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# Appendix A: Data quality information

This appendix provides information on the National Elective Surgery Waiting Times Data Collection (NESWTDC), including a Data Quality Statement summary relevant to interpreting the NESWTDC. It also contains further information on variation in hospital reporting that may affect the interpretation of the data presented in this report.

## National Elective Surgery Waiting Times Data Collection

The AIHW has undertaken the collection and reporting of 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 were used by the AIHW to assemble the National Elective Surgery Waiting Times Data Collection (NESWTDC), covering waiting times and other characteristics of elective surgery in all public hospitals.

The NESWTDC covers most public hospitals that undertake elective surgery. Hospitals that were not included may not undertake elective surgery, may not have had waiting lists, or may have had different waiting list characteristics from those of reporting hospitals. Some smaller remote hospitals may have different patterns of service delivery to those of other hospitals because specialists providing elective surgery services visit these hospitals only periodically.

Before 2016–17, the elective surgery waiting list data were reported to two separate national minimum data sets (NMDSs), which are available on the AIHW's Metadata Online Register (METeOR):

- (a) Elective surgery waiting times (census data) NMDS—which included patients on waiting lists for elective surgery who were yet to be admitted to hospital or removed for another reason (see METeOR identifier 613687).
- (b) Elective surgery waiting times (removals data) NMDS—which included patients removed from waiting lists for elective surgery (for admission or another reason) (see METeOR identifier 600056).

From 1 July 2016, the Elective surgery waiting times NMDS comprises both removals and census data—that is, patients on, or removed from, elective surgery waiting lists (see METeOR identifier 684521).

Detailed information about the AIHW's NESWTDC is in the Data Quality Statement. The Data Quality Statement is summarised below and accompanies this report online at <[www.aihw.gov.au](http://www.aihw.gov.au)>.

## Data quality summary for National Elective Surgery Waiting Times Data Collection 2019–20

The NESWTDC provides episode-level data on patients added to or removed from elective surgery waiting lists managed by public hospitals. This includes private patients treated in public hospitals, and may include public patients treated in private hospitals. 'Public hospitals' may include hospitals that are set up to provide services for public patients

(as public hospitals do), but are managed privately. Removals are counted for patients who have been removed for admission, or for another reason.

The data supplied for 1 July 2018 to 30 June 2019 are based on the ESWT NMDS for 2019–20.

The NESWTDC includes data for each year from 1999–00 to 2019–20.

## Summary of coverage

### How has data coverage changed over time?

For the purposes of this report, the coverage of the NESWTDC is estimated by comparing admissions for elective surgery reported to the NESWTDC with elective surgical separations reported to the National Hospital Morbidity Database (NHMD), expressed as a percentage. For more information on elective surgical separations and the estimate of coverage, see Appendix B.

As 2019–20 NHMD data are not yet available, the estimates of the coverage are preliminary, based on 2017–18 NHMD data. For 2019–20, the preliminary estimate of public hospital elective surgery covered by the NESWTDC was 95%. The estimated coverage was 100% in New South Wales, Queensland, Western Australia, Tasmania, the Australian Capital Territory and the Northern Territory. For Victoria and South Australia, the majority of public hospital elective surgery was covered by the NESWTDC (85% and 96%, respectively) (Table A1). These estimates will be updated when the total number of elective surgery separations for public hospitals is available in the NHMD, early in 2020.

Between 2015–16 and 2019–20, the coverage of the NESWTDC fluctuated between 93% and 95%. Coverage was highest for *Principal referral and women's and children's hospitals* and for *Public acute group A* and *Public acute group B hospitals* (Table A1).

For 2019–20, the NESWTDC covered most hospitals that undertook elective surgery. Hospitals that were not included may not undertake elective surgery, may not have had waiting lists, or may have had different waiting list characteristics compared with other hospitals.

After adjusting for the changes in coverage for Victoria and Queensland, additions to elective surgery waiting lists were estimated to have increased by 2.5% on average each year and removals were estimated to have increased by 2.3% on average each year.

