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Australian Institute of  
Health and Welfare

# Australian hospital statistics 2012–13



*Staphylococcus aureus* bacteraemia  
in Australian public hospitals



**Australian Government**

**Australian Institute of  
Health and Welfare**

*Authoritative information and statistics  
to promote better health and wellbeing*

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# **Australian hospital statistics 2012–13**

## ***Staphylococcus aureus* bacteraemia in Australian public hospitals**

Australian Institute of Health and Welfare  
Canberra

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#### **Australian Institute of Health and Welfare**

Board Chair

Dr Andrew Refshauge

Director

David Kalisch

Any enquiries about or comments on this publication should be directed to:

Media and Strategic Engagement Unit

Australian Institute of Health and Welfare

GPO Box 570

Canberra ACT 2601

Tel: (02) 6244 1032

Email: [info@aihw.gov.au](mailto:info@aihw.gov.au)

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The report was prepared by Liz Berryman, Katrina Burgess, Jenny Hargreaves, Nick Thompson and Jenny Webb of the Australian Institute of Health and Welfare.

# Abbreviations

|         |  |
|---------|--|
| ACT     | Australian Capital Territory   |
| ACSQHC  | Australian Commission on Safety and Quality in Health Care           |
| AIHW    | Australian Institute of Health and Welfare                           |
| COAG    | Council of Australian Governments                                    |
| CRC     | COAG Reform Council  |
| HAI     | healthcare-associated infection                                      |
| MRSA    | methicillin-resistant <i>Staphylococcus aureus</i>                   |
| MSSA    | methicillin-sensitive <i>Staphylococcus aureus</i>                   |
| NHA     | National Healthcare Agreement  |
| NHMRC   | National Health and Medical Research Council                         |
| NHPA    | National Health Performance Authority                                |
| NSABDC  | National <i>Staphylococcus aureus</i> Bacteraemia Data Collection    |
| NSQHS   | National Safety and Quality Health Service Standards                 |
| NSW     | New South Wales  |
| NT      | Northern Territory   |
| PI      | performance indicator  |
| Qld     | Queensland   |
| SAB     | <i>Staphylococcus aureus</i> bacteraemia                             |
| SA      | South Australia  |
| Tas     | Tasmania   |
| Vic     | Victoria   |
| VICNISS | Victorian Infection Control Nosocomial Infection Surveillance System |
| WA      | Western Australia  |

# Summary

This report presents national information on cases of *Staphylococcus aureus* bacteraemia (SAB) associated with care provided by public hospitals for the period 1 July 2012 to 30 June 2013. This report builds on robust national and jurisdictional arrangements to monitor and reduce SAB.

## What is SAB?

- SAB is a serious bloodstream infection that may be associated with hospital care. As such, it is known as a type of healthcare-associated infection.
- Patients who develop bloodstream infections such as SAB are more likely to suffer complications that result in a longer stay in hospital and an increased cost of hospitalisation. Serious infections can also result in death.
- In December 2008, Australian health ministers endorsed the reporting of SAB by all hospitals to form a national data collection.
- In addition, in 2008, rates of SAB, including cases caused by methicillin-resistant *Staphylococcus aureus*, were announced as one of the performance indicators to be reported by jurisdictions under the National Healthcare Agreement.

## SAB rates in 2012–13

- In 2012–13, all states and territories had rates of SAB below the national benchmark of 2.0 cases per 10,000 patient days. The national rate was 0.9 cases per 10,000 patient days.
- The rates ranged from 0.7 per 10,000 patient days in the Northern Territory to 1.3 per 10,000 in the Australian Capital Territory.
- There were 1,724 cases of SAB reported in Australian public hospitals, of which 77% were methicillin sensitive, and therefore treatable with commonly used antibiotics.
- The reported SAB cases occurred during 18.8 million days of patient care under SAB surveillance during 2012–13.
- Between 2010–11 and 2012–13, the national rates of SAB decreased from 1.1 cases per 10,000 patient days under surveillance to 0.9 cases per 10,000. Rates decreased in New South Wales and the Northern Territory, rose in the Australian Capital Territory, and fluctuated or remained about the same in the other states.

# 1 Introduction

This report presents the third year of nationally consistent information on cases of *Staphylococcus aureus* bacteraemia (SAB) associated with public hospitals in Australia. It is one of a series of reports the Australian Institute of Health and Welfare (AIHW) publishes on hospitals each year. As for previous years, this series has included reports on elective surgery waiting times (AIHW 2013a) and emergency department care (AIHW 2013b) for 2012–13, released in October 2013. A comprehensive report and a summary report on Australian hospitals for 2012–13 will be published in April 2014.

The SAB data in this report match those provided by the AIHW to the Council of Australian Governments (COAG) Reform Council report on the National Healthcare Agreement (NHA), and the Steering Committee for the Review of Government Service Provision *Report on government services*, both due for publication in the first half of 2014.

The data also align with data provided by the AIHW to the National Health Performance Authority for its reporting on the performance of individual public hospitals, through the *MyHospitals* website.

## Background

### Healthcare-associated infections

Healthcare-associated infections (HAIs) are acquired by patients during interactions with the healthcare system and are caused by microorganisms such as bacteria and viruses (NHMRC 2010). They include infections acquired during hospitalisation and during care at other healthcare facilities. HAIs can be bloodstream infections (bacteraemia) or localised infections, such as those associated with surgical sites.

It is estimated that there are about 200,000 HAIs each year in Australia (Cruickshank & Ferguson 2008), making them the most common complication affecting patients in hospital.

HAIs cause patients pain and suffering, prolonging hospital stays and increasing costs to the healthcare system (NHMRC 2010). Some patients die as a result of HAIs, and many of these deaths are preventable.

### ***Staphylococcus aureus* and SAB**

*Staphylococcus aureus* is an important cause of healthcare-associated bacteraemia, causing significant illness and death. When associated with healthcare procedures, these infections are considered to be potentially preventable.

When *Staphylococcus aureus* causes bacteraemia, this is referred to as *Staphylococcus aureus* bacteraemia, or SAB.

The bacteria causing SAB 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 that they are carrying them.

In hospitals, the transmission is 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 the patient's bloodstream if they have open wounds or when intravascular devices, such as central or peripheral venous catheters, are inserted.

