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Foreword

I am pleased to present this report on *Staphylococcus aureus* bacteraemia (SAB) in Australian public hospitals for July 2010 to June 2011. SAB is an important infection associated with hospital care, and reporting of national data on it is a major step forward in making information available on the safety and quality of care in Australian hospitals.

This report includes the first nationally consistent data that have been available for SAB, building on the work of the Australian Commission on Safety and Quality in Health Care to establish SAB surveillance arrangements for Australian hospitals. The Australian Institute of Health and Welfare (AIHW) is grateful for the cooperation of the states and territories that helped make it possible to release this report within 5 months of the end of the reference period.

The AIHW aims to maximise the usefulness of its reports, and making them timelier is one way of achieving this. We are exploring mechanisms to further improve timeliness of our reporting on Australian hospitals.

This report is one of a suite of products the AIHW produces to report on Australia's hospitals each year. As in previous years, a report on emergency department care and elective surgery waiting times for 2010–11 was released in late 2011, and a comprehensive report and a summary report on Australian hospitals covering other aspects will be published in April 2012.

This report is a companion to the *MyHospitals* website <www.myhospitals.gov.au> managed by the AIHW. *MyHospitals* includes the same information provided in this report, but for individual public hospitals. The *MyHospitals* information is based on the same data and the same standards as the information in this report, so users can be assured the information is comparable.

The SAB data in this report also matches that provided by the AIHW for the Council of Australian Governments Reform Council report on the National Healthcare Agreement, and the Steering Committee for the Review of Government Service Provision *Report on Government Service Provision*, both due for publication in early 2012.

David Kalisch
Director
November 2011

Contents

- Foreword iii
- Acknowledgments..... vi
- Abbreviations..... vii
- Summary viii
- 1 Introduction.....1**
 - Background1
 - The SAB performance indicator3
 - Data source.....3
 - Structure of this report4
 - State and territory information4
- 2 *Staphylococcus aureus* bacteraemia cases in 2010–115**
- 3 Strategies to reduce SAB.....8**
 - Hand hygiene.....8
 - Overview of Australian Commission on Safety and Quality in Health Care
strategies to reduce healthcare-associated SAB8
- Appendix A: Data quality statement for the National *Staphylococcus aureus*
Bacteraemia Data Collection (NSABDC)10**
- Glossary.....14**
- References.....15**

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The data on cases of *Staphylococcus aureus* bacteraemia associated with public hospitals were collected by staff using hospital infection surveillance arrangements. Without their work, the data would not have been available for this report.

The preparation of this report would not have been possible without the cooperation of the state and territory health authorities. They provided the data in a timely manner and also provided comments.

Within the Australian Institute of Health and Welfare, the report was prepared by Jenny Hargreaves, Cheryl Harkins, Louise York and Jenny Webb.

The Australian Commission on Safety and Quality in Health Care (ACSQHC) provided comment on the report.

Abbreviations

ACSQHC	Australian Commission on Safety and Quality in Health Care
AIHW	Australian Institute of Health and Welfare
CRC	COAG Reform Council
DQS	data quality statement
HAI	healthcare-associated infection
MRSA	methicillin-resistant <i>Staphylococcus aureus</i>
MSSA	methicillin-sensitive <i>Staphylococcus aureus</i>
NHA	National Healthcare Agreement
NSABDC	National <i>Staphylococcus aureus</i> Bacteraemia Data Collection
SAB	<i>Staphylococcus aureus</i> bacteraemia

Summary

This report presents national information on cases of *Staphylococcus aureus* bacteraemia (SAB) associated with care provided by public hospitals for 1 July 2010 to 30 June 2011. Timely provision of these data by states and territories has allowed this information to be reported within 5 months of the end of the collection period. This report builds on robust jurisdictional and private hospital arrangements to monitor and reduce SAB.

What is SAB?

- SAB is a serious bloodstream infection that may be associated with hospital care.
- The aim is to have as few cases of SAB as possible. One of the most effective ways to minimise the risk of SAB and other healthcare-associated infections (HAIs) is good hand hygiene.
- Patients who develop bloodstream infections such as SAB are more likely to suffer complications that result in a longer hospital stay and an increased cost of hospitalisation. Serious infections may also result in death.
- In December 2008, Australian Health Ministers endorsed the reporting of SAB by all hospitals in their relevant jurisdiction to form a national data collection.
- In addition, rates of SAB, including bloodstream infections with methicillin-resistant *Staphylococcus aureus* (MRSA), were announced in 2008 as one of the performance indicators to be reported by jurisdictions under the National Healthcare Agreement (NHA).