**Table A1: Estimated proportion (%) of elective surgery reported to the NESWTDC, states and territories, 2015–16 to 2019–20**

State/territory	2015–16	2016–17	2017–18	2018–19	2019–20 <sup>(a)</sup>
New South Wales	100	100	100	100	100
Victoria	81	85	85	81	81
Queensland	100	100	100	100	100
Western Australia <sup>(b)</sup>	100	100	100	100	100
South Australia	97	97	97	98	98
Tasmania	100	100	100	100	100
Australian Capital Territory	100	100	100	100	100
Northern Territory	100	100	100	100	100
<b>Total</b>	<b>93</b>	<b>95</b>	<b>95</b>	<b>94</b>	<b>94</b>

(a) Coverage estimate is preliminary, based on comparison with admitted patient data reported for 2018–19.

(b) In June 2018, Princess Margaret Hospital closed and Perth Children’s Hospital opened, both hospitals were reported for 2017–18, this did not constitute a change in coverage.

Note: See appendixes A and B for notes on data limitations and methods.

**Table A2: Estimated proportion (%) of elective surgery reported to the NESWTDC, by public hospital peer group, 2015–16 to 2019–20**

Hospital peer group	2015–16	2016–17	2017–18	2018–19	2019–20 <sup>(a)</sup>
Principal referral and women’s and children’s	100	100	100	100	100
Public acute group A hospitals	96	97	98	97	97
Public acute group B hospitals	96	99	99	99	99
Other hospitals <sup>(b)</sup>	75	76	71	67	67
<b>Total</b>	<b>93</b>	<b>95</b>	<b>95</b>	<b>94</b>	<b>94</b>

(a) Coverage estimate is preliminary, based on comparison with admitted patient data reported for 2018–19.

(b) Includes hospitals not included in the specified hospital peer groups. See Appendix C for details.

Note: See appendixes A, B and C for notes on data limitations and methods.

## Changes in the number of hospitals reporting

Between 2015–16 and 2019–20, the number of public hospitals that reported admissions from elective surgery waiting lists fluctuated between 255 and 261 nationally, and there were changes in the number of hospitals that reported admissions for some jurisdictions (Tables A3–A5)

A change in the number of hospitals reporting admissions over time does not necessarily represent a change in coverage of elective surgery data reported. For example, data provided by two separate hospitals for one period, may be combined and provided by a single hospital the following year. Any changes that made a material difference to the coverage of elective surgery reported over time, are outlined in Table A4.

Between 2016–17 and 2017–18, the number of hospitals that reported admissions from elective surgery waiting lists changed for three jurisdictions, however this increase did not constitute a change in coverage between these time periods.

In addition, the number of hospitals reported here may underestimate the number of hospitals with elective surgery waiting lists, because the coverage of the data collection is incomplete. See ‘How has data coverage changed over time?’ above for more information.

## **New South Wales**

- Bulli Hospital, Temora Hospital and Pambula District Hospital ceased providing elective surgery from 2016–17. Combined, these hospitals reported about 400 admissions from elective surgery waiting lists in 2015–16. This does not constitute a change in coverage.
- The Northern Beaches Hospital reported elective surgery data for the first time in 2018–19. This did not constitute a change in coverage.

## **Victoria**

- The Wodonga and Warrnambool hospitals reported elective surgery data for the first time in 2016–17. This constituted a change in coverage
- The Women’s Hospital at Sandringham began reporting elective surgery data separately in 2015–16, whereas in previous years this data was reported with elective surgery data for the Royal Women’s Hospital. This change in organisational arrangements did not represent an increase in coverage over this period.

## **Queensland**

- The Lady Cilento Children’s Hospital was renamed in 2018 September to Queensland Children’s Hospital.
- The Sunshine Coast University Hospital opened in March 2017. This did not constitute a change in coverage, as elective surgery services were previously provided by a number of smaller hospitals in the region, which reported data for the NESWTDC
- For 2015–16, data for an additional 18 smaller hospitals were reported for the first time. This constituted a change in coverage as the activity was previously not reported for the NESWTDC

