015). In the AHPF there is no specific 'quality' domain, as quality relates to all health system information domains, including 'Effectiveness', 'Continuity of care', 'Accessibility' and 'Appropriateness' (see Chapter 1.4 'Indicators of Australia's health').

A safe and high-quality health system provides the most appropriate and best-value care, while keeping patients safe from preventable harm. The benefits to the patient are paramount.

The AHPF, and a number of national agreements, support monitoring of the safety and quality of patient care in hospitals.

### Improving safety and quality

A range of organisations act to improve safety and quality of health care. They may focus their efforts nationally, at the state or territory level (for example, health departments), at the service level (for example, individual hospitals), at the clinical level or for specific areas of health care (health professional associations). At a national level, the Commission is the key agency, providing national leadership to improve the safety and quality of health care in Australia (Box 7.9.1).



#### Box 7.9.1: Australian Commission on Safety and Quality in Health Care

The Commission's role is to lead and coordinate national improvements in safety and quality in health care. To achieve a safe, high-quality and sustainable health system, it works in partnership with patients; carers; clinicians; the Australian, state and territory health systems; the private sector; managers; and health care organisations.

The Commission aims to:

- ensure the health system enables patients, consumers and members of the community to participate as partners with their health professionals in all aspects of health care
- ensure patients and consumers are kept safe from preventable harm
- have a health system that provides the right care, minimises waste and optimises value and productivity
- have a health system that supports safe clinical practice by implementing robust and sustainable improvement systems (ACSQHC 2017a).

Areas of work for the Commission include:

- developing and implementing the National Safety and Quality Health Service Standards that provide consistent standards about the level of care consumers can expect from health services
- developing and maintaining indicators aimed at promoting local safety and quality improvement
- supporting the health system to reduce unwarranted clinical variation. This work included publishing the first and second atlases of health care variation, which showed substantial variation in treatment across Australia (see Chapter 7.16 'Variation in health care provision' for more information)
- updating the Framework for Australian Clinical Quality Registries (ACSQHC 2014) which provides guidance on how to establish and develop clinical quality registries to enable benchmarked feedback to be provided to individual clinicians on their clinical performance
- working in partnership with patients, consumers, health care providers, policy makers and members of the community towards having person centred health care organisations. This includes work to improve health literacy (see Chapter 4.3 'Health literacy' for more information)
- supporting the consistent and routine use of patient-reported outcome measures and patient-reported experience measures to drive quality improvement in a way that brings patients' voices and outcomes to the fore (see Chapter 7.17 'Patient-reported experience and outcome measures' for more information).

Pricing mechanisms are part of national efforts in improving safety and quality of hospitals. Box 7.9.2 outlines recent initiatives to integrate safety and quality into the pricing and funding of public hospitals.



#### Box 7.9.2: Pricing for safety and quality

In 2017, the Australian Government and states and territories agreed to integrate safety and quality into the pricing and funding of public hospitals (CFFR 2017). The aim is to improve patient health outcomes and safety, and support greater efficiency of the health system.

When all reforms are in place, it is intended that funding and pricing for public hospitals will be linked to sentinel events (events that result in death or serious harm to a patient), hospital-acquired complications, and avoidable readmissions to hospital. Patient-centred care is one of the key principles underlying these reforms.

To varying extents, safety and quality are integrated into the pricing and funding of privately funded hospital care; the nature of such arrangements will vary depending on individual agreements between health insurers and hospitals.

Efforts to improve the safety and quality of health care include public reporting of information on these issues, including reporting by the AIHW. Reporting on safety and quality supports accountability and transparency in service provision. When relevant information is reported back to health professionals, health providers and the public, it can improve decision making and patient outcomes.

Alongside these efforts are the activities undertaken by states and territories and health service providers to measure and monitor performance within their jurisdictions, or by organisations to improve clinical outcomes and the appropriateness of their services.

## Selected indicators of the safety and quality of hospital care

This section presents information on the routinely reported national indicators of safety and quality of care for admitted patients in Australian hospitals.

