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OECD health-care quality indicators for Australia 2011–12

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Authoritative information and statistics to promote better health and wellbeing

OECD health-care quality indicators for Australia

2011–12

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Please note that there is the potential for minor revisions of data in this report. Please check the online version at <www.aihw.gov.au> for any amendments.

Contents

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Abbreviations

ABS	Australian Bureau of Statistics
ACD	Australian Cancer Database
ACHI	Australian Classification of Health Interventions
ACSQHC	Australian Commission on Safety and Quality in Health Care
AHRQ	Agency for Healthcare Research and Quality
AIHW	Australian Institute of Health and Welfare
AMI	acute myocardial infarction
APC NMDS	Admitted Patient Care National Minimum Data Set
CHBOI	core, hospital-based outcome indicator
CHF	chronic heart failure
COAG	Council of Australian Governments
COPD	chronic obstructive pulmonary disease
CRC	COAG Reform Council
DRG	diagnosis related group
DVT	deep vein thrombosis
HAAG	Health at a Glance
HCQI	Health Care Quality Indicator
ICD-10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification
ICD-9-CM	International Statistical Classification of Diseases, 9th Revision, Clinical Modification
ICDO-3	International Classification of Diseases for Oncology 3rd edition
LOS	length of stay
MH	mental health
NDI	National Death Index
NHA	National Healthcare Agreement

NHMD	National Hospital Morbidity Database
NHPA	National Health Performance Authority
NHPF	National Health Performance Framework
NMDS	national minimum data set
OECD	Organisation for Economic Co-operation and Development
PAF	Performance and Accountability Framework
PE	Pulmonary embolism
PPH	potentially preventable hospitalisations
PS	patient safety
PSI	patient safety indicator
SAB	*Staphylococcus aureus* bacteraemia
WHO	World Health Organization

Symbols

. .	not reported, as this indicator was not required in the 2011 OECD HDQI data collection.

Summary

This report:

- summarises information Australia provided in 2013 to the Organisation for Economic Co-operation and Development's (OECD) Health Care Quality Indicators (HCQI) 2012–13 data collection
- compares data supplied by Australia in 2013 to data Australia supplied in previous years, and to data reported by other OECD countries in the OECD's *Health at a glance 2013: OECD indicators*, or *HAAG 2013* (OECD 2013a).

Australia's contribution to the HCQI project is part of its multifaceted effort to maintain and improve the safety and quality of health-care services in Australia.

International data comparisons present many challenges due to the differences in data collection practices and data quality, and in administration and funding arrangements for health service delivery among countries.

How does Australia compare on the HCQI indicators?

The OECD HCQI indicators cover primary care, hospital acute care, mental health-care, cancer survival, hospital patient safety and patient experience.

Primary care: Quality in primary care is measured by rates of avoidable hospital admissions for selected health conditions. In 2011, asthma and chronic obstructive pulmonary disease (COPD) separation rates were around 50% higher in Australia than the OECD average. Separation rates for diabetes in Australia were similar to or better than the OECD average.

Hospital acute care: Australia's rates for mortality following hospital admissions for acute myocardial infarction (AMI) were lower than the OECD average, but mortality rates following hospital admissions for haemorrhagic stroke were similar to the OECD average, and mortality rates for ischaemic stroke were higher. The rate of mortality following AMI has been falling steadily over time both in Australia and internationally, but fell faster in Australia than the OECD average from 2001 to 2011.

Mental health-care: Rates of readmission for schizophrenia and bipolar disorder were higher in Australia than for the OECD average.

Cancer care: From 2001–06 to 2006–11, five-year relative survival for cervical, breast and colorectal cancers was better in Australia than the averages for OECD countries. They improved slowly both in Australia and internationally.

Hospital patient safety: Australia's rates for indicators such as postoperative complications and obstetric trauma were generally higher than the 2011 OECD averages. However, it is likely that differences in reporting had a considerable impact. Some evidence exists that Australia has better patient safety monitoring and recording (and, largely, absence of financial disincentives connected to the reporting of data on patient safety events), which may increase the number of reported events.

Patient experience: The only indicator submitted by Australia that was published in *HAAG 2013* concerned patient perceptions of the adequacy of the time a doctor had spent with them during a consultation. In 2011–12 in Australia, the number of people who felt that the doctor had always or often spent enough time with them was the same as the OECD average.

1 Introduction

This report summarises the information provided by Australia in 2013 to the Organisation for Economic Co-operation and Development's (OECD) Health Care Quality Indicators (HCQI) 2012–13 data collection. It also compares the 2013 data to data supplied in previous years and to data reported in the OECD's *Health at a glance 2013: OECD indicators*, or *HAAG 2013* (OECD 2013a).

Not all indicators submitted by Australia for 2013 were published in *HAAG 2013* but they are presented here for completeness, and are compared with data published in earlier HAAG reports where possible.

Australia's participation in the OECD HCQI project is one example of activities undertaken in Australia to monitor the safety and quality of Australia's health services. The focus is comparison of Australia with other countries, rather than comparisons within Australia, which is the focus of related national activities (summarised later in this chapter).

While it is useful to compare health on an international scale, comparisons of this kind are complex due to the diverse nature of health-care systems, data sources and data quality across countries.

What's in this report?

This chapter provides an introduction to the report and some background to the development and use of the OECD HCQIs. It also includes a brief overview of national activities involving the monitoring and assessment of safety and quality within the Australian health-care system.

Chapter 2 provides information on the method used to calculate the OECD HCQIs and the data sources used. It also presents some general considerations for international comparison of data.

Chapters 3–8 present the results for the indicators for Australia and compares these with results published in *HAAG 2013* (or the 2009 or 2011 editions where appropriate):

Chapter 3. Primary care indicators

Chapter 4. Acute care indicators

Chapter 5. Mental health-care indicators

Chapter 6. Cancer care indicators

Chapter 7. Patient safety indicators

Chapter 8. Patient experience indicators.

Information on the OECD HCQI specifications and technical notes is in Appendix B. National definitions for the terms used in this report are in the Glossary.

Assessing the safety and quality of health-care in Australia

Australia has a high-quality health-care system, delivering good health outcomes for the population. Against a range of health indicators, Australia compares favourably with other

developed countries (AIHW 2012a). Nevertheless, the safety and quality of health-care in Australia is of interest to health-care planners, providers and users, and efforts continue to maintain and improve the performance of health-care services.

In Australia, national public reporting of aspects of the safety and quality of various components of the health system is undertaken under a number of nationally agreed arrangements.

The national arrangements are accompanied by:

- reporting on state and territory health services by state and territory governments and others
- reporting by private organisations such as private hospital groups
- reporting by organisations involved in accrediting health service providers
- activities undertaken by health service providers to measure and monitor safety and quality internally within their organisations, with the aim of improving clinical outcomes and the appropriateness of services. In recent years, they have been supported by the Australian Commission on Safety and Quality in Health Care (ACSQHC), since 2011 under National Health Reform Agreement arrangements.

The national arrangements under which health-care safety and quality are monitored are arrangements for health performance reporting more broadly. They are the National Healthcare Agreement, the National Health Performance Framework, the National Health Reform Agreement and associated Performance and Accountability Framework, and the Review of Government Service Provision. The Australian Bureau of Statistics also reports on health-related national performance in its *Measures of Australia's Progress* series of reports (ABS 2013).

National Healthcare Agreement

The National Healthcare Agreement (NHA), agreed by the Council of Australian Governments (COAG) in 2008 and updated in August 2011, is one of six National Agreements under the Intergovernmental Agreement on Federal Financial Relations. The objective of the NHA is to improve health outcomes for all Australians and ensure the sustainability of the Australian health system.

The NHA guides the policy and reform directions toward its agreed outcomes, with attention to quality in primary and community health services, hospitals and aged care. Performance indicators are associated with each outcome to help the community assess the performance of governments towards achieving these outcomes. Changes in performance are assessed against baseline information and, for some, against defined performance benchmarks. Each year, the indicators are published by the COAG Reform Council (CRC) in its report on the NHA, comparing the performance of governments across Australia and over time (CRC 2013).

The indicators related to the safety and quality of Australia's health services include *Selected potentially preventable hospitalisations*, *Potentially avoidable deaths*, *Healthcare associated infections*, *Unplanned hospital readmission rates*, *Rate of community follow up within the first seven days of discharge from a psychiatric admission*, *Patient satisfaction/ experience* and *Survival of people diagnosed with notifiable cancers.*

The National Health Performance Framework

The National Health Performance Framework (NHPF) was developed in 2001 by the National Health Performance Committee under the auspices of the Australian Health Ministers' Advisory Council (NHPC 2002; AIHW 2012a). The NHPF was designed as an enduring framework, not linked to any particular agreement or to support performance reporting relating to a specific policy agenda. Instead, it serves as a general support for performance assessment, planning and benchmarking in the health sector. It is consistent with health performance frameworks used internationally (International Organization for Standardization 2010; OECD 2013a) and can therefore also support comparisons of Australia's performance internationally.

The NHPF provides a conceptual framework to understand and evaluate the health of Australians and the health system. It contains 14 dimensions grouped under three domains: health status, determinants of health and health system performance. The safety and effectiveness dimensions of the health system performance domain include the safety and quality indicators *Selected potentially preventable hospitalisations*, *Survival following heart attack*, *Survival of people diagnosed with cancer*, *Potentially avoidable deaths*, *Adverse events treated in hospitals* and *Falls resulting in patient harm in hospitals*.

The AIHW is responsible for biennial reporting against the NHPF in its *Australia's health* series of reports (AIHW 2012a), which presents the NHPF's safety and quality and other indicators in the context of a wide range of information on Australia's health status and health services. Statistics related to health-care safety and quality are also included in other more specific AIHW publications such as those focused on a type of health-care provider (for example, hospitals, AIHW 2013a), a type of disease or health condition (for example, cardiovascular disease, AIHW 2011), or the health of a population group (for example, Aboriginal and Torres Strait Islanders, AIHW 2014).

National Health Reform Agreement

The National Health Reform Agreement between the Australian Government and the state and territory governments aims to improve health outcomes for all Australians and enhance the sustainability of the Australian health system. Under the agreement, the National Health Performance Authority (NHPA) was established to report information on the performance of local health-care organisations (public and private hospitals, Local Hospital Networks and Medicare Locals, or primary health-care organisations) to inform consumers, empower clinicians and service providers to drive improvements, and increase transparency and accountability (NHPA 2013).

NHPA's public reporting is underpinned by the Performance and Accountability Framework (PAF) which was agreed by COAG in 2011. This Framework includes 48 performance indicators (17 for hospitals and 31 for primary health-care organisations) under the domains of equity, effectiveness and efficiency. The effectiveness domain addresses the areas of safety and quality and includes several indicators similar to OECD's HCQIs, for example *In-hospital mortality rates for AMI*, *In-hospital mortality rates for stroke* and *Hospital readmission rates for patients discharged with schizophrenia*. The data for these indicators are released through the NHPA's *MyHospitals* and *MyHealthyCommunities* websites (NHPA 2013).

The ACSQHC also has safety and quality reporting-related roles under the Agreement, reporting publicly on the state of safety and quality, and formulating and monitoring safety

and quality standards. The Commission's most recent report of the state of safety and quality was structured around three questions that reflect aspects of other performance reporting frameworks: Will my care be safe? Will I get the right care? Will I be a partner in my care? (ACSQHC 2013c).

The ACSQHC's work related to monitoring of health-care safety and quality includes its development of a succinct set of indicators—the core, hospital-based outcome indicators of safety and quality (CHBOI) that hospitals can use locally, at the hospital level, for hospital-level quality improvement purposes. They are designed to be generated by jurisdictions or private hospital ownership groups, and reported back to provider facilities. A number of jurisdictions are implementing the indicators in report–review–act–style cycles based on the routine supply of timely and targeted data back to hospitals (ACSQHC 2013b).

Like the OECD indicators, some of the CHBOI specifications are based on indicators that were developed by the Agency for Healthcare Research and Quality (AHRQ) in the United States (ACSQHC 2013b). CHBOI includes indicators that overlap with concepts covered in the OECD HCQIs, such as *In-hospital mortality for AMI* and *In-hospital mortality for stroke*.

Review of Government Service Provision

The Review of Government Service Provision was established in 1993 by heads of government (now COAG) to provide information on the equity, efficiency and effectiveness of Australian government services and to promote ongoing performance improvement. National health performance information is released along with information on other government services through the publication of the annual Report on Government Services (RoGS). The 2014 edition of RoGS (SCRGSP 2014) included chapters on public hospitals (including maternity services), primary and community health, and mental health management.

The RoGS publications are based on performance indicators set against a performance framework that depicts the review's focus on outcomes, consistent with demand by governments for outcome-oriented performance information. This outcome information is supplemented by information on outputs, grouped under 'equity', 'effectiveness' and 'efficiency' headings (SCRGSP 2014). Safety and quality performance indicators were included within the 'effectiveness' grouping.

OECD's health care quality indicators

The OECD's Health Care Quality Indicator (HCQI) project is an international project aimed at developing a common set of indicators about the quality of health-care delivered across OECD member countries, for reporting at a national level for international comparison. The HCQI project began in 2002 with the development of a conceptual framework for measuring HCQIs and associated research on international health performance frameworks (Arah et al. 2006). Work since 2002 has seen the development and continued expansion of a set of indicators that support international comparisons of the quality of health-care. The indicators cover domains of health status, determinants of health, health-care activities and health expenditure and financing.

After initial testing of a set of indicators and extensive investigations of their comparability, the publication of a chapter on quality of care was included in the OECD's *Health at a glance 2007*. Since then, the biennial publication of a chapter in *Health a glance* has been one of the

main outputs of the HCQI work. The OECD also publishes the data it collects for the HCQI data collection in its online statistical database: *OECD.StatExtracts* (OECD 2013b).

Research and development work to expand OECD's health-care quality reporting is ongoing, with the indicator set expanding to incorporate new indicators. In 2011, the 2010–11 HCQI data collection contained 40 indicators covering acute care, primary care, mental health-care, cancer care and patient safety. The 2012–13 HCQI (for *HAAG 2013*) data collection included a total of 75 indicators, covering acute care, primary care, mental health-care, cancer care, patient safety and patient experience. Sixty of the 2013 HCQIs were calculated using data submitted by OECD member countries; the remaining 15 indicators were collected separately by the OECD.

Australia's HCQI submissions

Australia has contributed data to the OECD's HCQI project since 2009. In 2011, data for 20 of 40 HCQIs were submitted calculated using 2008–09 data from the National Hospital Morbidity Database. In 2013, Australia submitted data for 33 of the 60 HCQIs requested from countries; 28 were prepared by the AIHW and 5 were prepared by the Australian Bureau of Statistics (ABS), for the reference period of 2011–12. The AIHW also provided some additional back-casted data in the 2013 submission, where available.

Some differences in data may affect comparability of the indicators from the different OECD countries. Details of issues with preparation of the indicators are noted along with presentation of the indicators in the relevant chapters of this report.

Australia was not able to provide a number of HCQIs in 2013 for a range of reasons. Australia does not currently collect the data to calculate some indicators and therefore would have required more lead time and/or resources for data collation than was available. For example:

- *Annual retinal exam for diabetics* data were not available.
- Data were not available for the patient experience indicators that were not submitted.
- Indicators that aimed to measure mortality after discharge from hospital were not available, as linkage of hospital and mortality data is not possible, routinely.
- Indicators for readmissions to any hospital (rather than to the same hospital) could not be prepared as individual patient records cannot be routinely linked in the national hospital data collections.
- Data on *Inpatient suicides* were not available as there is no agreed Australian method for the collection and reporting of these data.

Table 1.1 lists the HCQIs and shows those for which Australia submitted data in 2013.

