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# Appendix A: What data are reported?

This section presents information on the data used in this report, and their limitations. The data quality statement for the NNAPEDCD is available online at [www.aihw.gov.au/about-our-data/our-data-collections/national-hospitals-data-collection](http://www.aihw.gov.au/about-our-data/our-data-collections/national-hospitals-data-collection).

## National Non-admitted Patient Emergency Department Care Database

The AIHW has collected and reported on the data in this report under the auspices of the Australian Health Ministers' Advisory Council, through the National Health Information Agreement.

The data supplied by state and territory health authorities for the Non-admitted Patient Emergency Department Care (NAPEDC) National Minimum Data Set/National Best Endeavours Data Set (NMDS/NBEDS) were used by the AIHW to assemble the National Non-admitted Patient Emergency Department Care Database (NNAPEDCD). The data cover waiting times and other characteristics of presentations to public hospital emergency departments.

The NNAPEDCD provides information on the care provided (including waiting times for care) for non-admitted patients registered for care in public hospital emergency departments that have:

- purposely designed and equipped area with designated assessment, treatment, and resuscitation areas
- the ability to provide resuscitation, stabilisation, and initial management of all emergencies
- availability of medical staff in the hospital 24 hours a day
- designated emergency department nursing staff 24 hours per day 7 days per week, and a designated emergency department nursing unit manager.

Emergency departments (including 'accident and emergency' or 'urgent care centres') that do not meet the criteria above are not in scope for the NMDS, but data may have been provided for some of these by some states and territories.

Patients who were dead on arrival are in scope if an emergency department clinician certified the death of the patient. Patients who leave the emergency department after being registered/triaged to receive care and then advised of alternative treatment options are also in scope.

The scope includes only physical presentations to emergency departments. Advice provided by telephone or video conferencing is not in scope, although it is recognised that advice received by telehealth may form part of the care provided to patients physically receiving care in the emergency department. Also excluded from the scope of the NMDS is care provided to patients in general practitioner co-located units.

Since 2003–04, data for the NNAPEDCD have been reported annually. The most recent reference period for this data set includes records for Non-admitted patient emergency department service episodes between 1 July 2019 and 30 June 2020.

Since 2015–16, jurisdictions were able to provide data for the NNAPEDCD using the NAPEDC NMDS or the NAPEDC NBEDS/DSS. Episodes are included in the NAPEDC NMDS, but excluded for the NAPEDC NBEDS/DSS, where:

- only a clerical service is provided to people supporting a pre-arranged admission
- people are awaiting transit to another facility, and receive no clinical care.

## Summary of key data quality issues

Overall, the quality of the data in the NNAPEDCD is sufficient to be published in this report. However, the following limitations of the data should be taken into consideration when data are interpreted.

States and territories are primarily responsible for the quality of the data they provide. However, the AIHW undertakes extensive validations on receipt of data. Potential errors are queried with jurisdictions, and corrections and resubmissions may be made in response to these edit queries. The AIHW does not adjust data to account for possible data errors or missing values, except where stated.

Comparisons between states and territories and reporting years should be made with reference to the accompanying notes in the chapters and in this appendix.

The AIHW takes active steps to improve the consistency of these data over time.

- The NNAPEDCD may not include emergency presentations to hospitals that have emergency departments that are not in scope for the NAPEDC NMDS/NBEDS.
- The following jurisdictions have provided data to the NNAPEDCD using the NAPEDC NBEDS specification: Queensland (from 2015–16); Victoria and Western Australia (from 2016–17). All other states and territories used the NAPEDC NMDS. The data provided using the NAPEDC NBEDS may not be entirely comparable with data provided using the NAPEDC NMDS.
- For 2017–18, waiting times information could not be calculated for about 24,000 emergency presentations (for which waiting times are applicable).
- Changes in definitions for *Episode end status* in the NMDS and NBEDS between 2015–16 and 2016–17 may affect the comparability of the 2016–17 and 2017–18 *Episode end status* data with that for reporting periods prior to 2016–17.
- For 2015–16, Australian Capital Territory emergency department care data were not available at the time of publication. Therefore, comparisons over time should be interpreted with caution. The 2015–16 data for Australian Capital Territory may be available for inclusion in future reports.
- Although there are national standards for data on non-admitted patient emergency department services, the way those services are defined and counted varies across states and territories, and over time.
- The quality of the data reported for Indigenous status has not been formally assessed; therefore, caution should be used when interpreting these data.
- For Western Australia, the date and time of commencement of clinical care was missing for about 23,000 ED presentations for a *Public acute group B hospital* in 2016–17, and for about 43,000 in 2015–16. As a result, the 2015–16 and 2016–17 waiting times data for Western Australia (and particularly for *Public acute group B hospitals*) should be interpreted with caution.

