Government of **Western Australia**
Department of **Health**

Reporting of healthcare-associated *Staphylococcus aureus* bloodstream infections as a severity assessment code 1(SAC1).

Contents

Introduction

Staphylococcus aureus is the second most common cause of healthcare-associated bloodstream infection (HA-SABSI) but it is the organism most associated with serious complications including endovascular and disseminated infections(1). HA-SABSI frequently results in prolonged hospital stay, increased healthcare costs, increased use of antibiotics, and increased mortality (2-7).

Background

Reporting of HA-SABSI became mandatory for all Western Australian (WA) public healthcare facilities (HCFs) and those private HCFs contracted to provide care for public patients in October 2007. Reporting of HA-SABSI is via the Healthcare Infection Surveillance WA (HISWA) Program overseen by the Healthcare Associated Infection Unit (HAIU). In 2009, Australian Health Ministers endorsed the collection of HA-SABSI data as part of the National Healthcare Agreement. HA-SABSI data is included in the WA Health Service Performance Report and the Outcome Based Management Annual Report.

With extensive use of HA-SABSI data as a performance measure and an indicator of standard of care in HCFs, it is important that valid, reliable data is collected and reported. To assist with the quality of HA-SABSI data reported by WA HCFs, the HAIU undertakes a data validation process of all HA-SABSI submitted to HISWA. HISWA data has consistently shown that the majority of HA-SABSI can be attributed to two sources- intravascular devices (IVD) and procedure related events (8). Research has shown that HA-SABSI from these sources are largely preventable (2, 9-12).

Reporting of HA-SABSI as a clinical incident on the WA Health Datix Clinical Incident Management System (CIMS) is not standardised across WA public hospitals, with some hospitals reporting all HA-SABSI as severity assessment code (SAC) 1 clinical incidents, some reporting and classifying HA-SABSI with different SAC codes and some not reporting HA-SABSI events as clinical incidents at all. In 2017, the Healthcare Infection Council of WA (HICWA) Executive Committee endorsed the proposal to stream-line the reporting of HA-SABSI with input from Infection Prevention and Control (IP&C) staff. It was agreed that clarification around preventability of HA-SABSI was required to ensure that energies were directed where they are of most benefit in reducing harm to patients.

A literature review was conducted to determine the existence of evidence based strategies to prevent HA-SABSI and also if there was demonstrated evidence of a reduction in infections when the strategies were followed consistently.

Following the literature review and in consultation with IP&C staff, HA-SABSI were classified as either largely preventable or non-preventable based on the current evidence available and grouped in accordance with current HISWA ‘focus of infection’ classifications (13). A summary of the literature review is detailed in Appendix 1.

Reporting

Following endorsement by HICWA, the HA-SABSI, classified as ‘largely preventable’ (Refer Table 1) are to be entered on DATIX CIMS as clinical incidents and classified as SAC1 events.

Each HA-SABSI shall be investigated at the time of the occurrence to ensure timely investigation and in accordance with the most current version of the WA Health Clinical Incident Management Policy (14).

The HA-SABSI definitions must be applied as described in the HISWA Surveillance Manual to determine source of the HA-SABSI.