Table 1.1: OECD health care quality indicators 2012–13

Indicator	Included in Australia's data submission in 2013
Primary care	
Asthma hospital admission	✓
Chronic Obstructive Pulmonary Disease (COPD) hospital admission	✓
Congestive Heart Failure (CHF) hospital admission	✓
Hypertension hospital admission	✓
Uncontrolled diabetes without complications hospital admission	✓
Diabetes short-term complications hospital admission	✓
Diabetes long-term complications hospital admission	✓
Diabetes lower extremity amputation	✓
Annual retinal exam for diabetics	x
Acute care	
Patient-based acute myocardial infarction (AMI) 30 day (in-hospital and out of hospital) mortality	x
Patient-based AMI 30 day in-hospital (any hospital) mortality	x
Admission-based AMI 30 day in-hospital mortality	✓
Patient-based haemorrhagic stroke 30 day (in-hospital and out of hospital) mortality	x
Patient-based haemorrhagic stroke 30 day in-hospital (any hospital) mortality	x
Admission-based haemorrhagic stroke 30 day in-hospital mortality	✓
Patient-based ischemic stroke 30 day (in-hospital and out of hospital) mortality	x
Patient-based ischemic stroke 30 day in-hospital (any hospital) mortality	x
Admission-based ischemic stroke 30 day in-hospital mortality	✓
Hip fracture surgery initiated within 48 hours after admission to the hospital	x
Mental health-care	
Any hospital readmissions within 30 days for patients discharged with schizophrenia	x
Same hospital readmissions within 30 days for patients discharged with schizophrenia	✓
Any hospital readmission within 30 days among patients discharged with schizophrenia	x
Same hospital readmission within 30 days among patients discharged with schizophrenia	✓
Any hospital readmissions within 30 days for patients discharged with bipolar disorder	x
Same hospital readmissions within 30 days for patients discharged with bipolar disorder	✓
Any hospital readmission within 30 days among patients discharged with bipolar disorder	x
Same hospital readmission within 30 days among patients discharged with bipolar disorder	✓
In-patient suicides among people diagnosed with a mental disorder	x
In-patient suicides among people diagnosed with schizophrenia or bipolar disorder	x
Deaths after discharge from suicide among people diagnosed with a mental disorder	x
Deaths after discharge from suicide among people diagnosed with schizophrenia or bipolar disorder	x
Excess mortality for patients with schizophrenia	x
Excess mortality for patients with bipolar disorder	x

(continued)

Table 1.1 (continued): OECD health care quality indicators 2012–13

Indicator	Included in Australia's data submission in 2013
Cancer care	
Breast cancer five-year relative survival	✓
Cervical cancer five-year relative survival	✓
Colorectal cancer five-year relative survival	✓
Patient safety	
Retained surgical item or unretrieved device fragment	✓
Accidental puncture or laceration	✓
Postoperative haemorrhage or haematoma	✓
Postoperative wound dehiscence	✓
Postoperative pulmonary embolism or deep vein thrombosis—all surgical discharges	✓
Postoperative pulmonary embolism or deep vein thrombosis—hip and knee replacement discharges	✓
Postoperative sepsis—all surgical discharges	✓
Postoperative sepsis—abdominal surgery discharges	✓
Obstetric trauma vaginal delivery with instrument	✓
Obstetric trauma vaginal delivery without instrument	✓
Patient experience	
Waiting time of more than 4 weeks for getting appointment with a specialist	x
Waiting time of more than 1 hour on the day of consultation with a doctor	x
Consultation skipped due to difficulties in travelling	✓
Consultation skipped due to costs	✓
Medical tests, treatment or follow-up skipped due to costs	✓
Prescribed medicines skipped due to costs	✓
Doctor spending enough time with patients during the consultation	✓
Regular doctor spending enough time with patients during the consultation	x
Doctor providing easy-to-understand explanations	x
Regular doctor providing easy-to-understand explanations	x
Doctor giving opportunity to ask questions or raise concerns	x
Regular doctor giving opportunity to ask questions or raise concerns	x
Doctor involving patients in decisions about care or treatment	x
Regular doctor involving patients in decisions about care or treatment	x

2 Methods and data sources

This chapter presents information about the specifications and data sources for the HCQIs. It also includes information on broad issues affecting the comparability of Australia's data with those of other OECD member countries. More specific guidance on the comparability of Australian HCQI data is also included at the ends of chapters 3 to 8.

In 2013, the AIHW and the ABS provided data for 33 of the 60 OECD HCQIs where comparability and quality was considered sufficient. The HCQIs include a number of indicators not supported by current Australian collection arrangements, as noted in Chapter 1.

The acute care, primary care, mental health-care and patient safety HCQIs were reported using 2011–12 data from the National Hospital Morbidity Database (NHMD) at the AIHW. Where possible, data for earlier years were also supplied to provide time series for trend analysis. The specific years supplied are noted for each HCQI in chapters 3 to 8.

Data for the cancer care indicators were sourced from the Australian Cancer Database (ACD) at the AIHW.

Patient experience data were sourced from the 2011–12 ABS Patient Experience Survey.

Specifications for the HCQIs

In preparing data for the HCQIs, the AIHW adhered as closely as possible to the OECD specifications in the OECD guidelines and technical manual for the HCQIs provided to the AIHW by the OECD. These are reproduced in brief at Appendix B (and available on request from the AIHW).

The guidelines and technical manual for the HCQIs outline key concepts underpinning the preparation of the HCQIs. Where relevant, these concepts are noted throughout this report, particularly if Australian data collection and reporting practices deviate from those specified by the OECD. The technical manual lists ICD-9-CM (US version) and ICD-10 (2010 WHO version) codes and outline steps required to convert codes supplied in the specifications to each country's version of ICD or procedure codes. Age ranges and sex requirements for each HCQI are also included in these specification documents.

In line with OECD specifications, Australia provided confidence intervals for the HCQIs, where required. Confidence intervals have been included in this publication only for data sourced from survey data; that is, only the patient experience data. They have not been provided for indicators based on the NHMD and ACD. This approach was taken because, in the case of data collected by way of a sample survey, confidence intervals represent the sampling error. That is, the uncertainty of the quantity being reported arises from estimating a value for a population, based on data from a sample of that population. This theory is well developed and longstanding and therefore confidence intervals are considered reliable. For data from the NHMD and the ACD, which are collations of records of all relevant events rather than a sample, it is very difficult to determine the cause and properties of variability and therefore construct 'correct' or meaningful confidence intervals. Therefore the AIHW considers that confidence intervals created for such sources would be of uncertain reliability.

Data sources for the HCQIs

As noted above, the data provided for HCQIs by the AIHW and ABS were sourced from three national data collections. Information on each of these collections is provided below.

National Hospital Morbidity Database

The NHMD is a comprehensive dataset that has records for separations of admitted patients from essentially all public and private hospitals in Australia. The NHMD is based on the standards set out in the Admitted Patient Care National Minimum Data Set (APC NMDS). It provides for recording of a principal diagnosis and up to 99 additional diagnoses.

The counting unit in the NHMD is the separation. 'Separation' refers to the episode of admitted patient care (see Separation in the Glossary). This can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). When interpreting data from the NHMD, it is worth noting that data on hospital activity are affected by changes in coverage, administrative and reporting arrangements over time. Separations with a care type of *Newborn* with no qualified days and records for *Hospital boarders* and *Posthumous organ procurement* have been excluded.

It should be noted that data from the AIHW's NHMD are collected primarily for the purposes of recording care provided to admitted patients. Use for purposes such as reporting the OECD HCQIs has not been validated for accuracy in Australia. The results prepared using data from the NHMD should therefore be treated with caution.

AIHW notes a variation in Australia's mechanism for identifying same-day separations when providing data, although it is considered unlikely to affect comparability. The NHMD does not hold information on time of admission or separation, so a length of stay (LOS) of less than 24 hours cannot be accurately identified. A same-day flag identifies separations where a patient was discharged from hospital on the same calendar day during which they were admitted. Such separations were used as a proxy for separations with an LOS of less than 24 hours.

Patient days are calculated as the difference between admission and separation dates, less leave days if any, or one, depending on which was greater. Patient days were used to calculate LOS <4 days, <3 days and <2 days. This does not perfectly capture the concept in all cases, but was the best available option.

Diagnoses and procedures are recorded in the NHMD using the International Statistical Classification of Diseases and Related Health Problems, Tenth revision, Australian Modification (ICD-10-AM) or the Australian Classification of Health Interventions (ACHI), as appropriate.

The data quality statement for the NHMD is at Appendix A.

Australian Cancer Database

The ACD is a collection of data on all primary malignant cancers diagnosed in Australia since 1982. The following exclusions apply to the ACD:

- Tumours diagnosed as benign, of borderline malignancy or in situ are not included.

- Only the first occurrence of a cancer is included. That is, recurrences and metastases are not included.

Australian cancer data are primarily coded using the World Health Organization's classification for coding the topography and the morphology of the neoplasm, the International Classification of Diseases for Oncology 3rd edition (ICDO-3). However, disease codes are ICD-10 codes.

The ACD is routinely linked to the AIHW's National Death Index (NDI) so that cancer data can be updated with information on deaths of people who have been reported with cancer. The NDI is a database of all deaths that have occurred in Australia since 1980 and is maintained by the AIHW for the purposes of record linkage. At the time of analysis, cancer cases had been followed for deaths (from any cause) to the end of 2010.

The data quality statement for the ACD is at Appendix A.

ABS Patient Experience Survey

The ABS Patient Experience Survey is conducted annually and collects national data on respondents' perceptions of access and barriers to a range of health-care services. Data are also collected on aspects of communication between patients and health professionals (ABS 2012).

The Patient Experience Survey has been conducted by the ABS throughout Australia from July to June each year since 2010–11, as a topic on the ABS Multipurpose Household Survey.

After taking into account sample loss, the response rate for the Patient Experience Survey in 2011–12 was 79.6%. In total, information was collected from 26,437 fully responding households. One person aged 15 or over from each household was asked questions in relation to their own health. If the randomly selected person was aged 15 to 17 years, permission was sought from a parent or guardian before conducting the interview. For 334 people aged 15 to 17 years, permission was not given and the parent or guardian was asked the questions.

A data quality statement for the 2011–12 Patient Experience Survey is available online at <www.abs.gov.au>.

Methodological issues for the indicators

The OECD specifications were followed as closely as possible in the preparation of Australia's indicator data. Some specific points to note in relation to the indicator groups are outlined below. An overarching terminological issue is important to note: where indicators refer to a 'discharge' or an 'admission' in the OECD specifications, the similar, but not identical concept 'separation' is used by Australia (see Separation in the Glossary).

The HCQIs were originally written to use the ICD-9-CM coding/classification system (used in the United States). In developing the specifications, ICD-9-CM diagnosis codes were then mapped by the OECD to ICD-10 codes for use in other countries. These ICD-10 codes were mapped by the AIHW to ICD-10-AM; see Appendix B for details. Any cases where differences between ICD-10 and ICD-10-AM were substantial are noted in chapters 3 to 8.

Caution is advised when comparing data across years due to changes between the ICD-10-AM 5th edition (used in 2007–08), the ICD-10-AM 6th edition (used in 2008–09 and

2009–10) and ICD-10-AM 7th edition (used in 2010–11 and 2011–12) and their associated Australian Coding Standards.

As there is no common international classification of medical procedures, the OECD specifications provide ICD-9-CM (United States version) procedure codes to define inclusions or exclusions to the numerator, denominator, or both, for some indicators. These ICD-9-CM codes were mapped by the AIHW to codes in ACHI for the relevant years to calculate the Australian results. While ICD-9-CM to ACHI mapping is not straightforward in all cases, no significant mapping issues were encountered for procedure codes used in the HCQIs. See Appendix B for details.

HAAG 2013 notes issues with comparability for each group of indicators. This is referenced in this publication.

All OECD HCQIs that refer to admissions are, within the Australian context, in fact separations and therefore are referred to as such in this publication.

Primary care

For each of the primary care indicators, the denominator required is the population count. For the 2011–12 data, the population used is the preliminary estimated resident population as at 30 June 2012 (as published by the ABS in the Australian Demographic Statistics series). For earlier years, the population used is the preliminary rebased estimated resident population as at 30 June in the relevant year. Refer to the ABS Australian Demographic Statistics series for further details about population estimation.

Acute care

For acute care indicators, numbers were provided for males and females as per OECD specifications. Therefore patients were excluded from the calculation if their sex was categorised as 'indeterminate' or 'not stated/inadequately described'. These exclusions were made both in the numerator and the denominator.

Mental health-care

Linking of episodes of care within the same hospital is possible for some public hospitals within the NHMD. Seven jurisdictions approved the linkage of episodes of care within the same hospital for the mental health readmission indicators. Western Australia did not. While public hospitals provide the majority of mental health-related separations (AIHW 2013b), the exclusion of data from Western Australia and from private hospitals means that the mental health readmission indicators are based on an incomplete set of the Australian separation data for mental health conditions.

Cancer care

Results for the cancer care HCQIs were calculated from the ACD in 6-year follow-up periods from 1995–2000 to 2005–2010. Note that the OECD HCQI project refers to these survival data as *5-year relative survival rates*. In the Australian context, the reference periods prescribed by the OECD, for example 2000 to 2005, would generally be described as relating to 6-year survival.

Patient safety

Patient safety indicators supplied to the OECD for the HCQIs data collection were crude rates, with age-sex standardisation done by the OECD once all data were collected. This was because the OECD method for age-sex standardising for patient safety indicators was to aggregate specific denominator counts provided by each country to produce an internal standard population that was used along with each country's age-sex group indicator rate to form direct age-sex standardised rates. The crude rates supplied for Australia are presented in this report.

Patient experience

For the patient experience HCQIs, results were calculated by the ABS using data from the 2011–12 Patient Experience Survey.

HCQI specifications for the denominator of the patient experience indicators required both weighted and unweighted counts from survey data. Australia was unable to provide the denominator unweighted as the ABS does not release that information.

3 Primary care indicators

This chapter presents data for the primary care indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

The OECD HCQIs for primary care include rates of avoidable hospital admissions for a range of conditions. Rates of avoidable hospital admissions serve as measures of the effectiveness of the primary health-care system, as access to 'a high performing primary health-care system can, to a significant extent, avoid acute deterioration in people living with [these conditions] and prevent their admission to hospital' (OECD 2013a).

The AIHW supplied 8 primary care indicators for the 2013 HAAG data submission, based on 2007–08 to 2011–12 NHMD data. The indicators requested by the OECD were for avoidable hospital admission rates, but, as noted in the chapter on methods, Australia uses the similar concept of 'separation'. Therefore the indicators supplied were rates for:

- *Asthma hospital separation*
- *Chronic obstructive pulmonary disease (COPD) hospital separation*
- *Congestive heart failure (CHF) hospital separation*
- *Hypertension hospital separation*
- *Uncontrolled diabetes without complications hospital separation*
- *Diabetes short-term complications hospital separation*
- *Diabetes long-term complications hospital separation*
- *Diabetes lower extremity amputation*.

The National Healthcare Agreement includes an indicator of *Selected potentially preventable hospitalisations*, which reports on separations from hospital that could have potentially been prevented through the provision of appropriate non-hospital health services. This indicator includes separations for the conditions listed above.

For details of the methods used for calculating the indicators in this chapter see Chapter 2.

3.1 Asthma hospital separation

In 2011–12, the asthma separation rate for people aged 15 and over in Australia was 69 per 100,000 population, about the same as rates for each year since 2007–08. Rates for females were more than twice those for males (40 separations for males and 95 for females per 100,000 population in 2011–12), with this difference consistent over time (Table 3.1).

Table 3.1: Number of asthma separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	40.8	100.4	**71.9**
2008–09	37.4	92.4	**66.2**
2009–10	39.1	97.0	**69.2**
2010–11	41.3	92.6	**68.1**
2011–12	39.7	95.3	**68.8**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

3.2 Chronic obstructive pulmonary disease hospital separation

The rate of COPD separations for people aged 15 and over in Australia was between 309 and 325 per 100,000 in each year between 2007–08 and 2011–12. Rates were higher for males than females in each year (Table 3.2).

Table 3.2: Number of COPD separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	390.5	277.1	**319.8**
2008–09	385.4	290.0	**324.7**
2009–10	367.2	276.4	**309.7**
2010–11	375.1	284.4	**317.0**
2011–12	373.7	288.5	**319.3**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

3.3 Congestive heart failure hospital separation

The CHF separation rate for people aged 15 and over in Australia was 234 per 100,000 population in 2011–12, with little change since 2007–08. Rates for males are about one-third higher than for females, a trend that is stable over the reported period (Table 3.3).

Table 3.3: Number of CHF separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	285.1	197.8	**234.4**
2008–09	277.6	193.3	**228.2**
2009–10	270.3	184.4	**219.8**
2010–11	294.2	197.4	**237.2**
2011–12	289.3	195.2	**233.8**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

3.4 Hypertension hospital separation

The *Hypertension hospital separation* rate for people aged 15 and over in Australia was 36 per 100,000 population in 2011–12, up from almost 30 in 2007–08. Rates are about 60% higher for females than males (Table 3.4).

Table 3.4: Number of hypertension separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	20.6	35.3	**29.4**
2008–09	20.1	34.0	**28.5**
2009–10	20.5	35.3	**29.4**
2010–11	23.9	40.5	**33.9**
2011–12	26.0	41.4	**35.6**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

3.5 Diabetes hospital separations

Caution should be used when comparing data over the period reported due to coding changes (explained in Chapter 2: Methods and data sources) that resulted in decreased reporting of additional diagnoses for diabetes, particularly between 2009–10 and 2010–11.