## Missing or invalid data

In some cases, the data provided may include missing values (for example, the date/time of physical departure was not recorded), or invalid values (for example, if the time of physical departure was recorded as occurring before the time of presentation).

Due to missing or invalid values (such as time of presentation, or time of start of clinical care), valid waiting time could not be calculated for about 24,000 records with a type of visit of *Emergency presentation*—this excludes records with an episode end status of *Did not wait to be attended to by a health care professional* (319,000 records), *Dead on arrival* (340 records), or *Registered, advised of another health care service, and left the emergency department without being attended by a health care professional* (about 50,000 records). These records were not used in the derivation of waiting time statistics.

Further, because of missing or invalid values (such as time of start of clinical care, or time of episode end), duration of clinical care could not be calculated for about 56,000 records—this excludes records with an episode end status of *Did not wait to be attended to by a health care professional*, *Dead on arrival*, or *Registered, advised of another health care service, and left without being attended by a health care professional*.

The length of emergency department stay could not be calculated for about 5,000 records due to missing, or invalid values (such as for time of presentation, or time of physical departure).

## How has the scope of the collection changed?

From 2013–14 onwards, the scope of the NAPEDC NMDS (and for the NAPEDC NBEDS/DSS in 2015–16 and 2016–17) has been patients registered for care in public hospital emergency departments as described in ‘National Non admitted Patient Emergency Department Care Database’.

For 2012–13 and earlier years, the scope of the NAPEDC NMDS was public hospitals that were classified to peer groups A and B, for the purpose of reporting in *Australian hospital statistics* for the previous financial year period (using the AIHW’s previous peer group classification). As a result, any comparisons of time series data should take into consideration changes in the scope of the collection from 2013–14 onwards. For more information, see <<http://meteor.aihw.gov.au/content/index.phtml/itemId/612346>>.

## How has data coverage changed over time?

Because the scope of the NAPEDC NMDS is restricted to formal emergency departments, the number of ED presentations reported to the NNAPEDCD does not include all emergency or urgent care provided by public hospitals.

Between 2003–04 and 2013–14, the data coverage of the NNAPEDCD was estimated by comparing the number of ED presentations reported to the NNAPEDCD with the number of non-admitted patient emergency occasions of service reported to the National Public Hospital Establishments Database (NPHEd). The NPHEd estimate was considered to be a more complete count of emergency care services, because it included emergency care data for all public hospitals, regardless of whether they had a formal emergency department, or other arrangements for providing emergency care. This provided an estimate but not an exact measure of the coverage.

For 2014–15, an approximate estimate of coverage was calculated based on emergency occasions of service that were reported to the NPHEd in 2013–14. Using this approach, national coverage of the NNAPEDCD was estimated at about 88% in 2014–15. Estimated

coverage by remoteness area of the hospital (using the same approach) varied among remoteness areas, ranging from 100% in *Major Cities* to 18% in *Very remote* areas (AIHW 2015b).

However, emergency occasions of service were not reported to the NPHEd from 2014–15 onwards, which meant it was no longer possible to calculate the proportion of all emergency occasions of service that were reported to the NNAPEDCD.

Estimates of coverage from 2015–16 onwards have not been calculated.

## Variation in reporting

### Variation in hospitals reporting

Between 2015–16 and 2019–20, the number of hospitals that reported ED presentations to the NNAPEDCD was relatively stable for most states and territories and included the major public hospitals in all states and territories (Tables A1 to A2).

A summary of the key changes in hospital reporting between 2015–16 and 2019–20 is provided below:

- In New South Wales:
  - In 2018–19 Northern Beaches Hospital opened, Manly Hospital closed and Mona Vale hospital ceased providing emergency department services. Byron Central Hospital commenced providing emergency department care in 2015–16, replacing care previously provided by Mullumbimby Hospital and Byron Bay Hospital.
- In Queensland:
  - the Sunshine Coast University Hospital opened in March 2017, but this did not constitute a change in coverage, as the emergency department services were previously provided by a number of smaller hospitals in the region, which reported data for the NNAPEDCD.
  - Data for the Royal Children’s Hospital and the Mater Children’s Hospital were included in reporting from in 2014–15. During 2014–15, they were replaced by the Lady Cilento Children’s Hospital. All 3 hospitals reported emergency department care data in 2014–15.
- In Western Australia:
  - In 2018-19, six Public acute group C hospitals started reporting in Western Australia. This constitutes a change in coverage, as the activity was previously not reported for the NNAPEDCD.
  - Nickol bay Hospital closed and was replaced by Karratha Health campus, both hospitals were reported in 2018–19.
  - Perth’s Children’s Hospital opened in June 2018 and Princess Margaret Hospital closed. Both hospitals were reported in 2017–18.
  - the St John of God Midland Public Hospital opened, and the Swan District Hospital closed in November 2015. Both hospitals were reported in 2015–16.
  - in 2014–15, Busselton Health Campus began reporting emergency department care data, after the Busselton hospital was redeveloped to include a larger emergency department. This constituted a change in coverage as the activity was previously not reported for the NNAPEDCD.

- also in 2014–15, the Fremantle Hospital's emergency department was replaced by the Fiona Stanley Hospital emergency department. Both hospitals were reported for 2014–15.
- South Australia commenced reporting for 3 Public acute group C hospitals in 2019–20, Mount Barker District Soldiers' Memorial Hospital, South Coast District Hospital and Murray Bridge Soldiers' Memorial Hospital. This constitutes a change in coverage.
- In Tasmania
  - From 2019-20 onwards, patients in Tasmanian hospitals are not categorised as ending in admission to hospital unless they physically depart the emergency department to a recognised inpatient area. Caution should be exercised when interpreting tables based on admission status, as 2019-20 data is not directly comparable with previous years.
- In the Northern territory, Palmerston Regional Hospital opened in August 2018. This constitutes a change in coverage.

Change in coverage due to the opening or closing of hospitals should be taken into account when interpreting changes over time. There was a change in the coverage of the NNAPEDCD between 2017–18 and 2018–19 with the reporting of an additional 6 hospitals in Western Australia.

**Table A1: Public hospital emergency departments, by state and territory, 2015–16 to 2019–20<sup>(a)</sup>**

	2015–16	2016–17	2017-18	2018–19	2019–20
<b>New South Wales</b>	177	177	176	177	173
<b>Victoria</b>	40	40	40	40	40
<b>Queensland</b>	26	27	26	26	26
<b>Western Australia<sup>(b)</sup></b>	19	18	19	25	24
<b>South Australia</b>	14	14	14	14	17
<b>Tasmania</b>	4	4	4	4	4
<b>Australian Capital Territory</b>	2	2	2	2	2
<b>Northern Territory</b>	5	5	5	6	6
<b>Total</b>	<b>287</b>	<b>287</b>	<b>286</b>	<b>294</b>	<b>292</b>

(a) Interpretation of all changes over time presented in this report should take into account changes in coverage, as noted in Appendix A and summarised in the footnotes below.

(b) In 2018–19, Western Australia commenced reporting for 6 Public acute group C hospitals in Western Australia. Karratha health service replaces Nickol Bay hospital.

**Table A2: Public hospitals emergency departments, by public hospital peer group, 2014–15 to 2018–19<sup>(a)</sup>**

	2015–16	2016–17	2017-18	2018–19	2019–20
Principal referral and women's and children's hospitals	39	40	41	40	40
Public acute group A hospitals	60	60	60	61	59
Public acute group B hospitals	45	44	43	43	43
Public acute group C hospitals <sup>(c)</sup>	55	55	55	63	65
Other hospitals <sup>(b)</sup>	88	88	87	87	85
<b>All hospitals</b>	<b>287</b>	<b>287</b>	<b>286</b>	<b>294</b>	<b>292</b>

(a) Interpretation of all changes over time presented in this report should take into account changes in coverage, as noted in Appendix A.

(b) Includes hospitals not included in the specified hospital peer groups. See appendix C for more information about peer groups.  
*Note:* See appendixes A, B, and C for more information on terminology, data limitations, and methods.

In 2019–20, 292 public hospital emergency departments reported ED presentations. These included most major public hospitals—classified as *Principal referral and women’s and children’s hospitals*, *Public acute group A hospitals*, and *Public acute group B hospitals*—as well as some smaller hospitals located in regional and remote areas (Table A3).

