Bloodstream Infection (BSI) Protocol

Approved by Provincial IPC Surveillance Committee: June 2010
Revised: April 2025

Alberta Health Services
Infection Prevention & Control

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Introduction

Bloodstream infections (BSI) are an important cause of morbidity and mortality in severely ill patients, contributing to increased length of stay and a higher cost of care.

Surveillance is an essential component of Infection Prevention and Control (IPC). If carried out in a uniform manner, surveillance provides a measure of the burden of illness, establishes benchmark rates for internal and external comparison, identifies potential risk factors, and allows assessment of specific interventions. Surveillance of hospital-acquired BSI is considered a measure of quality of care (Public Health Agency of Canada [PHAC], 2023; Centers for Disease Control and Prevention [CDC], 2025a).

Surveillance can be performed for all BSIs, but the provincial IPC focus is on two types of BSIs – those attributed to a central line in critical care patients and those with any of four antibiotic-resistant organisms (methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin-resistant enterococcus (VRE), carbapenemase-producing organisms (CPO) or extended-spectrum beta-lactamases (ESBL). Additional BSI surveillance is determined at a local level by IPC leadership.

In conjunction with the BSI surveillance protocol, there are seven supporting documents to assist in the interpretation and practical use of this protocol:

- BSI Protocol-Specific and the General Surveillance Definitions (Appendix A and Appendix B)
- BSI Algorithms (Appendix C)
- Information on Central Lines (Appendix D)
- BSI Surveillance Process (Appendix E)
- BSI User Guide (Alberta Health Services [AHS], 2018).

Goal

To decrease hospital-acquired BSIs associated with MRSA, VRE, CPO or ESBL, and hospital-acquired central line-associated BSIs in Alberta Health Services (AHS) and Covenant Health facilities.

Objectives

1. To establish site-specific rates for central line-associated bloodstream infection (CLABSI) in adult critical care (intensive care unit, general systems-burn intensive care unit, neurosciences intensive care unit, cardiovascular intensive care unit, coronary care unit) and pediatric critical care (intensive care unit, and cardiac intensive care unit)) in AHS/Covenant Health facilities.
2. To establish site-specific rates for hospital-acquired BSI with an antibiotic-resistant organism (MRSA, VRE, CPO or ESBL) in the patient population under surveillance in AHS/Covenant Health facilities.
3. To use surveillance results to develop and evaluate IPC interventions which support safer patient care.
4. To establish quarterly and annual CLABSI and hospital-acquired BSI with an antibiotic-resistant organism incidence rates for trend analysis over time and to compare with internal and external benchmarks.
5. To detect clusters of CLABSI and hospital-acquired BSI with an antibiotic-resistant organism.

Methodology

Cases eligible for surveillance are new episodes of positive blood culture with an antibiotic-resistant organism (MRSA, VRE, CPO, ESBL) while an admitted inpatient at a hospital under surveillance or any positive bacterial or fungal blood culture related to a central line attributable to an adult or pediatric critical care[+] that meet case definition criteria.

- Blood culture results are identified by Infection Control Professionals (ICPs) in Connect Care.
- Facility ICPs or designates reviewing blood culture reports will determine if cases are a new BSI and classify as hospital-acquired, healthcare-associated, or community-acquired. The representative will compile and record at least the minimum case information. Data from completed BSI surveillance will be entered into the provincial surveillance platform.

Patient population

All individuals admitted to AHS/Covenant Health acute and acute tertiary rehabilitation facilities where inpatient care is provided 24 hours/day, 7 days a week, who have a positive blood culture while admitted. For simplicity, acute and acute tertiary rehabilitation facilities will be referred as the "facilities under surveillance" in this protocol. Please refer to Appendix B: General Surveillance Definitions for facilities that would be included under this term.

Case definition

Lab confirmed BSIs can be classified as primary or secondary to an infection at another body site. Provincial surveillance for BSIs will include:

1. A primary laboratory-confirmed BSI in an admitted patient with a central line in place for greater than 2 calendar days **and** onset occurred during their critical care[+] stay or CLABSI occurred on the day of transfer or the next day after transfer out of critical care[+]

OR

2. A Primary or Secondary laboratory-confirmed antibiotic-resistant organism (MRSA, VRE, CPO or ESBL) from a blood culture in an admitted patient.

Inclusion criteria

- BSI case identified in the emergency department in patients who are subsequently admitted to a facility under surveillance; this includes patients who may be transferred from one emergency department to another emergency department.
- All BSIs positive for MRSA, VRE, CPO identified while admitted to a facility under surveillance.
- Hospital acquired BSIs with ESBL identified while admitted to a facility under surveillance.
- CLABSI attributed to adult and pediatric critical care[+].

Exclusion criteria

- **CLABSI**
  - Infection is already present on admission to critical care+
  - Blood cultures with only a viral pathogen.

[+] Please refer to Appendix A: BSI protocol-specific definitions for units that would be included under this term.

- **BSI with an antibiotic-resistant organism**
    - ESBL-BSI classified as healthcare-associated or community-acquired.

Relapse vs new BSI

- If the same organism is isolated from a subsequent blood culture:

  Relapse:
    - If less than or equal to 10 days from a negative culture **or** less than or equal to 10 days from completion of appropriate antibiotic therapy*, consider as a relapse and **do not report**.

  New:
    - If greater than 10 days from a negative culture (if culture was done)

AND

    - Greater than 10 days from completion of appropriate antibiotic therapy, **report** as a **new** infection.
- If multiple organisms are identified in a blood culture, report all organisms as one New BSI record, unless one of the organisms is a secondary BSI, then report both as Primary and Secondary BSI. If a subsequent blood culture is identified with different organisms than the initial New BSI record entered, report as a New BSI record.

Note: The provincial BSI protocol does not use the Repeat Infection Timeframe that is included in the National Healthcare Safety Network definition.

NOTE: *Appropriate antibiotic therapy: The antibiotic therapy given to patient to treat the BSI. If you are unsure whether the antibiotic therapy charted is the appropriate one for treating the BSI, please discuss with your IPC medical lead/MOH or microbiologist.

Types of BSI

Primary BSI

Must meet one of the following criteria below:

Criterion 1:
Patient of any age has a recognized pathogen (i.e., an organism which is not on the National Healthcare Safety Network common commensal list or are listed as exceptions in the National Healthcare Safety Network BSI definitions) cultured from one or more blood cultures and pathogen identified in blood unrelated to infection at another site according to National Healthcare Safety Network definitions (refer to Secondary BSI definition in this protocol page 8);

Criterion 2:
Patient of any age has at least one of: fever greater than 38°C, chills, or hypotension;

AND

Organism cultured from blood is not related to an infection at another site according to National Healthcare Safety Network definitions (refer to Secondary BSI definition in this protocol p 10)

AND

The same common commensal is cultured from two or more blood cultures drawn on separate occasions, on the same or consecutive calendar days. Criterion elements must occur within a seven-day time period (the three calendar days before and three days after the positive blood culture date).

***Criterion 3**:*
Patient ≤ 1 year has at least one of the following with no other recognized cause: fever (>38°C core), hypothermia (<36°C core), apnea, or bradycardia

AND

Organism cultured from blood is not related to an infection at another site according to National Healthcare Safety Network definitions (refer to Secondary BSI definition in this protocol p 8)

AND

The same common commensal is cultured from two or more blood cultures drawn on separate occasions, on the same or consecutive calendar days. Criterion elements must occur within a seven-day time period (the three calendar days before and three days after the positive blood culture date) (PHAC, 2023; CDC, 2024a).