Uncontrolled diabetes without complications hospital separation

This indicator includes separations where diabetes was the principal diagnosis without mention of short or long-term complications. The rate of *Uncontrolled diabetes without complications* separations in Australia was between 6.4 and 7.4 per 100,000 population between 2007–08 and 2011–12. At almost 60% of separations, rates for males were consistently higher than those for females (Table 3.5).

Table 3.5: Number of uncontrolled diabetes without complications separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	7.3	5.5	**6.4**
2008–09	8.5	6.4	**7.4**
2009–10	8.4	5.8	**7.1**
2010–11	8.4	5.6	**6.9**
2011–12	8.4	6.3	**7.2**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

Diabetes short-term complications hospital separation

Rates of people aged 15 and over in Australia with *Diabetes short-term complications* apparently rose from 22 in 2007–08 to 27 separations per 100,000 population in 2011–12. The rates, which include conditions such as ketoacidosis and hyperosmolarity (see Appendix B), were similar for males and females (Table 3.6).

Table 3.6: Number of diabetes short-term complications separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	21.7	21.7	**21.7**
2008–09	23.1	23.4	**23.2**
2009–10	22.9	24.2	**23.5**
2010–11	23.8	24.3	**24.0**
2011–12	27.2	27.8	**27.4**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

Diabetes long-term complications hospital separation

Diabetes long-term complications include complications related to the kidneys, eyes, brain, circulatory system and other selected long-term complications (see Appendix B). In 2011–12 the separation rate was 97 per 100,000 population. This rate has more than halved since 2007–08, but this change is likely to be due primarily to changes in diabetes coding standards. Rates for females were much lower than for males, with 60–62% of separations attributed to males over the reporting period (Table 3.7).

Table 3.7: Number of diabetes long-term complications separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	253.1	166.6	**204.6**
2008–09	255.0	166.1	**205.1**
2009–10	244.3	154.9	**194.0**
2010–11	130.8	79.3	**102.1**
2011–12	124.1	76.1	**97.3**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

Diabetes lower extremity amputation

In 2011–12, the separation rate for *Diabetes lower extremity amputation* was 4.6 per 100,000 population, down from 6.9 in 2007–08. This rate excludes minor amputations of the toes, as they may be a result of improved patient surveillance and early detection of conditions that could otherwise require major amputations (OECD 2009). Rates for males were around three times as high as for females (7.4 and 2.4 separations respectively in 2011–12) (Table 3.8).

Table 3.8: Number of diabetes lower extremity amputation separations for people aged 15 and over, per 100,000 population, by sex, Australia, 2007–08 to 2011–12

Year	Male	Female	Total
2007–08	11.1	3.6	**6.9**
2008–09	10.2	3.3	**6.4**
2009–10	8.8	2.9	**5.5**
2010–11	8.2	2.5	**5.0**
2011–12	7.4	2.4	**4.6**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2007–08 to 2011–12.

3.6 How does Australia compare internationally?

For each of the primary care HCQIs reported by the OECD in *HAAG 2013,* rates were reported for adults (aged 15 and over) for 2006 and 2011, or the nearest years provided by OECD member countries. For Australia the data published by the OECD were for the 2007–08 and 2010–11 financial years.

HAAG 2013 notes that 'differences in coding practices among countries and the definition of an admission may affect the comparability of data. Differences in disease classification systems, for example between ICD-9-CM and ICD-10-AM, may also affect data comparability'.

Rates reported in *HAAG 2013* were for avoidable admissions for asthma, COPD and diabetes, and were age-sex standardised to the 2010 OECD population aged 15 and over, as presented here.

The OECD did not publish *Congestive heart failure (CHF) hospital separation*, *Hypertension hospital separation* or *Diabetes lower extremity amputation* in *HAAG 2013*. However, *Congestive heart failure (CHF) hospital separation* and *Diabetes lower extremity amputation* are listed on *OECD.StatExtracts* (OECD 2013b).

Mappings from OECD specifications to classifications used in Australia resulted in a number classification issues for the primary care indicators which may affect comparability between countries:

- For 2 indicators (*CHF hospital separation* and *Hypertension hospital separation*) cardiac procedure codes were also required for the indicator calculation. These were mapped by AIHW from ICD-9-CM to equivalent codes in ACHI, but the mapping was not exact. See Appendix B.
- For *Uncontrolled diabetes separation rate* the ICD-9-CM codes in the specifications address the concept of uncontrolled diabetes, while the mapped ICD-10 codes do not cover the exact concept.
- Caution must be taken when interpreting the *COPD* and *Asthma separation rate* indicators, as the mapped ICD-9-CM and ICD-10 codes do not measure identical concepts in relation to acute bronchitis.
- Caution should be used when comparing diabetes data from 2007–08 through to 2011–12 because of changes between ICD-10-AM 5th, 6th and 7th editions and their Coding Standards which resulted in decreased reporting of additional diagnoses for diabetes.

Asthma hospital separation

In 2010–11, Australia's rate was 68 separations per 100,000 population, almost 50% higher than the OECD average of 46. Asthma separation rates have fallen in Australia since 2007–08, from 72 per 100,000 population; however, the OECD average also fell, from 55 in 2006 (OECD 2013a). Asthma rates in 2011, for the 26 countries that reported *Asthma hospital separation* rates in *HAAG 2013,* ranged from a low of 11.4 in Italy to more than 150 in the Slovak Republic.

Chronic obstructive pulmonary disease hospital separation

In 2010–11, Australia's rate was 317 separations per 100,000 population, more than 56% higher than the OECD average. The average COPD separation rates have not changed substantially in Australia over the reported period, but the OECD average fell from 223 in 2006 to 203 in 2011 (OECD 2013a). A total of 26 countries contributed rates of COPD to *HAAG 2013*; the lowest rate of *COPD hospital separation* in 2011 was in Japan (23.5) and the highest was in Hungary where the rate of admissions was almost 380.

Congestive heart failure hospital separation

OECD.StatExtracts (OECD 2013b) includes rates for 30 OECD countries for *Congestive heart failure hospital separation* in 2011. These range from 57 per 100,000 population in Slovenia to almost 470 in Hungary. AIHW analysis of these data shows that Australia's rate—233—is similar to the average of the 21 countries that provided data in 2011.

Hypertension hospital separation

Hypertension separation rates were last included in *HAAG 2009*. Australia's rate was 28 per 100,000 population, 67% lower than the 2007 OECD average of 84 (OECD 2009).

Diabetes hospital separations

Diabetes is an area where mapping between ICD-9-CM and ICD-10-AM can be a complicated task as both the ICD and coding standards changed substantially over time. Diabetes indicators are likely to be subject to variations across countries with different practices for recording diabetes as either a primary or additional diagnosis. These variations affect the comparability of results. They are currently under investigation by an OECD HCQI Expert Group.

The OECD arrived at the results for *Diabetes hospital separation* published in *HAAG 2013* by summing the age-standardised rates for *Diabetes short-term complications*, *Diabetes long-term complications* and *Uncontrolled diabetes without complications*. Data for diabetes separations were also available broken down by 'with complications' and 'without complications'. The data for *Diabetes with complications* were arrived at by summing *Diabetes short-term complications* and *Diabetes long-term complications*.

In 2011–12, Australia's separation rate for Diabetes with complications was 126 per 100,000 population, down from 226 in 2007–08. However, some of this decrease would have been caused by changes in diabetes coding standards that led to decreased reporting of additional diagnoses for diabetes. The OECD average also improved over this time (119 in 2011 down from 134 in 2006) (OECD 2013a).

The rates for *Diabetes without complications* were substantially lower in Australia in both 2006 and 2011—6.4 and 6.9 separations per 100,000 population respectively, where the OECD averages were 55 and 45 respectively (OECD 2013a).

Diabetes hospital separation rates (which are the sum of the 2 indicators above) in 2011 were 133 in Australia compared with the OECD average of 164 per 100,000 population. For 2011, 22 countries reported *Diabetes hospital separations* rates in *HAAG 2013*. Of these the lowest rates were reported in Italy and the highest was in Hungary (54 compared with 404 admissions per 100,000 population).

Diabetes lower extremity amputation is reported in *OECD.StatsExtracts* (OECD 2013a). The rate in 2011 ranged from 1.1 per 100,000 population in Hungary to 18.4 in Germany. The AIHW calculated that the average for the 18 countries that supplied data in 2011 was 7.8. Australia's rate was 5.0.

4 Acute care indicators

This chapter presents data for the acute care indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

Australia calculated and submitted 3 acute care indicators as part of its data submission to the OECD in 2013. The OECD specifications request admission-based data but Australia has supplied separations data as explained in Chapter 2. The indicators are rates for:

- *Separation-based AMI 30-day in-hospital mortality*
- *Separation-based haemorrhagic stroke 30-day in-hospital mortality*
- *Separation-based ischaemic stroke 30-day in-hospital mortality.*

These indicators measure the proportion of total separations where the patient died in the same hospital, during that same episode of care, within 30 days of admission. In-hospital mortality rates for acute myocardial infarction (AMI) and stroke may reflect the quality of care provided for those conditions (OECD 2011).

These indicators have been prepared for the years 2008–09 to 2011–12. ICD-10-AM diagnosis codes used for indicator calculation are considered appropriate for use and consistent in meaning for the reference years reported (see Appendix B for specifications for acute care indicators). Rates are age-sex standardised, but are not risk-adjusted for any other patient characteristics.

4.1 Separation-based AMI 30-day in-hospital mortality

Table 4.1 presents Australia's results for *Separation-based AMI 30-day in-hospital mortality* rate per 100 separations from 2008–09 to 2011–12, by sex. The rate fell steadily between 2008–09 and 2011–12 by almost 20%, from 3.3 deaths per 100 separations in 2008–09 to 2.7 in 2011–12. In 2011–12 the mortality rate was similar for females and males.

Table 4.1: Separation-based AMI 30-day in-hospital mortality for people aged 15 and over, deaths per 100 separations, by sex, Australia, 2008–09 to 2011–12

Year	Male	Female	Total
2008–09	3.22	3.39	**3.30**
2009–10	3.00	3.46	**3.24**
2010–11	3.02	3.06	**3.04**
2011–12	2.67	2.72	**2.70**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2008–09 to 2011–12.

4.2 Separation-based stroke 30-day in-hospital mortality

The mortality rate for stroke in Australia has fallen over several decades due to a variety of factors, such as reduction in risk factors such as tobacco smoking and high blood pressure (AIHW 2012a) and improved treatments (OECD 2013a).

From 2008–09 to 2011–12, the number of deaths in Australia that occurred in the same hospital, within 30 days of the hospital admission, with a primary diagnosis of haemorrhagic stroke was about 3 times than for ischaemic stroke (tables 4.2 and 4.3).

Haemorrhagic stroke

Table 4.2 shows the *Separation-based haemorrhagic stroke 30-day in-hospital mortality* rate per 100 separations from 2008–09 to 2011–12, by sex. The rate was relatively unchanged over the reported period at around 17 deaths per 100 separations. The mortality rates for females were slightly higher than for males.

Table 4.2: Separation-based haemorrhagic stroke 30 day in-hospital mortality for people aged 15 and over, deaths per 100 separations, by sex, Australia, 2008–09 to 2011–12

Year	Male	Female	Total
2008–09	16.92	17.48	**17.33**
2009–10	15.00	17.36	**16.31**
2010–11	15.72	19.47	**17.80**
2011–12	16.33	17.21	**16.90**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2008–09 to 2011–12.

Ischaemic stroke

Table 4.3 shows the *Separation-based ischaemic stroke 30 day in-hospital mortality* rate per 100 separations from 2008–09 to 2011–12, by sex. Over this period the rate was between 5.2 and 5.8 per 100 separations. Rates were similar for males and females.

Table 4.3: Separation-based ischaemic stroke 30 day in-hospital mortality for people aged 15 and over, deaths per 100 separations, by sex, Australia, 2008–09 to 2011–12

Year	Male	Female	Total
2008–09	6.03	5.49	**5.79**
2009–10	5.27	5.58	**5.47**
2010–11	5.03	5.82	**5.50**
2011–12	4.73	5.58	**5.21**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2008–09 to 2011–12.

4.3 How does Australia compare internationally?

The most recent data reported in *HAAG 2013* are not the most recent data available in Australia (2011–12 data for Australia are reported above), but the year nearest to the OECD reported year, 2011. In Australia, this was 2010–11.

The *HAAG 2013* presents admission rates for the population aged 45 and over (presented below). Australia supplied an all-ages rate (presented above).

In Australia, the NHMD can be used to calculate separation-based same-hospital mortality, but not patient-based same-hospital mortality nor patient-based any-hospital mortality, nor patient-based in- or out-of hospital mortality at the national level. This means the Australian data can identify if a patient dies during a single episode of care in one hospital. However, if a patient was discharged from hospital or had a change in care type, then returned to that same hospital or another hospital and died, or died out of hospital, all within 30 days, that death would not be counted by this indicator. While it is possible to link patient records within the same hospital for public hospitals, it is not currently possible to link a patient's episodes of care in the data at a national level between hospitals. Nor is it possible to link hospital records to deaths records at the national level. The indicators therefore underestimate true case fatality.

Separation-based AMI 30-day in-hospital mortality

HAAG 2013 reported data for adults aged 45 and over from 2001, 2006 and 2011. Rates in Australia fell over time, consistent with the general trend seen in most OECD countries. This reflects improvements in hospital care for AMI—for example, the increased and more timely use of new hospital-based cardiac procedures such as percutaneous transluminal coronary angioplasty (PTCA) (OECD 2013a).

Australia's *Separation-based AMI 30-day in-hospital mortality* rate for adults aged 45 and over was lower than the OECD average from 2001 onward. The rate in Australia fell more than the OECD average, from around 15% lower in 2001 (9.4 deaths per 100 separations compared with 11.2), 20% lower in 2006 (6.7 compared with 8.3), and 25% lower in 2011 (4.8 compared with 6.3) (OECD 2013a). The lowest rate among the 32 countries that reported *Acute myocardial infarction 30-day in-hospital mortality rate* in 2011 was 3.0 per 100 separations in Denmark; the highest was 27.2 in Mexico.

Separation-based stroke 30-day in-hospital mortality

Separation-based haemorrhagic stroke 30-day in-hospital mortality rate was not published in *HAAG 2013*; however, is it reported (for the 23 countries in 2011) on *OECD.StatExtracts* (OECD 2013b). In 2011, for adults aged 45 and over Australia's rate (22 per 100 separations) was similar to the AIHW-calculated average of 21 per 100 admissions (OECD 2013a).

Australia's 2010–11 *Separation-based ischaemic stroke 30-day in-hospital mortality* rate for adults aged 45 and over (10.0 per 100 separations) was higher than the 2011 OECD average (7.8) (OECD 2013a). A total of 31 countries contributed results to the *Separation-based ischaemic stroke 30-day in-hospital mortality* rate. The lowest rate was in Japan (3.0 per 100 separations); the highest was in Mexico (19.6 deaths per 100 admissions).

5 Mental health-care indicators

This chapter presents data for the mental health-care indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

The mental health-care indicators are all unplanned hospital readmission rates for either schizophrenia or bipolar disorder. They entail the need to identify an **index separation** in which the patient is recognised as having the condition.

The index separation is the first separation per patient in a calendar year with the codes for the relevant condition as the principal diagnosis or as one of the first two listed additional diagnoses. All these separations count for the denominator of the indicator.

Any separation with a selected mental health diagnosis within 30 days of discharge from the index separation is considered an **unplanned readmission** and counts for the numerator. A single patient may have one, many, or no unplanned readmissions within 30 days of discharge from the index separation.

Codes, numerators and denominators for indicators are detailed in Section B.3 in Appendix B.

Mental health-care indicators submitted to the 2013 HAAG HCQIs collection are:

- *Same hospital readmissions within 30 days for patients discharged with schizophrenia*
- *Same hospital readmissions within 30 days among patients discharged with schizophrenia*
- *Same hospital readmissions within 30 days for patients discharged with bipolar disorder*
- *Same hospital readmissions within 30 days among patients discharged with bipolar disorder.*

The indicators described as '…**for** patients discharged with…' are the average number of times that a patient was readmitted to the same hospital.

Those described as '…**among** patients discharged with…' are number of patients who had at least one readmission, per 100 separations.

'The proportion of patients with "within 30-day readmissions" is … used as an indicator of the lack of proper management of mental health conditions outside of hospital' (OECD 2013a).

5.1 Schizophrenia readmissions

Schizophrenia is a mental disorder that affects how a person thinks, feels and acts. Without appropriate treatment, it can result in psychotic episodes.

Same hospital readmissions within 30 days for patients discharged with schizophrenia

Table 5.1 shows the average number of times that patients with an index separation—where the patient was recognised as having schizophrenia—were readmitted to the same hospital within 30 days with a mental health diagnosis. This number is stable over the 3 years reported, and between males and females, at 0.3 readmissions per patient.