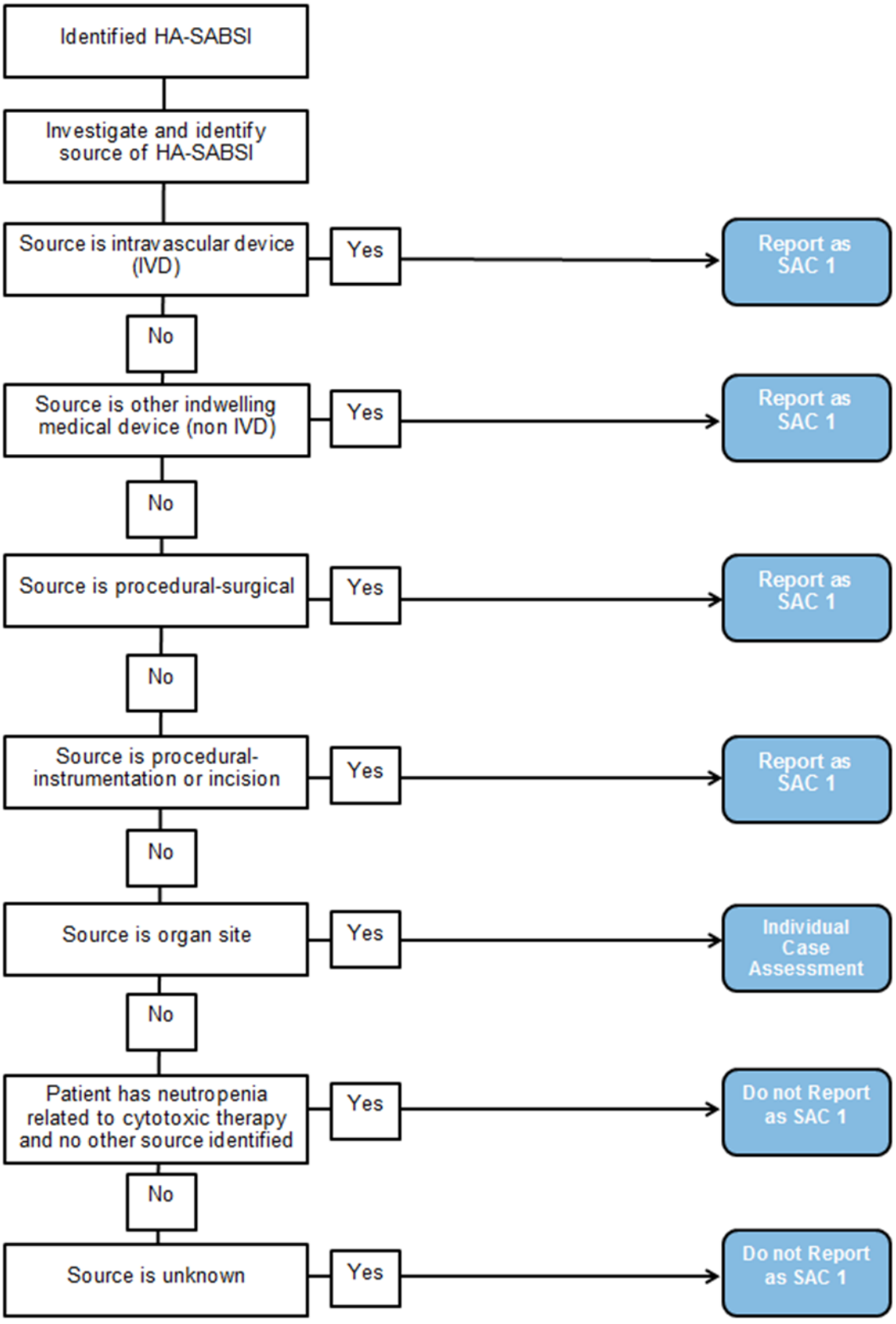
It is important to note that patient outcome may not be the best determinant in reporting a HA-SABSI as a SAC 1 clinical incident. A preventable HA-SABSI resulting in no or minor harm to the patient should be regarded as a SAC 1 near miss clinical incident. That is, the incident may have, but did not cause harm, either by chance or through timely intervention(14).

Table 1

Identified Source of HA-SABSI	Preventability	Report as SAC 1
Intravascular Device (IVD)	Largely Preventable	Yes
Other Indwelling Medical Device (Non IVD)	Largely Preventable	Yes
Procedural Surgical	Largely Preventable	Yes
Procedural – Instrumentation or Incision	Largely Preventable	Yes
Organ Site	Largely Non-Preventable	Individual case assessment is required. Report as SAC 1 where health care factors are identified.
Neutropenia	Non-Preventable	No, if single source of infection
Unknown	Non- Preventable	No

Where HA-SABSI are reported and investigated as a SAC 1 clinical incident, and determined to have not been preventable, a request for declassification may be submitted in accordance with the WA Health Clinical Incident Management Policy (14).