Information on the indicators discussed in this section—except for *Staphylococcus aureus* bacteraemia (SAB) cases in hospitals, and sentinel events—is derived from the AIHW's National Hospital Morbidity Database (NHMD). It should be noted that the data in the NHMD are collected primarily to record care provided to admitted patients; use of them for purposes such as reporting adverse events is developing, and evidence of validity is incomplete. The results should therefore be treated with caution.

Note, too, that the available information does not give a complete picture. For example, there is no routinely available information on some aspects of quality, such as continuity or responsiveness of hospital services.





## Health care-associated infections: *Staphylococcus aureus* bacteraemia cases in hospitals

SAB is an infection often associated with health care. It occurs when *Staphylococcus aureus* bacteria ('Golden staph') infect the bloodstream (bacteraemia). When associated with health care procedures, these infections are considered to be potentially preventable. Hospitals aim to have as few SAB cases as possible.

In fact, the rate of SAB is a national performance indicator for public hospitals. The performance benchmark is that the rate of SAB (including methicillin resistant *Staphylococcus aureus*, or MRSA) is no more than 2.0 per 10,000 days of patient care for acute care public hospitals in each state and territory.

In 2016–17, for public hospitals:

- the national rate of SAB was 0.8 cases per 10,000 days of patient care
- all jurisdictions had rates below the national benchmark
- almost all hospitals, for which data were published, had rates below the national benchmark (99%)
- most cases of SAB (81%) were treatable with commonly used antibiotics. These cases are termed methicillin-sensitive *Staphylococcus aureus* (MSSA) cases, while 19% of cases were MRSA (antibiotic resistant) cases (AIHW 2017a).

Between 2012–13 and 2015–16, rates of SAB fell from 0.9 cases to 0.7 cases per 10,000 days of patient care, then increased in 2016–17 to 0.8. The number of SAB cases dropped from 1,717 in 2012–13 to 1,450 in 2015–16, then increased to 1,502 cases in 2016–17. The number of MRSA cases decreased from 391 in 2012–13 to 278 cases in 2015–16, then increased to 290 cases in 2016–17 (Figure 7.9.1).

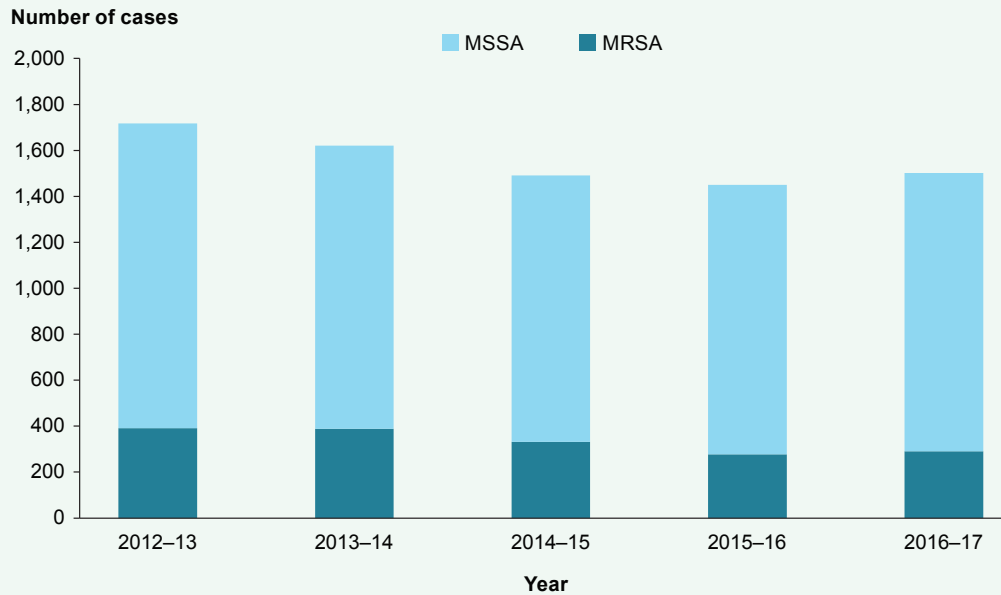
For 2016–17, SAB data for 89 (14% of all) private hospitals were reported. All private hospitals that reported SAB data had rates below the national benchmark. The national rate of SAB in private hospitals that had reported data was 0.4 cases per 10,000 days of patient care (AIHW 2017a). The data for public hospitals may not be comparable with the data for private hospitals because recording practices may differ.