Table 5.1: Average number of same hospital readmissions within 30 days, for patients with schizophrenia, Australia, 2009–10 to 2011–12

Year	Male	Female	Total
2009–10	0.3	0.3	**0.3**
2010–11	0.3	0.3	**0.3**
2011–12	0.3	0.3	**0.3**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2009–10 to 2011–12.

Same hospital readmissions within 30 days among patients discharged with schizophrenia

This indicator is the number per 100 patients with an index separation—where the patient was recognised as having schizophrenia—of patients who had at least one readmission. For every 100 people who had a schizophrenia separation, around 18 were re-admitted within 30 days with a mental health diagnosis in 2011–12 (Table 5.2). The rates were similar for males and females.

Table 5.2: Number of same hospital readmissions within 30 days, per 100 patients, among patients with schizophrenia, Australia, 2009–10 to 2011–12

Year	Male	Female	Total
2009–10	16.6	16.2	**16.4**
2010–11	16.8	17.0	**16.9**
2011–12	17.7	18.6	**18.1**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2009–10 to 2011–12.

5.2 Bipolar disorder readmissions

Bipolar disorder is a type of psychiatric disorder that manifests in alternating episodes of mania and depression.

Same hospital readmissions within 30 days for patients discharged with bipolar disorder

This indicator is the average number of times that patients with an index separation—where the patient was recognised as having bipolar disorder—were readmitted to the same hospital within 30 days with a mental health diagnosis (Table 5.3). This number was stable over the 3 years reported, and similar for males and females at 0.2 readmissions per patient.

Table 5.3: Average number of same hospital readmissions within 30 days, for patients with bipolar disorder, Australia, 2009–10 to 2011–12

Year	Male	Female	Total
2009–10	0.2	0.2	**0.2**
2010–11	0.2	0.2	**0.2**
2011–12	0.2	0.3	**0.2**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2009–10 to 2011–12.

Same hospital readmissions within 30 days among patients discharged with bipolar disorder

Table 5.4 shows the number per 100 patients who had an index separation—where the patient was recognised as having bipolar disorder—who had at least 1 readmission. For every 100 people who had a bipolar disorder separation, around 15 were readmitted within 30 days with a mental health diagnosis in 2011–12. This rate was similar for males and females.

Table 5.4: Number of same hospital readmissions within 30 days, per 100 patients, among patients with bipolar disorder, Australia, 2009–10 to 2011–12

Year	Male	Female	Total
2009–10	13.0	15.1	**14.1**
2010–11	13.0	15.0	**14.1**
2011–12	15.9	14.8	**15.2**

Note: Rates are age-sex standardised to the 2010 OECD population.

Sources: NHMD, 2009–10 to 2011–12.

5.3 How does Australia compare internationally?

This set of mental health indicators uses 'within 30–day readmissions' as a proxy for unplanned readmissions because many countries, including Australia, cannot differentiate between planned and unplanned mental health readmissions. Only the latter—unplanned readmissions—indicate poor quality health-care. The specifications excluded same-day admissions, which are likely to account for a considerable amount of planned readmissions.

Modifications were required to adapt the mental health-care indicators specifications for use in Australia (see Appendix B for further details).

Two indicators submitted by Australia were included in *HAAG 2013*. These were *Same hospital readmissions within 30 days among patients discharged with schizophrenia* and *Same hospital readmissions within 30 days among patients discharged with bipolar disorder*. The other 2 indicators submitted were not reported in *HAAG 2013* or on *OECD.StatExtracts* (OECD 2013b).

HAAG 2013 reports data from 2006 and 2011 or the nearest year. From Australia's submission, data from 2009–10 and 2011–12 were used. Data were age-sex standardised based on the 2010 OECD population structure.

Same hospital readmissions within 30 days among patients discharged with schizophrenia

The rate for readmission among those who have had a separation with a schizophrenia diagnosis in 2011–12 in Australia was 18 per 100 patients compared with an OECD average of 13 (among the 15 countries who supplied this indicator). Rates ranged from 5.5 in Mexico to 20 in Israel. Although the OECD average had not changed since 2006, the Australian rate rose from 16 in 2009–10 (OECD 2013a).

Same hospital readmissions within 30 days among patients discharged with bipolar disorder

The rate for readmission among those who have had a separation with a bipolar disorder diagnosis in 2011–12 in Australia was 15 per 100 patients, higher than the OECD average of 11 (for 15 countries). Rates ranged from 4.5 in Portugal to 17 in Israel. Australia's rate rose from 14 in 2009–10; the OECD average was relatively stable (OECD 2013a).

6 Cancer care indicators

This chapter presents data for the cancer care indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

A relatively small number of cancer care indicators made up part of the 2013 HAAG HCQI data collection. Cancer care indicators submitted by Australia (1995–2000 to 2005–2010) were for:

- *Breast cancer five-year relative survival*
- *Cervical cancer five-year relative survival*
- *Colorectal cancer five-year relative survival.*

A person's chance of surviving cancer depends on many factors, including their lifestyle and health conditions, the type of cancer they have, how far it had progressed before being diagnosed and what kinds of treatment are available. For most cancer patients, the risk of dying from other causes is not negligible. Relative survival allows for the contribution of cancer to other causes even when a specific underlying cause is known. It compares the survival of people diagnosed with cancer with that experienced by people in the general population, matched for age, sex and calendar year (AIHW & AACR 2001).

Five-year relative survival reflects the probability of being alive for at least 5 years after diagnosis. For some cancers, survival for 5 years after diagnosis is an important indicator of successful cancer management, through either periods of remission or cure, although for others there is still a substantial chance that the cancer may recur even after years of successful treatment (AIHW 2012c).

6.1 Breast cancer five-year relative survival

Five-year relative survival in Australia from breast cancer in females improved over the periods 1995–2000 (83%) to 2005–2010 (88%) (Table 6.1).

Table 6.1: Five-year relative survival from breast cancer, females, percent, Australia, 1995–2000 to 2005–2010

Time period	1995–2000	1996–2001	1997–2002	1998–2003	1999–2004	2000–2005	2001–2006	2002–2007	2003–2008	2004–2009	2005–2010
Relative survival, per cent	83.2	83.9	84.6	85.2	85.8	86.1	86.5	86.8	87.2	87.5	87.7

Note: Survival rates were age-standardised to the International Cancer Survival Standard population, 2004.

Source: AIHW Australian Cancer Database 2007.

6.2 Cervical cancer five-year relative survival

Five-year relative survival from cervical cancer in Australia remained relatively stable over the periods 1995–2000 to 2005–2010, at around 68% (Table 6.2).

Table 6.2: Five-year relative survival from cervical cancer, percent, Australia, 1995–2000 to 2005–2010

Time period	1995–2000	1996–2001	1997–2002	1998–2003	1999–2004	2000–2005	2001–2006	2002–2007	2003–2008	2004–2009	2005–2010
Relative survival, per cent	68.6	68.1	68.3	67.6	67.6	67.2	67.0	67.9	67.4	67.9	67.5

Note: Survival rates were age-standardised to the International Cancer Survival Standard population, 2004.

Source: AIHW Australian Cancer Database 2007.

6.3 Colorectal cancer five-year relative survival

Over the periods 1995–2000 to 2005–2010, 5-year relative survival for colorectal cancer in Australia improved from 58% to 65% in males and from 60% to 68% in females (Table 6.3).

Table 6.3: Five-year relative survival from colorectal cancer, percent, Australia, 1995–2000 to 2005–2010

Time period	Males	Females	Total
1995–2000	57.9	59.7	**58.6**
1996–2001	58.5	60.4	**59.3**
1997–2002	59.7	61.4	**60.4**
1998–2003	60.5	62.3	**61.3**
1999–2004	61.3	63.2	**62.1**
2000–2005	62.0	64.1	**62.9**
2001–2006	62.7	65.1	**63.7**
2002–2007	63.4	65.6	**64.3**
2003–2008	63.9	66.4	**65.1**
2004–2009	64.5	67.1	**65.7**
2005–2010	65.0	67.7	**66.2**

Note: Survival rates were age-standardised to the International Cancer Survival Standard population, 2004.

Source: AIHW Australian Cancer Database 2007.

6.4 How does Australia compare internationally?

For cervical cancer and breast cancer, *HAAG 2013* published OECD cancer survival data for 2001–2006 and 2006–2011; they were compared to data available in Australia for the nearest period (2001–2006 and 2005–2010). For colorectal cancer, OECD data for 2006–2011 were compared to Australian data for 2005–2010. Nineteen member countries reported relative survival rates for cervical and breast cancer, while 22 countries provided data for colorectal cancer. Australia's relative survival for each of the 3 cancers was better than the OECD average (OECD 2013a).

All survival estimates published in *HAAG 2013* were age-standardised to the International Cancer Survival Standard population, 2004.

Breast cancer five-year relative survival

In Australia, 5-year relative survival from breast cancer in females in 2005–2010 (88%) was higher than the OECD average (84%), a consistent feature since 2001–2006 (87% and 83% respectively). Poland had the lowest 5-year relative survival from breast cancer (74% in 2003–2008). The United States had the highest relative survival (89%, also reported for 2003–08) (OECD 2013a).

Cervical cancer five-year relative survival

Five-year relative survival from cervical cancer in Australia was about 67% or 68% between the periods 2001–2006 and 2005–2010. This was slightly above the average of the OECD countries, where 5-year relative survival was about 65% to 66% between 2001–2006 and 2006–2011. Internationally, relative survival from cervical cancer ranged from 53% (2003–2008) for Poland to 77% (2006–2011) for South Korea (OECD 2013a).

Colorectal cancer five-year relative survival

Five-year relative survival from colorectal cancer in Australia in 2005–2010 was 66%. For males, 5-year relative survival was slightly lower (65%) than for females (68%). Both rates were higher than the OECD averages of 61% for males and 63% for women. Survival rates ranged from 48% to 73% across OECD member countries, with Poland and South Korea reporting the lowest and highest rates respectively (OECD 2013a).

7 Patient safety indicators

This chapter presents data for the patient safety indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

The patient safety indicators (PSIs) are a set of quality measures that use hospital separation data to provide a perspective on patient safety for the purpose of international comparison of health systems. PSIs screen for events that patients experience during their hospital stays as a result of exposure to the health-care system—either adverse events, which cannot be totally avoided, or events that should never occur (OECD 2013a).

For the *2013 OECD HCQI data collection*, Australia submitted results for all ten PSIs in the data collection, based on 2011–12 data. The indicators were:

- *Retained surgical item or unretrieved device fragment*
- *Accidental puncture or laceration*
- *Postoperative haemorrhage or haematoma*
- *Postoperative wound dehiscence*
- *Postoperative pulmonary embolism or deep vein thrombosis:*
    - *all surgical discharges*
    - *hip and knee replacement discharges*
- *Postoperative sepsis:*
    - *all surgical discharges*
    - *abdominal discharges*
- *Obstetric trauma vaginal delivery:*
    - *with instrument*
    - *without instrument.*

Where these indicators were submitted to the *2011 OECD HCQI data collection,* these data are also presented in this chapter. This includes the indicator *Catheter-related bloodstream infection,* an indicator that was not requested for the 2013 collection.

It should be noted that data from the AIHW's NHMD are collected primarily for the purposes of recording care provided to admitted patients, and that use for purposes such as reporting the OECD HCQIs has not been validated for accuracy in Australia. The results prepared using data from the NHMD should therefore be treated with caution.

7.1 Retained surgical item or unretrieved device fragment

In *HAAG 2013* this indicator is referred to as *Foreign body accidentally left in during a procedure* (for example, surgical sponges, surgical instruments). Australia's 2011–12 rate for this indicator (8.4 per 100,000 separations) was lower than the 2008–09 rate of 9.4. The crude rate for Australia in 2011–12 was higher for males than for females—8.9 and 8.0 respectively and more than twice the rate for children aged 0–14 (3.9 for boys and 3.1 for girls) (Table 7.1).

Table 7.1: Retained surgical item or unretrieved device fragment rate[(a)], by sex, adults and children, Australia, 2008–09 and 2011–12

	Male		Female		Total	
Year	Children 0–14	Adults 15+	Children 0–14	Adults 15+	Children 0–14	Adults 15+
2008–09	. .	10.5	. .	8.5	**. .**	**9.4**
2011–12	3.9	8.9	3.1	8.0	**3.6**	**8.4**

(a) Crude rate per 100,000 separations, excluding same-day separations.

Sources: NHMD 2008–09 and 2011–12.

7.2 Accidental puncture or laceration

Some complex procedures involve an enhanced risk of accidental cut, puncture, perforation or laceration. However, accidents of this nature can also occur in relatively routine procedures. Adverse events of this nature may occur because of system problems such as inadequate professional training or fatigue (Romano 2007; Millar & Mattke 2004).

Table 7.2 shows that Australia's crude rate of *Accidental puncture or laceration* for adults 15 and over was just over 300 per 100,000 separations in 2011–12. Accidental puncture or laceration was higher for females (330) than for males (280). The rate for children aged 0–14, was much lower at 67.

Table 7.2: Accidental puncture or laceration rate[(a)], by sex, adults and children, Australia, 2008–09 and 2011–12

	Male		Female		Total	
Year	Children 0–14	Adults 15+	Children 0–14	Adults 15+	Children 0–14	Adults 15+
2008–09	. .	278.7	. .	335.3	**. .**	**307.1**
2011–12	67.7	281.1	65.5	330.5	**66.8**	**306.0**

(a) Crude rate per 100,000 separations, excluding same-day separations.

Sources: NHMD 2008–09 and 2011–12.

7.3 Postoperative haemorrhage or haematoma

Table 7.3 presents crude rates for this indicator in Australia for 2011–12. The crude rate for adults aged 15 and over was almost 1,330 per 100,000 separations, nearly 3 times the rate for children (490). The rate for adult males (almost 1,500) was higher than for females (just over 1,200), but the rates for boys and girls were similar. The indicator was not part of the collection in 2011.

Table 7.3: Postoperative haemorrhage or haematoma rate[(a)], by sex, adults and children, Australia, 2011–12

	Male		Female		Total	
Year	Children 0–14	Adults 15+	Children 0–14	Adults 15+	Children 0–14	Adults 15+
2011–12	490.8	1,452.8	485.2	1,209.4	**488.3**	**1,326.8**

(a) Crude rate per 100,000 separations.

Source: NHMD 2011–12.

7.4 Postoperative wound dehiscence

The 2011–12 rate of *Postoperative wound dehiscence* (where a wound ruptures along the surgical suture) in adults aged 15 and over was more than 110 per 100,000 separations. This rate has dropped since 2009–10 (more than 130) (Table 7.4). Rates for males were higher than for females (140 and 90 respectively in 2011–12). Although rates for children appear to be rising, this is based on very few cases; for example, in 2011–12 there were just 9 cases of *Postoperative wound dehiscence* in more than 25,000 separations for children 0–14.

Table 7.4: Postoperative wound dehiscence rate[(a)], by sex, adults and children, Australia, 2009–10 and 2011–12

	Male		Female		Total	
Year	Children 0–14	Adults 15+	Children 0–14	Adults 15+	Children 0–14	Adults 15+
2009–10	21.6	151.8	58.4	113.5	**37.3**	**131.0**
2010–11	41.6	132.8	84.6	101.9	**59.9**	**116.1**
2011–12	139.4	139.9	53.4	88.9	**102.6**	**112.1**

(a) Crude rate per 100,000 separations, excluding lengths of stay less than 2 days.

Sources: NHMD 2009–10 to 2011–12.

7.5 Postoperative pulmonary embolism or deep vein thrombosis

Australia's rate for this indicator in 2011–12 for all surgical separations was almost 1,300 per 100,000 separations, a rise of around 25% from about 970 in 2008–09 (Table 7.5).

In 2011–12, this indicator was reported separately for hip and knee replacement separations, as these are high-risk procedures with higher rates expected (OECD 2013a). This expectation is met by a rate that is 25% higher than for all surgeries (more than 1,700 per 100,000 separations, which was similar in men and women).

Table 7.5: Postoperative pulmonary embolism or deep vein thrombosis rate[a], by sex, Australia, 2008–09 and 2011–12

Year	Male	Female	Total
All surgical separations			
2008–09	1,018.7	930.9	**974.1**
2011–12	1,271.5	1,264.1	**1,267.7**
Hip and knee replacement separations			
2008–09	. .	. .	. .
2011–12	1,690.2	1,719.6	**1,706.6**

(a) Crude rate per 100,000 separations, excluding lengths of stay less than 2 days.

Sources: NHMD 2008–09 and 2011–12.

7.6 Postoperative sepsis

Postoperative sepsis (infection) is a severe complication that has a high mortality rate. The risk of sepsis following abdominal surgery is higher and was added to the OECD HCQI data collection in 2013 (OECD 2013a).