Patients who have a greater risk of infection than the general public are those who have:

- open wounds
- invasive devices such as catheters
- weakened immune systems (cancer or transplant recipients, very young or older patients)
- chronic disease such as diabetes or severe underlying illness
- prolonged or recurrent exposure to antibiotics.

### **Antibiotic resistance**

Antibiotic resistance can be defined as bacteria's ability to survive and even replicate during a course of treatment with a specific antibiotic.

Some *Staphylococcus aureus* bacteria are resistant to methicillin and other antibiotics used to treat bloodstream infections. In that case, the infections are referred to as being caused by methicillin-resistant *Staphylococcus aureus* (MRSA).

In Australia, some *Staphylococcus aureus* strains in hospital are methicillin resistant, and resistant to several other antimicrobial drugs (Nimmo et al. 2003). These emerging resistant strains are of particular concern as they are particularly virulent (Cosgrove et al. 2003).

If the *Staphylococcus aureus* bacteria are able to be treated with common antibiotics, then these infections are referred to as being caused by methicillin-sensitive *Staphylococcus aureus* (MSSA).

## **National initiatives to monitor and reduce SAB**

Consistent with the public health importance of HAIs, a range of national and local initiatives have been established recently throughout Australia to reduce the occurrence of SAB, with leadership provided by the Australian Commission on Safety and Quality in Health Care (ACSQHC) (see Box 1).

These initiatives have been accompanied by the establishment of surveillance arrangements in public hospitals to monitor HAIs, and the development of an agreed national definition for cases of SAB. These developments mean that nationally consistent data on public hospital-associated SAB cases are now available.

### **Box 1: Australian Commission on Safety and Quality in Health Care (ACSQHC) initiatives**

Reducing healthcare-associated infections (HAIs) is a major program area for the ACSQHC (ACSQHC 2013). The ACSQHC's HAI program includes a number of national initiatives:

- The National Antimicrobial Stewardship Initiative aims to improve the safe and appropriate use of antimicrobials, reduce patient harm and decrease the incidence of antimicrobial resistance in Australian hospitals.
- The National Surveillance Initiative explores options for a national surveillance system to monitor HAIs and provide timely feedback to jurisdictions and clinicians.
- The National Hand Hygiene Initiative monitors and promotes improvements in hand hygiene compliance rates, to reduce HAI and to measure hospital performance in hand hygiene. This initiative is managed by Hand Hygiene Australia.
- The Building Clinician Capacity Initiative aims to address knowledge-based gaps by providing educational packages and toolkits for clinical staff working in infection control and prevention roles.
- The National Safety and Quality Health Service (NSQHS) Standard 3 aims to minimise the risk to patients in acquiring preventable infections and to enable the effective management of infections when they occur by using evidence-based strategies.
- The National Infection Control Guidelines, in development with the National Health and Medical Research Council (NHMRC), to establish a nationally accepted approach to infection prevention and control.

## **The SAB performance indicator**

In 2008, Australian health ministers endorsed the reporting of data on public hospital-associated SAB cases by states and territories as part of performance reporting under the NHA. These data are reported each year by the COAG Reform Council (CRC).

The NHA sets out objectives for the Australian, state and territory governments for health care services and includes the outcome area – *Australians receive appropriate high quality and affordable hospital and hospital-related care*. The NHA includes public hospital-associated SAB as a performance benchmark for safety and quality:

The rate of *Staphylococcus aureus* (including MRSA) bacteraemia is no more than 2.0 per 10,000 occupied bed days for acute care public hospitals by 2011–12 in each state and territory.

A review of the NHA was commissioned in 2011 to evaluate performance reporting issues, including revision of the National Health Performance Framework and reducing the number of performance indicators. The review recommended that the SAB performance indicator be retained (COAG 2012).

In summary, the SAB performance indicator includes data on:

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

Data are restricted to cases associated with care provided in public hospitals. Cases associated with private hospitals and with non-hospital care are excluded.

The current specification for the performance indicator is provided in Appendix A.

## Data source

State and territory government health authorities source data on public hospital-associated SAB cases from HAI surveillance arrangements in their public hospitals. States and territories also provide data on patient days for the rate calculations. The patient day data are sourced from data on admitted patient care in public hospitals.

Data were provided to the AIHW for national collation. A data quality statement for the 2012–13 collection is included in Appendix B.

## State and territory reporting

The following states and territories publish data relating to healthcare-associated SAB on their websites:

- New South Wales: Healthcare Associated Infection  
<<http://www.health.nsw.gov.au/professionals/hai>>.
- Victoria: Victorian Infection Control Nosocomial Infection Surveillance System (VICNISS) hospital-acquired infection surveillance annual report 2009–10  
<<http://www.vicniss.org.au/AnnualReport.aspx>>.
- Queensland: Hospital performance (includes hospital-acquired infections)  
<<http://www.health.qld.gov.au/hospitalperformance/>>.
- Western Australia: Reports Healthcare Associated Infection Unit  
<[http://www.public.health.wa.gov.au/3/455/3/reports\\_\\_healthcare\\_associated\\_infection\\_unit.pm](http://www.public.health.wa.gov.au/3/455/3/reports__healthcare_associated_infection_unit.pm)>.
- Tasmania: HAI surveillance reports  
<[http://www.dhhs.tas.gov.au/peh/tasmanian\\_infection\\_prevention\\_and\\_control\\_unit/publications\\_and\\_guidelines](http://www.dhhs.tas.gov.au/peh/tasmanian_infection_prevention_and_control_unit/publications_and_guidelines)>.
- South Australia: South Australian Infection Control Service  
<<http://www.health.sa.gov.au/infectioncontrol/Default.aspx?tabid=147>>.
- Australian Capital Territory: ACT Public Health Services Quarterly Performance Report (includes healthcare-associated infection rates)  
<<http://health.act.gov.au/publications/reports/act-public-health-services-quarterly-performance-report/act-public-health-services-quarterly-performance-report>>.

## 2 *Staphylococcus aureus* bacteraemia cases

### SAB cases in 2012–13

There were 1,724 cases of SAB reported for Australian public hospitals in 2012–13. In all states and territories, MSSA cases (77%) were more common than MRSA cases. The MSSA cases would have been treatable with commonly used antibiotics (Table 2.1).