If primary infection criterion 1, 2, or 3 is met, determine if Primary BSI is mucosal barrier injury related.

If mucosal barrier injury criteria are not met, determine if CLABSI:

A laboratory-confirmed BSI where:

- A central line or umbilical catheter was in place for more than two consecutive calendar days, following the first access of the central line, with day of device placement being Day 1, in an inpatient location during the current admission

AND

- The date of the positive blood culture was in an inpatient location, during the current admission.

If a central line or umbilical catheter was in place for more than two calendar days, following the first access of the line and then removed, the BSI criteria must be fully met on the day of discontinuation or the next day.

If the patient has more than one central line in place at the time of BSI, use the central line that was inserted first for the line type and insertion date, unless there is evidence of infection at the other line(s). Additional central lines can be indicated under the “Other Line” dropdown and in the comments.

For CLABSI, determine if BSI is related to critical care unit

- Adult critical care (intensive care unit, general systems-burn intensive care unit, neurosciences intensive care unit, cardiovascular intensive care unit, coronary care unit), pediatric critical care (intensive care unit, cardiac intensive care unit) defined as:
    - CLABSI onset on day three or later during a stay in critical care or on the day of transfer out or the next calendar day after transfer out of critical care.

CLABSI example

Hospital Day in ICU	BSI Infection Window Period	Central Line in place?
1		
2		Central line inserted
3		
4	Fever >38.0 C	
5	**Blood Culture**: coagulase-negative *Staphylococcus*	
6	**Blood Culture**: coagulase-negative *Staphylococcus*	
7		
8		
9		
10		
11		
Hospital acquired Primary CLABSI, ICU related • Blood culture with a commen commensal was isolated from 2 blood cultures drawn on separate occasions identified on or after the 3rd calendar day of admission • No infection at another body site • Central line was inserted for more than 2 calendar days • Patient was admitted to ICU		

Infection Window Period
(First positive diagnostic test, 3 days before and 3 days after)

(CDC, 2025b)

Types of primary BSI

Types	Description
Primary – Line-related	• An intra-vascular catheter (central) present for more than 2 calendar days, after first access, on the date of the BSI episode and the BSI is not related to an infection at another site. • An intra-vascular catheter (peripheral) present for more than 2 calendar days, after first access, on the date of BSI episode and there is pus at the peripheral line with matching organism as the blood culture.
Primary- Maternal	• A BSI that occurs in newborns with BSI event date on hospital day 1 or day 2. This includes infections acquired as a result of passage through the birth canal or those acquired transplacentally.
Primary - Mucosal barrier Injury BSI	• A patient with at least one blood culture growing **ONLY** eligible intestinal organisms from the NHSN MBI organism list or at least two blood cultures with **ONLY** viridans group streptococci and/or Rothia, but no other organisms isolated which meets any National Healthcare Safety Network criteria for Mucosal Barrier Injury BSI, specifically, allogeneic hematopoietic stem cell transplant recipient who meets National Healthcare Safety Network criteria or a neutropenic patient (WBC less than $0.5X10^9$/L (or 500 cells/mm^3)) meeting National Healthcare Safety Network criteria. • Please refer to the National Healthcare Safety Network document http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf for complete definitions (CDC, 2025a).
Primary – Unknown origin	• BSI is not secondary to an infection at another site and patient does not have and has not had an intravascular catheter (central) present for more than 2 calendar days, after first access, on the date of the BSI episode.

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Secondary BSI

These are BSIs which are related to a primary infection at another body site. The National Healthcare Safety Network definitions of healthcare-associated infections are used to determine criteria of infection at another body site. For a BSI to be considered secondary to an infection at another body site, the following requirements must be met:

- A National Healthcare Safety Network site-specific infection definition must be fully met - including urinary tract infection, pneumonia, surgical site infection, ventilator-associated infection, or one of the other surveillance definitions for specific types of infections

AND

- One of the following scenarios must be met:
    - At least one organism from the blood specimen matches an organism identified from the site-specific infection that is used as an element to meet the National Healthcare Safety Network site specific infection criterion AND the blood specimen is collected during the secondary BSI attribution period (see NHSN BSI Event definitions for examples)

OR

    - An organism identified in the blood specimen is an element that is used to meet the National Healthcare Safety Network site-specific infection criterion and is collected during the site-specific infection window.

Secondary BSI example

Hospital Day	Secondary BSI Attribution Period	Infection Window Period for Primary Site of Infection
1		
2		
3		
4		**Urine Culture:** ≥ 10^7 CFU/mL K. pneumoniae
5		Fever > 38.0°C
6		
7		
8		
9		
10		Blood Culture: K. pneumoniae
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		

Hospital-acquired BSI Secondary to UTI
- Blood culture with a pathogen identified on or after the third calendar day of admission
- Urine culture and blood culture pathogen = K. pneumoniae
- Urine culture met NHSN UTI criteria during infection window period
- Blood culture taken during secondary BSI attribution period

Infection Window Period (First positive diagnostic test, 3 days before and 3 days after)
Secondary BSI Attribution Period (Infection window period of primary infection event + 10 days after)

(CDC, 2025b)

Note: This example is adapted from the National Healthcare Safety Network Secondary BSI example; however, be careful when using these examples because the AHS/Covenant Health secondary BSI attribution period differs from the term used in the National Healthcare Safety Network definition.

Special considerations

Primary BSI

1. If the patient is admitted or transferred into critical care[+] with an implanted central line in place and that is the patient's only central line, the day of first access (line placement, infusion, withdrawal through the line or hemodynamic pressure monitoring) is considered day 1. Such lines remain eligible for a critical care[+] related CLABSI once they are accessed until they are either discontinued or the day after the patient is discharged from ICU. Note that the "de-access" of a port does not result in the patient's removal from CLABSI surveillance.
2. Occasionally, a patient with both a central line and another vascular access device (see Appendix A) will have pus at the other access site. If there is pus at the site of one of the vascular access devices and a specimen collected from that site has at least one matching organism to an organism identified in

[+] Please refer to Appendix A: BSI protocol-specific definitions for units that would be included under this term.

the blood during the infection window period, the BSI will not be considered central line-associated. The primary BSI is then line-related to the other access site. If there is evidence of infection and pus is present at the central line site and the organism(s) from that site match the blood culture it would be considered a central line-associated bloodstream infection.

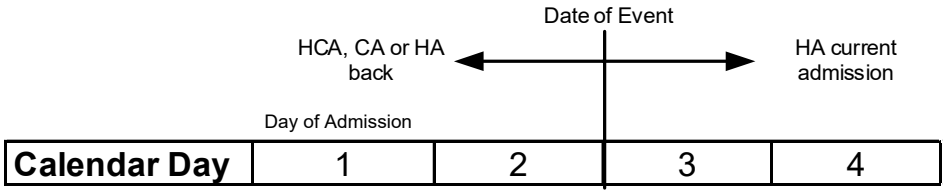
3. **Specimen collection considerations:** Although blood cultures drawn through central lines can have a higher rate of contamination than blood cultures collected through peripheral venipuncture, all positive blood cultures, regardless of the sites from which they were collected, must be included when conducting CLABSI surveillance.
4. **Patient suspected of injecting into vascular catheter:** A positive blood specimen meeting primary BSI criteria that is accompanied by documentation during the infection window period of observed or suspected patient injection into vascular lines will be excluded from CLABSI surveillance. This exclusion is very specific to INJECTION into the line (tampering with, manipulating, etc., do not meet the intent of the exclusion).
5. If determined Primary BSI, but not meeting CLABSI in critical care[+] criteria; and patient had a central line in place and have been in critical care[+] for more than 2 calendar days, data entry is required (see mandatory data entry section).