## **Western Australia**

- In September 2019, Nickol Bay Hospital closed and Karratha Health Campus opened, this did not constitute a change in coverage.
- In June 2018, the Princess Margaret Hospital closed and Perth Children’s Hospital opened, both hospitals were reported for 2017–18, this did not constitute a change in coverage.
- Karratha Health Campus reported elective surgery data for the first time in 2018–19 while Merredin Health Service and Kalamunda Hospital did not report elective surgery data in 2018 -19 This did not constitute a change in coverage.
- Data was reported for Kalamunda hospital for the first time in 2017–18.
- In November 2015, the St John of God, Midland Public Hospital opened, replacing the Swan District Hospital. Both hospitals are included for 2015–16 in tables 2.1 and 2.2

## **South Australia**

- in 2017–18, Southern Yorke Peninsula Health service elective surgery data was reported as part of Northern Yorke Peninsula health service. This did not constitute a change in coverage.
- 3 small hospitals ceased providing elective surgery between 2012–13 and 2015–16. This did not represent a change in coverage.

## **Australian Capital Territory**

- Australian Capital Territory data for 2015–16 were available at the time of publication. The addition of this data constitutes a change in coverage.

## Northern Territory

- The Palmerston Regional Hospital reported elective surgery data for the first time in 2018–19. This did not constitute a change in coverage.

**Table A3: Number of hospitals reporting admissions from waiting lists for elective surgery, by public hospital peer group, 2015–16 to 2019–20**

	2015–16	2016–17	2017–18	2018–19	2019–20
Principal referral and Women's and children's hospitals	41	43	44	43	43
Public acute group A hospitals	59	60	60	60	58
Public acute group B hospitals	42	43	43	43	43
Other hospitals <sup>(a)</sup>	117	113	114	113	111
<b>Total</b>	<b>259</b>	<b>259</b>	<b>261</b>	<b>259</b>	<b>255</b>

(a) Includes hospitals not included in the specified hospital peer groups. See Appendix C for details.

**Table A4: Number of hospitals reporting admissions from waiting lists for elective surgery, states and territories, 2015–16 to 2019–20**

	2015–16	2016–17	2017–18	2018–19	2019–20
New South Wales	96	93	94	94	92
Victoria <sup>(b)</sup>	33	35	35	35	35
Queensland <sup>(d)</sup>	50	51	51	51	50
Western Australia <sup>(c)</sup>	33	33	35	33	32
South Australia	36	36	35	34	34
Tasmania	4	4	4	4	4
Australian Capital Territory	2	2	2	2	2
Northern Territory	5	5	5	6	6
<b>Total</b>	<b>259</b>	<b>259</b>	<b>261</b>	<b>259</b>	<b>255</b>

(a) Wodonga Hospital and Warrnambool Hospital reported elective surgery data for the first time in 2016–17, this constituted a change in coverage.

(d) For 2015–16, Queensland provided data for an additional 18 small hospitals that accounted for about 3,000 admissions from waiting lists. This constituted a change in coverage.

**Table A5: Number of hospitals providing admissions from public hospital elective surgery waiting lists, by public hospital peer group, states and territories, 2019–20**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
Principal referral and Women's and children's hospitals	14	10	8	5	3	1	1	1	43
Public acute group A hospitals	21	13	12	5	3	2	1	1	58
Public acute group B hospitals	17	8	8	5	4	1	..	..	43
Other hospitals	40	4	22	17	24	0	0	4	111
<b>Total</b>	<b>92</b>	<b>35</b>	<b>50</b>	<b>32</b>	<b>34</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>255</b>

Note: See appendixes A, B and C for notes on data limitations and methods.