**Table A3: Public hospital emergency departments reported to the NNAPEDCD, by public hospital peer group, states and territories, 2018–19**

Public hospital peer group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Principal referral and Women's and children's	13	9	7	5	3	1	1	1	40
Public acute group A hospitals	21	15	12	4	3	2	1	1	59
Public acute group B hospitals	17	9	7	5	4	1	..	..	43
Public acute group C hospitals	38	6	..	10	7	..	..	4	65
Other hospitals <sup>(a)</sup>	84	1	..	..	..	..	..	..	85
<b>All hospitals</b>	<b>173</b>	<b>40</b>	<b>26</b>	<b>24</b>	<b>17</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>292</b>

(a) Includes hospitals not included in the specified hospital peer groups. See appendix C for more information about peer groups.

Note: See appendixes A, B, and C for more information on terminology, data limitations, and methods.

## Possible variation in triage categorisation

Of the 8.2 million presentations reported to the NNAPEDCD for 2019–20, 98.5% were *Emergency presentations*, and 1.3% were *Return visit, planned*. The remaining types of visit accounted for 0.2%. The proportion of presentations by triage category varied by state or territory.

New South Wales had the highest proportion of emergency presentations that were assigned a triage category of *Non-urgent* (9.5%). South Australia had the highest proportion assigned a triage category of *Resuscitation* (1.4%) and Queensland had the highest proportions assigned to the triage categories of *Emergency* (16.5%) and *Urgent* (46.1%) (Table A4). This may reflect different triage categorisation, differing mixes of patients, or both.

**Table A4: Proportion (%) of Emergency presentations by triage category, states and territories, 2017–18**

Triage category	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total <sup>(a)</sup>
Per cent									
Resuscitation	0.7	0.6	0.9	0.8	1.5	0.7	0.7	0.8	0.8
Emergency	13.3	13.4	17.0	13.9	15.0	11.8	12.3	16.3	14.2
Urgent	35.2	39.9	45.1	34.2	41.7	37.6	44.9	33.1	38.6
Semi-urgent	39.6	38.8	31.4	43.8	36.2	42.2	36.1	43.7	38.1
Non-urgent	11.1	7.4	5.6	7.3	5.6	7.6	5.9	6.2	8.2
<b>Total<sup>(a)</sup></b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

(a) Includes emergency presentations for which the triage category was not reported.

Variation in the proportion of patients admitted to the hospital by triage category may indicate variation in the way emergency departments triage patients. Although triage category is not a measure of the need for admission to hospital, the proportion of presentations in each category that had an episode end status of *Admitted to this hospital* can be used to indicate the comparability of the triage categorisation.



The proportion of patients who were subsequently admitted does not include patients referred to another hospital for admission. For example, nationally, about 31% of *Emergency presentations* had an episode end status of *Admitted to this hospital*. The Northern Territory had the highest proportion (37%), and New South Wales had the lowest (25%) (Table 4.13). For *Resuscitation* patients, about 74% had an episode end status of *Admitted to this hospital* nationally, with the proportion ranging from 69% in New South Wales to 85% in the Northern Territory.

## Reporting diagnosis information

For the 2019–20 NAPEDC NMDS/NBEDS, diagnosis information was reported using the ED ICD-10-AM version 9 shortlist that can be found on the website of the Independent Hospital Pricing Authority.

## Quality of Indigenous status data

The quality of the data reported for Indigenous status in emergency departments has not been formally assessed. In addition, the scope of the NNAPEDCD may not include some emergency services provided in areas where the proportion of Indigenous people (compared with other Australians) is higher than average. Therefore, the information on Indigenous status presented in this report should be used with caution.

All states and territories consider the Indigenous status data used in this report to be of a quality appropriate for publication. Indigenous status was not reported for fewer than 1% of ED presentations in 2019–20 (Table 3.2).

## Other factors affecting interpretation of the NNAPEDCD data

This section presents other information about the quality of the data provided for the NNAPEDCD, and factors that may affect the interpretation of the information presented in this report.

## Remoteness area of usual residence

In 2019–20, jurisdictions provided area of usual residence using either the 2016 Statistical Area Level 2 or Statistical Area Level 1.

The AIHW mapped the Statistical Area Level 2 area of usual residence information for each presentation to remoteness area categories based on the ABS Australian Statistical Geography Standard Remoteness Structure for 2016. This mapping was done on a probabilistic basis. About 1.7% of records could not be mapped to a remoteness of area of usual residence.

From 2017–18, remoteness area information are based on the ABS's ASGS 2016 classification, whereas the remoteness area information reported for 2013–14 to 2016–17 were based on the ABS's ASGS 2011 classification. Therefore, the remoteness (and socioeconomic status) data presented for 2019–20 are not comparable with similar information presented in earlier reports.