SAB rates by jurisdiction

- In 2010–11, all states and territories had rates of SAB below the national benchmark of 2.0 cases per 10,000 patient days.
- The rates ranged from 0.9 cases per 10,000 patient days in Victoria, South Australia and the Australian Capital Territory to 1.4 in the Northern Territory.
- There were 1,873 cases of SAB reported for Australian public hospitals overall. More than two-thirds (73%) were methicillin sensitive, and would therefore have been treatable with commonly used antibiotics.
- The reported SAB cases occurred during approximately 17 million days of patient care under SAB surveillance during 2010–11.

1 Introduction

This report presents the first nationally consistent information on cases of SAB associated with public hospitals in Australia. While the national SAB data collection includes SAB cases for some private hospitals, this report only presents information for public hospitals. Corresponding data for individual hospitals are on the *MyHospitals* website at <www.myhospitals.gov.au>.

This report is one of the AIHW's suite of reports on Australia's hospitals, compiled using data provided by states and territories for the AIHW's national hospitals databases. This report (and the report accompanying it on emergency department care and elective surgery waiting times; AIHW 2011) provide some information on Australia's hospitals for 2010–11. The AIHW's annual report, *Australian hospital statistics 2010–11* (to be published in early 2012), will present more comprehensive information on hospital activity.

Background

SAB associated with hospital care is an important measure of the safety of hospital care (see Box 1). Hospital and other healthcare-associated SAB have been subject to a range of national and local initiatives throughout Australia over recent years to reduce their occurrence. These initiatives have included the establishment of surveillance arrangements in public hospitals to monitor healthcare-associated SAB, and the development of an agreed national definition for cases of healthcare-associated SAB (see Box 3), which have, in turn, meant that national data on public hospital-associated SAB are now available.

Box 1: Healthcare-associated infections and bacteraemia

HAIs are infections that are acquired by patients during healthcare. They include infections acquired during hospitalisation and during care at other healthcare facilities. They include both bloodstream infections (bacteraemia) and localised infections such as those associated with surgical sites.

It is estimated that, each year in Australia, there are about 200,000 HAIs (Cruickshank & Ferguson 2008). HAIs cause patients pain and suffering, and prolong hospital admissions. Some patients die as a result of HAIs, and many of these deaths are preventable. Infection has moved from being considered an unpredictable 'complication' to being considered a potentially preventable 'adverse event'.

Studies in Australia document that 17–29% of patients with hospital-acquired bacteraemia die while still in hospital (Cruickshank & Ferguson 2008). Patients who develop bacteraemia are also more likely to suffer complications that result in a longer hospital stay and an increased cost of hospitalisation.

Consistent with the importance of healthcare-associated SAB (see Box 2), the National Healthcare Agreement (NHA) (COAG 2011) includes public hospital-associated SAB as a performance benchmark for safety and quality for the Agreement's outcome area of 'hospital and related care':

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.

The NHA, which sets out objectives of the Australian, state and territory governments for healthcare services, includes the performance measure 'selected adverse events in acute and sub-acute care settings' for 'hospital and related care'. One type of adverse event that has been selected as a performance indicator to be reported for the Agreement is 'Healthcare-associated *Staphylococcus aureus* (including MRSA) bacteraemia in acute care hospitals' (COAG 2011).

Data for the SAB benchmark and SAB performance indicator were reported for five states and territories for 2008–09. However, the data were not regarded as comparable among the jurisdictions, as they were collected before the development and implementation of the agreed definition of a case of SAB (SCRGSP 2009).

For 2009–10, data were available for all states and territories, based on the nationally agreed definition, for all but one state (CRC 2011).

For the 2010–11 reference year, data are available for all states and territories, based on the nationally agreed definition.

Box 2: *Staphylococcus aureus* and SAB

Staphylococcus aureus (also known as 'golden staph') 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 commonly found on the skin or in the nose of many individuals and are commonly spread from person to person in the community. In hospitals, the transmission is most common via the hands of healthcare workers. The bacteria from the patient's skin or from the hand of a healthcare worker have a direct entry into the patient's bloodstream when intravascular devices such as a central, or peripheral venous catheters are inserted.