The reported SAB cases occurred during 18.8 million days of patient care under SAB surveillance during 2012–13. The number of days of patient care under surveillance represented 97% of all public hospital patient days.

At the national level and for each state and territory, the rate of SAB (including MRSA) was lower than the national benchmark of 2.0 per 10,000 days of patient care. The rates of SAB per 10,000 days of patient care under SAB surveillance ranged from 0.7 in the Northern Territory to 1.3 in the Australian Capital Territory. The national rate was 0.9 cases per 10,000 days of patient care.

### How have SAB rates changed over time?

Due to the changes in the performance indicator specification, the data presented in this publication cannot be directly compared with the rates published in *Australian hospital statistics 2010–11: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011). There were also a number of changes to the numbers of cases previously reported for 2011–12 as a result of some states and territories undertaking audits of SAB data. Revised data for 2011–12 are in Table 2.2.

Between 2010–11 and 2012–13, the number of SAB cases reported for Australian public hospitals decreased from 1,875 to 1,724 cases, a decrease of 8.1% overall, and despite an increase in the coverage of days of patient care under SAB surveillance from 90% to 97% (tables 2.1 to 2.3). Over this period, MSSA cases consistently accounted for about three-quarters of SAB cases.

Between 2010–11 and 2012–13, the rates of SAB per 10,000 days of patient care under SAB surveillance decreased from 1.1 cases to 0.9 cases. Over this period, the rates of SAB per 10,000 days of patient care decreased in New South Wales and the Northern Territory, rose in the Australian Capital Territory, and fluctuated or remained about the same in the other states (Figure 2.1).

**Rate per 10,000 days of patient care**



- (a) The SAB patient episodes were associated with both admitted patient care and with non-admitted patient care (including emergency departments and outpatient clinics). The comparability of the SAB rates among jurisdictions and over time is limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.
- (b) For Queensland, the data for 2010-11 do not include patient days for patients aged 14 and under.
- (c) For 2010-11 and 2011-12, the Western Australian data exclude unqualified days for newborns, specialised psychiatric care units and psychiatric hospitals.

Source: Tables 2.1 to 2.3.

**Figure 2.1: *Staphylococcus aureus* (including MRSA) bacteraemia rates in public hospitals, states and territories, 2010-11 to 2012-13<sup>(a)</sup>**

**Table 2.1: Cases of *Staphylococcus aureus* (including MRSA) bacteraemia in public hospitals, MRSA and MSSA, states and territories, 2012–13<sup>(a)</sup>**

|   | NSW   | Vic        | Qld        | WA         | SA         | Tas        | ACT        | NT         | Total        |
|---|---|------------|------------|------------|------------|------------|------------|------------|--------------|
|   | <b>Rate per 10,000 days of patient care</b> |            |            |            |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i>        | 0.3   | 0.2        | 0.1        | 0.1        | 0.2        | 0.1        | 0.2        | 0.2        | 0.2          |
| Methicillin-sensitive <i>Staphylococcus aureus</i>        | 0.7   | 0.7        | 0.8        | 0.6        | 0.6        | 0.9        | 1.1        | 0.5        | 0.7          |
| <b>Total<sup>(b)</sup></b>                                | <b>1.0</b>                                  | <b>0.9</b> | <b>1.0</b> | <b>0.8</b> | <b>0.8</b> | <b>1.0</b> | <b>1.3</b> | <b>0.7</b> | <b>0.9</b>   |
|   | <b>Number of cases</b>                      |            |            |            |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i>        | 206   | 81         | 47         | 22         | 23         | 2          | 7          | 7          | 395          |
| Methicillin-sensitive <i>Staphylococcus aureus</i>        | 447   | 344        | 260        | 106        | 91         | 29         | 37         | 15         | 1,329        |
| <b>Total</b>  | <b>653</b>                                  | <b>425</b> | <b>307</b> | <b>128</b> | <b>114</b> | <b>31</b>  | <b>44</b>  | <b>22</b>  | <b>1,724</b> |
| Patient days under SAB surveillance ('000) <sup>(c)</sup> | 6,829                                       | 4,717      | 3,171      | 1,659      | 1,502      | 318        | 331        | 312        | 18,840       |
| Coverage (per cent) <sup>(c)(d)</sup>                     | 98  | 99         | 96         | 93         | 93         | 86         | 98         | 100        | 97           |

(a) The SAB patient episodes were associated with both admitted patient care and with non-admitted patient care (including emergency departments and outpatient clinics). The comparability of the SAB rates among jurisdictions and over time is limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

(b) Total may not equal sum of components due to rounding.

(c) Coverage and patient day estimates may be preliminary.

(d) Coverage is the number of patient days for hospitals included in the SAB surveillance arrangements as a proportion of total patient days for all public hospitals.

Source: AIHW National *Staphylococcus aureus* Bacteraemia Data Collection.

**Table 2.2: Cases of *Staphylococcus aureus* (including MRSA) bacteraemia in public hospitals, MRSA and MSSA, states and territories, 2011–12<sup>(a)(b)</sup>**

|   | NSW   | Vic        | Qld        | WA <sup>(c)</sup> | SA         | Tas        | ACT        | NT         | Total        |
|---|---|------------|------------|-------------------|------------|------------|------------|------------|--------------|
|   | <b>Rate per 10,000 days of patient care</b> |            |            |                   |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i>        | 0.3   | 0.2        | 0.2        | 0.2               | 0.3        | 0.1        | 0.2        | 0.5        | 0.2          |
| Methicillin-sensitive <i>Staphylococcus aureus</i>        | 0.7   | 0.8        | 0.7        | 0.6               | 0.6        | 0.7        | 0.9        | 0.8        | 0.7          |
| <b>Total<sup>(d)</sup></b>                                | <b>1.0</b>                                  | <b>0.9</b> | <b>0.9</b> | <b>0.7</b>        | <b>0.9</b> | <b>0.8</b> | <b>1.1</b> | <b>1.3</b> | <b>0.9</b>   |
|   | <b>Number of cases</b>                      |            |            |                   |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i>        | 201   | 82         | 51         | 23                | 42         | 4          | 6          | 15         | 424          |
| Methicillin-sensitive <i>Staphylococcus aureus</i>        | 473   | 379        | 220        | 81                | 85         | 23         | 31         | 24         | 1,316        |
| <b>Total</b>  | <b>674</b>                                  | <b>461</b> | <b>271</b> | <b>104</b>        | <b>127</b> | <b>27</b>  | <b>37</b>  | <b>39</b>  | <b>1,740</b> |
| Patient days under SAB surveillance ('000) <sup>(e)</sup> | 6,735                                       | 4,855      | 3,178      | 1,392             | 1,363      | 318        | 328        | 304        | 18,474       |
| Coverage (per cent) <sup>(e)(f)</sup>                     | 97  | 99         | 98         | 83                | 80         | 90         | 98         | 100        | 95           |

(a) The SAB patient episodes were associated with both admitted patient care and with non-admitted patient care (including emergency departments and outpatient clinics). The comparability of the SAB rates among jurisdictions and over time is limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

(b) Note that these data have been updated since the publication of Australian *hospital statistics 2011–12: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2013c).