## Type of visit

For 2019–20, Victoria, Queensland, and Western Australia provided data for the NNAPEDCD using the NAPEDC NBEDS specifications, for which *Patient in transit* is not a valid type of visit category. Under the NAPEDC NBEDS specification, patients in transit are included as *Emergency presentation*.

## Episode end status

For the purposes of reporting, the NAPEDC NBEDS episode end status category *Transferred for admitted patient care in this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)* was mapped to the NAPEDC NMDS episode end status category *Admitted to this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)*.

For the NAPEDC NMDS, patients who are admitted to the hospital, and subsequently die before leaving the emergency department are included in the NAPEDC NMDS *Episode end status* category of *Admitted to this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)*.

For the NAPEDC NBEDS specifications, patients who died or otherwise left the emergency department are not included in the NAPEDC NBEDS category of *Transferred for admitted patient care in this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)*. As a result, Victoria, Queensland, and Western Australia data may not be entirely comparable with data provided for other states and territories.

Caution should be used when interpreting changes over time for episode end status because:

- Between 2015–16 and 2016–17, a change in the episode end status data element resulted in a new category—*Registered, advised of another health care service, and left the emergency department without being attended by a health care professional* (METeOR identifier 685013). As a result, the 2016–17 to 2018–19 data presented for episode end status are not comparable with previous years.
- Between 2014–15 and 2015–16, a change in practice in the certification of death in Victoria resulted in a decrease in the number of presentations with an episode end status of *Dead on arrival*—from 1,313 in 2015–16 to 111 in 2016–17.

There is a difference between the number of presentations with a type of visit of *Dead on arrival* (2,337; Table 4.1) and the number of presentations with an episode end status of *Dead on arrival* (2,602; Table 4.13). All presentations with a type of visit of *Dead on arrival* had an episode end status of *Dead on arrival*. However, some presentations with an episode end status of *Dead on arrival* did not have a type of visit of *Dead on arrival*. The majority of these presentations were in New South Wales (1,748 with a type of visit of *Dead on arrival* and 1,987 with an episode end status of *Dead on arrival*).

## Quality of waiting times and length of stay data

### Waiting time

For 2019–20, about 20,000 records that should have been included in the calculation of waiting times statistics were excluded, as they did not have a valid commencement of clinical care time recorded.

The criteria used to determine the proportion of *Resuscitation* patients seen on time varies between jurisdictions, therefore, the proportions of *Resuscitation* patients seen on time presented in this report may differ from those reported by individual jurisdictions.

### **Emergency department length of stay**

For about 5,000 records, the emergency department length of stay could not be calculated, as the date and time of physical departure were missing. These records were distributed across multiple hospitals, mainly from New South Wales. Of those, about 800 had an episode end status of Did not wait to be attended by a health care professional, Dead on arrival, or Registered, advised of another health care service, and left the emergency department without being attended by a health care professional.

### **Emergency department duration of clinical care**

For about 255,000 records, duration of clinical care cannot be calculated. Of these, 200,000 of these have had an episode end status of either Did not wait to be attended to by a health care professional, Dead on arrival or Registered, advised of another health service and left without being attended to—for which are expected to have no a clinical duration would not be meaningful.

For the remaining Of the 55,000 records, that are expected to have a calculable clinical duration 38,000 have a were missing Episode end date and time while 17,000 were missing clinical commencement date and time.

## **NHA Performance indicators**

In 2016–17, there was a change in the definition of the indicator *Waiting times for emergency department care—proportion seen on time* to exclude records for which the episode end status was *Registered, advised of another health care service, and left the emergency department without being attended by a health care professional*. Therefore, data presented for 2016–17 to 2019–20 data presented for proportion seen on time are not comparable with previous years.

For 2017–18, this resulted in about 49,200 records being excluded from the calculation of this indicator that, in previous years, may have been included. About 48,000 of these records were in New South Wales.

# Appendix B: Technical notes

## What terms and methods are used?

This section presents the main calculation methods and common terms used throughout this report. Terms relevant to the data on emergency department care are summarised in the text and more terms are included in the 'Glossary'.

## Definitions

If not otherwise indicated, data elements were defined according to the 2018–19 definitions in the *National health data dictionary*, versions 16, 16.1 and 16.2 (AIHW 2012, 2015c, 2015d) (summarised in the Glossary).