Patients with open wounds, invasive devices such as catheters or with weakened immune systems (cancer or transplant recipients, very young or older patients), or who have chronic disease such as diabetes or severe underlying illness, and prolonged or recurrent exposure to antibiotics, are at greater risk of infection than the general public.

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 MRSA. 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). Resistance can be defined as bacteria's ability to survive and even replicate during a course of treatment with a specific antibiotic. In Australia, *Staphylococcus aureus* strains in hospital can be methicillin resistant, and resistant to several other antimicrobial drugs (Nimmo et al. 2003).

The SAB performance indicator

The SAB performance indicator includes data on:

- counts of cases of SAB
- the rate of cases of SAB per 10,000 patient days (bed days).

Data are restricted to cases associated with care provided in public hospitals and:

- all types of public hospitals are included (except as noted), both those focusing on acute care, and those focusing on non-acute or sub-acute care, for example, rehabilitation or palliative care. (Note: the indicator name stipulates 'acute care' public hospitals however, all public hospitals are included.)
- cases associated with private hospitals and with non-hospital care are excluded.

The data are presented separately for:

- MRSA
- MSSA.

The specification for the performance indicator is summarised in Box 3.

Box 3: *Staphylococcus aureus* bacteraemia performance indicator specification

The **numerator** is the number of SAB cases (as defined below) associated with public hospitals.

Cases associated with care provided by private hospitals and non-hospital healthcare are excluded.

A patient episode (**case**) of SAB is defined as a positive blood test for *Staphylococcus aureus*.

A case of SAB is considered to be healthcare-associated if the first positive blood test is more than 48 hours after hospital admission or less than 48 hours after discharge, or, if the first positive blood test is 48 hours or less after admission and one or more of the following criteria was met:

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.

The **denominator** is the number of patient days for public hospitals included in the SAB surveillance arrangements.

The SAB rate is calculated as $10,000 \times (\text{numerator}/\text{denominator})$.

The data are presented as the number of cases and the number of cases per 10,000 patient days.

Data source

The sources of data on public hospital-associated SAB cases are the state and territory government health authorities. They source the data from HAI surveillance arrangements in their public hospitals.

States and territories also provided data on patient days for the rate calculations. The patient day data were sourced by them from their collections of data on admitted patient care in public hospitals.

The data were provided by the states and territories to the AIHW for national collation and calculation of rates. The AIHW collated the data into its National *Staphylococcus aureus* Bacteraemia Data Collection (NSABDC). A data quality statement (DQS) for the collection for 2010–11 is at Appendix A.

The data were initially provided by states and territories to the AIHW for the *MyHospitals* website, and for the COAG Reform Council's (CRC) report on the NHA, expected to be published in 2012. Under the Intergovernmental Agreement on Federal Financial Relations, the AIHW collates these data and provides them to the Steering Committee for the Review of Government Service Provision, for on-provision to the CRC for its report. The AIHW provides the data to the Committee with an accompanying DQS that is the basis for the information in this report on the limitations of the data.

Structure of this report

Chapter 1 introduces the report and provides important definition information.

Chapter 2 presents data on SAB cases associated with public hospitals in 2010–11. It also includes important information on the limitations of the data.

Chapter 3 presents some information on strategies to reduce SAB used in Australian hospitals.

Appendix A is the DQS for the NSABDC.

State and territory information

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

New South Wales: Healthcare associated infections reporting.

<<http://www.health.nsw.gov.au/hospitals/index.asp>>

Tasmania: Healthcare associated infection surveillance reports.

<http://www.dhhs.tas.gov.au/peh/tasmanian_infection_prevention_and_control_unit/publications_and_guidelines>

Western Australia: Healthcare associated Infection Unit – annual report

<http://www.public.health.wa.gov.au/3/455/3/reports_healthcare_associated_infection_unit.pm>

South Australia: Patient safety report

<<http://www.sahealth.sa.gov.au/wps/wcm/connect/7209378046aaedec99a4fb2e504170d4/PatientSafetyReport2009-10.pdf?MOD=AJPERES&CACHEID=7209378046aaedec99a4fb2e504170d4>>

Victoria: VICNISS hospital-acquired infection surveillance annual report 2009-10

<[http://docs.health.vic.gov.au/docs/doc/3DED99B14180EA3CCA25787600167809/\\$FILE/1101018_VICNISS%20AR2010_Web_FA.pdf](http://docs.health.vic.gov.au/docs/doc/3DED99B14180EA3CCA25787600167809/$FILE/1101018_VICNISS%20AR2010_Web_FA.pdf)>

2 *Staphylococcus aureus* bacteraemia cases in 2010–11

Table 1 presents information on the number of cases of SAB reported as associated with public hospitals between 1 July 2010 and 30 June 2011. Analysis by state and territory is based on the location of the hospital.