Australia's 2011–12 rate for postoperative sepsis following surgery was almost 920 per 100,000 separations, up from almost 790 in 2008–09 (Table 7.6). The rate of postoperative sepsis in Australia for males was almost twice the rate for females in all the reported data.

Table 7.6: Postoperative sepsis rate[a], by sex, Australia, 2008–09 and 2011–12

Year	Male	Female	Total
All surgical separations			
2008–09	1043.8	580.2	**789.5**
2011–12	1176.8	725.5	**919.6**
Abdominal separations			
2008–09	. .	. .	. .
2011–12	1660.9	832.5	**1124.6**

(a) Crude rate per 100,000 discharges, excluding lengths of stay less than 3 days.

Sources: NHMD 2008-09 and 2011–12.

7.7 Obstetric trauma

The OECD's PSIs define obstetric trauma as third and fourth degree perineal lacerations that arise during delivery. In 2011–12 in Australia, the rate of obstetric trauma for vaginal delivery with instrument such as forceps or vacuum, at 7.3 per 100 vaginal deliveries, was almost 4 times that of vaginal delivery without an instrument (2.2). There has been little change in this rate over time, with the rate for obstetric trauma with instrument 7.4 and without instrument 2.0 per 100 vaginal deliveries in 2008–09 (NHMD 2011–12).

7.8 Catheter-related bloodstream infection

This indicator includes not only catheter-related bloodstream infections, but also infections following infusions, therapeutic injections, immunisation, and implantation of selected cardiac and vascular devices (see Appendix B).

This indicator was not part of the indicator set for the 2013 OECD HCQI data collection. However, Australia's 2008–09 rate of *Catheter-related blood stream infection*, calculated for the *2011 OECD HCQI data collection*, was almost 280 per 100,000 separations. Australia's crude rate increased from more than 270 in 2007–08 to 300 in 2009–10.

7.9 How does Australia compare internationally?

Australia has supplied data for 2008–09 and 2011–12. Data for 2011–12 were used in *HAAG 2013*, as these most closely align with the 2011 reporting period of the report.

Given the large variations highlighted in rates reported for PSI, in some cases 10 or 20-fold variations, it is likely that differences in reporting have a considerable impact. This was recognised in *HAAG 2013*: 'The extent … to which payments are determined by diagnosis or procedure lists may also influence recording'. The report also comments that 'higher adverse event rates may signal more developed patient safety monitoring systems rather than worse care' (OECD 2013a).

HAAG 2013 also notes that 'A fundamental challenge in international comparison of patient safety indicators centres on the quality of the underlying data. The indicators are typically derived from administrative databases, rather than systems specifically designed to monitor adverse events, hence differences in how countries record diagnoses and procedures and define hospital episodes can affect calculation of rates.' (OECD2013a).

There is, largely, a lack of financial disincentives connected to the reporting of adverse events in Australia and this may have contributed to the relatively high rates reported for Australia. It is also possible that efforts to improve coding quality and to improve the focus on patient safety in Australia in recent years could have led to increased reporting of patient safety events in Australia compared with some other OECD countries.

A number of features of Australian patient safety monitoring would support the claim that Australia is one of those countries that have a more developed patient safety monitoring system. Australia employs specially trained staff to identify and code information from patient records. This practice was identified in *HAAG 2013* as likely to provide better data than systems that rely on report by clinicians that may be more patchy (OECD 2013a). It is likely that in Australia additional diagnoses are generally well recorded at the national level due to the ability to record up to 99 additional diagnoses in the AIHW NHMD. An examination of 2009 data from 14 OECD countries showed a positive relationship between the number of additional diagnoses present in hospitalisation records and the crude rate of PSIs (note that obstetric trauma PSIs were not included in this study). Specifically, the more additional diagnoses, the higher the PSI rate (Drösler et al. 2011). The rates published in *HAAG 2013* for surgical complications were adjusted by the average number of additional diagnoses, but despite this *HAAG 2013* remarked that there may still be some underestimation for countries that report fewer than 1.5 diagnoses (OECD 2013a).

Surgical complications and obstetric trauma published in *HAAG 2013* included rates that are not age-sex standardised. The OECD comments that this rate was not age-sex standardised

as it 'makes a marginal difference to countries' reported rate or ranking relative to other countries' (OECD 2013a). Neither were data adjusted for other variations among countries in casemix that could also affect risk of complications occurring.

Some of the PSI specifications exclude some separations based on LOS (length of stay)—for example the specification for *Postoperative PE or DVT* and *Postoperative wound dehiscence* exclude separations with a LOS less than 2 days and *Postoperative sepsis* excludes separations less than 3 days. Australia's average LOS for separations in 2010 (5.8 days) was below the OECD average of 8.0 days (OECD 2013a).

In a country where the average LOS was higher than in Australia, selecting cases from hospitalisations with LOS greater than 2 or 3 days would be likely to include a greater proportion of their hospitalisations, adding more of the less-complex cases. The proportion of more-complex cases in the mix for each country could possibly increase the rates for selected PSIs.

Rates reported in *HAAG 2013* are adjusted by the average number of additional diagnoses available for all PSIs except obstetric PSIs.

The indicators *Accidental puncture or laceration*, *Postoperative haemorrhage or haematoma* and *Postoperative wound dehiscence* were not reported in *HAAG 2013*. *Postoperative wound dehiscence* was included in *OECD.StatExtracts* (OECD 2013b).

Retained surgical item or unretrieved device fragment

HAAG 2013 reported a large range of results from the 20 countries that contributed to this indicator, from 0.5 in Belgium to 11.6 in Switzerland. The 2011 OECD average for diagnoses of *Retained surgical item or unretrieved device fragment* was 5.0 per 100,000 separations with Australia's reported rate higher at 8.6 (OECD 2013a).

Postoperative wound dehiscence

OECD.StatExtracts reported adjusted rates for *Postoperative wound dehiscence* ranging from 42 in Switzerland to more than 1,150 per 100,000 hospital discharges in Norway. This was compared with Australia's adjusted rate of just over 100. The AIHW calculates the average from the 19 countries that supplied data (which the OECD also adjusted by the average number of secondary diagnoses) to be just over 350 per 100,000 hospital discharges.

Postoperative pulmonary embolism or deep vein thrombosis

There were large variations in the reported rates of postoperative embolism or deep vein thrombosis between OECD countries. As detailed above in this section, it is likely that differences in their respective reporting approaches had a considerable impact on the variation in the results reported. It is possible that Australia's approaches to patient safety monitoring and recording contributes to the difference between number of reported events in Australia and in other OECD countries.

Australia's 2011–12 adjusted postoperative embolism or deep vein thrombosis rates for all surgeries was just over 1,200. The 2011 OECD average was 600 per 100,000 separations respectively. For hip and knee replacements the Australian rate was almost 1,800, while the 2011 OECD average was over 500. The range of adjusted rates reported for postoperative PE or DVT— all surgeries was large: from just over 100 in Belgium to Australia's rate of more than 1,200, with countries spread across that range. There was a similar spread of results

reported for postoperative PE or DVT—hip and knee replacement, from about 90 in Denmark to Australia's rate of almost 1,800 (OECD 2013a).

Postoperative sepsis

Adjusted rates of sepsis following abdominal surgeries in Australia were lower than the OECD average (more than 1,500 and 1,600 per 100,000 separations respectively), but the rate of sepsis following all surgeries was higher in Australia at almost 1,100 compared with more than 780 on average across the 20 OECD countries contributing to this indicator. The range of rates reported in *HAAG 2013* for both abdominal and all surgeries postoperative sepsis was considerable, from just under 100 per 100,000 in Israel to almost 1,700 in Ireland for all surgeries and from around 450 in Israel to more than 3,000 in Spain for abdominal surgeries (OECD 2013a).

Obstetric trauma

HAAG 2013 notes that for obstetric trauma 'differences in data reporting across countries may influence the calculated rates of obstetric PSIs. These relate primarily to differences in coding practices and data sources'. There is some evidence that countries that rely on data from registries produce higher quality data and report a greater number of obstetric trauma events compared to administrative datasets (OECD 2013a). Australia's obstetric trauma data were prepared using NHMD, which would be classified as an administrative dataset.

The 2011 OECD average (over 21 countries) for obstetric trauma for *Vaginal delivery with instrument* was 6.0 per 100 patients. Australia's crude rate was 7.3, with the range from 0.5 in Poland to 17.3 in Denmark (OECD 2013a).

For *Vaginal deliveries without instrument,* Australia's crude rate (2.2 per 100 patients) was also higher than the OECD average (1.6), with the range from 0.1 in Poland to 3.7 in Switzerland (OECD 2013a).

8 Patient experience indicators

This chapter presents data for the patient experience indicators supplied for Australia to the 2013 HAAG HCQI data collection. It compares these data with the HCQI results for OECD countries published in *HAAG 2013*, and comments on international comparability.

Five indicators of patient experience were supplied from the 2011–12 ABS Patient Experience Survey for the 2012–13 HAAG data collection. The remaining 9 indicators used data items that are not currently collected. The 5 indicators supplied were:

- *Consultation skipped due to difficulties in travelling*
- *Consultation skipped due to costs*
- *Medical tests, treatment or follow-up skipped due to costs*
- *Prescribed medicines skipped due to costs*
- *Doctor spending enough time with patients during the consultation.*

For the 'consultation skipped' indicators, the ABS survey asked people various questions about their experience with GPs, medical specialists, dental professionals or hospitals, whereas the OECD HCQI specified 'a health professional' (for example, a doctor, nurse or allied health professional).

Confidence intervals (CIs) have been included for these data as explained in Chapter 2: Methods.

8.1 Consultation skipped due to difficulties in travelling

The ABS Patient Experience Survey found that about 1 per 100 people aged 15 and over reported skipping a consultation due to difficulties with travelling in 2011–12 in Australia. This rate was lower for males (0.7 per 100 people) than females (1.3) (Table 8.1).

Table 8.1: Consultations skipped due to difficulties in travelling for people aged 15 and over, number per 100 people, Australia, 2011–12

	Male			Female			Total		
Year	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit
2011–12	0.73	0.51	0.95	1.34	1.08	1.60	**1.04**	0.87	1.21

Note: Rates are age-sex standardised to the 2010 OECD population.

Source: ABS Patient Experience Survey 2011–12.

8.2 Consultation skipped due to costs

In 2011–12 in Australia, almost 19 per 100 people aged 15 and over reported skipping a consultation due to costs. This rate was higher among females (22 per 100 people) than males (16).

Table 8.2: Consultations skipped due to costs for people aged 15 and over, number per 100 people, Australia, 2011–12

	Male			Female			Total		
Year	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit
2011–12	15.99	15.14	16.83	21.69	20.90	22.49	**18.86**	18.27	19.44

Note: Rates are age-sex standardised to the 2010 OECD population.

Source: ABS Patient Experience Survey 2011–12.

8.3 Medical tests, treatment or follow-up skipped due to costs

This indicator was supplied using the ABS Patient Experience Survey question that asked people whether they delayed or did not get referred pathology or imaging tests because of cost. In 2011–12 in Australia, 4.9 per 100 people aged 15 and over delayed or skipped a pathology or imaging test due to cost.

Table 8.3: Delayed or skipped pathology or imaging test due to cost for people aged 15 and over, number per 100 people, Australia, 2011–12

	Male			Female			Total		
Year	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit
2011–12	4.29	3.61	4.97	5.43	4.92	5.94	**4.87**	4.44	5.30

Note: Rates are age-sex standardised to the 2010 OECD population.

Source: ABS Patient Experience Survey 2011–12.

8.4 Prescribed medicines skipped due to costs

For this indicator, the ABS Patient Experience Survey asked whether the interviewee delayed or did not get prescription due to cost. In 2011–12 in Australia, 9.2 per 100 people aged 15 and over reported having delayed or skipped medicines. More females delayed or skipped getting a prescription than males (10.9 compared with 7.6 per 100 people).

Table 8.4: Delayed or skipped prescribed medicines due to cost for people aged 15 and over, number per 100 people, Australia, 2011–12

	Male			Female			Total		
Year	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit
2011–12	7.57	6.80	8.34	10.89	10.17	11.61	**9.23**	8.70	9.76

Note: Rates are age-sex standardised to the 2010 OECD population.

Source: ABS Patient Experience Survey 2011–12.

8.5 Doctor spending enough time with patients during the consultation

This indicator was supplied using a question for which respondents who saw a GP for their own health were asked to 'Think about all the GPs you have seen in the last 12 months. How often did they spend enough time with you?'. Possible responses were: *always*, *often*, *sometimes* or *rarely*. Responses of *always* and *often* were the responses considered to be equivalent to *yes* for the OECD HCQIs.

In 2011–12 in Australia, 87 per 100 people aged 15 and over said that of all the GPs seen in the past 12 months, the doctor had always or often spent enough time with them. These rates were similar for males and females (86 and 87 respectively).

Table 8.5: Doctor spending enough time with patients during the consultation for people aged 15 and over, number per 100 people, Australia, 2011–12

	Male			Female			Total		
Year	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit	Rate	95% CI Lower limit	95% CI Upper limit
2011–12	87.20	86.31	88.09	85.87	85.14	86.60	**86.53**	85.96	87.11

Note: Rates are age-sex standardised to the 2010 OECD population.

Source: ABS Patient Experience Survey 2011–12.

8.6 How does Australia compare

Three of the 4 tables presented in *HAAG 2013* contain data for Australia that were sourced from the Commonwealth Fund's *International health policy survey 2010*.

The only indicator submitted by Australia published in *HAAG 2013* was *Doctor spending enough time with patients during a consultation*. The OECD recommends monitoring patient experience with any doctor (OECD 2013a), as Australia has done, but the majority of other countries to which Australia is compared measure experience with a patient's regular doctor. The ABS Patient Experience Survey does not distinguish between the concepts of 'regular doctor' and 'doctor'.

In 2011–12 in Australia, 87 per 100 people aged 15 and over said that of all the GPs seen in the past 12 months, the doctor had always or often spent enough time with them. This is the same as the OECD average across the 14 countries that contributed to the indicator. Rates ranged from 74 in Sweden to 97 per 100 interviewees in the Czech Republic (OECD 2013a).

Appendix A: Data quality statement summaries

This appendix includes data quality summaries relevant to interpretation of the:

- National Hospital Morbidity Database (NHMD)
- Australian Cancer Database (ACD).

Complete data quality statements for these databases are available online at <www.aihw.gov.au>.

A data quality statement for the Patient Experience Survey is available online at <www.abs.gov.au>.

National Hospital Morbidity Database

The NHMD is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals.

The data supplied are based on the national minimum data set (NMDS) for admitted patient care. They include demographic, administrative and length of stay data, as well as data on the diagnoses of the patients, the procedures they underwent in hospital and external causes of injury and poisoning.

The purpose of the NMDS for admitted patient care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS is episodes of care for admitted patients in all public and private acute and psychiatric hospitals, free-standing day hospital facilities and alcohol and drug treatment centres in Australia. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia's off-shore territories are not in scope, but some are included.

The latest reference period for this data set is 2011–12. The data set includes records for admitted-patient separations between 1 July 1993 and 30 June 2012.

Summary of key issues

- The NHMD is a comprehensive data set that has records for all separations of admitted patients essentially from all public and private hospitals in Australia.
- A record is included for each separation, not for each patient, so patients who separated more than once in the year have more than one record in the NHMD.
- For 2011–12, almost all public hospitals provided data for the NHMD.
- There is apparent variation between states and territories in the use of statistical discharges and associated assignment of care types.
- There was some variation between states and territories in the reporting of separations for *Newborns* (without qualified days).
- Variations in admission practices and policies lead to variation among providers in the number of admissions for some conditions.
- Caution should be used in comparing diagnosis, procedure and external cause data over time, as the classifications and coding standards for those data can change over time. In

particular, between 2009–10 and 2010–11, there were significant changes in the coding of diagnoses for diabetes and obstetrics and for reporting imaging procedures.

Australian Cancer Database

To avoid excessive repetition in what follows, the word 'cancer' is used to mean 'cancer, excluding basal cell carcinomas of the skin and squamous cell carcinomas of the skin'. In most states and territories these two very common skin cancers are not notifiable diseases and as such are not in the scope of the ACD.

All states and territories have legislation that makes cancer a notifiable disease. All hospitals, pathology laboratories, radiotherapy centres and registries of births, deaths and marriages must report cancer cases and deaths to the state or territory population-based cancer registry.

Each registry supplies incidence data annually to the AIHW under an agreement between the registries and the AIHW. These data are compiled into the ACD, the only repository of national cancer incidence data.

