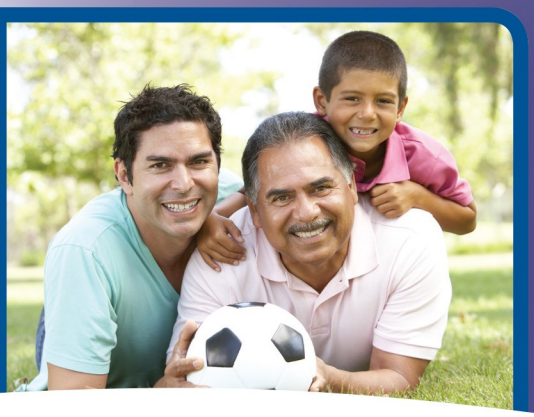
Staphylococcus aureus Bloodstream Infection (SABSI)

Surveillance protocol version 5







Department of Health

Tasmanian Government

***Staphylococcus aureus* Bloodstream Infection (SABSI) surveillance protocol**

Department of Health, Tasmania

Published 2016

Updated June 2021

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Suggested reference: Watson, J, Wilson, F and Ratcliff A (2021), *Staphylococcus aureus Bloodstream Infection* (SABSI) surveillance protocol V5, Hobart: Department of Health.

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Background

Staphylococcus aureus is a Gram-positive bacteria found on the skin and mucous membranes, with humans being the major reservoir. *Staphylococcus aureus* can cause a wide variety of clinical diseases and if allowed to enter the blood stream or tissues, *S. aureus* can cause serious infections including skin and soft tissue, bone and joint, respiratory and medical device related infections

Infection may be associated with a bacteraemia (bloodstream infection) which may be complicated by sepsis, endocarditis or metastatic seeding (infection established at other tissue sites). *S. aureus* bloodstream infection (SABSI) are a serious cause of morbidity and mortality worldwide with a proportion of these SABSI episodes associated with healthcare and healthcare activities. The majority of healthcare associated *Staphylococcus aureus* blood stream infections (HA-SABSI) are related to indwelling devices, hand hygiene practices and healthcare associated practices. HA-SABSI are considered to be preventable adverse events.

SABSI in Tasmania is a notifiable disease pursuant to the Public Health Act 1997, thus all SABSIs identified in Tasmania are notified to the Director of Public Health by the identifying laboratory.

The Tasmanian Infection Prevention and Control Unit (TIPCU) monitors and reports on all SABSI identified within Tasmania in accordance with the surveillance methods outlined in this protocol.

Definitions

SABSI patient episode - a positive blood culture for *Staphylococcus aureus* (*S. aureus*); count the first isolate per patient unless at least 14 days have passed without a positive culture after which, record another isolate as an additional patient episode.

Healthcare associated SABSI (HA-SABSI) – the SABSI meets either Criterion A **OR** Criterion B:

- **Criterion A** - the patients first *S. aureus* blood culture was collected more than 48 hours after hospital admission, with no documented evidence that infection was present or incubating on admission **or** less than 48 hours after hospital discharge.
- **Criterion B** - the patients first blood culture was collected less than or equal to 48 hours after hospital admission **AND** one or more **key clinical criteria (KCC)** is met.
    - **KCC** 1. SABSI is a complication of an indwelling medical device.
    - **KCC 2.** SABSI related to a surgical site infection that occurs within 30 or 90 days of the procedure depending on the type of procedure.
    - **KCC 3**. SABSI diagnosed within 48 hours of a related invasive instrumentation or incision.
    - **KCC 4**. SABSI associated with neutropenia contributed to by cytotoxic therapy and unrelated to an indwelling medical device.

Community associated SABSI - the SABSI does not meet either Criterion A or Criterion B

Contaminant – the clinical picture does not support infection AND either a repeat blood culture is negative AND/OR no *S. aureus* targeted antibiotic treatment is given.

SABSI subsequent episodes – for surveillance purposes, a subsequent episode is only recorded if 14 days or more has elapsed since the detection of the previous SABSI.

Inpatient healthcare facility – facility where patients can be admitted for overnight stay and includes acute private or public hospitals, rural hospital, sub-acute facility, long term care facility, nursing home.

Inpatient – a person who has been admitted to a hospital site for an episode of care and has at least one overnight stay in the hospital.

Outpatient - a person who attends a healthcare facility for a medical, allied health or similar appointment.

Day case - a person who is admitted to a healthcare facility for a full or part day and does not have an overnight stay.

Relevant personnel – person/s participating in cross checking SABSI data; this can be the patient's/client's General Practitioner, infection prevention and control personnel or staff in residential and aged care facilities.