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 patient days. The rates of SAB per 10,000 patient days ranged from 0.9 in Victoria, South Australia and the Australian Capital Territory to 1.4 in the Northern Territory.

There were 1,873 cases of SAB reported for Australian public hospitals. MSSA cases were more common in all states and territories than MRSA cases, with almost three quarters (73%) of all cases being MSSA. The MSSA cases would have been treatable with commonly used antibiotics.

The reported SAB cases occurred during approximately 17 million days of patient care under SAB surveillance during 2010–11.

While the data are based on the nationally agreed definition of SAB, there are limitations to the data that affect the comparability of the information among the states (see Box 4).

Box 4: Limitations of the data

Variation in definitions

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

The data on SAB cases were collected by states and territories through their HAI surveillance arrangements. 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 indicator name stipulates '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 patient days for hospitals in the SAB surveillance arrangements as a proportion of total patient days for all public hospitals.

For some states and territories there is less than 100 per cent coverage of public hospitals. 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 if 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 and 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 include only patients aged 14 and older.

Limitations of the denominator

The SAB cases were associated with both admitted patient care and with 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 is 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 denominators may be preliminary for some hospitals/jurisdictions.

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 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.

Table 1: Cases of *Staphylococcus aureus* (including MRSA) bacteraemia (SAB) in public hospitals, MRSA and MSSA, by state/ territory, 2010–11^(a)

	NSW	Vic	Qld ^(b)	WA	SA	Tas	ACT	NT	Australia
Rate per 10,000 patient days									
Methicillin-resistant <i>Staphylococcus aureus</i>	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.6	0.3
Methicillin-sensitive <i>Staphylococcus aureus</i>	0.9	0.7	0.9	0.9	0.7	1.1	0.7	0.8	0.8
Total^(c)	1.2	0.9	1.2	1.0	0.9	1.3	0.9	1.4	1.1
Number of cases									
Methicillin resistant <i>Staphylococcus aureus</i>	232	118	72	23	30	6	6	18	505
Methicillin sensitive <i>Staphylococcus aureus</i>	535	322	218	117	93	35	23	25	1,368
Total	767	440	290	140	123	41	29	43	1,873
Patient days under SAB surveillance ('000)	6,279	4,791	2,440	1,335	1,300	305	313	301	17,064
Coverage ^(d) (per cent)	97	99	77	83	81	81	98	100	91

- (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) Only includes patients aged 14 and over.
- (c) Total may not equal sum of components due to rounding
- (d) Coverage and patient day estimates may be preliminary. 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.

3 Strategies to reduce SAB

As noted in Chapter 1, a range of national and local initiatives have been introduced throughout Australia in recent years to reduce the occurrence of hospital and other healthcare-associated SAB. Reducing HAI is a major program area for the Australian Commission on Safety and Quality in Health Care (ACSQHC), which has provided leadership for this work (ACSQHC 2011b).

Hand hygiene

One of the most effective ways to minimise the risk of SAB and other HAI is good hand hygiene (HHA 2011). Hand hygiene in hospitals generally refers to the washing of and/or use of alcohol-based rubs by healthcare workers to clean their hands, and should be performed regularly during their working day. Studies have shown that many healthcare workers do not perform hand hygiene as often as they should.

Hand hygiene is a component of the broader strategies healthcare facilities use to minimise the risk of transmitting infection, including SAB. These strategies are collectively known as standard precautions to prevent or reduce the likelihood of transmission of infectious agents from one person or place to another.

Standard precautions include:

- use of personal protective equipment, such as gloves, gowns, plastic aprons, masks/face shields and eye protection
- environmental controls, such as cleaning and spills management
- appropriate cleaning or sterilising of reusable equipment and instruments
- aseptic non-touch technique to prevent micro-organisms on hands, surfaces or equipment from being introduced into potential infection sites
- appropriate handling of waste and linen (NHMRC 2010).

Overview of Australian Commission on Safety and Quality in Health Care strategies to reduce healthcare-associated SAB

A major focus of the work of the ACSQHC is its HAI program, which aims to achieve a national approach to reducing HAI.