## Summary of key data quality issues

- Although there are national standards for data on elective surgery waiting times, methods to calculate waiting times have varied between states and territories and over time. For example, in Victoria, Queensland and Tasmania, for patients who were transferred from a waiting list managed by one hospital to that managed by another, the time waited on the first list is not included in the waiting time reported to the NESWTDC from the second hospital. Therefore, the number of days waited in those jurisdictions reflected the waiting time on the list managed by the reporting hospital only.
- For New South Wales, patients are not transferred to another hospital list. Where a patient is treated at a hospital other than the hospital that manages the waiting list, the waiting time reflects the complete period from the original listing date to admission for the awaited surgery.
- Between 2016–17 and 2019–20, the Northern Territory did not report the number of patients who were *Transferred to another hospital's waiting list*.
- There is an apparent lack of comparability of the assignment of clinical urgency categories among jurisdictions, which may result in statistics that are not meaningful or comparable between jurisdictions.
- The quality of the data reported for Indigenous status for the NESWTDC has not been formally assessed; therefore, caution should be exercised when interpreting these data.
- A small number of intended procedures may be undertaken as non-admitted patient care (for example, for some cataract extractions in New South Wales). Waiting times associated with non-admitted activity are not captured in the NESWTDC.
- Between 2015–16 and 2019–20, the coverage of the data collection changed for Victoria, Queensland and the Australian Capital Territory

## Additional information on data quality

### Clinical urgency categorisation

As for earlier years, there is apparent variation in the assignment of urgency categories among states and territories for 2019–20. This apparent lack of comparability of clinical urgency categories among jurisdictions means that measures based on these categories are also not comparable between jurisdictions. The concepts of the proportion 'overdue' and the 'average overdue wait time' may also not be meaningful or comparable because they depend on the urgency categorisation.

Despite the differences in how clinicians assign clinical urgency categories, interpreting state and territory waiting times statistics could be assisted by having context information about the proportion of patients in each urgency category.

For example, a state or territory could report relatively long median waiting times in association with a relatively high proportion of patients assessed by clinicians in the state (or territory) as being in *Category 3* (procedure clinically indicated within 365 days). Conversely, a state or territory in which a relatively high proportion of patients are assessed by clinicians as being in *Category 1* or *2* (procedure clinically indicated within 30 days and 90 days, respectively) could have relatively short overall median waiting times.

With the aim of promoting more nationally consistent and comparable elective surgery urgency categorisation, the AIHW worked with the Royal Australasian College of Surgeons (RACS) to develop national definitions for elective surgery urgency categories, including 'not ready for care'.

The AIHW and the RACS reviewed the existing practices across Australia and reported the findings of their review and recommendations for action in the report *National definitions for elective surgery urgency categories* (AIHW 2013b) which was presented to the Standing Council on Health in late 2012.

The Australian Health Ministers' Advisory Council was asked to progress the implementation of the report's recommendations:

1. Adopt a statement of an overarching principle for urgency category assignment.
2. Adopt simplified, time-based definitions of urgency categories.
3. A listing of usual urgency categories for higher volume procedures, to be developed by surgical specialty groups.
4. Establish a national process to provide information on comparative urgency categorisation between states and territories.
5. Adopt 'treat in turn' as a principle for elective surgery management.
6. Clarified approaches for patients who are not ready for surgery because of clinical or personal reasons.

As a result of this work, revised definitions for clinical urgency categories and for the glossary items *elective surgery*, *emergency surgery* and *other surgery* were developed and were implemented in the ESWT NMDs from 1 July 2015. In addition, the data element *Intended procedure* and the revised data element for *Surgical specialty* were implemented on 1 July 2016.

Guidelines on the assignment of the 'usual' clinical urgency category for each intended procedure were released in 2015 (AHMAC 2015). With these changes, it is expected that the comparability of the urgency categorisation data will improve over coming years.

### **Surgical specialties**

Before 2016–17, information about the specialty of the surgeon who was to perform the procedure was collected using the data element *Elective surgery waiting list episode—surgical specialty* (of scheduled doctor) (METeOR identifier 270146). It included 10 specific surgical specialties, and an 'other' category.

From 1 July 2016, the surgical specialty data element was revised to include *Paediatric surgery*, and some surgical specialties were relabelled (METeOR identifier 689726). The revised surgical specialty data element now contains 11 specific surgical specialties, and an 'other' category.

In previous years, records for which the surgical specialty may have been *Paediatric surgery* would have been allocated to another surgical specialty or as 'Other' (surgical specialty other than one of the 10 specified specialties). Therefore, the data for 2016–17 to 2018–19 are not comparable with data presented for earlier years.

Use of the *Paediatric surgery* category varied among jurisdictions.

In 2016–17:

- *Paediatric surgery* was reported by Western Australia, South Australia, Tasmania and the Australian Capital Territory.