Improvements in the hand hygiene of health care workers is the highest priority for reducing the risk of infections associated with health care. Hand Hygiene Australia reported that, in October 2017, hand hygiene compliance in all hospitals (public and private combined) was about 85% (HHA 2017). Between July 2012 and June 2017, hand hygiene compliance in public hospitals increased from about 76% to 84%. Between July 2013 and June 2017, hand hygiene compliance in private hospitals increased from 76% to 86%.

SAB performance information for individual public hospitals and for some private hospitals is available on the AIHW's MyHospitals website (see section 'Where do I go for more information?').



Figure 7.9.1: Cases of SAB in public hospitals, by antibiotic sensitivity status (MSSA or MRSA), 2012–13 to 2016–17



Source: AIHW 2017a; Table S7.9.1.

### Clostridium difficile infections associated with health care

Clostridium difficile infection (CDI) is a gastrointestinal infection that commonly affects hospitalised patients and people in the community. The transmission, prevention and control of CDI is complex because it can be exacerbated by treatment with antibiotics; it can also spread between patients because of poor infection control and contaminated hospital surfaces and medical equipment (ACSQHC 2017c).

Each year between 2011–12 and 2015–16, around 1 in 800 (around 8,000) hospitalisations in public hospitals involved patients with CDI. For around 30% of these hospitalisations, the patients were admitted to hospital with a diagnosis of CDI; the rest acquired the infection during their hospital stay (ACSQHC 2017c).

### Adverse events treated in hospitals

'Adverse events treated in hospitals' is a measure of the safety and quality of the care provided to admitted patients. It covers a range of events, rather than focusing on one type, such as readmissions or falls. This indicator is limited to adverse events that can be identified by specific codes for diseases and injuries in the NHMD and therefore may not include all adverse events.

Adverse events are defined as incidents where harm resulted to a person receiving health care. They include the adverse effects of drugs, injuries that occur during care, and conditions that occur after procedures (such as infections and bleeding). Some of these events may be preventable.



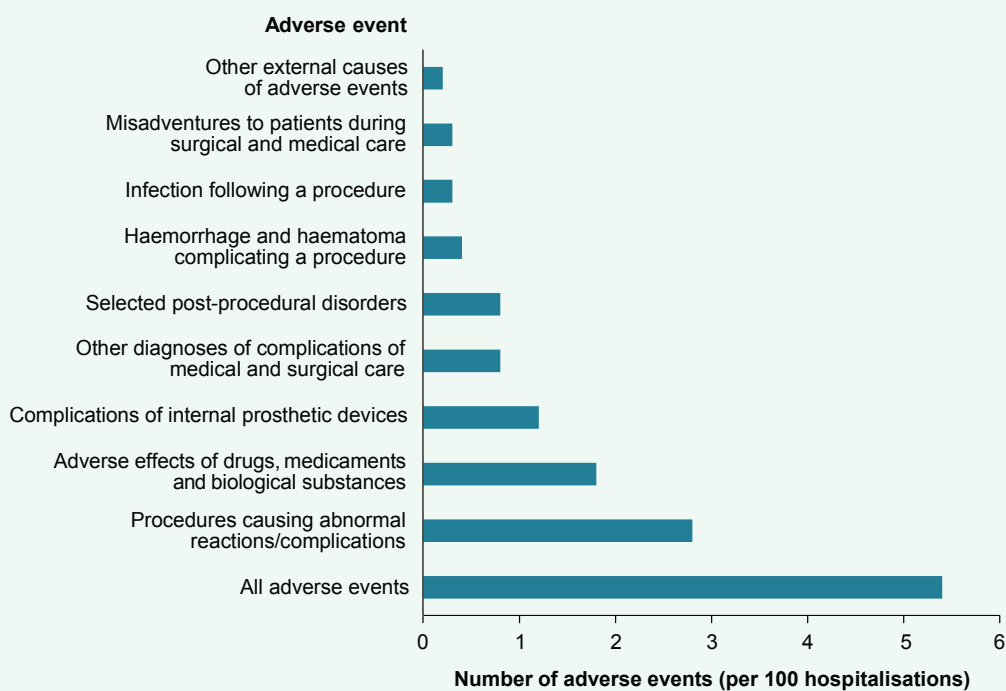
Adverse events can lead to increased length of stay and poorer patient outcomes, along with increased costs of treatment. This indicator is based on an event (or events) identified by the treating doctor in the clinical record as having had an adverse outcome that resulted in, or affected, hospital admission. One hospitalisation may have more than one adverse event.