The ACSQHC was instrumental in achieving national agreement and endorsement of the case definition for Healthcare-associated SAB. This definition supported the Commission's work to establish SAB surveillance systems to monitor HAI (ACSQHC 2011a).

The ACSQHC's HAI program includes a number of national initiatives such as:

- the national hand hygiene initiative <www.hha.org.au>
- national infection control guidelines
- education packages and toolkits for clinical staff working in infection control and prevention roles (ACSQHC 2011b).

In addition, the ACSQHC provides evidence-based documents to assist hospitals with establishing antibiotic stewardship programs (Duguid & Cruickshank 2011). Effective programs can prevent the occurrence of hospital antimicrobial resistance and reduce preventable MRSA.

Appendix A: Data quality statement for the National *Staphylococcus aureus* Bacteraemia Data Collection (NSABDC)

Summary of key issues

- Cases of SAB have been reported by all states and territories using the nationally agreed case definition.
- There may be imprecise exclusion of private hospital and non-hospital cases due to the inherent difficulties in determining the origins of SAB cases.
- For some states and territories there is less than 100 per cent coverage of public hospitals. It is possible that there will be a lower risk of SAB in hospitals not included in the SAB surveillance arrangements, especially if they undertake fewer invasive procedures than hospitals which are included.
- The data for 2010–11 are comparable with those from 2009–10, except for New South Wales and the Northern Territory. The 2010–11 data are not comparable with the data for 2008–09, for all states and territories except Tasmania, because of changes in the definition used for a case of SAB and changes in the public hospitals included.
- The patient day and coverage data may be preliminary for some hospitals/jurisdictions.

<p>Description</p>	<p>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. Data are included separately for MRSA and MSSA for public hospitals.</p> <p>The data include the counts of patient days under surveillance.</p> <p>A case (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 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:</p> <ol style="list-style-type: none"> 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.
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Description (continued)	<p>Cases associated with care provided by private hospitals and non-hospital healthcare are excluded.</p> <p>This definition of a case of SAB was used by all states and territories for reporting for 2010–11.</p>
Institutional environment	<p>The AIHW is a major national agency set up by the Australian Government under the <i>Australian Institute of Health and Welfare Act 1987</i> 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 and Ageing portfolio.</p> <p>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.</p> <p>The Institute 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.</p> <p>One of the main functions of the AIHW is to work with the states and territories to improve the quality of administrative data and, where possible, to compile national datasets based on data from each jurisdiction, to analyse these datasets and disseminate information and statistics.</p> <p>The <i>Australian Institute of Health and Welfare Act 1987</i>, in conjunction with compliance to the <i>Privacy Act 1988</i>, (Commonwealth), ensures that the data collections managed by the AIHW are kept securely and under the strictest conditions with respect to privacy and confidentiality.</p> <p>For further information see the AIHW website <www.aihw.gov.au>.</p> <p>Data for the NSABDC were supplied to the AIHW by state and territory health authorities for the purpose of reporting against the NHA performance benchmark and performance indicator 'Healthcare-associated <i>Staphylococcus aureus</i> (including MRSA) bacteraemia in acute care hospitals' and for reporting on the <i>MyHospitals</i> website.</p>
Timeliness	<p>The reference period for the data presented in this report is 2010–11. States and territories provided the data to the AIHW by October 2011. This report was published in November 2011. The original timetable was for states and territories to provide the data by 26 August 2011.</p>
Accessibility	<p>The AIHW provides a variety of products that draw upon the NSABDC. Published products available on the AIHW website are:</p> <ul style="list-style-type: none"> • The Australian hospital statistics suite of products. • The <i>MyHospitals</i> website <www.myhospitals.gov.au>, which provides information on individual public hospitals and some private hospitals

Accessibility (continued)	<p>throughout Australia.</p> <p>These products may be accessed on the AIHW website <http://www.aihw.gov.au/hospitals/>.</p>
Interpretability	<p>Information about the definition of patient days (metadata) can be found on the METeOR website <http://meteor.aihw.gov.au>. METeOR is Australia's repository for national metadata standards for health, housing and community services statistics and information.</p> <p>Information about the definition of SAB cases can be found in the 'Description' section above.</p> <p>The data on SAB cases were collected by states and territories (public hospitals) and private hospitals through their HAI surveillance arrangements.</p>
Relevance	<p>Data from the NSABDC are used for the National Healthcare Agreement performance benchmark and performance indicator about safety and quality in hospital and related care.</p> <p>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.</p> <p>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.</p> <p>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.</p>
Accuracy	<p>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 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.</p> <p>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.</p> <p>For some states and territories there is less than 100 per cent coverage of public hospitals. It is possible that there will be less risk of SAB in hospitals not included in the SAB surveillance arrangements, especially if such hospitals undertake fewer invasive procedures than those hospitals that are included.</p> <p>There may be imprecise exclusion of private hospital and non-hospital cases due to the inherent difficulties in determining the origins of SAB episodes. However, it is likely that the number of cases incorrectly included or excluded would be small.</p>