Secondary BSI

1. If the blood specimen by itself does not meet BSI criteria (e.g., only one positive blood culture with a common commensal), then that specimen may not be used to indicate the presence of a secondary BSI.
2. Physician diagnosis can be accepted as evidence of infection only when physician diagnosis is an element of the specific infection criteria.
3. If determined to be a secondary BSI, had a central line in place and is in critical care[+] for more than two calendar days, data entry is still required even if not an ARO organism (see mandatory data entry section).

Case classification

Once a positive blood culture has been identified as meeting surveillance definition for BSI, it will be classified as hospital-acquired, healthcare-associated, or community-acquired based on the following criteria:



[+]Please refer to Appendix A: BSI protocol-specific definitions for units that would be included under this term.

Hospital-acquired BSI

BSI is identified on or after the 3rd calendar day of admission;

AND

The primary BSI or the infection site where the secondary BSI is attributed to must not be present or incubating at the time of admission.

If patient has been in hospital for less than 3 calendar days prior to the onset of the BSI, there must be compelling evidence that the infection is attributable to the hospital (i.e., there is an established epidemiological link – Appendix A (BSI Data Dictionary).

Direct transfers between inpatient locations or facilities

Transfer rule: If all elements of a BSI are present within 2 calendar days of transfer from one inpatient location to another in the same facility or to another facility under surveillance (i.e., on the day of transfer or the next day), the infection is attributed to the transferring location or facility. Receiving facilities should share information about such hospital-acquired infections with the transferring location/facility to enable reporting.

- The infection control professional at the receiving facility creates a *For Info* record using the encounter information of their facility and sends invite to infection control professional at the sending facility. The infection control professional at the sending facility will change the record to a New BSI surveillance case if the BSI is deemed to meet the National Healthcare Safety Network transfer rule criteria.
- For example, the date of event is on the date of transfer or discharge, or the next day, the infection is attributed to the transferring/discharging location (i.e. hospital-acquired back). The patient must have been at the sending facility for 3 calendar days. If deemed to be hospital-acquired back, the infection control professional at the sending facility would go into the For Info record, change it to a New BSI record, classify as hospital-acquired and enter the encounter information during the patient's stay prior to transfer.

Healthcare-associated BSI

Does not meet the criteria for hospital-acquired (i.e., patient is a newly identified BSI positive on the day of admission (day 1) or the next day (day 2).

AND

Was previously admitted to any AHS/Covenant Health facilities under surveillance for 3 calendar days or more in the past 30 days. If the admission was less than 3 calendar days, there must be compelling evidence of an established epidemiological link to that facility healthcare encounter; **or**

Has an indwelling catheter or a medical device at the time of culture that is externally exposed and can be manipulated for care on a regular basis (e.g., urinary catheter, intravenous catheter, etc.); **or**

Is a resident at a Continuing care home Type A where care is provided 24 hours/day, 7 days a week; **or**

in the past 30 days was known to have:

- a surgical procedure
- peritoneal or hemodialysis
- received wound care or specialized nursing
- had intravenous medical therapy (e.g. chemotherapy, antibiotics, TPN, etc.) and/or
- attended a hospital clinic.

(Friedman et al., 2002; Shorr et al., 2006; Lenz et al., 2012)

Community-acquired BSI

Patient becomes BSI positive on the day of admission (day 1) or the next day (day 2) and does not fulfill the criteria for hospital-acquired or healthcare-associated;

OR

If the infection control professional's judgment rules out the hospital-acquired or healthcare-associated definitions based on a history of risk factors.

Acquired-outside Alberta

Identified BSI positive on the day of admission (day 1) and/or the day after admission (day 2) to an inpatient location

AND

There is epidemiological evidence (e.g., travel outside of Alberta with healthcare exposure, patient was a direct transfer from outside of Alberta) suggesting that the patient acquired the BSI outside of Alberta, which will be determined on a case-by-case basis.

Other considerations for classification

BSI identified in Surgical Site Infections (SSI):
If a BSI is identified as secondary to an SSI, it will be classified as hospital-acquired to the facility where the surgery was done if infection occurs within their National Healthcare Safety Network SSI defined follow-up time.

Secondary BSI
If a BSI is determined to be secondary to a primary infection that was present or incubating on admission the BSI would not be considered hospital acquired. An algorithm for case inclusion for hospital-acquired BSI is available in Appendix C.

Data entry and data collection

Mandatory data entry

- All new episodes of BSI with an antibiotic-resistant organism (MRSA, VRE, CPO), of any case classification (hospital-acquired, healthcare-associated, community-acquired).
  - For inpatient BSIs with MRSA, VRE and CPO, entry is required in the BSI module and their corresponding antibiotic-resistant organism module, regardless of record type (*Initial, First Infection, For Info, Follow-up)* – refer to the individual protocols for information on correct case classification. The BSI module can also be used to enter data from local surveillance initiatives.
- All new episodes of hospital-acquired BSI with ESBL.
- All new episodes of BSI from a patient with all the following criteria no matter the type of BSI (including Primary line-related: central line associated BSI or peripheral line associated BSI, Primary Maternal, Primary MBI and Secondary BSI):
  - a central line in place for more than two days
  - more than two days in critical care[+] and

[+]Please refer to Appendix A: BSI protocol-specific definitions for units that would be included under this term.

- at least two common commensals or a pathogen.

Minimum case information

Information may be obtained from a variety of sources including inpatient/resident charts (current or archived), nurses' logs, laboratory reports, nursing and medical staff, etc. The data will be collected by the infection control professional manually or electronically as soon as possible after the lab report of the new BSI specimen is obtained.

Basic demographic, facility and microbiological data will be collected on all cases, including:

- Name (first, middle and last)
- Date of birth
- Gender
- Alberta Personal Healthcare Number (PHN) or Unique Lifetime Identifier (ULI)
- Connect Care Medical Record Number (MRN)
- Record type and case classification (i.e., hospital-acquired, healthcare-associated, community-acquired)
- Admission date to reporting facility
- Reporting zone and facility name
- Encounter service and area where patient is admitted
- BSI type (Primary, Secondary), BSI Symptoms, Attributed Line Type or Secondary BSI origin (as applicable)
- BSI association (e.g., intensive care unit CLABSI)
- Culture date, laboratory name, accession number, cultured site, culture result, and pathogen(s)
- Additional information if CLABSI is intensive care unit-associated: intensive care unit admission/discharge dates; central line insertion date; Risk Factors; Birth Weight (if applicable).

Other considerations for data entry

Each infection control professional or IPC designate will be responsible for timely entry of BSI surveillance data into the provincial surveillance platform. It is expected that the minimum data set is collected and entered in a timely manner after factoring in time of collection, time to reach laboratory, work-up and distribution to infection control professionals and/or IPC offices. Typically, the time it takes for a laboratory to work up a culture specimen is approximately three days. As a recommendation, data entry should be completed within 1-2 weeks of receiving the laboratory report by an infection control professional or an IPC designate. Refer to Appendix E for more information.