In 2015–16:

- about 576,000 hospitalisations (5.4 per 100) reported 1 or more adverse events (Figure 7.9.2)
- these hospitalisations accounted for about 6.6 per 100 hospitalisations for public hospitals and 3.8 per 100 for private hospitals. The data for public hospitals are not comparable with those for private hospitals because their casemix differs and recording practices may also be different
- the most common adverse event group reported was *Procedures causing abnormal reactions/complications* (around half of all hospitalisations with 1 or more adverse event); this pattern was consistent for both public and private hospitals (AIHW 2017b).

See Chapter 1.4 'Indicators of Australia's health' for more information.

Figure 7.9.2: Adverse events per 100 hospitalisations, all hospitals, 2015–16



Note: The adverse events presented are not mutually exclusive, and a hospitalisation may include more than one adverse event.

Source: AIHW 2017b; Table S7.9.2.





Another way to assess the overall safety and quality of care provided to admitted patients is to measure diagnoses reported as being acquired during the hospital episode (Box 7.9.3).

#### Box 7.9.3: Hospital-acquired diagnoses

Hospital-acquired diagnoses is another measure of the overall safety and quality of care provided to admitted patients. This measure overlaps with the safety and quality performance indicators presented in this article but is not, in itself, a national performance indicator. This measure and the performance indicators should not be added together due to this overlap.

The Classification of Hospital-Acquired Diagnoses is a system that allows hospitals to identify, count and monitor events as markers of patient safety (ACSQHC 2013). The hospital-acquired diagnoses included in the classification are broader than those defined as hospital-acquired complications (described later), and include post-procedural complications, adverse drug events, accidental injuries, specific infections and metabolic disorders. A hospital-acquired diagnosis is identified using a condition onset flag (which indicates whether the condition was apparent before or after hospitalisation), along with diagnosis information.

In 2015–16:

- more than 889,000 hospitalisations reported a hospital-acquired diagnosis. These accounted for about 9.8% of hospitalisations in public hospitals and 6.6% in private hospitals
- for public hospitals, the most common hospital-acquired diagnoses were *Labour, delivery and postpartum complications* and *Cardiovascular complications* (accounting for 20% and 17% of hospitalisations that included a hospital-acquired diagnosis, respectively)
- for private hospitals, the most common hospital-acquired diagnoses were *Gastrointestinal complications*, accounting for 20% of hospitalisations that included a hospital-acquired diagnosis
- *Post-procedural complications* accounted for about 12% of hospital-acquired diagnosis in public hospitals and 15% in private hospitals (AIHW 2017b)
- about 30% of hospital-acquired diagnoses were also classified as 'Adverse events treated in hospital'.

## Falls resulting in patient harm in hospitals

This indicator is intended to report where a fall occurred in hospital during an episode of care, resulting in patient harm. Falls resulting in patient harm in hospitals is a subset of 'Adverse events treated in hospital'.

In 2015–16, about 34,000 hospitalisations (3.2 per 1,000 hospitalisations) reported a fall. The rate of falls reported was higher for public hospitals (4.6 per 1,000 hospitalisations) than for private hospitals (1.3 per 1,000) (AIHW 2017b). The difference between the rates in public and private hospitals may reflect differences in casemix and recording practices (also see Chapter 1.4 'Indicators of Australia's health').



The data presented have some limitations. The indicator identifies falls that occur in any health service area, as it is not currently possible to identify those that occur just in hospitals. Therefore, rates may overestimate falls in hospitals. However, patients with an injury as the primary reason for hospitalisation are excluded to minimise including falls that occurred before admission. These rates may also be underestimated, as 18% of hospitalisations recording a fall did not state where it occurred.