Between 2017–18 and 2019–20

- *Paediatric surgery* was reported by New South Wales, Western Australia, South Australia, Tasmania and the Australian Capital Territory.



The data by surgical specialty for jurisdictions that did report *Paediatric surgery* are not comparable with the data provided by jurisdictions that did not report *Paediatric surgery*.

## Intended surgical procedures

Between 2015–16 and 2016–17, the data element *Indicator procedure* was replaced by *Intended procedure* in the ESWT NMDS. The *Intended procedure* (intended surgical procedure) data element (METeOR identifier 717635) contains 152 categories of surgical procedures, and includes the 15 procedures that were previously reported for the *Indicator procedure* data element (METeOR identifier 514033).

The following *Intended procedures* are considered equivalent to the corresponding *Indicator procedures*:

- *Cataract extraction (with or without intra-ocular lens insertion)*
- *Cholecystectomy (open/laparoscopic)*
- *Coronary artery bypass grafting*
- *Cystoscopy*
- *Hysterectomy (abdominal/vaginal/laparoscopic)*
- *Prostatectomy*
- *Tonsillectomy (with/without adenoidectomy).*

In addition, *Myringotomy (without insertion of grommets)* and *Pressure equalising tubes—insertion of*, combined, are considered to be equivalent to the indicator procedure *Myringotomy*.

There are some minor differences between the following *Intended procedures* and the corresponding *Indicator procedures*:

- *Inguinal herniotomy/herniorrhaphy*
- *Total hip replacement*
- *Total knee replacement*
- *Varicose veins treatment.*

The previous list of 15 *Indicator procedures* represented high-volume procedures that were potentially associated with longer waiting times. These are presented in this report, in Table 3.4 along with the 10 most commonly reported intended surgical procedures (that were not in the previous set of indicator procedures).

From 2016–17, 2 separate *Intended procedures*—*Myringotomy* and *Pressure equalising tubes (grommets) - insertion of*—are regarded as equivalent to the *Myringotomy* indicator procedure. The increase in admissions for *Myringotomy* between 2015–16 and 2016–17 reflects, in part, the inclusion of New South Wales admissions for *Pressure equalising tubes (grommets) - insertion of*, that had not previously been reported for NSW under the indicator procedure *Myringotomy*.

There was some variation in the reporting of intended procedures among jurisdictions, which may indicate that the data element was not completely implemented, or that there are differences among jurisdictions in the types of procedures that are managed through elective surgery waiting lists.

For 2019–20, the majority of states and territories provided some patient counts for most of the 152 intended procedures. For Tasmania, 98 of the 152 intended procedures were not reported.

The *Intended procedure* data element includes an 'Other' category for procedures other than the 152 individual procedures. In 2019–20, nationally, 37.4% of intended procedures were categorised as 'Other'. The proportion of admissions from public hospital elective surgery waiting lists where the intended procedure was reported as 'Other' ranged from 48.4% in South Australia to 21.9% in the Northern Territory.

Please note that for Tasmania, admissions for some intended procedures have 'n.a' instead of '0'. When the data was initially collected, intended procedures were not able to be fully categorised therefore some admissions fall under the 'other' category instead of an intended procedure (Table 3.4 & 3.5).

Therefore, the data reported for intended procedure may not be comparable between jurisdictions.

For time series, the 15 indicator procedures are presented, including the 2016–17 to 2019–20 data based on the *Intended procedure* data element. There is also an 'other' category which contains data for procedures not included in the 15 indicator procedure categories.

### **Quality of Indigenous status data**

The quality of Indigenous status information in the data provided for the NESWTDC in 2019–20 has not been formally assessed. Therefore, the information presented for Indigenous status for elective surgery waiting times in Chapter 4 should be used with caution.

The AIHW report *Indigenous identification in hospital separations data: quality report* (AIHW 2013a) found that, nationally, about 88% of Indigenous Australians were identified correctly in hospital admissions data in the 2011–12 study period, and the 'true' number of separations for Indigenous Australians was about 9% higher than reported. This under-identification could similarly affect the NESWTDC data.