### Public hospital peer groups

Public hospital peer groups are used to classify hospitals that share similar characteristics, to provide a basis for meaningful comparisons.

This report presents analyses by hospital peer group, including the NHA performance indicators, using the AIHW's peer group classification. The Steering Committee for the Review of Government Service Provision will also use these peer groups to report the NHA performance indicators in the *Report on government services 2020*.

Before 2014–15, this information was presented using the AIHW's previous peer group classification. As a result, the data presented here by public hospital peer group are not directly comparable with those presented in AIHW reports before 2014–15.

See Appendix C and the AIHW publication *Australian hospital peer groups* (AIHW 2015a) for more information.

## Data presentation

Data are presented by the state or territory of the hospital, not by the state or territory of usual residence of the patient.

Except as noted in this section, the totals in tables include data only for those states and territories for which data were available, as indicated in the tables. Throughout the report, percentages may not add up to 100.0 because of rounding. Percentages and rates shown as 0.0 or 0 indicate a zero. The symbol '<0.1' has been used to denote less than 0.05, but greater than 0.

Data on waiting times (50th and 90th percentiles) and the proportion seen on time have been suppressed if there were fewer than 100 presentations in the category being presented. The abbreviation 'n.p.' has been used to denote these suppressions. For these tables, the totals include the suppressed information.

# Methods

## Changes over time

Time series data in this report show average annual changes from 2013–14 to 2017–18, and the annual change between 2016–17 and 2017–18. The average annual rate of change, expressed as a percentage is calculated as follows:

$$\left( \left( \frac{p_n}{p_0} \right)^{\left( \frac{1}{N} \right)} - 1 \right) \times 100$$

where

$p_n$  = indicator value in later time period

$p_0$  = indicator value in earlier time period

$N$  = number of years between two time periods.

The rates were not adjusted for other changes in data coverage, except where noted in the text.

## Median and 90th percentiles

The 50th percentile (the median, or the middle value in a group of data arranged from lowest to highest value for minutes waited) represents the number of minutes within which 50% of patients commenced clinical care (or completed their episode, or were admitted)—half the waiting times will have been shorter, and half longer than the median.

The 90th percentile data represent the number of minutes (or hours and minutes) within which 90% of patients commenced clinical care (or completed their episode, or were admitted).

The 50th percentile and 90th percentile waiting times are calculated using an empirical distribution function with averaging. Using this method, observations are sorted in ascending order.

The calculation is where:

$n$  is the number of observations, and

$p$  is the percentile value divided by 100,

then  $n \times p = i + f$  (where  $i$  is an integer and  $f$  is the fractional part of  $n \times p$ ).

If  $n \times p$  is an integer, the percentile value will correspond to the average of the values for the  $i^{\text{th}}$  and  $(i+1)^{\text{th}}$  observations.

If  $n \times p$  is not an integer, the percentile value will correspond to the value for the  $(i+1)^{\text{th}}$  observation.

For example, if there were 100 observations, the median waiting time will correspond to the average waiting time for the 50th and 51st observations (ordered according to waiting time). Similarly, the 90th percentile will correspond to the average waiting time for the 90th and 91st observations if there are 100 observations.

If there were 101 observations, the median waiting time will correspond to the waiting time for the 51st observation, and the 90th percentile waiting time will correspond to the waiting time for the 91st observation.

The 50th and 90th percentiles have been rounded to the nearest whole number of minutes.

## Principal diagnosis reporting

From 2018–19, Principal diagnoses for were provided using the ICD-10-AM (9th Ed) Principal Diagnosis Short List, developed by the Independent Hospital Pricing Authority (IHPA) from the full version of ICD-10-AM.

## Waiting times

### Waiting time to commencement of clinical care

The waiting times are determined as the time elapsed between presentation to the emergency department and the commencement of clinical care. The calculation is restricted to presentations with a type of visit of *Emergency presentation*, and presentations were excluded if the waiting time was missing or invalid, or if the patient *Did not wait to be attended by a health care professional*, or was *Dead on arrival*.

See Appendix A for information on the completeness of the data provided for waiting times calculations.

### Proportion of presentations seen on time

The proportion of presentations seen on time was determined as the proportion of presentations in each triage category with a waiting time less than or equal to the maximum waiting time stated in the Australasian Triage Scale definition.

For this report, a patient with a triage category of *Resuscitation* was considered to be seen on time if the waiting time to commencement of clinical care was less than or equal to 2 minutes.