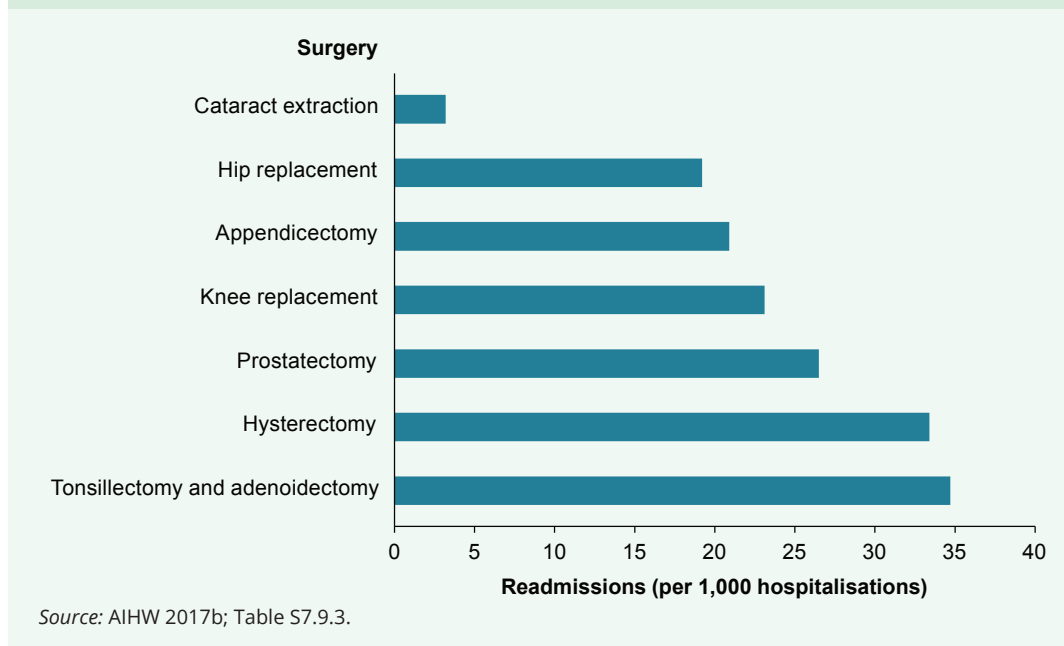
## Unplanned readmissions

This indicator includes hospitalisations for which an unplanned readmission to the same public hospital occurred within 28 days after surgery (for selected surgical procedures), and the cause of the hospitalisation was an adverse event. The diagnosis codes used to identify adverse events for unplanned readmissions are a subset of those used in 'Adverse events treated in hospitals'. 'Unplanned readmissions' account for 6.4% of hospitalisations with 'adverse events'.

Rates of unplanned or unexpected readmissions to the same public hospital were highest for *Tonsillectomy and adenoidectomy* (35 per 1,000 hospitalisations) and *Hysterectomy* (33 per 1,000 hospitalisations) (Figure 7.9.3). For *Cataract extraction*, only about 3 per 1,000 hospitalisations were readmitted within 28 days.

Routine linkage of hospital data will improve the reporting of this indicator by allowing an unplanned readmission to any, rather than the same, hospital to be identified (see section 'What is the AIHW doing?').

Figure 7.9.3: Rate of readmission to the same public hospital within 28 days of surgery, selected types of surgery, 2015–16







## Sentinel events

'Sentinel events' includes a subset of 'adverse events' that result in death or serious harm to a patient. They include events such as procedures for the wrong patient or body part that resulted in death or permanent loss of function, or an infant's discharge to the wrong family. Australian health ministers have agreed on a national core set of sentinel events (ACSQHC 2017b). This list is currently under review, with completion expected in 2018.

In 2014–15, there were 99 sentinel events in Australian public hospitals. The most commonly reported was *Retained instruments or other material after surgery requiring re-operation or further surgical procedure*, of which there were 33. The number of events ranged from 85 to 102 between 2010–11 and 2014–15 (SCRGSP 2017).