For entering "BSI Attributed Line" – If patient is in ICU with a central, hemodialysis or PICC line, BSI is attributed to CL-ICU or CL-PICU; if patient is not in ICU, or has a peripheral line infection, BSI is attributed to "Other".

If your site is a Canadian Nosocomial Surveillance Program (CNISP) hospital (University of Alberta Hospital, Mazankowski Alberta Heart Institute, Stollery Children's Hospital, Alberta Children's Hospital, Foothills Medical Centre, Rockyview General Hospital, Peter Lougheed Centre, and South Health Campus), CLABSI cases in NICU may be considered for data entry into the provincial surveillance data base following the CNISP protocol (PHAC, 2023). For entering "BSI Attributed Line" for these cases, BSI is attributed to CL-NICU.

Denominator data

Numbers of inpatient admissions and inpatient days are provided by AHS Analytics. These denominators are presented by month, which are aggregated for the fiscal quarter of the report. Denominators used for reporting can be accessed on Tableau Workbooks.

Central line-days

Denominator data are collected electronically for critical care patients. The number of patients with one or more eligible central line is counted at the same time once each day. A patient with more than one central line counts as only one central line day. Refer to Appendix D for further details.

Rate calculations

BSI rates will be calculated quarterly for facilities participating in surveillance.

Incidence Rates for AHS/Covenant Health Hospitalized Patients	Calculations
CLABSI*	Number of CLABSI cases attributed to ICU x 1,000 / Number of central line days
Hospital-acquired (HA) BSI^	Number of hospital-acquired BSI cases x 10,000 / Number of patient-days
HA- BSI with an antibiotic-resistant organism#	Number of HA BSI with an antibiotic-resistant organism cases x 10,000 / Number of patient-days
Healthcare-associated BSI^	Number of healthcare-associated BSI cases x 1,000 / Number of admissions
Community-acquired BSI^	Number of community-acquired BSI cases x 1,000 / Number of admissions

*Rates may be further analyzed to derive rates for neonates by birth weight and line type or to derive rates for intensive care unit/unit types
^ rates may be further analyzed to derive rates for Primary and Secondary BSI
#antibiotic resistant organism may be: MRSA, VRE, CPO or ESBL

Comparator rates

Internal and external surveillance rates are used as comparators. The internal rates are the historical rates for the province or zone from the previous fiscal year. The external rates are provided by the Canadian Nosocomial Infection Surveillance Program (CNISP) which are created from data submitted by large and tertiary acute care facilities; therefore, may not provide appropriate comparison for smaller acute care facilities.

Reporting

Communication and dissemination of surveillance reports is an integral part of surveillance to inform IPC practice within AHS and Covenant Health facilities and provide support for interventions that improve the quality of patient care delivered. Responsibility for compiling, reporting, and disseminating data and reports is shared between provincial IPC Surveillance and Standards and the provincial IPC program. Formal reports are generated routinely (usually quarterly) using reconciled and validated data.

The reports contain information on the facility, zone and provincial level and are presented to the provincial IPC Surveillance, Evaluation, Quality Improvement and Research committee for approval (AHS, 2019). Operational reports are created by local infection control professionals or their designate and may or may not consist of reconciled and validated data, as they are often created with real-time, as is, data. Additional CLABSI and ARO-BSI information can be accessed on IPC Tableau Workbooks.

Any new hospital-acquired BSI where the pathogen is an antibiotic-resistant organism is included in the hospital-acquired BSI with an antibiotic-resistant organism rate, which is reported provincially. This is regardless of the status of the antibiotic-resistant organism (either Initial or Follow-up). The event is reported in the reporting quarter of the BSI event date. Any new CLABSI case attributed to the ICU is included in the CLABSI rate, which is reported provincially and within the reporting quarter where the CLABSI event occurred.

Data quality

The purpose of evaluating the quality of data is to ensure that surveillance-related events are monitored efficiently and effectively. The evaluation should involve the assessment of the program (i.e., the protocol and reporting) and system (i.e., electronic data collection tool) attributes, including relevance, simplicity, flexibility, data quality, acceptability, consistency, representativeness, timeliness and stability. Additionally, with increasing use of technology, informatics concerns for surveillance systems need to be addressed. These include evaluating hardware and software, using a standard user interface, applying standard data formatting and coding, performing quality checks and adhering to confidentiality and security standards.

A standardized approach is used to reconcile and validate the data, provincially. The first component of data reconciliation and validation of data in the provincial surveillance platform ensures that demographic data is valid and reliable. The second component entails ensuring that the surveillance-related events are entered in a manner that is consistent with the protocol definitions. At this latter stage, outliers are identified and requests are sent to the infection control professional to verify that the data was correctly entered and definitions were consistently applied according to the provincial surveillance protocol. Final designation of cases is a collaborative effort between the facility-based infection control professionals and the epidemiologists/analysts of the IPC Surveillance and Standards team.

Further use of statistical software for validating records is still in development. Algorithms are continuously being updated and added to ensure capture of as many discrepancies as possible. In addition to this current process of data review, there will be data audits using external data sources to determine the validity and reliability of the data in provincial surveillance platform. The data will also serve to inform decisions made by the IPC Surveillance and Standards team to improve surveillance processes and methodologies.

Data quality working group

The IPC Surveillance Data Quality Working Group reports to the IPC Surveillance, Evaluation, Quality Improvement and Research committee and is responsible to develop, review and update indicator protocols to include the precise methodology for data collection to ensure consistency. Decisions from the Data Quality Working Group on specific protocol questions are communicated to provincial infection control professionals through the Data Quality Forum and are included in the protocol User Guide. These decisions will be supplemental to the protocol and will be incorporated into the protocol, when revised.

Protocol revision history

Date	Details
September/October 2009	Alberta Health Services-Hospital-acquired BSI surveillance commenced with a protocol trial September, 2009 with full implementation October, 2009..
April 2012	Updated line inclusion criteria.
February 2013	Additional case classifications, definitions included.
February 2015	Updated BSI definitions, change to timeframe for relapse BSI, and revisions for electronic line-days collection.
October 2015	Updated BSI definitions for change in MRSA and VRE protocol.
April 2016	Updated antibiotic resistant organism to include ESBL
March 2017	Provincial protocol alignment and CVC BSI changed to CLABSI.
March 2018	Updated for clarity and to incorporate exclusion criteria of observed or suspected patient injection into vascular access lines.
March 2019	Updated case definition, exclusion list, calculation tables, and appendices.
Spring 2020	Updated primary-line related definition to only include central lines or peripheral lines where patient had pus and matching organism, special considerations for primary BSI, case classification language, and appendices Updated to new template and reposted to web page.
Spring 2021	Updated references.
Spring 2022	Updated mandatory data entry to include BSIs that are not CLABSI but had a line inserted and stayed in ICU as mandatory NEW BSI