Definitions (continued)

Key Clinical Criteria (KCC)

KCC	Description	Examples
KCC 1	Complication of an intravascular (IV) device if: • An IV catheter was in-situ in the 48 hours prior to the SABSI episode and there is no other identifiable focus of infection due to *S. aureus* • An IV introducer was used for a procedure occurring within the 48 hours prior to the SABSI episode unless there is an identifiable focus of infection likely due to *S. aureus* at another site. • The device is a haemodialysis access device and there is clinical evidence of infection at the vascular access site OR there is no other identifiable source of *S. aureus* infection. • The non-IV indwelling device was in situ in the 48 hours prior to the SABSI being detected AND there is clinical or microbiological evidence of *S. aureus* infection at the insertion site or the organ connected to the device.	A – CVC - central venous catheter (CVC), tunneled CVC (Hickman's), peripherally inserted central venous catheter (PICC), Swan Ganz catheter, Vascath (dialysis), implanted devices (Infusaport, Portacath). B – other: IV device - peripheral arterial line, peripheral intravenous device, umbilical venous device, AV fistula. C – other: non IV indwelling device - urinary catheter, percutaneous endoscopic gastrostomy (PEG) tube, chest tubes, cerebrospinal fluid (CSF) shunts, peritoneal dialysis catheters.
KCC 2	Complication of a surgical procedure if there is a superficial or deep organ/space surgical site infection (SSI) this is proven or suspected to be due to *S. aureus* • Within 30 days of surgery • OR within 90 days for deep incisional/organs spaced infections related to a surgically implanted device	There is an infection that is proven or likely to be due to *S. aureus* and fulfills the surveillance criteria of a: • superficial or deep organ space surgical site infection within 30 days of the surgical procedure or • deep incisional/organ space SSI related to the implanted device within 90 days of the surgical procedure.
KCC 3	Within 48 hours of invasive instrumentation or incision. If there have been multiple incisions or instrumentation, and the source of infection cannot be identified, the infection should be allocated to the most recent procedure.	Pacing wires, endoscopic retrograde cholangiopancreatography (ERCP), cardiac catheterisation.
KCC 4	Neutropenia defined as at least two separate calendar days with absolute neutrophil count (ANC) or total white blood cell count (WBC) $< 0.5 \times 10^9$ / L on or within a seven-day time period which includes the date the positive blood specimen was collected (Day 1), the 3 calendar days before and the 3 calendar days after.	Only relates to neutropenia contributed to by cytotoxic therapy. Does not include neutropenia from other causes such as disease related neutropenia.

Surveillance process

All isolates of positive blood cultures for *S. aureus* are notified by the identifying laboratory to Public Health Services (PHS).

Laboratory notifications are entered into the TIPCU spreadsheet by TIPCU personnel

Only the first patient isolate within a 14-day period is counted; a SABSI where a known previous blood culture has been obtained within the last 14 days is excluded.

TIPCU perform data validation of all new SABSI quarterly from laboratory reports and with the relevant personnel.

The SABSI data is sent quarterly to the relevant personnel for enhanced data collection spreadsheet and cross checking.

Upon receipt of the returned data, TIPCU personnel make any changes or additions to the data.

Data validation

Identifying laboratories perform a data extraction of all SABSIs identified within Tasmania in the relevant quarter and send the extracted data to TIPCU.

TIPCU cross checks data extraction with SABSIs notified to Public Health within the same quarter.

Any discrepancies are investigated by TIPCU and the identifying laboratory.

TIPCU sends cross checked data to hospital infection control personnel to cross check against SABSIs notified to them, to identify acquisition and attribution site, and for data error corrections.

The validated data is returned to TIPCU.

Reporting

SABSI data reports are available on request to TIPCU.

TIPCU produce publicly available, ad hoc reports on SABSI data.

Surveillance process responsibilities

	Notification	Data
Laboratory	Notifies PHS of result	• Hospital identification number • Date of birth • Surname • Sex • Specimen date • Specimen laboratory number • Name of organism • Antibiotic susceptibilities

TIPCU	Checks SABSI spreadsheet on shared drive to identify if the SABSI meets the 'SABSI patient episode' case definition.
	
	• New case:
	  • Enters minimum patient data set into SABSI spreadsheet
	  • Requests relevant personnel cross check the notification with their own data and completes classification and attribution of SABSI
	  • Enters returned data into SABSI spreadsheet.
	• Duplicate results:
	  • Discards repeat results into confidential waste.
		• Indigenous status
		• Postcode
		• Hospital code
		• Admission date where available
		• Collection time where available
		• Days between admission and specimen collection where relevant
		• Laboratory code
		• Type of *S. aureus*

Relevant personnel	Identifies if the SABSI is:
	• Healthcare associated **OR** Community associated
	• If healthcare associated, is it Criterion A or B?
	  • If Criterion B, the SABSI must have an associated KCC
	  • If criterion A, identify if there is a KCC associated with the SABSI.
		• Classification of SABSI
		• Key Clinical Criteria (for Criterion A where applicable and for all Criterion B)
		• Attribution of SABSI

Information management

All information held by TIPCU is in accordance with the information privacy principles as set out in the *Personal Information Privacy Act 2004*.

Information shared by laboratories (public and private) pursuant to the *Public Health Act 1997* is held in accordance with the *Personal Information Privacy Act 2004*.

Electronic data are stored in the TIPCU shared drive.

Hard copy laboratory reports are filed and held in a locked cabinet by TIPCU for at least one year and then destroyed securely

All data or information requests must be referred to the Director of Public Health.

References

Australian Commission on Safety and Quality in Health Care, 2021. *How to analyse Staphylococcus aureus bloodstream infection (SABSI) data for quality improvement.* [Online]
Available at: https://www.safetyandquality.gov.au/publications-and-resources/resource-library/staphylococcus-aureus-bloodstream-infection-data-analysis-information-sheet

Australian Commission on Safety and Quality in Health Care, 2021. *Implementation Guide for the Surveillance of Staphylococcus aureus bloodstream Infection,* Sydney: ACSQHC.