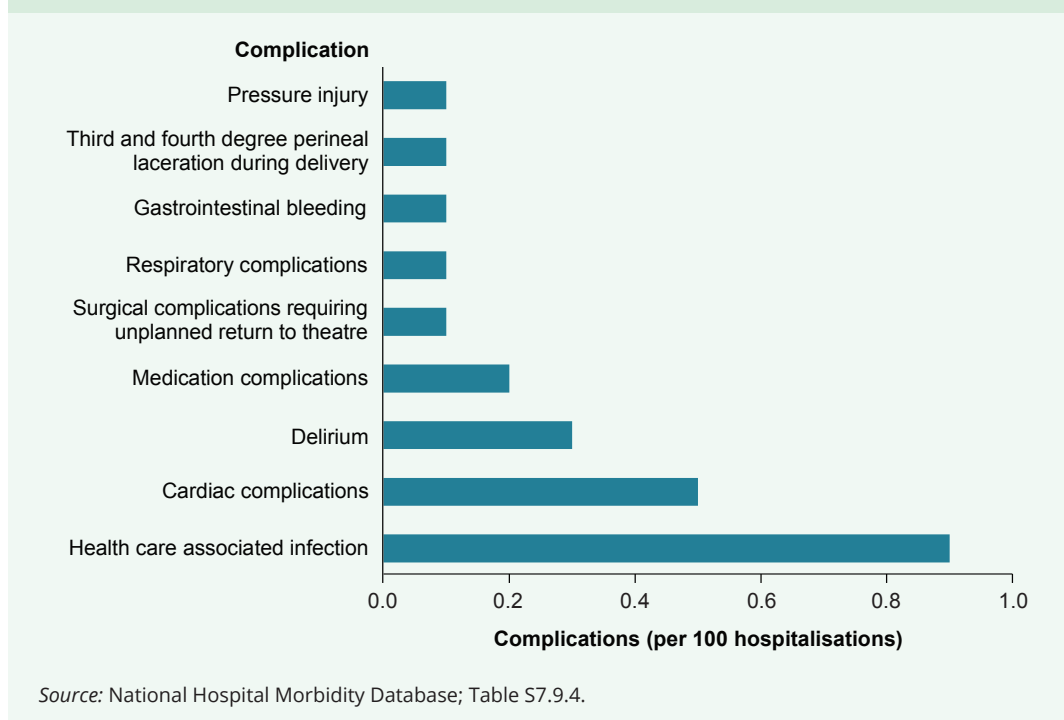
## Hospital-acquired complications

A hospital-acquired complication (HAC) is a complication for which clinical action may reduce (but not necessarily eliminate) the risk of its occurring—for example, selected infections or pressure injuries (ACSQHC 2017a). The nationally agreed Hospital Acquired Complications List can be found on the Commission's website.

There is overlap between the number of HACs and the number of hospitalisations that reported a hospital-acquired diagnosis (Box 7.9.3). There will also be some overlap with adverse events treated in hospitals, falls resulting in patient harm in hospital, and CDIs associated with health care.

In 2015–16, a HAC was reported for about 184,000 hospitalisations. The most common complication was *Healthcare associated infection* (Figure 7.9.4).

Figure 7.9.4: Rate of HACs, selected complications, all hospitals, 2015–16





Box 7.9.4 highlights some areas of work underway at the national level to support improved measurement of safety and quality of hospital care in the future. These relate broadly to improvements to data, and improvements in the integration of data.

## International comparisons

Australia also monitors the safety and quality of its health services through participation in the Organisation for Economic Co-operation and Development (OECD) Health Care Quality Indicators project. The OECD publishes selected data in its 'Health at a glance' series (OECD 2017). Table 7.9.1 lists the indicators related to patient safety against which Australian data were reported for the most recent OECD collection—and shows how Australia compares with other OECD countries. For this subset of indicators, rates were higher for Australia than the OECD average.