The calculation is restricted to presentations with a type of visit of *Emergency presentation*, and presentations were excluded if the waiting time was missing or invalid, if the patient *Did not wait to be attended by a health care professional*, or was *Dead on arrival*, or if the triage category was not reported.

### Proportion of presentations ending in admission

The proportion of presentations ending in admission is determined as the proportion of all emergency presentations with an episode end status of *Admitted to this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)* (for the NAPEDC NMDS), or *Transferred for admitted patient care in this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)* (for the NAPEDC NBEDS). The calculation is restricted to presentations with a type of visit of *Emergency presentation*.

## Emergency department length of stay

### Emergency department length of stay

The length of stay is determined as the time elapsed between presentation and the physical departure of the patient. Length of stay statistics are calculated for all emergency department type of visit categories.

## Proportion of presentations completed in 4 hours or less

The proportion of presentations completed in 4 hours or less is determined as the proportion of all emergency presentations for which the time elapsed between the presentation and the physical departure of the patient was less than or equal to 240 minutes.

Presentations were excluded if either (or both) of the presentation date/time or physical departure date/time were missing or invalid, or if the calculation resulted in an invalid length of stay (that is, missing or a negative number of minutes).

## Admission to hospital from emergency departments

Admission to hospital from emergency departments (for patients who were subsequently admitted) is calculated using the emergency department length of stay for presentations with an episode end status of:

- *Admitted to this hospital (either short-stay unit, hospital-in-the-home, or non-emergency department hospital ward)* (for the NAPEDC NMDS), or
- *Transferred for admitted patient care in this hospital (either short-stay unit, hospital-in-the-home or non-emergency department hospital ward)* (for the NAPEDC NBEDS).

## Duration of clinical care

The duration of clinical care is determined as the time elapsed between commencement of clinical care and the end of the non-admitted patient emergency department episode (the end of clinical care).

See Appendix A for information on the completeness of the data used to calculate the duration of clinical care. Duration of clinical care statistics are calculated for presentations with a type of visit of *Emergency presentation*.

## Age and sex of patient

All states and territories supplied the date of birth of the patient, from which the age of the patient at the date of presentation was calculated.

For 406 records, the age of the patient could not be calculated, as date of birth was missing. For 1,047 records, the sex of the patient was reported as either *Intersex or indeterminate* or *Not stated/inadequately described*.

## Age-standardised rates

Unless noted otherwise, population rates (presentation rates) presented in this report are age-standardised, calculated using the direct standardisation method and 5 year age groups.

The ABS' population estimates for 30 June at the beginning of the reporting period were used for the observed rates.

For time series tables in this report, the age-standardised presentation rates (per 1,000 population) have been calculated using estimated resident populations relevant to the reporting period.

The total Australian population for 30 June 2001 was used as the standard population against which expected rates were calculated.

There was some variation in the age group used for age-standardising. For example:

- presentation rates by hospital state, remoteness areas and by quintiles of socioeconomic advantage/disadvantage (SES) were directly age-standardised, using the estimated resident populations as at 30 June 2019. The estimated resident populations had a highest age group of 85 and over
- presentation rates by Indigenous status were directly age-standardised, using the projected Indigenous population (low series) as at 30 June 2019. The population for other Australians was based on the estimated resident populations as at 30 June 2019. As the projected Indigenous population estimates had a highest age group of 65 and over, standardised rates calculated for analyses by Indigenous status are not directly comparable with other standardised rates presented in this report which used a highest age group of 85 and over.

### **Presentation rate ratios**

For some tables reporting comparative presentation rates, presentation rate ratios are presented. These ratios are calculated by dividing the age-standardised presentation rate for a population of interest (an observed rate) by the age-standardised presentation rate for a comparison population (the expected rate). The calculation is as follows:

$$\text{Presentation rate ratio} = \text{observed rate/expected rate}$$

A rate ratio of 1.0 indicates that the population of interest (for example, Indigenous Australians) had a presentation rate similar to that of the comparison group (for example, other Australians). A rate ratio of 1.2 indicates that the population of interest had a rate that was 20% greater than that of the comparison population and a rate ratio of 0.8 indicates a rate 20% smaller.

The populations used for the observed and expected rates vary in this report. For example for:

- Indigenous status, the rate ratio is equal to the presentation rate for Indigenous Australians divided by the presentation rate for other Australians (other Australians includes Indigenous status not reported)
- analyses by state or territory of residence, remoteness areas and SES of area of residence, the rate ratio is equal to the presentation rate for the state or territory of residence, remoteness area, or SES group, divided by the presentation rate for Australia.