(c) For Western Australia, data exclude unqualified days for newborns, specialised psychiatric care units and psychiatric hospitals.

(d) Total may not equal sum of components due to rounding.

(e) Coverage and patient day estimates may be preliminary.

(f) Coverage is the number of patient days for hospitals included in the SAB surveillance arrangements as a proportion of total patient days for all public hospitals.

Source: AIHW National *Staphylococcus aureus* Bacteraemia Data Collection.

**Table 2.3: Cases of *Staphylococcus aureus* (including MRSA) bacteraemia in public hospitals, MRSA and MSSA, states and territories, 2010–11<sup>(a)(b)</sup>**

|  | NSW   | Vic        | Qld <sup>(c)</sup> | WA <sup>(d)</sup> | SA         | Tas        | ACT        | NT         | Total        |
|--|---|------------|--------------------|-------------------|------------|------------|------------|------------|--------------|
|  | <b>Rate per 10,000 days of patient care</b> |            |                    |                   |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i> | 0.4   | 0.2        | 0.3                | 0.2               | 0.2        | 0.2        | 0.2        | 0.5        | 0.3          |
| Methicillin-sensitive <i>Staphylococcus aureus</i> | 0.9   | 0.7        | 0.9                | 0.8               | 0.7        | 1.1        | 0.7        | 0.9        | 0.8          |
| <b>Total<sup>(e)</sup></b>                         | <b>1.3</b>                                  | <b>0.9</b> | <b>1.2</b>         | <b>1.0</b>        | <b>0.9</b> | <b>1.2</b> | <b>0.9</b> | <b>1.5</b> | <b>1.1</b>   |
|  | <b>Number of cases</b>                      |            |                    |                   |            |            |            |            |              |
| Methicillin-resistant <i>Staphylococcus aureus</i> | 233   | 118        | 72                 | 23                | 31         | 6          | 6          | 16         | 505          |
| Methicillin-sensitive <i>Staphylococcus aureus</i> | 536   | 322        | 218                | 117               | 91         | 36         | 23         | 27         | 1,370        |
| <b>Total</b>                                       | <b>769</b>                                  | <b>440</b> | <b>290</b>         | <b>140</b>        | <b>122</b> | <b>42</b>  | <b>29</b>  | <b>43</b>  | <b>1,875</b> |
| Patient days under SAB surveillance ('000)         | 5,961                                       | 4,791      | 2,453              | 1,377             | 1,331      | 342        | 310        | 296        | 16,862       |
| Coverage (per cent) <sup>(f)</sup>                 | 94  | 99         | 77                 | 84                | 81         | 91         | 98         | 100        | 90           |

(a) The SAB cases were associated with both admitted patient care and with non-admitted patient care (including emergency departments and outpatient clinics). The comparability of the SAB rates among jurisdictions is limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

(b) Note that these data have been updated since the publication of *Australian hospital statistics 2010–11: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011).

(c) For Queensland, data only includes patients aged 14 and over.

(d) For Western Australia, data exclude unqualified days for newborns, specialised psychiatric care units and psychiatric hospitals

(e) Total may not equal sum of components due to rounding.

(f) Coverage is the number of patient days for hospitals included in the SAB surveillance arrangements as a proportion of total patient days for all public hospitals.

Source: AIHW National *Staphylococcus aureus* Bacteraemia Data Collection.

## Limitations of the data

While the data are based on the nationally agreed definition of a SAB case, there are limitations that affect the comparability of the information.

### Variation in definitions

The indicator uses an agreed definition of a case of SAB which is used by all states and territories. However, there may be imprecise exclusion of cases originating in private hospitals and in non-hospital settings due to the inherent difficulties in determining the origins of SAB cases.

States and territories, through their HAI surveillance arrangements, collected the data on SAB cases. The arrangements for the collection of data by hospitals and the reporting to state and territory health authorities may vary among the jurisdictions.

Although the previous indicator name stipulated 'acute care' public hospitals, all public hospitals are included. The provision of 'acute' services varies among jurisdictions, so it is not possible to exclude 'non-acute' hospitals from the indicator in a way that would be uniform among all states and territories. Therefore, all hospitals have been included in the scope of the indicator so that the same approach is taken for each state and territory.

### Variation in coverage

The coverage is the number of days of patient care for hospitals in the SAB surveillance arrangements as a proportion of total patient days for all public hospitals.

For most states and territories, there is less than 100% coverage of public hospitals (tables 2.1 to 2.3) and this may affect the reported rates. It is possible that there will be a lower risk of SAB in hospitals not included in the SAB surveillance arrangements, especially where they undertake fewer invasive procedures than hospitals which are included. Rates should be interpreted in conjunction with information about SAB surveillance coverage.

To enable better comparison, only patient days for those hospitals/patients that were covered by the SAB surveillance arrangements are included (in the denominator). For example, if a hospital was not included in the SAB surveillance arrangements for part of the year, then the patient days for that part of the year were not included. If part of the hospital was not included in the SAB surveillance arrangements (for example, children's wards, psychiatric wards), then patient days for that part of the hospital were not included. Patient days for 'non-acute' hospitals (such as rehabilitation and psychiatric hospitals) are included if the hospital was included in the SAB surveillance arrangements, but not otherwise.

Data for Queensland for 2010–11 included patient days only for patients aged 14 and older.

For 2010–11 and 2011–12, the Western Australian data exclude unqualified days for newborns, specialised psychiatric care units and psychiatric hospitals.