The following information has been supplied by the states and territories to provide some insight into the quality of Indigenous status data in the NESWTDC.

#### **New South Wales**

The New South Wales Ministry of Health advised that Indigenous status has been collected for elective surgery waiting times data from 2010–11.

#### **Victoria**

The Victorian Department of Health reports that Indigenous status data is of acceptable quality, with valid information recorded for more than 98% of patients admitted and/or removed from elective surgery waiting lists. However, the number of identified Aboriginal and Torres Strait Islander patients is likely to be more accurate within the admitted patient care data, compared with the waiting list data.

#### **Queensland**

Available evidence suggests that the number of Indigenous patients is understated in Queensland hospital data due to both non-reporting and misreporting of Indigenous status. Despite this, Queensland Health regards the Indigenous status data used in this report to be of an appropriate quality for publication.

#### **Western Australia**

The Western Australian Department of Health regards its Indigenous status data for elective surgery waiting times as being of good quality. Quality improvement activities, including

cross-referencing across patient administration systems, continue to enhance the accuracy of this data element.

### **South Australia**

The South Australian Department for Health and Ageing reports that the quality of Indigenous status data in its elective surgery waiting times collection has improved over recent years and is of sufficient quality to be appropriate for publication.

### **Tasmania**

The Tasmanian Department of Health and Human Services reports that the quality and level of Indigenous status identification, across public hospital information collections, are of a high standard. However, as with all data collections, there is continued work on maintaining and improving the collection of this data element, where needed.

### **Australian Capital Territory**

The Australian Capital Territory Health Directorate advised that the quality of its Indigenous status data for elective surgery waiting times is of sufficient quality to be appropriate for publication.

### **Northern Territory**

The Northern Territory Department of Health considers the quality of its Indigenous status data for elective surgery waiting times patients to be good, with accuracy at over 90%. The department retains historical reporting of Indigenous status. All management and statistical reporting, however, is based on a person's most recently reported Indigenous status.

## **What are the limitations of the data?**

Overall, the quality of the data in the NESWTDC is sufficient for them to be published in this report. However, the limitations of the data should be taken into consideration when they 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, checking for valid values, logical consistency and historical consistency. Where possible, data in individual data sets are checked against data from other data sets. Potential errors are queried with jurisdictions, and corrections and resubmissions may be made in response to these queries. Except as noted, the AIHW does not adjust data to account for possible data errors or missing or incorrect values.

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

Caution should be used when interpreting the data presented in this report, as they have not been confirmed against the data on elective surgery in the National Hospital Morbidity Database (NHMD) because those data are not yet available. The NHMD includes information on patient characteristics and on the procedures performed, which can be used to check the data in the NESWTDC. These data will be reported in early 2020.

# Appendix B: Technical notes

## Definitions

If not otherwise indicated, data elements were defined according to the 2019–20 definitions in the *National health data dictionary*, versions 16, 16.1 and 16.2 (AIHW 2012, 2015b, 2015c) (summarised in the Glossary).

## 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. 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 printed as 0.0 or 0 generally indicate a zero; the symbols '<0.1' and '>-0.1' are used to denote numbers between zero and 0.05 and zero and negative 0.05, respectively.

Data on 50th and 90th percentile waiting times and the proportion of patients who waited more than 365 days for their surgery have been suppressed if there were fewer than 100 admissions 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

### Median and 90th percentile waiting times

The number of days a patient waits for elective surgery is calculated by states and territories as the number of calendar days between the date the patient was placed on the waiting list and the date that the patient was removed from the waiting list (the removal date), minus any days when the patient was 'not ready for care', and any days when the patient was waiting with a clinical urgency category that was less urgent than their clinical urgency category at removal (that is, if the patient's urgency category was reassigned as being more urgent while they were waiting).

The number of days waited also does not include the time waited for an initial appointment with the specialist—from the time of referral by the patient's GP—because this information is not available. The AIHW is currently working with states and territories to develop a consistent and nationally agreed approach to measuring access time for elective surgery from the time of referral by the patient's GP. The aim is that nationally consistent data will become available on the time spent between GP referral and the initial specialist appointment.