Protocol revision history

Date	Details
Spring 2023	Revised primary CLABSI definition to be clear that line must be in place for 2 days and in ICU for 2 days – addition in bold: • A central line or umbilical catheter was in place for more than two consecutive calendar days, following the first access of the central line, with day of device placement being Day 1, in an inpatient location, during the current admission. • CLABSI onset on day three or later during a stay in critical care or on the day of transfer out or the next calendar day after transfer out of critical care. Clarified that for common commensals, the two or more blood cultures need to be collected on the same or consecutive calendar days. Updated MBI definition to align with NSHN – additions in bold: • A patient with at least one blood culture growing ONLY eligible intestinal organisms from the NHSN MBI organism list or at least two blood cultures with ONLY viridans group streptococci and/or Rothia but no other organisms isolated. For a BSI to be considered secondary to an infection at another body site, the following requirements must be met – following statement was revised to: • A National Healthcare Safety Network site-specific infection definition must be fully met – including urinary tract infection, pneumonia, surgical site infection, ventilator-associated event, or one of the other surveillance definitions for specific types of infections. Clarified that MRSA BSIs also require data entry in both BSI and MRSA module. Revised data collection form. Updated Primary BSI algorithm #2. Added information on CLABSI reporting: Any new CLABSI case attributed to the ICU is included in the CLABSI rate, which is reported provincially and within the reporting quarter where the CLABSI event occurred. Updated References. Updated LTC definition. Changed reporting process from IPC Surveillance Committee to IPC Surveillance, Evaluation, Quality Improvement and Research Committee. Addition of the following statement to clarify what to do if a patient has more than one central line: “If the patient has more than one central line in place at the time of BSI, use the central line that was inserted first for the line type and insertion date, unless there is evidence of infection at the other line(s). Additional central lines can be indicated under the “Other Line” dropdown and in the comments.”

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Protocol revision history

Date	Details
Spring 2024	• Reference to supporting documentation in the "Introduction" changed to a bulleted list • Removed reference to ProvSurv – used "provincial surveillance platform" • Clarified definition for critical care and adding definition to Appendix A: removed critical care unit list and added in a footnote to see Appendix A • Added in clarification for identification of multiple organisms in blood • Aligned inclusion criteria to be consistent with other modules by adding all included case types • Moved "Relapse vs. new BSI" section to after the exclusion criteria • Updated "common commensal" hyperlink to link the NHSN Terminology browser webpage https://www.cdc.gov/nhsn/cdaportal/terminology/index.html • Removed example list of common commensal organisms from Primary BSI Criterion and have added these to the common commensal definition in Appendix A • Clarified that Primary BSI with MBI should also be determined prior to determining if CLABSI • Clarified CLABSI example and Secondary BSI example • Added vascular access device definition in Appendix A • Clarified mandatory data entry elements • Added in information about CNISP reporting for NICU in the other considerations for data entry section • Added "optional data entry" to outcomes and risk factors section titles • Separate occasions definition updated to align with 2024 NHSN updates • Clarified algorithms by reorganization and adding in information about pus at the VAD site • General and specific definitions updated • References updated.
Spring 2025	• Clarified in Methodology that blood cultures could be bacterial or fungal • Clarified that cases transferred from one emergency department to another emergency department are included if they are subsequently admitted to an acute care facility • Added to exclusion criteria: blood cultures with only a viral pathogen • Restored formatting to Primary BSI, that was incorrectly removed last year and used criteria to explain different options for meeting a primary BSI • Revised CLABSI example (removed repeat infection timeframe and improved clarity around when central line was inserted) • Added Canadian conversion / definition for neutropenia • Added clarity around RIT • Removed reference to spreadsheet and instead referenced the NHSN Terminology Browser • Updated format of protocol revision history table

Protocol revision history

Date	Details
	• Added this statement to the definition of the secondary BSI attribution period: If you are considering a case to be a secondary BSI, the blood specimen must occur within the primary infection window period or in the 10 days following the primary infection window period • Removed Appendix F: Data collection form • Fixed Table of Contents (previously missing Appendix D) • Removed reference to LTC and replaced with Continuing Care Home Type A – updated definition and added link to continuing care website for source of truth • Updated definition for patient admissions denominator • Changed from “isolate” to “specimen” throughout • Removed optional data entry sections (outcomes, risk factors) – this information can be found in the user guide.

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Appendix A: BSI protocol-specific definitions

Terms	Definitions
Calendar days	Used for determining the timeline of presenting with or acquiring an antibiotic-resistant organism, CDI, BSI, or National Healthcare Safety Network infection definition. Calendar day 1 is the day of patient admission (see patient admission definition for more information) or day of surgical procedure.
Critical care	Specialized treatment units including intensive care units, general systems-burn intensive care units, neurosciences intensive care units, cardiovascular intensive care units, coronary care units, pediatric intensive care units, and pediatric cardiac intensive care units.
Dialysis	Hemodialysis patients require a vascular access, which can be a catheter or a graft or enlarged blood vessel that can be punctured to remove and replace blood. Peritoneal dialysis works on the same principle as hemodialysis, but the blood is cleaned while still inside the patient's body, rather than in a machine. A catheter is surgically inserted in the abdomen, usually below and to one side of the navel. Because of frequent hospitalizations and receipt of antimicrobial drugs, dialysis patients are also at high risk for infection with antimicrobial-resistant bacteria (CDC, 2025; The Kidney Foundation of Canada, n.d.).
Epidemiological link	A case is thought to be epidemiologically linked to another person(s) or healthcare worker(s) in a facility (e.g., shared same room, same ward/unit, same caregiver, and same procedure/surgery as a known patient/resident with the same antibiotic-resistant organism colonization or infection)
Indwelling catheter	A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a closed collection system. It is also called a Foley catheter. It does not include straight in and out catheters or urinary catheters that are not placed in the urethra (e.g., suprapubic catheter) (CDC, 2025c).
Infection	Presence of micro-organisms from any site with signs and the manifestation of symptoms of a clinical infection. Refer to National Healthcare Safety Network definitions for infection definitions from specific sites (CDC, 2025b).
Infection window period	The 7-days during which all site-specific infection criteria must be met. It includes the day of the first positive diagnostic test (i.e. lab specimen collection, imaging test, procedure or exam, physician diagnosis and initiation of treatment) that is an element of the site-specific infection criterion, was obtained, the 3 calendar days before and the 3 calendar days after. For site-specific infection criteria that do not include a diagnostic test, the first documented localized sign or symptom that is an element of National Healthcare Safety Network infection criterion, excluding SSIs, should be used to define the window (i.e., diarrhea, site specific pain, purulent exudate).
Matching organisms	Genus and species identification are used to determine if the organisms are the "same". Antibiograms will only be considered if differentiating between ARO and non-ARO BSIs. If the organism is less definitively defined in one culture than in the other, the identifications must be complementary (e.g., *Candida albicans* and "yeast" are complementary). The matching common commensals represent a single element; therefore, the collection date of the first common commensal is the date of the element used to determine the date of the event.

