Bloodstream infections associated with hospital care 2018–19

Citation


Latest edition

Staphylococcus aureus bloodstream infections (SAB, or ‘golden staph’) associated with hospital care can be serious, particularly when bacteria are resistant to common antimicrobials.

In 2018–19, all states and territories had public hospital SAB infection rates below the national benchmark of 2.0 cases per 10,000 patient days.

Over the past 5 years, the SAB infection rate has remained stable, for instance, 0.79 in 2014–15 and 0.75 in 2018–19.

Findings from this report:

- In 2018–19 public hospitals had 1,573 SAB infections during 21.0 million days of patient care under surveillance.
- All jurisdictions had a SAB infection rate lower than the national benchmark of 2.0 cases per 10,000 patient days.
- 82% of public hospital SAB infections were treatable with commonly-used antibiotics.
- SAB infection rates in public hospitals have remained stable over the past 5 years.

Cat. no: HSE 240
Introduction

This report provides information and data visualisations for *Staphylococcus aureus* bloodstream infections (SAB also called *S. aureus*, or 'golden staph') associated with hospital care in Australia. It presents national information on healthcare-associated SAB infections for the period 1 July 2018 to 30 June 2019, focusing on cases associated with public hospitals. Summary analyses are also provided for the previous 4 years.

SAB infection data for public hospitals are provided to the Australian Institute of Health and Welfare (AIHW) by states and territories as part of the National *Staphylococcus aureus* Bacteraemia Data Collection (NSABDC). Private hospitals are also invited to supply SAB infection data to the AIHW, although currently their participation in the NSABDC is voluntary. More information about the NSABDC is provided in the Data quality summary.

Information relating to SAB infections occurring in individual public hospitals and participating private hospitals is available from MyHospitals. Note that due to various administrative arrangements, SAB infection data for a small number of public hospitals is not reported on MyHospitals but included in counts within this report.

'Bloodstream infections' vs 'bacteraemia'

Previous editions of this report have used the term 'bacteraemia' for these infections. Wherever possible, this report uses the more accessible term 'bloodstream infections' rather than bacteraemia.

'Antimicrobials' vs 'antibiotics'

Antimicrobials are medicines that kill or slow the growth of bacteria that cause diseases. Antibiotics are the most commonly prescribed antimicrobial.

Acknowledgements

Information about SAB infections is collected by hospital staff for infection surveillance purposes. The AIHW thanks state and territory health authorities and participating private hospitals and hospital groups for providing SAB infection data through the National *Staphylococcus aureus* Bacteraemia Data Collection (NSABDC).
What are Staphylococcus aureus bloodstream (SAB) infections?

Staphylococcus aureus bacteria are frequently found on the skin or in the nose of many individuals and are commonly spread from person to person in the community. In this form they are usually harmless and most people are unaware they are carrying them. In hospitals, Staphylococcus aureus bacteria are transmitted through a range of potential means, most commonly via the hands of healthcare workers. Bacteria from the patient's skin or from the hand of a healthcare worker can gain direct entry into a patient's bloodstream if they have open wounds (including incisions) or when invasive devices such as catheters are inserted. Other patients who have a greater risk of SAB infections are those with:

- weakened immune systems (associated with cancer, or with transplant receipt, or with being very young or elderly)
- with chronic diseases such as diabetes or
- severe underlying illness.

Staphylococcus aureus bloodstream (SAB) infections occur when Staphylococcus aureus bacteria (also called S. aureus, or ‘golden staph’) causes an infection of the bloodstream. This infection may occur as a result of the delivery of health care and these infections are called healthcare-associated. Many healthcare-associated infections, including SAB infections, are considered to be potentially preventable.

For more information on the definition of healthcare-associated SAB infections see Appendix A.

Are SAB infections serious?

Patients who develop SAB infections are more likely to suffer complications that result in longer hospital stays and increased costs of hospitalisation. SAB infections can result in death.
SAB infections are an indicator of the safety and quality of hospital care

The rate of healthcare-associated Staphylococcus aureus bloodstream infections is an indicator under the Australian Health Performance Framework and under the National Healthcare Agreement (NHA).