The waiting times data presented in this report are for patients who completed their wait and were admitted for their surgery as either an elective or emergency admission.

In reports before 2011–12, waiting times information was presented for elective admissions only. Therefore, the data presented are not directly comparable with those presented in *Australian hospital statistics* reports before 2011–12.

The 50th percentile (the median or middle value in a group of data arranged from lowest to highest value) represents the number of days within which 50% of patients were admitted for

the awaited surgery; half the waiting times will have been shorter, and half the waiting times longer, than the median.

The 90th percentile data represent the number of days within which 90% of patients were admitted for the awaited surgery. The remaining 10% of patients waited longer.

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

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 ascending waiting time). Similarly, the 90th percentile waiting time 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.

## Overdue wait time

The 'overdue wait' is the amount of time spent waiting while overdue—that is, after 30, 90 or 365 days for clinical urgency categories 1, 2 and 3, respectively. The average overdue wait time (in days) is calculated for patients who were still waiting for their elective surgery as at 30 June 2018, who were ready for care, and who had waited beyond the recommended time.

In general, at the time of being placed on the public hospital waiting list, a clinical assessment is made of the urgency with which the patient requires elective surgery. The clinical urgency categories are:

*Category 1*—procedures that are clinically indicated within 30 days

*Category 2*—procedures that are clinically indicated within 90 days

*Category 3*—procedures that are clinically indicated within 365 days.

Analyses of clinical urgency category data have shown notable variation in the assignment of these categories, both among and within jurisdictions, and for individual surgical specialties and surgical procedures, as well as overall (see Appendix A).

## Changes over time

Tables presenting the numbers of admissions from elective surgery waiting lists over time show the average annual changes from 2015–16 to 2019–20 and from 2018–19 to 2019–20.

Where noted in the text, rates were adjusted for changes in data coverage over time, as described below in 'Estimated coverage of the NESWTDC'.

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.

## Estimated coverage of the NESWTDC

The estimated proportion of elective surgical separations covered by the NESWTDC data is calculated as the number of admissions for elective surgery reported to the NESWTDC, divided by the number of elective surgical separations (separations with an *Elective* urgency of admission and a *Surgical* Australian Refined Diagnosis Related Group for public hospital) reported to the NHMD, as a percentage.

For 2019–20, as the corresponding admitted patient care data were not available, this estimate was based on a comparison of the numbers of admissions and hospitals that were reported to the NESWTDC for 2018–19 and 2019–20, and the number of elective surgical separations reported to the NHMD for 2018–19.

For example:

- if the same hospitals were reported by a jurisdiction for the NESWTDC for both 2018–19 and 2019–20, the jurisdiction's coverage was assumed to be the same for both years
- if the hospitals reported by a jurisdiction changed between 2018–19 and 2019–20, the jurisdiction's coverage was adjusted by increasing (or decreasing) the numerator counts (NESWTDC admissions for 2018–19), based on the number of elective surgical separations reported for the individual hospital(s) to the NHMD for 2018–19
- if a hospital that was included in the NESWTDC for the first time in 2019–20 was not included in the NHMD for 2018–19, the number of elective surgical separations was assumed to be equal to the number of admissions from elective surgery waiting lists.

# Appendix C: Public hospital peer groups

This report uses the Australian hospital peer group classification (AIHW 2015a). A summary of the public hospital peer group classification is presented in Table C.1.

In AIHW reports before 2014–15, this information was presented using the previous peer group classification. The change from the previous peer group classification to the current peer group classification has resulted in a ‘break in series’ for data disaggregated by peer group. Therefore, the performance indicator information presented here by public hospital peer group is not directly comparable with information presented in AIHW reports before 2014–15.

**Table C.1: 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 Principal referral 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 Principal referral and Public acute group A hospitals. 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 Public acute group B hospitals.
<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 C.1 (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. 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

The Australian Institute of Health and Welfare (AIHW) currently provides secretariat support for the following national committees that are relevant to hospital statistics:

- (a) the Strategic Committee for National Health Information (SCHNI)
- (b) the National Health Data and Information Standards Committee (NHDISC)
- (c) the National Hospital Information Advisory Committee (NHIAC).

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