# Appendix C: Public hospital peer groups

This report uses the AIHW's public hospital peer group classification, which was published in *Australian hospital peer groups* (AIHW 2015a). A summary of the peer group classification is presented in Table C1.

**Table C1: Public hospital peer groups**

Group	Description
<b>Acute public hospitals</b>	<b>Are identified according to the hospital's service profile:</b>
<b>Principal referral hospitals</b>	Provide a very broad range of services, including some very sophisticated services, and have very large patient volumes. Most include an intensive care unit, a cardiac surgery unit, a neurosurgery unit, an Infectious diseases unit and a 24-hour emergency department.
<b>Public acute group A hospitals</b>	Provide a wide range of services to a large number of patients and are usually situated in metropolitan centres or inner regional areas. Most have an intensive care unit and a 24-hour emergency department. They are among the largest hospitals, but provide a narrower range of services than the <i>Principal referral</i> group. They have a range of specialist units, potentially including bone marrow transplant, coronary care and oncology units.
<b>Public acute group B hospitals</b>	Most have a 24-hour emergency department and perform elective surgery. They provide a narrower range of services than the <i>Principal referral</i> and <i>Public acute group A hospitals</i> . They have a range of specialist units, potentially including obstetrics, paediatrics, psychiatric and oncology units.
<b>Public acute group C hospitals</b>	These hospitals usually provide an obstetric unit, surgical services and some form of emergency facility. They are generally smaller than the <i>Public acute group B hospitals</i> .
<b>Public acute group D hospitals</b>	Often situated in regional and remote areas and offer a smaller range of services relative to the other public acute hospitals (groups A–C). Hospitals in this group tend to have a greater proportion of non-acute separations compared with the larger acute public hospitals.
<b>Very small hospitals</b>	Generally have less than 200 admitted patient separations each year.
<b>Specialist hospital groups</b>	<b>Perform a readily identified role within the health system</b>
<b>Women's and children's hospitals</b>	
Children's hospitals	Specialise in the treatment and care of children.
Women's hospitals	Specialise in treatment of women.
Women's and children's hospitals	Specialise in the treatment of both women and children.
<b>Early parenting centres</b>	Specialise in care and assistance for mothers and their very young children.
<b>Drug and alcohol hospitals</b>	Specialise in the treatment of disorders relating to drug or alcohol use.

(continued)

**Table C1 (continued): Public hospital peer groups**

<b>Group</b>	<b>Description</b>
<b>Psychiatric hospitals</b>	Specialise in providing psychiatric care and/or treatment for people with a mental disorder or psychiatric disability.
Psychogeriatric hospitals	Specialise in the psychiatric treatment of older people.
Child, adolescent, and young adult psychiatric hospitals	Specialise in the psychiatric treatment of children and young people.
General acute psychiatric hospitals	Provide acute psychiatric treatment.
General non-acute psychiatric hospitals	Provide non-acute psychiatric treatment—mainly to the general adult population.
Forensic psychiatric hospitals	Provide assessment and treatment of people with a mental disorder and a history of criminal offending, or those who are at risk of offending.
<b>Same-day hospitals</b>	Treat patients on a same-day basis. The hospitals in the same-day hospital peer groups tend to be highly specialised.
Other day procedure hospitals	Provide a variety of specialised services on a same-day basis.
<b>Other acute specialised hospitals</b>	Specialise in a particular form of acute care, not grouped elsewhere. This group is too diverse to be considered a peer group for comparison purposes. It includes hospitals that specialise in the treatment of cancer, rheumatology, eye, ear, and dental disorders.
<b>Subacute and non-acute hospitals</b>	
Rehabilitation and geriatric evaluation and management hospitals	Primarily provide rehabilitation and/or geriatric evaluation and management in which the clinical purpose or treatment goal is improvement in the functioning of a patient.
Mixed subacute and non-acute hospitals	Primarily provide a mixture of subacute (rehabilitation, palliative care, geriatric evaluation and management, psychogeriatric care) and non-acute (maintenance) care that is not covered by the hospitals in the rehabilitation and geriatric evaluation and management hospital peer group.
<b>Outpatient hospitals</b>	Provide a range of non-admitted patient services. They generally do not admit patients.
<b>Unpeered hospitals</b>	Could not be placed in one of the other peer groups.

# Appendix D: National hospital statistics-related committees

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