Summary of key issues

- All states and territories maintain a population-based cancer registry to which all cancer cases and deaths must be reported.
- The AIHW compiles the ACD using information from state and territory registers.
- Some duplication may occur where the same person and cancer have been registered in two or more jurisdictions. The AIHW provisionally resolves these instances and notifies the relevant states and territories of possible duplicates. Full resolution has usually occurred by the following year's version of the ACD.
- The level of duplication is small, about 0.17% of all records.
- Cancer registry databases change every day, adding new records and improving the quality of existing records as new information becomes available. Information on ACD records may therefore change from year to year.

Appendix B: OECD HCQI specifications

This appendix summarises the technical specifications for the 2012–13 OECD HCQI data collection provided to the AIHW by the OECD:

- *OECD Health Care Quality Indicators 2012–13 Data Collection: Guidelines for filling in the data collection questionnaires*
- *OECD Health Care Quality Indicators 2012–13 Data Collection: Technical manual for patient safety indicators.*

These specifications include numerators and denominators of each indicator, with inclusions and exclusions specified where necessary. ICD-9-CM and ICD-10 code lists (referred to here as ICD-10-WHO to clearly distinguish from ICD-10-AM) were supplied as part of the technical specifications for most indictors. Where the AIHW's method for preparing an indicator differed from the specification, this is noted in the relevant section.

Code lists for excluded cases, named at each specification, are given in full here only where a mapping was required. Other code list for excluded cases—for example specifying newborns or infection—can be obtained by contacting the AIHW.

B.1 Primary care indicators

ICD-10-WHO codes supplied by the OECD for primary care indicators were assessed by the AIHW and found to be equivalent with ICD-10-AM codes. However, some codes supplied as ICD-9-CM were mapped by the AIHW to appropriate Australian Classification of Health Interventions (ACHI) codes.

Asthma hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (age 15+) with a principal diagnosis code of asthma (Table B.1) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- with any diagnosis code of cystic fibrosis and anomalies of the respiratory system
- same-day separations.

Table B.1: ICD-10 (WHO and AM) codes for asthma

Code	Description
J45.0	Predominantly allergic asthma
J45.1	Nonallergic asthma
J45.8	Mixed asthma
J45.9	Asthma, unspecified
J46	Status asthmaticus

Chronic obstructive pulmonary disease hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with a principal diagnosis code for COPD (Table B.2) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- same-day separations.

Table B.2: ICD-10 (WHO and AM) COPD codes

Code	Description
J40	Bronchitis[(a)]
J41.0	Simple chronic bronchitis
J41.1	Mucopurulent chronic bronchitis
J41.8	Mixed simple and mucopurulent chronic bronchitis
J42	Unspecified chronic bronchitis
J43.0	Macleod syndrome
J43.1	Panlobular emphysema
J43.2	Centrilobular emphysema
J43.8	Other emphysema
J43.9	Emphysema, unspecified
J44.0	COPD with acute lower respiratory infection
J44.1	COPD with acute exacerbation, unspecified
J44.8	Other specified chronic obstructive pulmonary disease
J44.9	Chronic obstructive pulmonary disease, unspecified
J47	Bronchiectasis

(a) Qualifies only if accompanied by additional diagnosis of one of the following codes:
J41 Simple and mucopurulent chronic bronchitis, J43 Emphysema,
J44 Other chronic obstructive pulmonary disease or J47 Bronchiectasis.

Congestive heart failure hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with principal diagnosis code for CHF (Table B.3) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- with cardiac procedure codes in any field (mapping at Table B2)
- same-day separations.

Table B.3: ICD-10 (WHO and AM) CHF codes

Code	Description
I11.0	Hypertensive heart disease with (congestive) heart failure
I13.0	Hypertensive heart and renal disease with (congestive) heart failure
I13.2	Hypertensive heart and renal disease with both (congestive) heart failure and renal failure
I50.0	Congestive heart failure
I50.1	Left ventricular failure
I50.9	Heart failure, unspecified

Hypertension hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with principal diagnosis code for hypertension (Table B.4) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- with cardiac procedure codes in any field (mapping at Table B.10)
- same-day separations.

Table B.4: ICD-10 (WHO and AM) hypertension codes

Code	Description
I10	Essential (primary) hypertension
I11.9	Hypertensive heart disease without (congestive) heart failure
I12.9	Hypertensive renal disease without renal failure
I13.9	Hypertensive heart and renal disease, unspecified

Uncontrolled diabetes without complications hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with principal diagnosis code for uncontrolled diabetes, without mention of a short-term or long-term complication (Table B.5) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- same-day separations.

Table B.5: ICD-10 (WHO and AM) uncontrolled diabetes codes

Code	Description
E10.9	Insulin-dependent diabetes mellitus without complications
E11.9	Non-insulin-dependent diabetes mellitus without complications
E13.9	Other specified diabetes mellitus without complications
E14.9	Unspecified diabetes mellitus without complications

Diabetes short-term complications hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with a principal diagnosis code for diabetes short-term complications (Table B.6) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- same-day separations.

Table B.6: ICD-10 (WHO and AM) diabetes short-term complications codes

Code	Description
E10.0	Insulin-dependent diabetes mellitus with coma
E10.1	Insulin-dependent diabetes mellitus with ketoacidosis
E11.0	Non-insulin-dependent diabetes mellitus with coma
E11.1	Non-insulin-dependent diabetes mellitus with ketoacidosis
E13.0	Other specified diabetes mellitus with coma
E13.1	Other specified diabetes mellitus with ketoacidosis
E14.0	Unspecified diabetes mellitus with coma
E14.1	Unspecified diabetes mellitus with ketoacidosis

Diabetes long-term complications hospital separation

Numerator: All non-maternal/non-neonatal hospital separations (aged 15 and over) with principal diagnosis code for diabetes long-term complications (Table B.7) in a specified year.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium
- principal diagnosis of newborn and other neonates
- same-day separations.

Table B.7: ICD-10 (WHO and AM) diabetes long-term complications codes

Code	Description
E10.2	Insulin-dependent diabetes mellitus with renal complications
E10.3	Insulin-dependent diabetes mellitus with ophthalmic complications
E10.4	Insulin-dependent diabetes mellitus with neurological complications
E10.5	Insulin-dependent diabetes mellitus with peripheral circulatory complications
E10.6	Insulin-dependent diabetes mellitus with other specified complications
E10.7	Insulin-dependent diabetes mellitus with multiple complications
E10.8	Insulin-dependent diabetes mellitus with unspecified complications
E11.2	Non-insulin-dependent diabetes mellitus with renal complications
E11.3	Non-insulin-dependent diabetes mellitus with ophthalmic complications
E11.4	Non-insulin-dependent diabetes mellitus with neurological complications
E11.5	Non-insulin-dependent diabetes mellitus with peripheral circulatory complications
E11.6	Non-insulin-dependent diabetes mellitus with other specified complications
E11.7	Non-insulin-dependent diabetes mellitus with multiple complications
E11.8	Non-insulin-dependent diabetes mellitus with unspecified complications
E13.2	Other specified diabetes mellitus with renal complications
E13.3	Other specified diabetes mellitus with ophthalmic complications
E13.4	Other specified diabetes mellitus with neurological complications
E13.5	Other specified diabetes mellitus with peripheral circulatory complications
E13.6	Other specified diabetes mellitus with other specified complications
E13.7	Other specified diabetes mellitus with multiple complications
E13.8	Other specified diabetes mellitus with unspecified complications
E14.2	Unspecified diabetes mellitus with renal complications
E14.3	Unspecified diabetes mellitus with ophthalmic complications
E14.4	Unspecified diabetes mellitus with neurological complications
E14.5	Unspecified diabetes mellitus with peripheral circulatory complications
E14.6	Unspecified diabetes mellitus with other specified complications
E14.7	Unspecified diabetes mellitus with multiple complications
E14.8	Unspecified diabetes mellitus with unspecified complications

Diabetes lower extremity amputation

Numerator: All non-maternal/non-neonatal separations (aged 15 and over) with procedure code for lower extremity amputation excluding toe (Table B.8) in any field and diagnosis code of diabetes (Table B.9) in any field in a specified year.

Procedure codes for lower-extremity amputation excluding toe were supplied by OECD in ICD-9-CM only; therefore, the AIHW prepared a mapping to ACHI codes.

Denominator: 100,000 population (aged 15 and over).

Exclude cases:

- transferring from another institution
- principal diagnosis of pregnancy, childbirth and puerperium

- principal diagnosis of newborn and other neonates
- with traumatic amputation diagnosis code in any field
- same-day separations.

Table B.8: Procedure codes for lower-extremity amputation excluding toe map

ICD-9-CM	ACHI code
8410 lower limb amputat nos	44370-00 Amputation at hip
8412 amputation through foot	44373-00 Hindquarter amputation
8413 disarticulation of ankle	4436700 Amputation above knee
8414 amputat through malleoli	44367-02 Amputation below knee
8415 below knee amputat nec	44358-00 Amputation of toe including metatarsal bone
8416 disarticulation of knee	44361-00 Disarticulation through ankle
8417 above knee amputation	44364-00 Midtarsal amputation
8418 disarticulation of hip	44364-01 Transmetatarsal amputation
8419 hindquarter amputation	44361-01 Amputation of ankle through malleoli of tibia and fibula

Table B.9: ICD-10 (WHO and AM) diabetes diagnosis codes

Code	Description
E10.0	Insulin-dependent diabetes mellitus with coma
E10.1	Insulin-dependent diabetes mellitus with ketoacidosis
E10.2	Insulin-dependent diabetes mellitus with renal complications
E10.3	Insulin-dependent diabetes mellitus with ophthalmic complications
E10.4	Insulin-dependent diabetes mellitus with neurological complications
E10.5	Insulin-dependent dm with peripheral circulatory complications
E10.6	Insulin-dependent dm with other specified complications
E10.7	Insulin-dependent diabetes mellitus with multiple complications
E10.8	Insulin-dependent diabetes mellitus with unspecified complications
E10.9	Insulin-dependent diabetes mellitus without complications
E11.0	Non-insulin-dependent diabetes mellitus with coma
E11.1	Non-insulin-dependent diabetes mellitus with ketoacidosis
E11.2	Non-insulin-dependent diabetes mellitus with renal complications
E11.3	Non-insulin-dependent dmwith ophthalmic complications
E11.4	Non-insulin-dependent dm with neurological complications
E11.5	Non-insulin-dependent dm with peripheral circulatory complications
E11.6	Non-insulin-dependent dm with other specified complications
E11.7	Non-insulin-dependent diabetes mellitus with multiple complications
E11.8	Non-insulin-dependent dm with unspecified complications
E11.9	Non-insulin-dependent diabetes mellitus without complications
E13.0	Other specified diabetes mellitus with coma
E13.1	Other specified diabetes mellitus with ketoacidosis
E13.2	Other specified diabetes mellitus with renal complications
E13.3	Other specified diabetes mellitus with ophthalmic complications
E13.4	Other specified diabetes mellitus with neurological complications
E13.5	Other specified dm with peripheral circulatory complications
E13.6	Other specified diabetes mellitus with other specified complications
E13.7	Other specified diabetes mellitus with multiple complications
E13.8	Other specified diabetes mellitus with unspecified complications
E13.9	Other specified diabetes mellitus without complications
E14.0	Unspecified diabetes mellitus with coma
E14.1	Unspecified diabetes mellitus with ketoacidosis
E14.2	Unspecified diabetes mellitus with renal complications
E14.3	Unspecified diabetes mellitus with ophthalmic complications
E14.4	Unspecified diabetes mellitus with neurological complications
E14.5	Unspecified dm with peripheral circulatory complications
E14.6	Unspecified diabetes mellitus with other specified complications
E14.7	Unspecified diabetes mellitus with multiple complications
E14.8	Unspecified diabetes mellitus with unspecified complications
E14.9	Unspecified diabetes mellitus without complications

Cardiac procedure codes

Cardiac procedure codes (ICD-9-CM codes at Table B.10a and equivalent codes in ACHI at Table B.10b) were excluded from the indicators *CHF hospital separation* and *Hypertension hospital separation*. The AIHW found that mapping was not straightforward in this instance and so developed the ACHI code list for use in this indicator based on the ICD-9-CM codes supplied by the OECD.

Table B.10a: ICD-9-CM cardiac procedure codes

ICD-9-CM	ICD-9-CM
0050 Impl crt pacemaker sys oct02-	3553 Prost repair ventric def
0051 Impl crt defibrillat oct02-	3554 Pros rep endocar cushion
0052 Imp/rep lead lf ven sys oct02-	3555 Pros rep ventrc def-clos oct06-
0053 Imp/rep crt pacemkr gen oct02-	3560 Graft repair hrt sept nos
0054 Imp/rep crt defib genat oct02-	3561 Graft repair atrial def
0056 Ins/rep impl sensor lead oct06-	3562 Graft repair ventric def
0057 Imp/rep subcue card dev oct06-	3563 Graft rep endocar cushion
0066 Ptca oct06-	3570 Heart septa repair nos
3500 Closed valvotomy nos	3571 Atria septa def rep nec
3501 Closed aortic valvotomy	3572 Ventr septa def rep nec
3502 Closed mitral valvotomy	3573 Endocar cushion rep nec
3503 Closed pulmon valvotomy	3581 Tot repair tetral fallot
3504 Closed tricusp valvotomy	3582 Total repair of tapvc
3510 Open valvuloplasty nos	3583 Tot rep truncus arterios
3511 Opn aortic valvuloplasty	3584 Tot cor transpos grt ves
3512 Opn mitral valvuloplasty	3591 Interat ven retrn transp
3513 Opn pulmon valvuloplasty	3592 Conduit rt vent-pul art
3514 Opn tricus valvuloplasty	3593 Conduit left ventr-aorta
3520 Replace heart valve nos	3594 Conduit artium-pulm art
3521 Replace aort valv-tissue	3595 Heart repair revision
3522 Replace aortic valve nec	3596 Perc heart valvuloplasty
3523 Replace mitr valv-tissue	3598 Other heart septa ops
3524 Replace mitral valve nec	3599 Other heart valve ops
3525 Replace pulm valv-tissue	3601 Ptca–1 Vessel w/o agent
3526 Replace pulmon valve nec	3602 Ptca–1 vessel with agnt
3527 Replace tric valv-tissue	3603 Open coronry angioplasty
3528 Replace tricusp valv nec	3604 Intrcoronry thromb infus
3531 Papillary muscle ops	3605 Ptca-multiple vessel
3532 Chordae tendineae ops	3606 Insert of cor art stent oct95-
3533 Annuloplasty	3607 Ins drug-elut coronry st oct02-
3534 Infundibulectomy	3609 Rem of cor art obstr nec
3535 Trabecul carneae cord op	3610 Aortocoronary bypass nos

(continued)

Table B1.10a (continued): ICD-9-CM cardiac procedure codes

ICD-9-CM	ICD-9-CM
3539 Tiss adj to valv ops nec	3611 Aortocor bypas–1 cor art
3541 Enlarge existing sep def	3612 Aortocor bypas–2 cor art
3542 Create septal defect	3613 Aortocor bypas–3 cor art
3550 Prosth rep hrt septa nos	3614 Aortcor bypas–4+ cor art
3551 Pros rep atrial def-opn	3615 1 Int mam-cor art bypass
3552 Pros repair atria def-cl	3616 2 Int mam-cor art bypass
3617 Abd-coron art bypass oct96-	3772 Int insert lead atri-vent
3619 Hrt revas byps anas nec	3773 Int inser lead in atrium
3633 Oth heart revascular	3774 Int or repl lead epicar
3631 Open chest trans revasc	3775 Revision of lead
3632 Oth transmyo revascular	3776 Repl tv atri-vent lead
3633 Endo transmyo revascular oct06-	3777 Removal of lead w/o repl
3634 Perc transmyo revascular oct06-	3778 Inser team pacemaker sys
3639 Oth heart revasular	3779 Revis or relocate pocket
3691 Coron vess aneurysm rep	3780 Int or repl perm pacemkr
3699 Heart vessle op nec	3781 Int insert 1-cham, non
3731 Pericardiectomy	3782 Int insert 1-cham, rate
3732 Heart aneurysm excision	3783 Int insert dual-cham dev
3733 Exc/dest hrt lesion open	3785 Repl pacem w 1-cham, non
3734 Exc/dest hrt les other	3786 Repl pacem 1-cham, rate
3735 Partial ventriculectomy	3787 Repl pacem w dual-cham
3741 Implant prosth card support dev oct06	3789 Revise or remove pacemak
375 Heart transplantation (not valid after oct 03)	3794 Implt/repl carddefib tot
3751 Heart tranplantation oct03-	3795 Implt cardiodefib leads
3752 Implant tot rep hrt sys oct03-	3796 Implt cardiodefib genatr
3753 Repl/rep thorac unit hrt oct03-	3797 Repl cardiodefib leads
3754 Repl/rep oth tot hrt sys oct03-	3798 Repl cardiodefib genratr
3770 Int insert pacemak lead	3826 Insrt prsr snsn w:o lead
3771 Int insert lead in vent	