Flowchart for SAC 1 Reporting



Appendix 1 Evidence Review

Source of HA-SABSI	Evidence-based infection prevention strategies available	Evidence supporting preventable versus non-preventable
Intravascular device (IVD) related	**Central line associated blood stream infection (CLABSI)** • ANZICS Guidelines (15). • SHEA and ISDA Guidelines (16). **Haemodialysis Access Devices** • CDC Dialysis Interventions (17). **Peripheral IVDs (PIVC)** • MP 0038/16 PIVC insertion and management (9). • Australian Infection Control Guidelines (18).	• A systematic review estimated 65-70% of CLABSI are preventable with implementation of evidence-based strategies (12). • CLABSI ICU studies showed 70% reduction following adherence to best-practices (19). • Princess Alexandra Hospital (Brisbane) Study -81% of PIVC related SABSI had preventable contributing factors identified (20). • Study showed SABSI was the most common IV sepsis and also showed the largest percentage fall following a whole of hospital intervention program (6). **Conclusion** • Evidence-based prevention strategies published. • Studies demonstrate reduced rates with implementation of and compliance with the strategies. • Largely preventable.
Non-IVD indwelling device related e.g. Catheters - • Urinary, • suprapubic • intercostal • PEG • tracheostomy	**Catheter associated urinary tract infections (CAUTI)** • Australian Guidelines • SHEA strategies (21). **Ventilator Associated Pneumonia (VAP)** • SHEA Strategies to Prevent VAP (22). **Other indwelling devices** • Australian Infection Control Guidelines: protocols for aseptic technique, hand hygiene, skin antisepsis (18).	Estimated 65-70% of CAUTI and 55% of VAP are reasonably preventable with implementation of evidence based strategies (12). **Conclusion** • All CAUTI largely preventable with adherence to IP&C best practice guidelines. • Around half of VAP are preventable by application of evidence based-strategies. • Evidence-based prevention strategies for specific devices published. • Largely preventable

Source of HA-SABSI	Evidence-based infection prevention strategies available	Evidence supporting preventable versus non-preventable
Procedure related - Surgical site infections (SSI)	• CDC – Guidelines for the prevention of SSIs (23). • IHI – How to Guide: Prevent SSI. • SHEA - Strategies to Prevent Surgical Site Infections in Acute Care Hospitals (24). • WATAG Surgical Antibiotic Prophylaxis Guidelines (25). A review of the literature shows that the following care components assist in reducing the incidence of SSI: appropriate use of prophylactic antibiotics; appropriate hair removal; pre-operative showering, appropriate skin antisepsis, controlled postoperative serum glucose for cardiac surgery patients; and immediate postoperative normothermia for colorectal surgery patients (23). For high-risk surgery: • Screening for *S.aureus* for high-risk surgery and decolonisation if found to be S.aureus carriers e.g. cardiac, arthroplasty, vascular (25).	• Systematic review estimated 55% of SSI are preventable with implementation of evidence-based strategies (12). • Princess Alexander Hospital (PAH) Study: 50% of SABSI related to SSI had no preventable potential contributors (20). • Institute for Healthcare Improvement (IHI) estimate that 40-60% of SSI following clean cases (class1) are preventable (26). • CDC estimated 50% preventable by application of evidence based-strategies (23). A systematic review of risk factors associated with *S.aureus* SSIs among a broad range of surgical patients provides strength in evidence for host factors such as co-morbidity burden, patient advanced age, dependence and frailty and duration and complexity of surgery were consistently found to be associated with SSIs across a variety of study designs (27). Although SSIs are not always preventable, progression to bacteraemia may be avoided if managed promptly e.g. excision of infected tissue and targeted antimicrobial therapy (11). **Conclusion:** • Patient factors and complexity of surgical procedures do contribute to SSI. • Around half are preventable by application of evidence based-strategies. • If no preventable factors are identified by the SAC 1 investigation, consider de-classifying.

Source of HA-SABSI	Evidence-based infection prevention strategies available	Evidence supporting preventable versus non-preventable
Procedure related due to Invasive instrumentation or incision e.g. ERCP, cardiac catheterisation, joint injection	• Australian Infection Control Guidelines - Protocols for aseptic technique, hand hygiene, skin antisepsis. • WATAG Surgical Antibiotic Prophylaxis Guidelines (25) (where indicated).	**Conclusion** Largely preventable with adherence to IP&C best practice guidelines.
Organ site infections Not related to a SSI, procedure, IVD or other indwelling medical device.		Organ site infections may be directly related or secondary to the patient's underlying medical condition or those that occur > 48 hours after a hospital admission (28). **Conclusion** Largely non-preventable, assessment needs to be made on an individual basis.
Neutropenia	HA-SABSI associated with neutropenia caused by cytotoxic therapy.	**Conclusion** Generally no known preventable IP&C factors.
Unknown	The source of the HA-SABSI cannot be determined following an investigation.	**Conclusion** Not preventable as unable to identify source of infection.

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