The NHA sets out objectives for state and territory governments for health care services. A performance benchmark for healthcare-associated SAB infections in public hospitals is included for the outcome area Australians receive appropriate high quality and affordable hospitals and hospital-related care.

It includes a performance benchmark for public healthcare-associated SAB infections of no more than 2.0 cases per 10,000 days of patient care under surveillance (patient days) for acute care public hospitals. While the NHA performance benchmark is not mandatory for private hospitals, it has also been applied to private hospital SAB infection data referred to within this report.

Data from the NSABDC have shown that the rate of SAB (both MSSA and MRSA) infections has been fewer than 2.0 cases per 10,000 patient days for public hospitals in each state and territory every year since rates were first published in 2010–11.

Appendix B provides a more detailed description of the NHA performance indicator relating to SAB infections.

Last updated 5/02/2020 v3.0
© Australian Institute of Health and Welfare 2020
Antimicrobial resistance in Staphylococcus aureus

**Antimicrobial resistance** occurs when some of the bacteria that cause infections resist the effects of antimicrobials used to treat them. This may lead to 'treatment failure', or the inability to treat the cause of the infection (Department of Health, 2020). Methicillin is an antimicrobial used to treat SAB infections.

A SAB infection that is identified by a laboratory as being caused by a methicillin-resistant strain of *S. aureus* is referred to as MRSA. A SAB infection that is identified by a laboratory as being caused by a *S. aureus* strain that is methicillin-sensitive is referred to as MSSA.

SAB infections caused by MRSA may cause more harm to patients and is associated with poorer patient outcomes as there are fewer antimicrobials available to treat the infection.

The analysis and monitoring of SAB infections resistance to antimicrobials can inform strategies regarding the appropriate prescribing of antimicrobials with the aim of reducing resistance and adverse effects on patients.

### Antimicrobial Use and Resistance in Australia (AURA) Surveillance System

Variations in prescribing of antimicrobials in hospitals and rates of MRSA are analysed in reports on Antimicrobial Use and Resistance in Australia (AURA) Surveillance System data published by the Australian Commission on Safety and Quality in Health Care (ACSQHC). Overall, more than 21% of antimicrobial prescriptions in Australian hospitals were assessed as inappropriate (National Centre for Antimicrobial Stewardship and ACSQHC 2020). Methicillin resistance in *S. aureus* has been stable at around 20% for the last decade, but there is evidence it increased slowly over the three years to 2017, and the rate of community-associated MRSA blood infections has increased (ACSQHC 2018; Coombs et al. 2019).

### References


Last updated 5/02/2020 v4.0

© Australian Institute of Health and Welfare 2020
SAB infections in public hospitals

Over 600 public hospitals reported a total of 1,573 SAB infections

SAB infection rates over the past 5 years have remained stable, from 0.79 cases per 10,000 patient days in 2014–15 to 0.75 in 2018–19.

The proportion of cases treated with commonly used antibiotics increased from 78% to 82% over the past 5 years.

In 2018–19:
- There were 1,573 SAB infections occurring during 21.0 million days of patient care under surveillance. Patient days under SAB infection surveillance covered 99% of days of patient care in public hospitals.
- Overall, there were 0.75 SAB infections per 10,000 patient days.
- 82% of SAB infections were methicillin-sensitive (MSSA), and therefore treatable with commonly used antimicrobials.

Data in this report relating to numbers of cases and rates of S. aureus bloodstream infections exclude public hospitals where there were no SAB infection surveillance arrangements, as well as some public hospital services supplied by private hospitals. Data relating to individual public hospitals with SAB infection surveillance arrangements where services are supplied by private providers are available from the MyHospitals website.