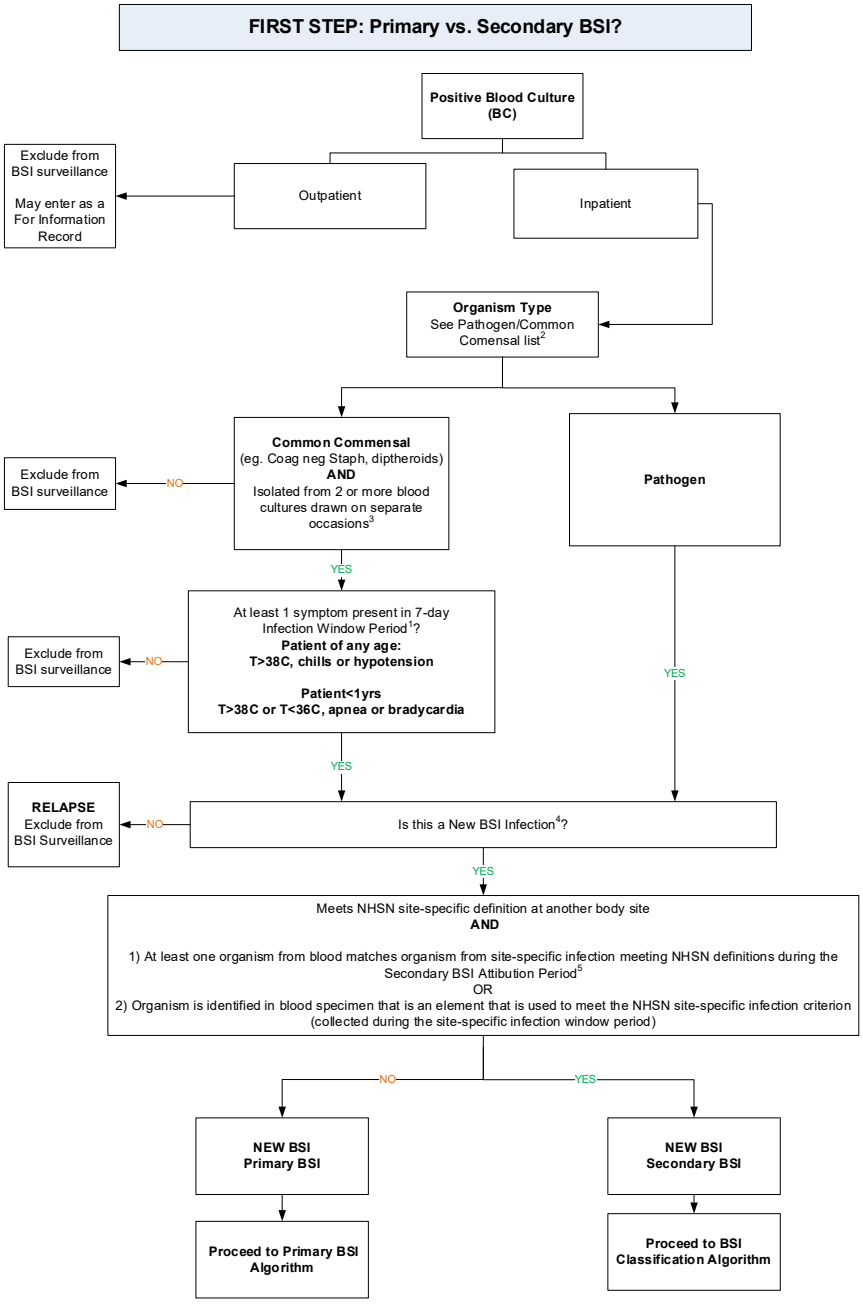
Terms	Definitions
Medical device	Covers a wide range of products used in the treatment, mitigation, diagnosis or prevention of a disease or abnormal physical condition (Health Canada, 2022). Examples to consider when determining whether an incident BSI, CPO, ESBL, MRSA or VRE case is classified as healthcare-associated include: central venous catheters, intravenous lines, peripheral, umbilical catheters, peripherally inserted central catheter, stoma, tracheostomy, feeding tube, suprapubic catheter, endotracheal tube, wound drains etc.
Pathogen/Common Commensal list	The National Health and Safety Network has created a NHSN Organism List that can be accessed via the NHSN Terminology Browser. Common commensal: i.e., diphtheroids, *Corynebacterium* spp. excluding *Corynebacterium diphtheria*; *Bacillus* spp excluding *B. anthracis*; *Propionibacterium* spp.; coagulase-negative staphylococci including *S. epidermidis*; viridans group streptococci; *Aerococcus* spp.; *Micrococcus* spp.; and *Rhodococcus* spp.
Secondary BSI attribution period (Infection window period + 10 days)	The infection window period of the primary infection event and 10 days after. This 10-day period is not the same as the 10 days used for determining a relapse BSI. If you are considering a case to be a secondary BSI, the blood specimen must occur within the primary infection window period or in the 10 days following the primary infection window period. The provincial BSI protocol does not use the Repeat Infection Timeframe that is included in the National Healthcare Safety Network definition.
Separate occasions	Means that blood from at least two separate blood draws were collected on the same or consecutive calendar days and the blood cultures are assigned separate specimen numbers, processed individually, and are reported separately in the final laboratory report. For example, blood specimens drawn from different sites (i.e., different venipunctures, a combination of venipuncture and lumen withdrawal, or different lumens of the same central line), or at different times, would be expected to undergo separate decontaminations and are therefore considered drawn on “separate occasions”.
Vascular access devices	Device inserted in a patient access the bloodstream for frequent or regular administration of drugs, like intravenous (IV) antibiotics. If there is pus at one of the following vascular access devices and a specimen collected from that site has at least one matching organism to an organism found in the blood during the infection window period, the BSI will not be considered central line-associated. Vascular access devices included in this exception are limited to: ○ Arterial catheters unless in the pulmonary artery, aorta or umbilical artery ○ Arteriovenous fistulae ○ Arteriovenous grafts ○ Atrial catheters (also known as transthoracic intra-cardiac catheters, those catheters inserted directly into the right or left atrium via the heart wall) ○ Hemodialysis reliable outflow (HERO) dialysis catheters ○ Intra-aortic balloon pump (IABP) devices ○ Non-accessed CL (those neither inserted nor used during current admission) ○ Peripheral IV or Midlines.

Appendix B: General surveillance definitions

Terms	Definitions
Encounter types	Type of AHS/Covenant Health healthcare location or facility where the patient is located at the time of identification. The following encounter types are referred to in acute care surveillance protocols (Government of Alberta, 2008; Government of Alberta, 2024). • **Inpatient acute care:** Refers to a General Hospital: According to the Hospitals Act, a general hospital is defined as a "hospital providing diagnostic services and facilities for medical or surgical treatment in the acute phase for adults and children and obstetrical care" (Government of Alberta, 2024). General hospitals have several functional centres. Each functional centre is associated with inpatient, outpatient, or diagnostic and therapeutic services. • **Inpatient mental health/rehab**: A designated mental health facility providing diagnosis and treatment for mental illness and addiction in the acute phase for adults and children. Inpatient services refer to a person admitted to and assigned a bed in a facility by order of a physician for provision of diagnostic and/or treatment services. They would have a patient/group room in which inpatient services are provided within the patient's room or within a common group room within the designated mental health facility. AHS facility examples include Glenrose Rehabilitation Hospital, Centennial Centre for Mental Health and Brain Injury.
Infection prevention and control baseline	A comparator rate created for each acute care facility in the IPC Surveillance on-line dashboards and reporting modules, to guide efforts to reduce healthcare-associated infections. The IPC baseline is based on reported monthly rates for the previous fiscal year. The calculation excludes the monthly rates higher than 1 Standard Deviation above the 12-month average but includes all rates where the site had optimal performance. This calculation method biases the IPC baseline rate towards zero, to focus on the best patient safety outcomes.
Continuing Care Home (CCH) Type A (formerly Long Term Care)	This environment provides onsite RN and/or registered psychiatric nurse (RPN) care, assessment and/or treatment 24-hours a day. Licensed practical nurses (LPNs) may also be onsite in addition to onsite personal care and support provided by health care aides (HCAs). CCH Type A may also have a secure space. Some sites may have specialized programs and services available for residents with complex clinical or complex functional care requirements (e.g., rehabilitation) (Alberta Health Services, 2025). To identify if a facility has CCH Type A beds refer to this website: https://www.albertahealthservices.ca/cc/page15328.aspx where you can search by Name and identify what type of beds the facility has.
Patient admission (aka inpatient admission)	A person admitted to and assigned a bed in a hospital by the order of a physician, for the provision of diagnostic or treatment services or both. Includes any time in the emergency department where the patient is subsequently transferred to an inpatient unit. This is the denominator used for non-hospital-acquired rates (see Rate Calculation Section) (Government of Alberta, 2024).
Patient days (aka inpatient days)	As defined by AHS, this is used to create the denominator for hospital-acquired or hospital-identified cases. The total is equal to midnight census with patients admitted and discharged on the same day counted as a one day stay. It includes patients out on a pass. Day of admission is counted but the day of separation (discharge, death or transfer out of hospital) is not counted. Patient-days are included for inpatient encounters where discharge date is not recorded in the