### Limitations of the denominator

The SAB cases were associated with both admitted patient care and non-admitted patient care (including emergency departments and outpatient clinics). No denominator is available to describe the total admitted and non-admitted patient activity of public hospitals.

However, the number of patient days for admitted patient activity is used as the denominator to take into account the large differences between the sizes of the public hospital sectors among the jurisdictions. The comparability of the SAB rates among jurisdictions and over time may be limited because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

The amount of hospital activity that patient days reflect varies among jurisdictions and over time because of variation in admission practices and casemix differences.

Patient days are used as the denominator, rather than occupied bed days, because occupied bed day data were not available for all states and territories. Patient days are the total number of days of stay for all patients who are separated from hospital during a specified period – that is, there may have been days of stay that occurred in a previous period(s) but are counted in the period in which the patient separated from hospital. Occupied bed days are the number of days of stay for all patients that occurred during a specified period. There may be some difference between patient days and occupied bed days. However, at the state and territory level, for annual figures, there is unlikely to be a marked difference between counts of patient days and occupied bed days.

The patient day data used for the denominator may be preliminary for some hospitals or jurisdictions for 2012–13.

## **Casemix differences**

The data presented have not been adjusted for any differences in casemix among the states and territories. Casemix is a term that refers to the range and types of patients (the mix of cases) treated by a hospital or other health service. For SAB, relevant aspects of casemix could include patient comorbidities and procedures.

## **Comparability of rates**

The comparability of the SAB rates among jurisdictions may be limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

# Appendix A: National Healthcare Agreement: PI 22–Healthcare associated infections, 2014

## Identifying and definitional attributes

|                             |  |
|-----------------------------|--|
| <i>Metadata item type:</i>  | Indicator  |
| <i>Indicator type:</i>      | Progress measure   |
| <i>Short name:</i>          | PI 22 – Healthcare-associated infections, 2014   |
| <i>METeOR identifier:</i>   | 517636   |
| <i>Registration status:</i> | Health, Standard 25/11/2013  |
| <i>Description:</i>         | <i>Staphylococcus aureus</i> bacteraemia (SAB) associated with acute care public hospitals (excluding cases associated with private hospitals and non-hospital care) |
| <i>Indicator set:</i>       | National Healthcare Agreement (2014) Health, Standard  |
| <i>Outcome area:</i>        | Hospital and Related Care, Health, Standard 07/07/2010   |
| <i>Quality statement:</i>   | National Healthcare Agreement: PI 22 – Healthcare-associated infections, 2014 QS Health, Standard  |

## Collection and usage attributes

|                                 |   |
|---------------------------------|---|
| <i>Computation description:</i> | <p>Acute care public hospitals are defined as all public hospitals including those hospitals defined as public psychiatric hospitals in the Public Hospital Establishments National Minimum Data Set (NMDS). All types of public hospitals are included, both those focusing on acute care, and those focusing on non-acute or subacute care, including psychiatric, rehabilitation and palliative care.</p> <p>Unqualified newborns are included in the indicator. Hospital boarders and posthumous organ procurement are excluded from the indicator.</p> <p>A patient episode of SAB is defined as a positive blood culture for <i>Staphylococcus aureus</i>. For surveillance purposes, only the first isolate per patient is counted, unless at least 14 days has passed without a positive blood culture, after which an additional episode is recorded.</p> <p>A <i>Staphylococcus aureus</i> bacteraemia will be considered to be healthcare-associated if: the first positive blood culture is</p> |
|---------------------------------|---|

collected more than 48 hours after hospital admission or less than 48 hours after discharge, OR, if the first positive blood culture is collected 48 hours or less after admission and one or more of the following key clinical criteria was met for the patient episode of SAB:

1. SAB is a complication of the presence of an indwelling medical device (e.g. intravascular line, haemodialysis vascular access, cerebrospinal fluid (CSF) shunt, urinary catheter)
2. SAB occurs within 30 days of a surgical procedure where the SAB is related to the surgical site
3. An invasive instrumentation or incision related to the SAB was performed within 48 hours
4. SAB is associated with neutropenia ( $<1 \times 10^9$ ) contributed to by cytotoxic therapy.

**Exclusions:**

Cases where a known previous positive test has been obtained within the last 14 days are excluded. For example: If a patient has SAB in which 4 sets of blood cultures are positive over the initial 3 days of the patient's admission only one episode of SAB is recorded. If the same patient had a further set of positive blood cultures on day 6 of the same admission, these would not be counted again, but would be considered part of the initial patient episode.

Note: If the same patient had a further positive blood culture 20 days after admission (i.e. greater than 14 days after their last positive on day 5), then this would be considered a second patient episode of SAB.

Denominator: includes unqualified newborns, excludes posthumous organ procurement and hospital boarders.

See the definition of patient days in the Glossary. Also included in the denominator are patient days for unqualified newborns, which are not covered in the definition. Patient days for unqualified newborns must be reported in addition to patient days as defined in the definition.

Analysis by state and territory is based on location of the hospital.

Presented as:

- a number, and
- per 10,000 patient days.

Coverage: Denominator  $\div$  Number of patient days for all public hospitals in the state or territory.

Any variation from the specifications by jurisdictions will be

footnoted and described in the data quality statement.

*Computation:*

$10,000 \times (\text{Numerator} \div \text{Denominator})$ .

*Numerator:*

Number of SAB patient episodes (as defined above) associated with acute care public hospitals.

*Denominator:*

Number of patient days for public acute care hospitals under surveillance (i.e. only for hospitals included in the surveillance arrangements).

Include unqualified newborns, exclude posthumous organ procurement and hospital boarders.

*Disaggregation:*

2012–13 – State and territory, by:

- Methicillin-resistant *Staphylococcus aureus* (MRSA)/Methicillin-sensitive *Staphylococcus aureus* (MSSA).

Some disaggregation may result in numbers too small for publication.

*Comments:*

Most recent data available for 2014 Council of Australian Governments (COAG) Reform Council (CRC) report: 2012–13.

The number of SAB patient episodes associated with acute public hospitals under surveillance includes SAB patient episodes associated with all public hospitals, and the number of patient days for public acute care hospitals under surveillance includes the number of patient days for all public hospitals under surveillance.