Changes in SAB infections over time
Between 2014–15 and 2018–19:
- SAB infection rates over the past 5 years have remained stable, from 0.79 cases per 10,000 patient days in 2014–15 to 0.75 in 2018–19.
- The proportion of MSSA cases increased from 78% to 82%.
- The proportion of MRSA cases decreased from 22% to 18%.
Figure 1: SAB in public hospitals, by case type, 2014–15 to 2018–19

Table 1. SAB infections in public hospitals, MSSA and MRSA, states and territories, 2018–19

<table>
<thead>
<tr>
<th></th>
<th>MSSA rate (a)</th>
<th>MRSA rate (a)</th>
<th>Total SAB infections</th>
<th>Total SAB infection rate (a)</th>
<th>Patient days under surveillance ('000)</th>
<th>Coverage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>0.57</td>
<td>0.16</td>
<td>551</td>
<td>0.73</td>
<td>7,500,768</td>
<td>98</td>
</tr>
<tr>
<td>Vic</td>
<td>0.64</td>
<td>0.13</td>
<td>414</td>
<td>0.77</td>
<td>5,343,491</td>
<td>99</td>
</tr>
<tr>
<td>Qld</td>
<td>0.68</td>
<td>0.08</td>
<td>303</td>
<td>0.76</td>
<td>3,977,004</td>
<td>100</td>
</tr>
<tr>
<td>WA</td>
<td>0.72</td>
<td>0.13</td>
<td>127</td>
<td>0.85</td>
<td>1,496,387</td>
<td>96</td>
</tr>
<tr>
<td>SA</td>
<td>0.47</td>
<td>0.14</td>
<td>91</td>
<td>0.61</td>
<td>1,499,546</td>
<td>99</td>
</tr>
<tr>
<td>Tas</td>
<td>0.75</td>
<td>0.09</td>
<td>38</td>
<td>0.83</td>
<td>455,523</td>
<td>100</td>
</tr>
<tr>
<td>ACT</td>
<td>0.71</td>
<td>0.11</td>
<td>31</td>
<td>0.82</td>
<td>380,311</td>
<td>98</td>
</tr>
<tr>
<td>NT</td>
<td>0.34</td>
<td>0.13</td>
<td>18</td>
<td>0.47</td>
<td>382,427</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>0.62</td>
<td>0.13</td>
<td>1573</td>
<td>0.75</td>
<td>21,035,457</td>
<td>99</td>
</tr>
</tbody>
</table>

(a) Cases per 10,000 patient days

Source: AIHW National Staphylococcus aureus Bacteraemia Data Collection.

SAB infections in states and territories
In 2018–19:
- For each state and territory, and at the national level, the SAB infection rate was lower than the national benchmark of 2.0 cases per 10,000 patient days.
- SAB infection rates in 2018–19 ranged from 0.47 in the Northern Territory to 0.85 in Western Australia.
- Differences in SAB infection rates between jurisdictions may reflect differences in surveillance and validation processes.

SAB infection rates by type of public hospital
Major, large and children’s hospitals can be more likely to treat patients at risk of SAB infections than other hospitals, and therefore tend
to have higher proportions of SAB infections and higher SAB infection rates.

For more information on public hospital peer groups, see the technical notes on the MyHospitals website.

In 2018–19:

- The SAB infection rate across all major hospitals was 1.02 cases per 10,000 patient days. In comparison, the rate across all large hospitals was 0.65 cases per 10,000 patient days and the rate across medium hospitals was 0.52 cases per 10,000 patient days. The SAB infection rate across all children's hospitals was 1.17 cases per 10,000 patient days.
- Over half of all SAB infections occurred in major hospitals.
- 29% of all SAB infections occurred in large hospitals.
- 6% of all SAB infections occurred in medium hospitals.
- 5% of all SAB infections occurred in children's hospitals.