Terms	Definitions
	data source. Inpatient totals exclude the time patients are waiting in the emergency department for an inpatient bed (time from decision to admit to discharge from emergency department).
Emergency department inpatient days (EDIP)	As defined by AHS, denominators for provincial surveillance modules include these figures in the total patient-days. Includes the number of acute care inpatient patient-days utilized in the emergency department during the reporting period. The figures reflect the time from emergency department discharge (i.e. decision to admit) to emergency department departure for patients admitted to an acute care hospital. It is calculated as [(emergency department departure date and time – emergency department discharge date and time) ÷ 60 ÷ 24]. Figures exclude cases where the emergency department discharge date and time or emergency department departure date and time were not provided, or the value has a negative number.

Appendix C: BSI algorithms



1. **INFECTION WINDOW PERIOD:** 7 days during which all site-specific infection criteria must be met. It includes the day the first positive diagnostic test that is an element of the BSI criteria was obtained, the 3 calendar days before and the 3 calendar days after.

2. **See Pathogen/Common Commensal list: spreadsheet** https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx **or NHSN Terminology Browser** https://cdcnhsn.clinicalarchitecture.com/SymedicalCDCNHSNViewpoint/#/search

3. **SEPARATE OCCASIONS:** Blood from at least two separate blood draws were collected on the same or consecutive calendar days and were collected in a manner that suggests two **separate blood site preparations** were performed.

4. **NEW BSI**: In subsequent blood cultures, if the same microorganism is:
- ***less*** than or ***equal*** to 10 days from a negative culture **OR *less*** than or ***equal*** to 10 days from completion of appropriate antibiotic therapy, consider as a relapse and **DO NOT REPORT**.
- ***greater*** than 10 days from a negative culture (if culture was done) **AND *greater*** than 10 days from completion of appropriate antibiotic, **REPORT** as a NEW infection
- If multiple organisms are identified in a blood culture, report all organisms as one New BSI record, unless one of the organisms is a secondary BSI, then report both. If a subsequent blood culture is identified with a different organisms than the initial New BSI record, report as NEW infection.

5. **SECONDARY BSI ATTRIBUTION PERIOD:** The infection window period of the primary infection event and 10 days after. This 10 day period is not the same as the 10 days used for determining a relapse BSI. The AHS/COV BSI protocol does not use the Repeat Infection Timeframe that is included in the NHSN definition.

REMINDER: For consistency across the province **the cut off to use for urine colony counts is 10^7 cfu/L** for interpreting NHSN definitions, no matter how your lab is currently reporting colony counts.

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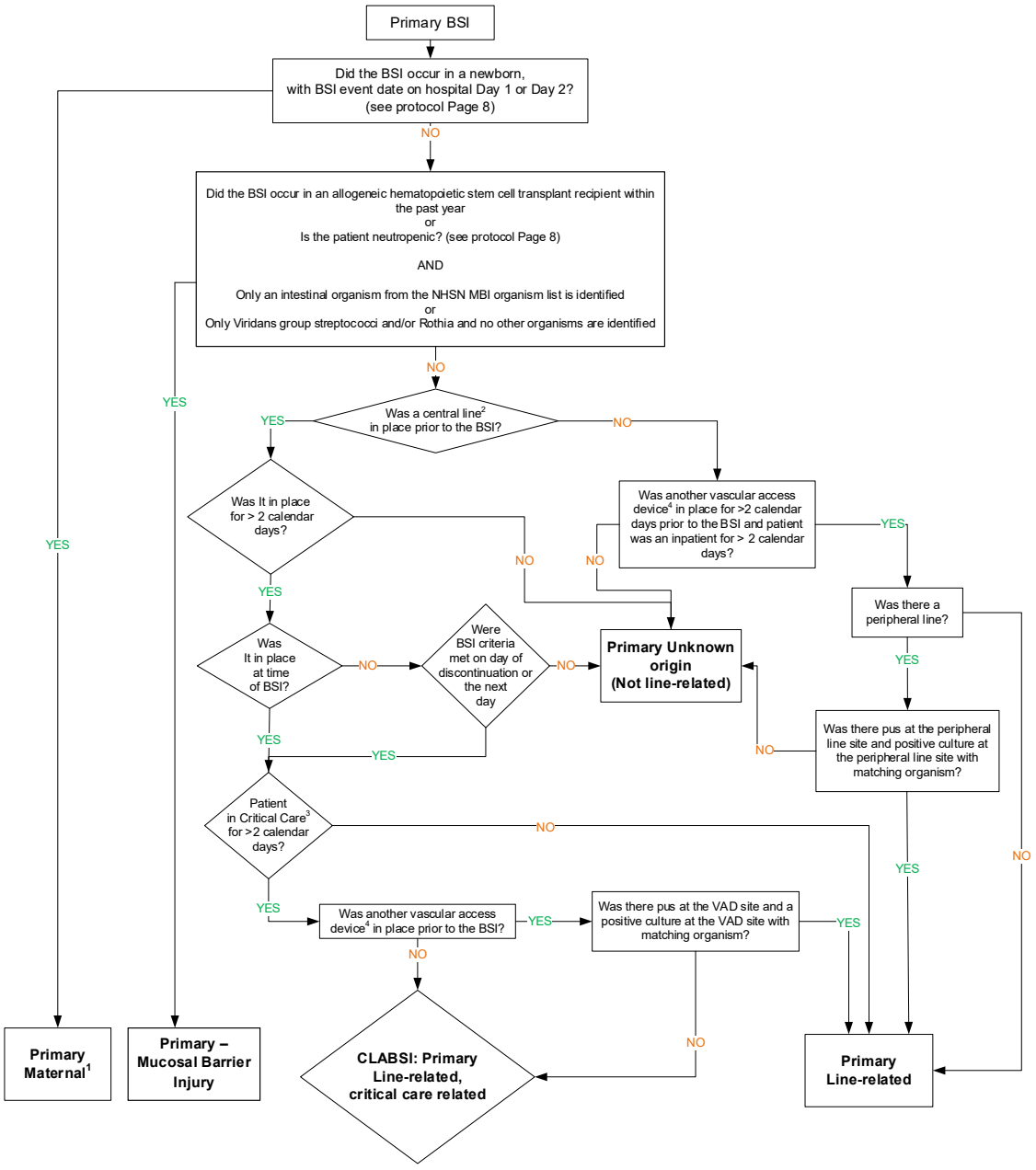
SECOND Step: Primary BSI Algorithm



Proceed to BSI Classification Algorithm

1. PRIMARY, MATERNAL: A BSI that occurs in newborns with BSI event date on hospital Day 1 or Day 2. This includes infections acquired as a result of passage through the birth canal or those acquired transplacentally.