Table 7.9.1: OECD selected patient safety indicators, Australia (2014–15) and OECD average (2015, or nearest year)

Indicator	Australia	OECD average
<b>Rate per 100,000 surgical hospitalisations</b>		
Foreign body left in during procedure	8.8	5.4
Post-operative deep vein thrombosis in hip and knee surgeries	1,113	357
Post-operative pulmonary embolism in hip and knee surgeries	549	301
Post-operative sepsis in abdominal surgeries	2,658	2,117
<b>Rate per 100 vaginal deliveries</b>		
Obstetric trauma—vaginal delivery with instrument	7.2	5.7
Obstetric trauma—vaginal delivery without instrument	2.5	1.5

Note: Caution should be taken in interpreting these findings due to differences in data capture and reporting that may influence the reported rates.

Source: OECD 2017.

The OECD acknowledges the challenge in collating data of this type in a comparable manner, and suggests that some caution should be taken in interpreting the results. Differences in hospital admission practices, data coding practices, and sources of data (for example, whether they are based on hospital administrative data or registry-based data) can result in large variations in the rates reported.





## What is the AIHW doing?

The work that the AIHW is doing to set up routine linkage of data is outlined in Box 7.9.4. The AIHW's suite of products, including Australian hospital statistics and the MyHospitals website, are intended to inform the public on selected safety and quality measures at the national, state and territory and hospital level, on an annual basis.

### Box 7.9.4 Measuring safety and quality in the future

#### Improved data

Data on patient outcomes are central to assessing the safety and quality of hospital care. This article includes data on some outcome measures; however, there are currently limited national data on patient experience, and no nationally reported data on outcomes described by patients themselves. Routine collection of standardised patient-reported experience is important, as is further consideration of the most effective and efficient way to integrate patient-reported outcome measures.

Clinical Quality Registries (CQR) are an important means to monitor outcomes and drive quality improvements in care. Australian registries have evolved over time in a fragmented way. In 2016, Australian governments committed to developing a national CQR strategy to provide a systematic approach to funding and governing CQR for diseases, conditions and procedures with high cost and disease burden on the Australian health system. The aim is to optimise the use of CQR to inform safety and quality improvement purposes and patient outcomes.

The World Health Organization recently released the 11th revision of the International Classification of Diseases (ICD). The ICD-11 has several features that will enhance reporting on hospital care safety and quality. In particular, it will allow explicit linking between harm associated with hospital care and the mechanism and cause of the harm—for example, if a person bleeds heavily after a surgical procedure, the surgery (cause) will be able to be linked to the subsequent bleeding (harm). Concepts align with the current knowledge in adverse events and safety.

#### Improved integration of data

Improving the integration of hospital and other health service data at a national level will better support the measurement of safety and quality outcomes.

The AIHW is currently working with Australian, state and territory government authorities to establish routine linkage of data for hospitals, the Medicare Benefits Schedule, the Pharmaceutical Benefits Scheme, residential aged care, and deaths. Routinely linked data sets such as these will provide a stronger foundation to investigate patient outcomes after hospital care—not only as readmissions to hospital, but also as deaths, or through investigation of the patient's use of general practitioners or pharmaceuticals.

Integration of hospital data with other data sources, for example clinical-quality registries, and potentially the My Health Record in the future (see Chapter 2.4 'Digital health'), may also inform questions about the outcomes for patients after care in hospital.





## What is missing from the picture?

National reporting on safety and quality in hospitals has focused mainly on admitted care, rather than on care provided in outpatient and emergency departments. This is generally because the data collected for admitted care are more detailed and can better support investigation and reporting. The MyHospitals website (see 'What is the AIHW doing?') publishes safety and quality indicators for most public hospitals and some private hospitals.

In 2017, the Productivity Commission suggested that more data were needed to better support patient choice in Australia (PC 2017) and noted the need to increase the number of indicators (particularly outcome indicators) reported for individual hospitals in the future. Expanding the number of private hospitals for which these data are separately reported is also important so as to provide patients and health providers with a more complete picture of hospital care.

It should be noted that the measurement of safety and quality is more developed for hospitals than other health sectors, or areas such as aged care and primary care.

## Where do I go for more information?

For more information on safety and quality of hospital care see the [Australian Commission on Safety and Quality in Health Care](#) website, [AIHW hospitals](#) page and [MyHospitals](#) website.

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