Accuracy (continued)	Data for Queensland includes only patients aged 14 and over.
Coherence	<p>NSABDC data for 2008–09 were presented in the 2010 COAG Reform Council National Healthcare Agreement 2008–09 report (CRC 2010). 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. Tasmania has advised that their SAB data are comparable across the three reporting years (2008–09, 2009–10, and 2010–11).</p> <p>NSABDC data for 2009–10 were presented in the 2011 COAG Reform Council National Healthcare Agreement 2009–10 report (CRC 2011). New South Wales used a definition of SAB that differed from the national definition.</p> <p>NSABC data for 2010–11 will be presented in the 2012 COAG Reform Council National Healthcare Agreement 2010–11 report (forthcoming). The data for 2010–11 are comparable with those from 2009–10, except for New South Wales and the Northern Territory. New South Wales reported using the national definition of a case of SAB for 2010–11 therefore, this data will not be comparable with their previous data. The Northern Territory 2009–10 and 2010–11 data may not be comparable as they changed their collection method and verification processes for the 2010–11 collection period.</p>

Glossary

Adverse event	An incident in which harm resulted to a person receiving health care.
Admitted patient	A patient who undergoes a hospital's formal 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).
Antimicrobial resistance	Antimicrobial resistance occurs where a micro-organism develops ways to survive exposure to an antimicrobial medicine that could previously kill or weaken them.
Bacteraemia	A bacterial infection of the blood or the lymph system.
Bloodstream infection	The presence of live micro-organisms 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	Infections acquired as a direct or indirect result of healthcare.
Infection	The invasion and reproduction of micro-organisms inside the body. This can cause tissue injury and disease.
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	Strains of <i>Staphylococcus aureus</i> that are resistant to many of the antibiotics commonly used to treat infections (NHMRC 2010).
Methicillin-sensitive <i>Staphylococcus aureus</i> (MSSA)	Strains of <i>Staphylococcus aureus</i> that are sensitive to treatment with the antibiotics commonly used to treat infections.
Non-admitted patient	A patient who receives care from a recognised non-admitted patient service or clinic of a hospital.
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 1 patient day.
Private hospital	A privately owned or 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.

References

- ACSQHC (Australian Commission on Safety and Quality in Health Care) 2011a. Healthcare-associated infection (HAI). Viewed 8 November 2011, <<http://www.safetyandquality.gov.au/internet/safety/publishing.nsf/Content/PriorityProgram-03>>.
- ACSQHC 2011b. Windows into safety and quality in health care 2011. Sydney: Australian Commission on Safety and Quality in Health Care.
- AIHW (Australian Institute of Health and Welfare) 2011. Australian hospital statistics 2010–11: emergency department care and elective surgery waiting times. Health services series no. 41. Cat. no. HSE 115. Canberra: AIHW.
- COAG (Council of Australian Governments) 2011. National Healthcare Agreement 2011: Intergovernmental Agreement on Federal Financial Relations. Canberra: COAG.
- CRC (COAG Reform Council) 2010. National Healthcare Agreement: Baseline performance report for 2008–09. Sydney: COAG Reform Council.
- CRC 2011. National Healthcare Agreement: Performance report for 2009–10. Sydney: COAG Reform Council.
- Cruickshank M & Ferguson J (eds) 2008. Reducing harm to patients from healthcare associated infection: the role of surveillance. Sydney: Australian Commission on Safety and Quality in Health Care.
- Duguid M & Cruickshank M (eds) 2011. Antimicrobial stewardship in Australian hospitals. Sydney: Australian Commission on Safety and Quality in Health Care.
- HHA (Hand Hygiene Australia) 2011. The National Hand Hygiene Initiative. Viewed 11 November 2011, <hha.org.au/AboutHandHygiene.aspx>.
- 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 11 November 2011, <www.nhmrc.gov.au/_files_nhmrc/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.