Table B.10b: ACHI cardiac procedure codes

ACHI (by block)		ACHI (by block)	
600	Incision procedures on atrium	636	Incision procedures on pulmonary valve
601	Destruction procedures on atrium	637	Repair or replacement of pulmonary valve
602	Excision procedures on atrium	638	Other procedures on pulmonary valve
603	Repair procedures on atrium	639	Incision procedures on myocardium
604	Reconstruction procedures on atrium	640	Excision procedures on myocardium
606	Other procedures on atrium	641	Repair procedures on myocardium
609	Destruction procedures on ventricle	644	Other incision procedures on pericardium
610	Ventricular myectomy	645	Biopsy of pericardium
611	Excision of ventricular aneurysm	646	Other excision procedures on pericardium
612	Other excision procedures on ventricle	647	Insertion of temporary transvenous electrode for cardiac pacemaker or defib
613	Baffle or conduit procedures	648	Insertion of permanent transvenous electrode for cardiac pacemaker or defib
614	Other repair procedures on ventricle	649	Insertion of other electrode or patch for cardiac pacemaker or defibrillator
615	Other procedures on ventricle	650	Insertion of cardiac pacemaker generator
616	Excision procedures on septum	653	Insertion of cardiac defibrillator generator
617	Closure of atrial septal defect	654	Adjustment, replacement or removal of electrode for cardiac pacemaker or defib
618	Closure of ventricular septal defect	655	Adjustment, replacement or removal of cardiac pacemaker generator
619	Other repair procedures on septum	656	Adjustment, replacement or removal of cardiac defibrillator generator
620	Other procedures on septum	660	Transplantation of heart or lung
621	Incision procedures on aortic valve	661	Other repair procedures on other sites of heart
622	Repair of aortic valve	662	Reconstruction procedures on other sites of heart
623	Replacement of aortic valve	666	Other procedures on other sites of heart
624	Other procedures on aortic valve	669	Excision procedures on coronary arteries
625	Incision procedures on mitral valve	670	Transluminal coronary angioplasty
626	Repair of mitral valve	671	Transluminal coronary angioplasty with stenting
627	Mitral valve annuloplasty	672	Coronary artery bypass - saphenous vein graft
628	Replacement of mitral valve	673	Coronary artery bypass - other vein graft
629	Reconstruction procedures on mitral valve	674	Coronary artery bypass - left internal mammary artery [LIMA] graft
630	Other procedures on mitral valve	675	Coronary artery bypass - right internal mammary artery [RIMA] graft
631	Incision procedures on tricuspid valve	676	Coronary artery bypass - radial artery graft
632	Repair of tricuspid valve	677	Coronary artery bypass - epigastric artery graft
633	Tricuspid valve annuloplasty	678	Coronary artery bypass - other artery graft
634	Replacement of tricuspid valve	679	Coronary artery bypass - other material graft
635	Other procedures on tricuspid valve	681	Other procedures on coronary arteries

B.2 Acute care indicators

ICD-10-WHO codes supplied by the OECD for acute care indicators were assessed by the AIHW and found to be equivalent with ICD-10-AM codes.

Separation-based AMI 30-day in-hospital mortality

Numerator: Number of deaths (aged 15 and over) in the same hospital that occurred within 30 days of hospital admission with principal diagnosis of acute myocardial infarction (Table B.11) in a specified year.

Denominator: Number of hospital separations (aged 15 and over) with principal diagnosis of acute myocardial infarction in the specified year.

Table B.11: ICD-10 (WHO and AM) AMI codes

Code	Description
I21	Acute myocardial infarction
I22	Subsequent myocardial infarction

Separation-based haemorrhagic stroke 30-day in-hospital mortality

Numerator: Number of deaths (aged 15 and over) in the same hospital that occurred within 30 days of hospital admission with principal diagnosis of haemorrhagic stroke (Table B.12) in a specified year.

Denominator: Number of hospital separations (aged 15 and over) with a principal diagnosis of haemorrhagic stroke in the specified year.

Table B.12: ICD-10 (WHO and AM) haemorrhagic stroke codes

Code	Description
I60	Subarachnoid hemorrhage
I61	Intracerebral hemorrhage
I62	Other nontraumatic intracranial hemorrhage

Separation-based ischaemic stroke 30-day in-hospital mortality

Numerator: Number of deaths (aged 15 and over) in the same hospital that occurred within 30 days of hospital admission with principal diagnosis of ischaemic stroke (Table B.13) in a specified year.

Denominator: Number of hospital separations (aged 15 and over) with a principal diagnosis of ischaemic stroke in the specified year.

Table B.13: ICD-10 (WHO and AM) ischaemic stroke codes

Code	Description
I63	Cerebral infarction
I64	Stroke, not classified as haemorrhage or infarction

B.3 Mental health-care indicators

ICD-10-WHO codes supplied by the OECD for mental health-care indicators were assessed by the AIHW and found to be equivalent with ICD-10-AM codes.

Readmissions were identified by the presence of a mental health diagnosis code at *any* diagnosis, not restricted to first 3 diagnoses as in the OECD indicator definition.

For the Australian data, readmissions were counted if they occurred within 30 days of separation from the index separation (the first separation of the reference year for that patient, for the condition of interest—that is, schizophrenia or bipolar disorder) as no cut–off dates to the denominator were specified in the OECD specification.

Table B.14 lists the selected mental health conditions referred to in the numerator of these mental health indicators.

Table B.14: ICD-10 (WHO and AM) selected mental health-related diagnosis codes

Code	Mental and behavioural disorders
F10– F19	Mental and behavioural disorders due to psychoactive substance use
F20–F29	Schizophrenia, schizotypical and delusional disorders
F30–F39	Mood [affective] disorders
F40–F48	Neurotic, stress related and somatoform disorders
F50–F59	Behavioural syndromes associated with physiological disturbances and physical factors
F60–F69	Disorders of adult personality and behaviour
F90–F98	Behavioural and emotional disorders with onset usually occurring in childhood and adolescence
F99	Unspecified mental disorder

Same hospital readmissions within 30 days for/among patients discharged with schizophrenia (readmission rate and number of readmissions)

Numerator: Total number of unplanned readmissions in a calendar year to the same hospital for patients (aged 15 and over) separated from hospital at least once in the referred year with a principal diagnosis of one of the selected mental health conditions (Table B.14).

Denominator: Total number of patients (aged 15 and over) separated at least once from hospital in the referred year with a principal or first two listed additional diagnosis of schizophrenia (Table B.15).

Exclusions:

- same-day separations are excluded from both the numerator and the denominator.

Table B.15: ICD-10 (WHO and AM) schizophrenia codes

Code	Description
F20	Schizophrenia
F21	Schizotypal disorder
F23.1	Acute polymorphic psychotic disorder with symptoms of schizophrenia
F23.2	Acute schizophrenia-like psychotic disorder
F25.0	Schizoaffective disorders
F25.1	Schizoaffective disorder, depressive type
F25.2	Schizoaffective disorder, mixed type
F25.8	Other schizoaffective disorders
F25.9	Schizoaffective disorder, unspecified

Same hospital readmissions within 30 days for/among patients discharged with bipolar disorder (readmission rate and number of readmission)

Numerator: Total number of unplanned readmissions in a calendar year to the same hospital for patients (aged 15 and over) separated from hospital at least once in the referred year with a principal diagnosis of one of the selected mental health conditions (Table B.14).

Denominator: Total number of patients (aged 15 and over) separated at least once from hospital in the referred year with a principal or first two listed additional diagnosis of bipolar disorder (Table B.16).

Exclusions:

- same-day separations are excluded from both the numerator and the denominator.

Table B.16: ICD-10 (WHO and AM) bipolar disorder codes

Code	Description
F31	Bipolar affective disorder

B.4 Cancer care indicators

ICD-10-WHO codes as supplied in the HCQI specs were found to be adequate to describe the specified diseases in the ACD, therefore no mappings were required.

Breast cancer five-year relative survival

Five-year observed survival for females aged 15–99 diagnosed with breast cancer (first primary cancer at the specified site) (ICD-10 code C50) divided by the expected survival of a comparable group from the general population (expressed in percentage).

Cervical cancer five-year relative survival

Five-year observed survival for females aged 15–99 diagnosed with cervical cancer (first primary cancer at the specified site) (ICD-10 code C53) divided by the expected survival of a comparable group from the general population (expressed in percentage).

Colorectal cancer five-year relative survival

Five-year observed survival for males, females and total population aged 15–99 diagnosed with colorectal cancer (first primary cancer at the specified site) (ICD-10 codes: C18, C19, C20 and C21) divided by the expected survival of a comparable group from the general population (expressed in percentage).

B.5 Patient safety indicators

Patient safety indicator specifications included codes in ICD-9-CM and ICD-10-WHO. The AIHW mapped these to ICD-10-AM and/or ACHI codes as appropriate, following the intent of the indicators where mapping was not straightforward.

Retained surgical item or unretrieved device fragment

Numerator: All separations with a code for *Retained surgical item or unretrieved device fragment* (Table B.17) in any additional diagnosis field among cases meeting the inclusion and exclusion rules for the denominator.

Denominator: All surgical and medical separations aged 15 and over and for children aged 0–14.

Exclude cases:

- with a code for retained surgical item or unretrieved device fragment in the principal diagnosis field
- same-day separations are excluded from both the numerator and the denominator
- for children aged less than 15 years, also exclude normal newborns and newborns weighing less than 500 grams.

Table B.17: ICD-10 (WHO and AM) retained surgical item or unretrieved device fragment codes

Code	Description
T81.5	Foreign body accidentally left in body cavity or operation wound following a procedure
T81.6	Acute reaction to foreign substance accidentally left during a procedure
Y61.0	Foreign object accidentally left in body during surgical and medical care: During surgical operation
Y61.1	Foreign object accidentally left in body during surgical and medical care: During infusion or transfusion
Y61.2	Foreign object accidentally left in body during surgical and medical care: During kidney dialysis or other perfusion
Y61.3	Foreign object accidentally left in body during surgical and medical care: During injection or immunisation
Y61.4	Foreign object accidentally left in body during surgical and medical care: During endoscopic examination
Y61.5	Foreign object accidentally left in body during surgical and medical care: During heart catheterization
Y61.6	Foreign object accidentally left in body during surgical and medical care: During aspiration, puncture and other catheterization
Y61.7	Foreign object accidentally left in body during surgical and medical care: During removal of catheter or packing
Y61.8	Foreign object accidentally left in body during surgical and medical care: During other surgical and medical care
Y61.9	Foreign object accidentally left in body during surgical and medical care: During unspecified surgical and medical care

Postoperative haemorrhage or haematoma

Mapping of the procedure codes from ICD-9-CM to ACHI for postoperative control of haemorrhage or drainage of haematoma was not a straightforward process but the intent of indicator was followed to give the most complete list possible.

Numerator: Separations among cases defined in the denominator with ICD code for postoperative haemorrhage or haematoma (Table B.18) in any additional field and procedure code for postoperative control of haemorrhage or drainage of haematoma (Table B.19).

Denominator:

All surgical separations with a code for an operating room procedure, for patients aged 15 and over and for children aged 0–14.

Exclude cases:

- with principal diagnosis of postoperative haemorrhage or postoperative haematoma. (The specifications ask that additional diagnosis of postoperative haemorrhage or postoperative haematoma present on admission also be excluded if known, but this was not possible for Australian data.)
- where the only operating room procedure is postoperative control of haemorrhage or drainage of haematoma
- where a procedure for postoperative control of haemorrhage or drainage of haematoma occurs before the first operating room procedure. (This exclusion could not be implemented by the AIHW.)
- principal diagnosis of pregnancy, childbirth and puerperium
- for children aged less than 15 years old, also exclude newborns weighing less than 500 grams.

Table B.18: ICD-10 (WHO and AM) postoperative haemorrhage or haematoma code

Code	Description
T81.0	Haemorrhage and haematoma complicating a procedure, not elsewhere classified

Table B.19: Postoperative control of haemorrhage or for drainage of haematoma code map

ICD-9-CM		ACHI 7th edition	Block no.	Description
287	Control of haemorrhage after tonsillectomy and adenoidectomy	41797-00	410	Arrest of haemorrhage following tonsillectomy and adenoidectomy
3880	Other surgical occlusion of unspecified site	34106-14	697	Interruption of other artery
		34106-19	726	Interruption of other vein
		37420-00	1195	Ligation of vein to inhibit rapid penile drainage
3881	Other surgical occlusion of intracranial vessels	No map		
3882	Other surgical occlusion of other vessels of head and neck	34100-02	697	Interruption of carotid artery
		34100-03	726	Interruption of jugular vein
		52141-00	697	Interruption of mandibular artery

(continued)

Table B.19 (continued): Postoperative control of haemorrhage or for drainage of haematoma code map

ICD-9-CM		ACHI 7th edition	Block no.	Description
		52141-01	697	Interruption of facial artery
		52141-02	697	Interruption of lingual artery
		52141-03	726	Interruption of facial vein
		52141-04	726	Interruption of lingual vein
		52141-05	726	Interruption of mandibular vein
3883	Other surgical occlusion of upper limb vessels	34103-11	697	Interruption of axillary artery
		34103-16	726	Interruption of axillary vein
		34106-10	697	Interruption of brachial artery
		34106-11	697	Interruption of radial artery
		34106-12	697	Interruption of ulnar artery
		34106-15	726	Interruption of brachial vein
		34106-16	726	Interruption of radial vein
		34106-17	726	Interruption of ulnar vein
3884	Other surgical occlusion of aorta, abdominal	No map		
3885	Other surgical occlusion of thoracic vessel	34103-10	697	Interruption of subclavian artery
		34103-15	726	Interruption of subclavian vein
		38700-01	690	Closure of patent ductus arteriosus
		38715-00	717	Banding of main pulmonary artery
3886	Other surgical occlusion of abdominal arteries	34103-12	697	Interruption of iliac artery
3887	Other surgical occlusion of abdominal veins	34103-17	726	Interruption of iliac vein
3888	Other surgical occlusion of lower limb arteries	34103-13	697	Interruption of femoral artery
		34103-14	697	Interruption of popliteal artery
		34106-13	697	Interruption of tibial artery
3889	Other surgical occlusion of lower limb veins	34103-18	726	Interruption of femoral vein
		34103-19	726	Interruption of popliteal vein
		34106-18	726	Interruption of tibial vein
3941	Control of haemorrhage following vascular surgery	33842-00	698	Control of postoperative bleeding or thrombosis after carotid or vertebral artery surgery
		33845-00	746	Control of postoperative bleeding or thrombosis after intra-abdominal vascular procedure
		33848-00	746	Control of postoperative bleeding or thrombosis of an extremity after vascular procedure
3998	Control of haemorrhage nos	30058-01	777	Control of postoperative haemorrhage, not elsewhere classified

(continued)

Table B.19 (continued): Postoperative control of haemorrhage or for drainage of haematoma code map

ICD-9-CM		ACHI 7th edition	Block no.	Description
		30663-00	1195	Control of haemorrhage following male circumcision
		35759-00	1299	Control of postoperative haemorrhage, following gynaecological surgery NEC
		38656-01	562	Reopening of thoracotomy or sternotomy site
4995	Control of (postoperative) haemorrhage of anus	90345-00	931	Control of haemorrhage of rectum or anus
5793	Control of (postoperative haemorrhage of bladder	36842-00	1092	Endoscopic lavage of blood clots from bladder
6094	Control of (postoperative) haemorrhage of prostate	90392-00	1162	Control of postoperative haemorrhage of prostate
1809	Other incision of external ear	No map		
540	Incision of abdominal wall	13112-00	1062	Establishment of peritoneal dialysis by abdominal puncture and insertion of temporary catheter
		30402-00	987	Drainage of retroperitoneal abscess
		37812-00	1178	Exploration of groin for impalpable testis
		90952-00	987	Incision of abdominal wall
5412	Reopening of recent laparotomy site	30385-00	985	Postoperative reopening of laparotomy site
		30397-00	987	Laparostomy via previous surgical wound
		90375-01	983	Replacement of intra-abdominal packing
		90375-02	983	Removal of intra-abdominal packing
5919	Other incision of perivesicle tissue	90369-00	1127	Exploration of perivesical tissue
610	Incision and drainage of scrotum and tunica and vaginalis	37604-00	1172	Exploration of scrotal contents, unilateral
		37604-01	1172	Exploration of scrotal contents, bilateral
6998	Other operations on supporting structures of uterus	35680-00	1272	Laparoscopic reconstruction of uterus and supporting structures
7014	Other vaginotomy	35572-01	1280	Vaginotomy
7109	Other incision of vulva and perineum	35569-00	1287	Enlargement of vaginal orifice
7591	Evacuation of obstetrical incisional haematoma of perineum	90484-00	1347	Evacuation of perineal incisional haematoma
7592	Evacuation of other haematoma of vulva or vagina	90484-01	1347	Evacuation of nonincisional haematoma of perineum or vagina
8604	Other incision w/ drainage of skin and subcutaneous tissue	30223-00	1606	Incision and drainage of haematoma of skin and subcutaneous tissue
		30223-01	1606	Incision and drainage of abscess of skin and subcutaneous tissue
		30223-02	1606	Other incision and drainage of skin and subcutaneous tissue

Postoperative wound dehiscence

Numerator: Separations among cases defined in the denominator with procedure code for reclosure of postoperative disruption of abdominal wall (ICD-9-CM code: 5461, *Reclosure postoperative disruption* mapped to ACHI code: 3040303, *Reclosure of postoperative disruption of abdominal wall*).