For most states and territories, there is less than 100 per cent coverage of hospitals. This may impact on the reported rate. For those jurisdictions with incomplete coverage of acute care public hospitals (in the numerator), only patient days for those hospitals that contribute data are included (in the denominator). Specifically, if a hospital was not included in the SAB surveillance arrangements for part of the year, then the patient days for that part of the year are excluded. If part of the hospital was not included in the SAB surveillance arrangements (e.g. children's wards, psychiatric wards), then patient days for that part of the hospital are excluded. Patient days for 'non-acute' hospitals (such as rehabilitation and psychiatric hospitals) are included if the hospital was included in the SAB surveillance arrangements, but not otherwise. However, all these patient days are included in the coverage rate denominator measure of total number of patient days for all public hospitals in a state or territory.

Some states operate a 'signal surveillance' arrangement for smaller hospitals whereby the hospital notifies the appropriate authority if a SAB case is identified, but the hospital is not

considered to have formal SAB surveillance as per larger hospitals. Where this arrangement is in place, these hospitals should be included as part of the indicator. That is, SAB patient episodes and patient days should be included as 'under surveillance'.

Only episodes associated with acute public hospital care in each jurisdiction should be counted. If a case is associated with care provided in another jurisdiction (cross-border flows), then it is reported (where known) by the jurisdiction where the care associated with the SAB occurred.

There may be patient episodes of SAB identified by a hospital which did not originate in the identifying hospital (as determined by the definition of a patient episode of SAB), but in another public hospital. If the originating hospital is under SAB surveillance, then the patient episode of SAB should be attributed to the originating hospital and should be included as part of the indicator. If the originating hospital is not under SAB surveillance, then the patient episode is unable to be included in the indicator.

Patient episodes associated with care provided by private hospitals and non-hospital health care are excluded.

Patient days for unqualified newborns are included. Patient days for hospital boarders and posthumous organ procurement are excluded.

Almost all patient episodes of SAB will be diagnosed when the patient is an admitted patient. However, the intention is that cases are reported whether they were associated with admitted patient care or non-admitted patient care in public acute care hospitals.

Where there is significant variation, for example non-coverage of cases diagnosed less than 48 hours after admission, in the data collection arrangements it will affect the calculation of values across states and territories.

Variation in admission practices across jurisdictions will influence the denominator for this indicator, impacting on comparability of rates.

Jurisdictional manuals should be referred to for full details of definitions used in infection-control surveillance.

Note that patient episodes of SAB are just one type of healthcare associated infection. Hence, this performance indicator is not a complete measure of healthcare associated infections for the outcome area of *Hospital and hospital related care*.

## Representational attributes

|                              |         |
|------------------------------|---------|
| <i>Representation class:</i> | Rate    |
| <i>Data type:</i>            | Real    |
| <i>Unit of measure:</i>      | Episode |
| <i>Format:</i>               | NN[N]   |

## Data source attributes

|                      |   |
|----------------------|---|
| <i>Data sources:</i> | <b>Data source</b><br>State/territory infection surveillance data |
|                      | <b>Frequency</b><br>Annual  |
|                      | <b>Data custodian</b><br>State/territory health authorities       |
|                      | <b>Data source</b><br>State/territory admitted patient data       |
|                      | <b>Frequency</b><br>Annual  |
|                      | <b>Data custodian</b><br>State/territory health authorities       |

## Accountability attributes

|  |  |
|--|--|
| <i>Reporting requirements:</i>                         | National Healthcare Agreement  |
| <i>Organisation responsible for providing data:</i>    | Australian Institute of Health and Welfare   |
| <i>Benchmark:</i>                                      | National Healthcare Agreement: PB g – Better health: the rate of <i>Staphylococcus aureus</i> (including MRSA) bacteraemia is no more than 2.0 per 10,000 occupied bed days for acute care public hospitals by 2011–12 in each state and territory, 2014 |
| <i>Further data development / collection required:</i> | Specification: substantial work required; the measure requires significant work to be undertaken.  |

# Appendix B: Data quality statement for the National *Staphylococcus aureus* Bacteraemia Data Collection

This data quality statement provides information relevant to interpretation of statistics derived from the National *Staphylococcus aureus* Bacteraemia Data Collection (NSABDC).

## Summary of key issues

- The NSABDC is a data set that includes counts of cases of *Staphylococcus aureus* bacteraemia (SAB) for each public hospital covered by SAB surveillance arrangements, and for private hospitals that choose to provide data.
- Cases of SAB have been reported by all states and territories using the nationally agreed case definition.
- There may be imprecise exclusion of some SAB cases due to the inherent difficulties in determining the origins of SAB episodes, such as those originating in non-hospital health care settings.
- For some states and territories, there is less than 100% coverage of public hospitals.
- The accuracy and comparability of the rates of SAB among jurisdictions and over time is also limited because the count of patient days (denominator) reflects the amount of admitted patient activity, but does not reflect the amount of non-admitted patient activity.
- The data for 2012–13 are comparable with those from 2011–12 except for Western Australia.
- The data for 2011–12 are comparable with those from 2010–11 except for Queensland.
- Western Australian data for 2010–11 and 2011–12 are not comparable with data from other jurisdictions.
- Due to changes in the performance indicator specification, the data for 2010–11, 2011–12 and 2012–13 as published in *Australian hospital statistics 2012–13: Staphylococcus aureus bacteraemia in Australian public hospitals* are not comparable with the data published in the *Australian hospital statistics 2010–11: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011). In addition, some data for 2011–12 have been updated since previously published.
- The patient days and coverage data may be preliminary for some hospitals or jurisdictions.

## Description

The NSABDC includes counts of cases of SAB for each public hospital covered by SAB surveillance arrangements, and for private hospitals that choose to provide data.

The data for public hospitals are collected under hospital infection control arrangements by state and territory health authorities. Data on methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-sensitive *Staphylococcus aureus* (MSSA) cases for public hospitals are reported separately at a state or territory level.

The data include the counts of patient days under surveillance.

Data for SAB cases in private hospitals are provided directly to the Australian Institute of Health and Welfare (AIHW) by individual hospitals or hospital groups.