**Figure 2: SAB infection rate over time, by peer group and case type, states and territories**

<table>
<thead>
<tr>
<th>State</th>
<th>MSSA Rate</th>
<th>MRSA Rate</th>
<th>Total SAB Infections</th>
<th>Total SAB Infection Rate</th>
<th>Patient Days Under Surveillance (000)</th>
<th>Coverage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>0.57</td>
<td>0.16</td>
<td>551</td>
<td>0.73</td>
<td>7,500,768</td>
<td>98</td>
</tr>
<tr>
<td>Vic</td>
<td>0.64</td>
<td>0.13</td>
<td>414</td>
<td>0.77</td>
<td>5,343,491</td>
<td>99</td>
</tr>
<tr>
<td>Qld</td>
<td>0.68</td>
<td>0.08</td>
<td>303</td>
<td>0.76</td>
<td>3,977,004</td>
<td>100</td>
</tr>
<tr>
<td>WA</td>
<td>0.72</td>
<td>0.13</td>
<td>127</td>
<td>0.85</td>
<td>1,496,387</td>
<td>96</td>
</tr>
<tr>
<td>SA</td>
<td>0.47</td>
<td>0.14</td>
<td>91</td>
<td>0.61</td>
<td>1,499,546</td>
<td>99</td>
</tr>
<tr>
<td>Tas</td>
<td>0.75</td>
<td>0.09</td>
<td>38</td>
<td>0.83</td>
<td>455,523</td>
<td>100</td>
</tr>
<tr>
<td>ACT</td>
<td>0.71</td>
<td>0.11</td>
<td>31</td>
<td>0.82</td>
<td>380,311</td>
<td>98</td>
</tr>
<tr>
<td>NT</td>
<td>0.34</td>
<td>0.13</td>
<td>18</td>
<td>0.47</td>
<td>382,427</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>0.62</td>
<td>0.13</td>
<td>1573</td>
<td>0.75</td>
<td>21,035,457</td>
<td>99</td>
</tr>
</tbody>
</table>

(a) Cases per 10,000 patient days

Source: AIHW National Staphylococcus Aureus Bacteraemia Data Collection.

1. For more information on data quality, including collection methodologies and data limitations, see MYEOR on the AIHW website.
   Source: AIHW National Staphylococcus Aureus Bacteraemia Data Collection
SAB infections in private hospitals

Counts and rates for individual private hospitals participating in the NSABDC are provided on MyHospitals.

In 2018–19:

- There were 247 SAB infections occurring during 7.4 million days of patient care under surveillance. Patient days under SAB infection surveillance covered 99.6% of days of patient care in private hospitals that provided SAB infection data.
- Overall, there were 0.34 SAB infections per 10,000 patient days.
- 83% of SAB infections were methicillin-sensitive (MSSA), and therefore treatable with commonly used antimicrobials.
- Amongst the 62 private hospitals that reported 1 or more SAB infections in 2018–19, SAB infection rates ranged from 0.10 cases per 10,000 patient days to 2.02 cases per 10,000 patient days.
- 59 of the private hospitals reporting 1 or more SAB infections provided separate counts of MSSA and MRSA cases. Among these hospitals, rates of MSSA ranged from 0 to 2.02 and rates of MRSA ranged from 0 to 0.68 cases per 10,000 patient days.

28% of private hospitals provided data for 2018–19
183 private hospitals reported a total of 247 SAB infections

Private hospital participation


- 183 private hospitals (or 28%) participated in the NSABDC. This is similar to overall participation figures for the 2017–18 NSABDC (160 private hospitals, or 24%, provided data by the time of the previous AIHW report).
- 3 private hospitals also provided public hospital services.

<table>
<thead>
<tr>
<th>Private hospitals participating in 2018–19 NSABDC (a) (no.)</th>
<th>Private hospitals listed as such in 2016–17 (no.)</th>
<th>Participation rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>66</td>
<td>210</td>
</tr>
<tr>
<td>Vic</td>
<td>51</td>
<td>174</td>
</tr>
<tr>
<td>Qld</td>
<td>35</td>
<td>118</td>
</tr>
<tr>
<td>WA</td>
<td>16</td>
<td>64</td>
</tr>
<tr>
<td>SA</td>
<td>9</td>
<td>56</td>
</tr>
<tr>
<td>Tas, ACT &amp; NT (b)</td>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>657</td>
</tr>
</tbody>
</table>

a. Includes some public hospital services supplied by private providers.
b. Figures for Tasmania, the Australian Capital Territory and the Northern Territory were combined to protect the confidentiality of the small numbers of private hospitals in these jurisdictions.


Private hospital data quality

Currently, private hospitals participate in the NSABDC on a voluntary basis, and coverage of SAB infections and rates in the private sector is therefore incomplete. The casemix of patients treated in private hospitals may also be different to that in public hospitals. Data reported by participating private hospitals may therefore not be representative of the private sector as a whole.
SAB infections in private hospitals

Counts and rates for individual private hospitals participating in the NSABDC are provided on MyHospitals.