Denominator: All abdominopelvic surgical separations, for patients aged 15 and over and for children aged 0–14.

Exclude cases:

- where a procedure for reclosure of postoperative disruption of abdominal wall occurs before or on the same day as the first abdominopelvic surgery procedure. (This exclusion could not be implemented by the AIHW)
- where length of stay is less than 2 days
- principal diagnosis of pregnancy, childbirth and puerperium
- with any diagnosis or procedure code for immunocompromised state
- for children aged less than 15 years old, also exclude:
  - with hepatic failure consisting of any diagnosis of cirrhosis and any diagnosis of hepatic coma or hepatorenal syndrome
  - with procedure code for gastroschisis or umbililcal hernia repair in newborns (omphalacele repair) performed before reclosure. (Exclusion of those procedures that were performed before reclosure could not be implemented by the AIHW.)
  - newborns weighing less than 500 grams.

Postoperative pulmonary embolism or deep vein thrombosis

Numerator: Separations among cases meeting the inclusion and exclusion rules for the denominator with ICD codes for deep vein thrombosis or pulmonary embolism (Table B.20) in any additional diagnosis field.

Denominator: Surgical separations (aged 15 and over) with a code for an operating room procedure for a) all surgical separations (code list can be obtained by contacting the AIHW) and b) hip and knee replacement separations (Table B.21).

Exclude cases:

- with principal diagnosis of deep vein thrombosis or pulmonary embolism (The specifications ask that additional diagnosis of deep vein thrombosis or pulmonary embolism present on admission also be excluded if known, but this was not possible for Australian data)
- where a procedure for interruption of vena cava is the only operating room procedure
- where a procedure for interruption of vena cava occurs before or on the same day as the first/main operating room procedure. (This exclusion could not be implemented by the AIHW. Note that if day of procedure is not available in the input data file, the rate may be slightly lower than if the information was available.)
- principal diagnosis of pregnancy, childbirth and puerperium
- with length of stay less than 2 days.

Table B.20: ICD-10 (WHO and AM) pulmonary embolism and deep vein thrombosis diagnosis codes

Code	Description
I26.0	Pulmonary embolism with mention of acute cor pulmonale
I26.9	Pulmonary embolism without mention of acute cor pulmonale
I80.1	Phlebitis and thrombophlebitis of femoral vein
I80.2	Phlebitis and thrombophlebitis of other deep vessels of lower extremities
I80.3	Phlebitis and thrombophlebitis of lower extremities, unspecified
I80.8	Phlebitis and thrombophlebitis of other sites
I80.9	Phlebitis and thrombophlebitis of unspecified site
I82.8	Embolism and thrombosis of other specified veins
I82.9	Embolism and thrombosis of unspecified vein

Table B.21: Total hip and knee replacement procedure code map

ICD-9-CM		ACHI 7th ed	Block	Decription
8151	Total hip replacement	4931800	1489	Total arthroplasty of hip, unilateral
		4931900	1489	Total arthroplasty of hip, bilateral
		9060700	1489	Resurfacing of hip, unilateral
		9060701	1489	Resurfacing of hip, bilateral
8154	Total knee replacement	4951700	1518	Hemiarthroplasty of knee
		4951800	1518	Total arthroplasty of knee, unilateral
		4951900	1518	Total arthroplasty of knee, bilateral
		4952100	1519	Total arthroplasty of knee with bone graft to femur, unilateral
		4952101	1519	Total arthroplasty to knee with bone graft to femur, bilateral
		4952102	1519	Total arthroplasty to knee with bone graft to tibia, unilateral
		4952103	1519	Total arthroplasty to knee with bone graft to tibia, bilateral
		4952400	1519	Total arthroplasty of knee with bone graft to femur and tibia, unilateral
		4952401	1519	Total arthroplasty of knee with bone graft to femur and tibia, bilateral
		4953401	1518	Total replacement arthroplasty of patellofemoral joint of knee
		9056200	1524	Patella resurfacing

Postoperative sepsis

Numerator: Separations among cases meeting the inclusion and exclusion rules for the denominator with a code for sepsis (Table B.22) in any additional diagnosis field.

Denominator: Surgical separations (aged 15 and over) with a code for an operating room procedure for a) all surgical separations and b) abdominopelvic surgical separations. (These code lists can be obtained by contacting the AIHW.)

Exclude cases:

- with a principal diagnosis of sepsis or infection. (The specifications ask that additional diagnosis of sepsis or infection present on admission also be excluded if known, but this was not possible for Australian data.)
- with a principal diagnosis of infection, or any code for immunocompromised state, or cancer
- principal diagnosis of pregnancy, childbirth and puerperium
- with length of stay of less than 3 days.

Table B.22: ICD-10 Sepsis diagnosis code map

ICD-10-WHO		ICD-10-AM 7th edition	
A40.0	Septicaemia due to streptococcus, group a	A40.0	Sepsis due to streptococcus, group A
A40.1	Septicaemia due to streptococcus, group b	A40.1	Sepsis due to streptococcus, group B
A40.2	Septicaemia due to streptococcus, group d	A40.2	Sepsis due to streptococcus, group D
A40.3	Septicaemia due to streptococcus pneumoniae	A40.3	Sepsis due to *Streptococcus pneumoniae*
A40.8	Other streptococcal septicaemia	A40.8	Other streptococcal sepsis
A40.9	Streptococcal septicaemia, unspecified	A40.9	Streptococcal sepsis, unspecified
A41.0	Septicaemia due to staphylococcus aureus	A41.0	Sepsis due to *Staphylococcus aureus*
A41.1	Septicaemia due to other specified staphylococcus	A41.1	Sepsis due to other specified staphylococcus
A41.2	Septicaemia due to unspecified staphylococcus	A41.2	Sepsis due to unspecified staphylococcus
A41.3	Septicaemia due to haemophilus influenza	A41.3	Sepsis due to *Haemophilus influenzae*
A41.4	Septicaemia due to anaerobes	A41.4	Sepsis due to anaerobes
A41.5	Septicaemia due to other gram-negative organisms	A41.5	Sepsis due to other and unspecified Gram-negative organisms
		A41.50	Sepsis due to unspecified Gram-negative organisms
		A41.51	Sepsis due to *Escherichia coli* [E. Coli]
		A41.52	Sepsis due to *Pseudomonas*
		A41.58	Sepsis due to other Gram-negative organisms
A41.8	Other specified septicaemia	A41.8	Other specified sepsis
A41.9	Septicaemia, unspecified	A41.9	Sepsis, unspecified
R57.2	Septic shock	R57.2	Septic shock
R57.8	Other shock	R57.8	Other shock
R65.0	Systemic Inflammatory Response Syndrome of infectious origin without organ failure	R65.0	Systemic inflammatory response syndrome [SIRS] of infectious origin without acute organ failure
R65.1	Systemic Inflammatory Response Syndrome of infectious origin with organ failure	R65.1	Systemic inflammatory response syndrome [SIRS] of infectious origin with acute organ failure
T81.1	Shock during or resulting from a procedure, not elsewhere classified	T81.1	Shock during or resulting from a procedure, not elsewhere classified

Accidental puncture or laceration

Numerator: Separations among cases meeting the inclusion and exclusion rules for the denominator with code denoting accidental cut, puncture, perforation or laceration during a procedure (Table B.23) in any additional diagnosis field.

Denominator: All surgical and medical separations. (These code lists can be obtained by contacting the AIHW.) Disaggregated by patients aged 15 and over and children aged 0–14.

Exclude cases:

- with code denoting technical difficulty (for example, accidental cut, puncture, perforation or laceration) in the principal diagnosis field. (The specifications ask that additional diagnosis code denoting technical difficulty present on admission also be excluded if known, but this was not possible for Australian data.)
- principal diagnosis of pregnancy, childbirth, and puerperium
- same-day separations
- for children aged less than 15 years old, also exclude normal newborns and newborns weighing less than 500 grams
- with procedure codes for spine surgery.

Table B.23: ICD-10 (WHO and AM) accidental puncture or laceration diagnosis codes

Code	Description
T81.2	Accidental puncture and laceration during a procedure, not elsewhere classified
Y60.0	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during surgical operation
Y60.1	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during infusion or transfusion
Y60.2	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during kidney dialysis or other perfusion
Y60.3	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during injection or immunization
Y60.4	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during endoscopic examination
Y60.5	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during heart catheterization
Y60.6	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during aspiration, puncture and other catheterization
Y60.7	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during administration of enema
Y60.8	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during other surgical and medical care
Y60.9	Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care: during unspecified surgical and medical care

Obstetric trauma

Includes: Vaginal delivery separations for patients aged 15 and over. Codes for delivery outcome differ somewhat in ICD-10-AM and ICD-10-WHO and therefore a map was not attempted. Instead a new list following the intent of the indicator was developed (Table B.24).

Table B.24: ICD-10-AM outcome of delivery codes

ICD-10-AM	
O80	Single spontaneous delivery
O81	Single delivery by forceps and vacuum extractor
O83	Other assisted single delivery
O84	Multiple delivery
O84.0	Multiple delivery, all spontaneous
O84.1	Multiple delivery, all by forceps and vacuum extractor
O84.8	Other multiple delivery
O84.81	Multiple delivery, all assisted, not elsewhere classified
O84.82	Multiple delivery by combination of methods
O84.9	Multiple delivery, unspecified

Vaginal delivery with instrument

Numerator: Separations among cases meeting the inclusion and rules for the denominator with codes for third and fourth degree obstetric trauma in any diagnosis (Table B.25). (In following the intent of the indicator the AIHW also included cases with ACHI code 16573-00, suture of third or fourth degree tear of perineum, in a procedure field.)

Denominator: All vaginal delivery separations (Table B.24) with any procedure code for instrument-assisted delivery (Table B.26) for patients aged 15 and over.

Table B.25: ICD-10 (WHO and AM) obstetric trauma diagnosis codes

Code	Description
O70.2	Third degree perineal laceration during delivery
O70.3	Fourth degree perineal laceration during delivery

Table B.26: Instrument-assisted delivery procedure code map

ICD-9-CM		ACHI 8th edition	Block	Description
720	Low forceps operation	9046800	1337	Low forceps delivery
721	Low forceps operation w/ episiotomy			
724	Forceps rotation of fetal head	9046803	1337	Forceps rotation of fetal head
		9046804	1337	Forceps rotation of fetal head with delivery
726	Forceps application to aftercoming head			
728	Other specified instrumental delivery			
729	Unspecified instrumental delivery			
7221	Mid forceps operation w/ episiotomy			
7229	Other mid forceps operation	9046801	1337	Mid-cavity forceps delivery
7231	High forceps operation w/ episiotomy			
7239	Other high forceps operation	9046802	1337	High forceps delivery
7251	Partial breech extraction w/ forceps to aftercoming head	9047002	1339	Assisted breech delivery with forceps to after-coming head
7253	Total breech extraction w/ forceps to aftercoming head	9047004	1339	Breech extraction with forceps to after-coming head
7271	Vacuum extraction w/ episiotomy			
7279	Vacuum extraction delivery nec	9046900	1338	Vacuum extraction with delivery
		9046901	1338	Failed vacuum extraction
		9046805	1337	Failed forceps
		9047001	1339	Assisted breech delivery
		9047200	1343	Episiotomy
		9047400	1343	Incision of cervix to assist delivery
		9047500		Symphysiotomy to assist delivery

Vaginal delivery without instrument

Numerator: Separations among cases meeting the inclusion and exclusion rules for the denominator with codes for third and fourth degree obstetric trauma in any diagnosis (Table B.25). (In following the intent of the indicator the AIHW also included cases with ACHI code 16573-00, suture of third or fourth degree tear of perineum, in a procedure field.)

Denominator: All vaginal delivery separations (Table B.24) for patients aged 15 and over.

Exclude cases:

- with instrument-assisted delivery (Table B.26).

Glossary

Most definitions in this glossary contain an identification number from the METeOR. METeOR is Australia's central repository for health, community services and housing assistance metadata, or 'data about data'. It provides definitions for data for topics related to health and community services, and specifications for related NMDSs. METeOR can be viewed on the AIHW website at <www.aihw.gov.au>.

Additional diagnoses: A condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. This is equivalent to the OECD HCQI concept of secondary diagnosis. METeOR identifier: 391322.

Age standardisation: A set of techniques used to remove, as far as possible, the effects of differences in age when comparing two or more populations.

Australian Classification of Health Interventions (ACHI): The 6th edition was used for the 2008–09 and 2009–10 procedures data for admitted patients in Australian hospitals. The 7th edition was used for the 2011–12 procedures data for admitted patients in Australian hospitals. METeOR identifier: 514008

Episode of care: The period of admitted patient care between a formal or statistical admission and a formal or statistical separation, characterised by only one care type (see *Separation*). METeOR identifier: 270174 (Care type), METeOR identifier: 268956 (Episode of admitted patient care).

Hospital: A health-care facility established under Commonwealth, state or territory legislation as a hospital or a free-standing day procedure unit and authorised to provide treatment and/or care to patients. METeOR identifier: 268971.

International Classification of Diseases (ICD): The World Health Organization's internationally accepted classification of diseases and related health conditions. The 10th revision, Australian modification (ICD-10-AM) is currently in use in Australian hospitals for admitted patients. Data for 2010–11 and 2011–12 were reported to the NHMD using the 7th edition of ICD-10-AM, 2008–09 and 2009–10 data used the 6th edition and 2007–08 used the 5th edition. METeOR identifier: 514003

Length of stay: For an overnight patient, calculated by subtracting the date the patient is admitted from the date of separation and deducting days the patient was on leave. A same-day patient is allocated a length of stay of one day. METeOR identifier: 269982.

Performance indicator: A statistic or other unit of information that reflects, directly or indirectly, the extent to which an expected outcome is achieved or the quality of processes leading to that outcome.

Potentially preventable hospitalisation (selected): Those conditions where hospitalisation is thought to be avoidable if timely and adequate non-hospital care is provided.

Principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care. METeOR identifier: 391326.

Private hospital: A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and paramedical practitioners.

Acute care and psychiatric hospitals are included, as are private free-standing day hospital facilities.

Procedure: A clinical intervention that is surgical in nature, carries a procedural risk, carries an anaesthetic risk, requires specialised training and/or requires special facilities or equipment available only in the acute-care setting. METeOR identifier: 391349.

Public hospital: A hospital controlled by a state or territory health authority. Public hospitals offer free diagnostic services, treatment, care and accommodation to all eligible patients.

Separation: An episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation). Separation also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care. The OECD HCQIs refer to admissions; however, Australia's data is for separations.

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Romano P 2007. Selecting indicators for patient safety at the health systems level in OECD countries: summary of recent US experience. Paper presented at the OECD HCQI patient safety subgroup meeting, 24th October 2007, and expert group meeting, 210th October 2007. Viewed 5 September 2011, <http://www.oecd.org/dataoecd/44/29/39495326.pdf>.

SCRGSP (Steering Committee for the Review of Government Service Provision) 2011. National Agreement performance information 2011–12: National Healthcare Agreement. Productivity Commission: Canberra.

SCRGSP 2014. Report on government services 2014. Productivity Commission: Canberra.

List of tables

Related publications

The following AIHW publications relating to the OECD and international health comparisons might also be of interest:

- Australian Institute of Health and Welfare 2009. Towards national indicators of safety and quality in health care. Cat. no. HSE 75. Canberra: AIHW.
- Australian Institute of Health and Welfare 2012. A working guide to international comparisons of health. Cat. no. PHE 195. Canberra: AIHW.

This report summarises information Australia provided in 2013 to the Organisation for Economic Co-operation and Development's Health Care Quality Indicators 2012–13 data collection and compares data supplied by Australia in 2013 to data Australia supplied in previous years, and to data reported by other OECD countries in the OECD's Health at a glance 2013: OECD indicators.