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

A case of SAB will be considered to be healthcare-associated if: the first positive blood culture is collected more than 48 hours after hospital admission or less than 48 hours after discharge, or, if the first positive blood culture is collected 48 hours or less after admission and one or more of the following key clinical criteria was met for the patient episode of SAB:

1. SAB is a complication of the presence of an indwelling medical device (for example, intravascular line, haemodialysis vascular access, cerebrospinal fluid shunt, urinary catheter)
2. SAB occurs within 30 days of a surgical procedure where the SAB is related to the surgical site
3. an invasive instrumentation or incision related to the SAB was performed within 48 hours
4. SAB is associated with neutropenia ( $<1 \times 10^9$ ) contributed to by cytotoxic therapy.

This definition of a case of SAB was used by all states and territories for reporting for 2010–11 and subsequent years.

### **Institutional environment**

The AIHW is a major national agency set up by the Australian Government under the *Australian Institute of Health and Welfare Act 1987* to provide reliable, regular and relevant information and statistics on Australia's health and welfare. It is an independent statutory authority established in 1987, governed by a management board, and accountable to the Australian Parliament through the Health portfolio.

The AIHW aims to improve the health and wellbeing of Australians through better health and welfare information and statistics. It collects and reports information on a wide range of topics and issues, ranging from health and welfare expenditure, hospitals, disease and injury, and mental health, to ageing, homelessness, disability and child protection.

The AIHW also plays a role in developing and maintaining national metadata standards. This work contributes to improving the quality and consistency of national health and welfare statistics. The Institute works closely with governments and non-government organisations to achieve greater adherence to these standards in administrative data collections to promote national consistency and comparability of data and reporting.

One of the AIHW's main functions is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national data sets based on data from each jurisdiction, analyse these data sets, and disseminate information and statistics.

The *Australian Institute of Health and Welfare Act 1987*, in conjunction with compliance to the *Privacy Act 1988* (Cwlth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.

For further information, see the AIHW website: <http://www.aihw.gov.au/>.

Data for the NSABDC were supplied to the AIHW by state and territory health authorities for the purpose of reporting against the National Healthcare Agreement (NHA) performance benchmark and performance indicator 'Healthcare-associated infections' and for reporting by the National Health Performance Authority (NHPA). Data were provided to AIHW by private hospitals for reporting by the NHPA.

### **Timeliness**

The reference period for this data set is 1 July 2012 to 30 June 2013. Data are provided annually by state and territory health authorities. The original timetable was for states and territories to provide the data by 27 September 2013. States and territories provided the data to the AIHW in September and October 2013. The data were published in December 2013.

Data are also provided annually by private hospitals and private hospital groups.

### **Accessibility**

The AIHW publishes data from the NSABDC annually in the *Australian hospital statistics: Staphylococcus aureus bacteraemia in Australian public hospitals* series. These reports may be accessed on the AIHW website: <<http://www.aihw.gov.au/hospitals/>>.

### **Interpretability**

Information on the definitions used for the NSABDC, including patient days, admitted patient, non-admitted patient and care type, are available on the AIHW's online metadata repository (METeOR). METeOR can be accessed on the AIHW website:

<<http://meteor.aihw.gov.au/content/index.phtml/itemId/181162>>.

The 2014 NHA performance indicator specification has been included in Appendix A of this report, and can be accessed on the METeOR website at:

<<http://meteor.aihw.gov.au/content/index.phtml/itemId/517636>>.

### **Relevance**

Data from the NSABDC are used for the NHA performance benchmark and performance indicator about safety and quality in hospital and related care.

If a case is associated with care provided in another jurisdiction, then it may be reported (where known) by the jurisdiction where the care associated with the SAB occurred.

Almost all cases of SAB will be diagnosed when the patient is an admitted patient. However, the intention is that cases are reported whether they were determined to be associated with admitted patient care or non-admitted patient care in public hospitals.

The count of patient days reflects the amount of admitted patient activity, but does not reflect the amount of non-admitted patient activity. The amount of hospital activity that patient days reflect varies among jurisdictions and over time because of variation in admission practices.

### **Accuracy**

States and territories are primarily responsible for the quality of the data they provide. However, the AIHW undertakes validations on receipt of data. Data are checked for valid values, logical consistency and historical consistency. 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 or incorrect values, except as stated.

The arrangements for the collection of data by hospitals and the reporting to state and territory health authorities may vary among the jurisdictions. Jurisdictional manuals should be referred to for full details of definitions used in their infection surveillance arrangements.

For most states and territories, there is less than 100% coverage of public hospitals.

There may be imprecise exclusion of some SAB cases due to the inherent difficulties in determining the origins of SAB episodes, such as those originating in non-hospital health care settings. However, it is likely that the number of cases incorrectly included or excluded would be small.

The patient day data may be preliminary for some hospitals or jurisdictions.

## Coherence

The NSABDC data were first reported for 2008–09 in the 2010 COAG Reform Council *National Agreement performance information 2008–09: National Healthcare Agreement* (SCRGSP 2009). The 2008–09 data were provided by five jurisdictions only and before the development of an agreed national definition of a case of SAB. These data were limited to principal referral and large hospitals only. For these reasons, 2008–09 data are not comparable with those reported subsequently, with the exception of data for Tasmania.

NSABDC data for 2009–10 were presented in the 2011 COAG Reform Council *National Healthcare Agreement: performance report for 2009–10* (CRC 2011). New South Wales used a definition of SAB that differed from the national definition.

NSABDC data for 2010–11 were presented in *Australian hospital statistics 2010–11: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011) and in the 2012 COAG Reform Council *National Healthcare Agreement: performance report for 2010–11* (CRC 2012).

NSABDC data for 2011–12 were presented in *Australian hospital statistics 2011–12: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2013c) and in the 2013 COAG Reform Council *National Healthcare Agreement: performance report for 2011–12* (CRC 2013).

Due to the changes in the performance indicator specification, the data originally published for 2010–11 (in *Australian hospital statistics 2010–11: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011)) are not comparable with the data published in later reports. In 2012, the scope of the indicator was revised to include unqualified newborns. Data reported for 2010–11 and subsequent years include unqualified newborns, except for Western Australia where unqualified days for newborns were not included in 2010–11 and 2011–12 data. In addition, hospital boarders and posthumous organ procurement episodes were explicitly excluded from the data from 2011–12.

Data for 2011–12 have been updated for Victoria, Western Australia, South Australia, Tasmania and the Australian Capital Territory since previously published.