In 2018–19:
- There were 247 SAB infections occurring during 7.4 million days of patient care under surveillance.
- Patient days under SAB infection surveillance covered 99.6% of days of patient care in private hospitals that provided SAB infection data.
- Overall, there were 0.34 SAB infections per 10,000 patient days.
- 83% of SAB infections were methicillin-sensitive (MSSA), and therefore treatable with commonly used antimicrobials.
- Amongst the 62 private hospitals that reported 1 or more SAB infections in 2018–19, SAB infection rates ranged from 0.10 cases per 10,000 patient days to 2.02 cases per 10,000 patient days.
- 59 of the private hospitals reporting 1 or more SAB infections provided separate counts of MSSA and MRSA cases. Among these hospitals, rates of MSSA ranged from 0 to 2.02 and rates of MRSA ranged from 0 to 0.68 cases per 10,000 patient days.

Private hospital participation


183 private hospitals (or 28%) participated in the NSABDC. This is similar to overall participation figures for the 2017–18 NSABDC (160 private hospitals, or 24%, provided data by the time of the previous AIHW report).

Table 2. Participation in NSABDC reporting among private hospitals, states and territories, 2018–19

<table>
<thead>
<tr>
<th>State</th>
<th>Hospitals Participating in 2018–19</th>
<th>Hospitals Listed as Private in 2016–17</th>
<th>Participation Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>66</td>
<td>210</td>
<td>31</td>
</tr>
<tr>
<td>Vic</td>
<td>51</td>
<td>174</td>
<td>29</td>
</tr>
<tr>
<td>Qld</td>
<td>35</td>
<td>118</td>
<td>30</td>
</tr>
<tr>
<td>WA</td>
<td>16</td>
<td>64</td>
<td>25</td>
</tr>
<tr>
<td>SA</td>
<td>9</td>
<td>56</td>
<td>16</td>
</tr>
<tr>
<td>Tas, ACT &amp; NT</td>
<td>6</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>657</td>
<td>28</td>
</tr>
</tbody>
</table>

a. Includes some public hospital services supplied by private providers.
b. Figures for Tasmania, the Australian Capital Territory and the Northern Territory were combined to protect the confidentiality of the small numbers of private hospitals in these jurisdictions.

Source:

Private hospital data quality

Currently, private hospitals participate in the NSABDC on a voluntary basis, and coverage of SAB infections and rates in the private sector is therefore incomplete. The casemix of patients treated in private hospitals may also be different to that in public hospitals. Data reported by participating private hospitals may therefore not be representative of the private sector as a whole.

References


Last updated 5/02/2020 v6.0
© Australian Institute of Health and Welfare 2020
What is Australia doing to reduce SAB infections?

**Hand hygiene:** the washing and/or use of alcohol-based rubs by healthcare workers to clean their hands. It should be performed according to the World Health Organisation's (WHO) 'Five Moments for Hand Hygiene' (WHO 2018).

There are many initiatives that take place at the national, jurisdiction and local/hospital level to reduce the occurrence of SAB infections and other healthcare-associated infections (HAIs). These include the National Hand Hygiene Initiative (NHHI), which aims to educate and promote standardised hand hygiene practice in all Australian hospitals (ACSQHC 2019a).

The NHHI is managed by the Australia Commission on Safety and Quality in Health Care. State and territory health departments, along with a number of private health organisations, report hand hygiene compliance three times per year for the NHHI (ACSQHC 2019b).

**References**


Australian Commission on Safety and Quality in Health Care (ACSQHC) 2019b. National audit data. Sydney: ACSQHC.

Appendixes

A. Definition of healthcare-associated *Staphylococcus aureus* bloodstream (SAB) infections

A case (or patient episode) of SAB infection is defined as a positive blood culture for *Staphylococcus aureus*. For surveillance purposes, only the first isolate (a culture of microorganisms isolated for study) per patient is counted, unless at least 14 days have passed without a positive blood culture, after which an additional episode is recorded.

A SAB infection is considered to be healthcare-associated if: the first positive blood culture is collected more than 48 hours after hospital admission or fewer than 48 hours after discharge, or if the first positive blood culture is collected 48 hours or less after admission and the patient-episode of SAB infection meets at least one of the following key clinical criteria:

- SAB infection is a complication of the presence of an indwelling medical device (for example, intravascular line, haemodialysis vascular access, cerebrospinal fluid shunt, urinary catheter).
- SAB infection occurs within 30 days of a surgical procedure, where the SAB infection is related to the surgical site.
- SAB infection was diagnosed within 48 hours of a related invasive instrumentation or incision.
- SAB infection is associated with neutropenia contributed by cytotoxic therapy. Neutropenia is defined as at least two separate calendar days with values of absolute neutrophil count or total white blood cell count (WBC) < 500 cells/mm$^3$ (0.5 x $10^9$/L) on or within a seven-day period which includes the date the positive blood specimen was collected (day 1), the 3 calendar days before and the 3 calendar days after.

The definition of SAB infections was developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC). The ACSQHC changed the definition in 2016, with clarification of the neutropenia criterion. The change (which was first applied in the 2015–16 reporting period) is not considered to have resulted in counts of SAB infections for 2015–16 that are not comparable with counts for previous years. The definition used for SAB infections occurring prior to 1 July 2015 is available at National Healthcare Agreement: PI 22–Healthcare associated infections; *Staphylococcus aureus bacteraemia*, 2016.

B. NHA PI 22: Healthcare-associated infections

The National Healthcare Agreement performance indicator is calculated using:

- the number of SAB infection patient episodes associated with public hospitals for both hospitals focussing on acute care and hospitals focussing on non-acute or sub-acute care such as psychiatric, rehabilitation and palliative care
- the number of days of patient care for the public hospitals included in the SAB infection surveillance arrangements.

The performance indicator includes data on:

- counts of SAB infections, with data presented separately for MRSA and MSSA SAB infections
- the rate of SAB infections per 10,000 days of patient care for public hospitals included in the SAB infection surveillance arrangements.

Data are restricted to cases associated with care provided in public hospitals. Cases that are associated with care provided by private hospitals and with non-hospital care are excluded, even if the patients are subsequently treated for the SAB infection in a public hospital.

In 2016, the specification of this performance indicator was amended to exclude unqualified days (for example, when acute care was not required) for newborns from the count of days of patient care included in the SAB infection surveillance arrangements, which had previously been included.


C. Data quality statement

- The NSABDC is a data collection that includes counts of healthcare-associated SAB cases for public hospitals covered by SAB infection surveillance arrangements, and for private hospitals that choose to provide data. Data collected also includes counts of patient days under surveillance and total patient days.
- SAB infections are reported by all states and territories and participating private hospitals using the national agreed case definitions (see Appendix A).
- There may be imprecise exclusion of some SAB infections due to the inherent difficulties in determining the origins of SAB infections, such as those originating in non-hospital settings.
- For some states and territories there is less than 100% coverage of public hospitals as surveillance arrangements may not be in place in all wards or all hospitals.
The accuracy and comparability of SAB infection rates among jurisdictions and over time are also limited because the count of days of patient care reflects the amount of admitted patient activity.

The data for 2011–12 to 2018–19 are comparable. The count of days of patient care reflects the amount of admitted patient activity, but does not reflect the amount of non-admitted patient activity as this cannot be captured due to variations in admission practice.

The data for 2010–11 are comparable with subsequent year data except for public hospital data for Queensland.

The New South Wales (NSW) Ministry of Health provided the number of occupied bed days for NSW public hospitals rather than the number of patient days under surveillance. The comparability of NSW data and data from other jurisdictions is therefore limited, but only by the small extent that counts of occupied bed days would be expected to differ from counts of days of patient care.

The 2018–19 patient day and coverage data may be preliminary for some hospitals or jurisdictions.

Private hospitals supply data voluntarily to the NSABDC, and not all private hospitals report data. The casemix of patients treated in private hospitals may also be different to that in public hospitals. Coverage of the private sector is therefore incomplete and reported data may not be representative of the sector as a whole.

Due to the changes in 2016 to the denominator of the performance indicator specification, data published in 2017 and subsequent years for the reporting years 2010–11 to 2014–15 are not comparable with data previously published in:

- the Council of Australian Governments (COAG) Reform Council publications
- the AIHW series ‘Staphylococcus aureus bacteraemia in Australian public hospitals: Australian hospital statistics’

For the full data quality statement see Data quality statement for the 2018–19 NSABDC