Data for 2010–11, 2011–12 and 2012–13 published in *Australian hospital statistics 2012–13: Staphylococcus aureus bacteraemia in Australian public hospitals* are comparable for most states and territories, and are considered comparable at the national level. However, the data should be interpreted with caution due to the following issues:

- Data for Queensland for 2010–11 include only patients aged 14 and over, while from 2011–12 onwards, all age groups are included.
- For 2010–11 and 2011–12, the Western Australian data exclude unqualified days for newborns, specialised psychiatric care units and psychiatric hospitals. Therefore, the 2010–11 and 2011–12 SAB data for Western Australia are not comparable with data from other jurisdictions for those two years. For 2012–13, Western Australia was able to provide the data as specified.

# Glossary

**admitted patient:** A patient who undergoes a hospital's admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and can occur in hospital and/or in the person's home (for hospital-in-the-home patients). METeOR id: 268957.

**antimicrobial resistance:** Occurs where a microorganism develops ways to survive exposure to an antimicrobial medicine that could previously kill or weaken it.

**bacteraemia:** A bacterial infection of the blood or the lymph system.

**bloodstream infection:** The presence of live microorganisms in the blood.

**casemix:** The range and types of patients (the mix of cases) treated by a hospital or other health service. Casemix classifications (such as Australian Refined - Diagnosis Related Groups) provide a way of describing and comparing hospitals and other services for management purposes.

**healthcare-associated infection:** An infection acquired as a direct or indirect result of health care.

**infection:** The invasion and reproduction of microorganisms inside the body. This can cause tissue injury and disease.

**methicillin-resistant *Staphylococcus aureus* (MRSA):** A strain of *Staphylococcus aureus* that can survive treatment with the antibiotics normally used to treat *Staphylococcus aureus* infections. METeOR id: 391098.

**methicillin-sensitive *Staphylococcus aureus* (MSSA):** Strains of *Staphylococcus aureus* that are sensitive to treatment with the antibiotics commonly used to treat infections. METeOR id: 458522.

**non-admitted patient:** A patient who receives care from a recognised non-admitted patient service or clinic of a hospital. METeOR id: 268973.

**patient days:** The total number of days for patients who were admitted for an episode of care and who separated during a specified reference period. A patient who is admitted and separated on the same day is allocated one patient day. METeOR id: 270045.

**private hospital:** A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and paramedical practitioners. Acute care and psychiatric hospitals are included, as are private free-standing day hospital facilities.

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

**qualified days:** The number of qualified days within newborn episodes of care for babies aged 9 days old or less admitted to hospital. Days within newborn episodes of care are either qualified or unqualified. A newborn day is acute (qualified) when a newborn meets at least one of the following criteria:

- is the second or subsequent live born infant of a multiple birth, whose mother is currently an admitted patient
- is admitted to an intensive-care facility in a hospital, being a facility approved by the Australian Government Health Minister for the purpose of the provision of special care
- remains in hospital without its mother
- is admitted to the hospital without its mother. See METeOR id: 268957.

Unqualified newborn days are those days that do not meet these criteria.

**separation:** An episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute to rehabilitation).

Separation also means the process by which an admitted patient completes an episode of care – by being discharged, dying, transferring to another hospital or changing type of care.

# References

- ACSQHC (Australian Commission on Safety and Quality in Health Care) 2013. Healthcare associated infection. Sydney: ACSQHC. Viewed 30 October 2013, <<http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/>>.
- AIHW (Australian Institute of Health and Welfare) 2011. Australian hospital statistics 2010–11: *Staphylococcus aureus* bacteraemia in Australian public hospitals. Health services series no. 42. Cat. no. HSE 116. Canberra: AIHW.
- AIHW 2013a. Australian hospital statistics 2012–13: elective surgery waiting times. Health services series no. 51. Cat. no. HSE 140. Canberra: AIHW.
- AIHW 2013b. Australian hospital statistics 2012–13: emergency department care. Health services series no. 52. Cat. no. HSE 142. Canberra: AIHW.
- AIHW 2013c. Australian hospital statistics 2011–12: *Staphylococcus aureus* bacteraemia in Australian public hospitals. Health services series no. 47. Cat. no. HSE 129. Canberra: AIHW.
- COAG (Council of Australian Governments) (National Healthcare Agreement Review Working Group) 2012. National Healthcare Agreement review report, July 2012. Canberra: COAG. Viewed 9 August 2013, <<http://www.coag.gov.au/node/439>>.
- Cosgrove SE, Sakoulas G, Perencevich EN, Schwaber MJ, Karchmer AW & Carmeli Y 2003. Comparison of mortality associated with methicillin-resistant and methicillin-susceptible *Staphylococcus aureus* bacteremia: a meta-analysis. *Clinical Infectious Diseases* 36:53–59.
- CRC (COAG Reform Council) 2011. National Healthcare Agreement: performance report for 2009–10. Sydney: COAG Reform Council.
- CRC 2012. National Healthcare Agreement: performance report for 2010–11. Sydney: COAG Reform Council.
- CRC 2013. National Healthcare Agreement: performance report for 2011–12. Sydney: COAG Reform Council.
- Cruikshank M & Ferguson J (eds) 2008. Reducing harm to patients from health care associated infection: the role of surveillance. Sydney: ACSQHC.
- NHMRC (National Health and Medical Research Council) 2010. Australian guidelines for the prevention and control of infection in healthcare—online version. Reference no. CD33. Viewed 9 August 2013, <<http://www.nhmrc.gov.au/node/30290>>.
- Nimmo GR, Bell JM, Mitchell D, Gosbell IB, Pearman JW & Turnidge JD 2003. Antimicrobial resistance in *Staphylococcus aureus* in Australian teaching hospitals 1989–1999. *Microbial Drug Resistance* 9:155–60.
- SCRGSP (Steering Committee for the Review of Government Service Provision) 2009. National Agreement performance information 2008–09: National Healthcare Agreement. Canberra: Productivity Commission.

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In 2012–13, all states and territories had rates of hospital-associated *Staphylococcus aureus* bacteraemia (SAB) below the national benchmark, with rates ranging from 0.7 to 1.3 cases per 10,000 patient days.

There were 1,724 cases of hospital-associated SAB reported for Australia, which occurred during approximately 18.8 million days of patient care.