2. Central Line: An intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring (Appendix D). If patient is in critical care with a central, hemodialysis or PICC line, BSI is attributed to CL-ICU, CL-NICU or CL-PICU.

3. Critical Care: Units under surveillance if applicable to the site for CLABSI are the Intensive Care Unit (ICU), General Systems-Burn ICU, Neurosciences ICU, Cardiovascular Intensive Care Unit (CVICU), Coronary Care Unit (CCU), Pediatric Intensive Care Unit (PICU), and Pediatric Cardiac Intensive Care Unit (PCICU). CLABSI onset on day three or later during critical care stay or on the day of transfer or the next calendar day after transfer out of the critical care (protocol pg 10). Neonatal Intensive Care Unit (NICU) should be taken into consideration if at a CNISP participating site.

4. Vascular access device (VAD): Vascular access devices included are: Arterial catheters unless in the pulmonary artery, aorta or umbilical artery; arteriovenous fistulae; arteriovenous graft; atrial catheters (also known as transthoracic intra-cardiac catheters, those catheters inserted directly into the right or left atrium via the heart wall); hemodialysis reliable outflow (HERO) dialysis catheters; intra-aortic balloon pump (IABP) devices; non-accessed CL (those neither inserted nor used during current admission); peripheral IV or Midlines

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Other considerations for Hospital-acquired Classification

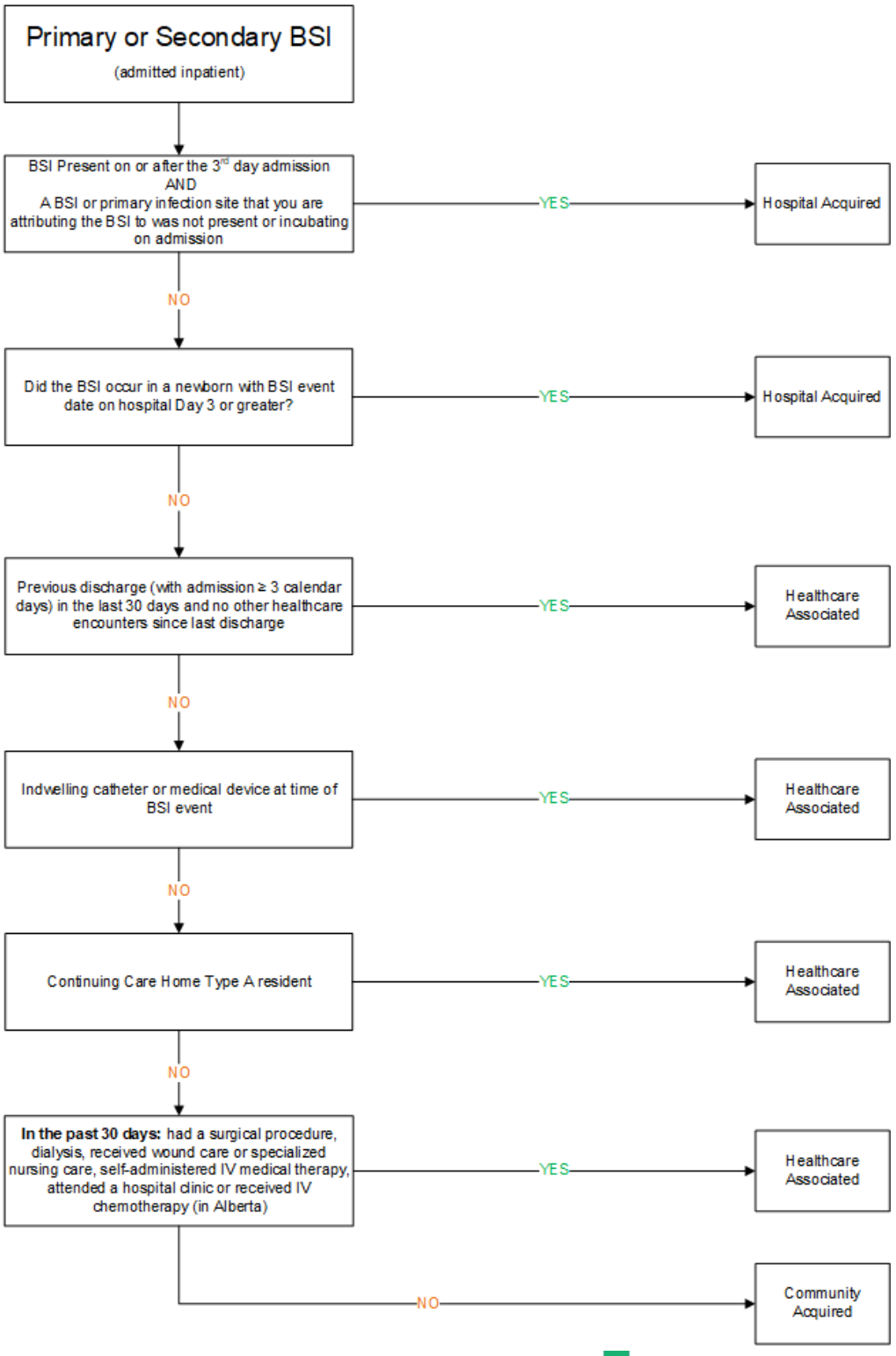
BSI identified in Surgical Site Infections (SSI)

A. If a BSI is identified as secondary to a SSI, it will be classified as hospital-acquired to the facility where the surgery was done if infection occurs within their NHSN SSI defined follow-up time.

Direct transfers between inpatient locations or facilities

B. *Transfer Rule*[2]*:* If all elements of a BSI are present within two calendar days of transfer from one inpatient location to another in the same facility or to a new facility (i.e., on the day of transfer or the next day), infection is attributed to the transferring location or facility (hospital-acquired back).

FINAL Step: BSI Classification Algorithm



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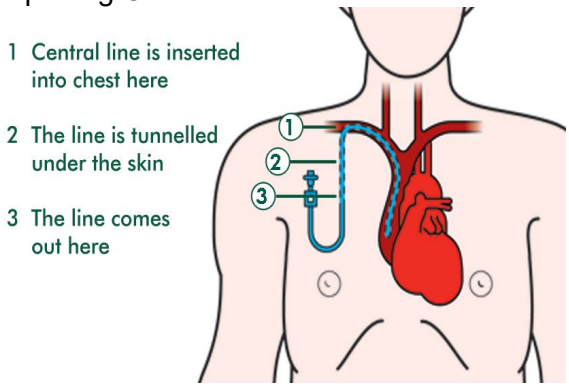
Appendix D: Information on central lines

Central lines

A central line is an intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for **infusion**, **withdrawal** of blood, or hemodynamic **monitoring**.

The following are considered great vessels for the purpose of reporting Central Line-Associated Bloodstream Infection (CLABSI) and counting central-line days:

- Aorta
- Pulmonary artery
- Superior vena cava, inferior vena cava
- Brachiocephalic veins
- Internal jugular veins
- Subclavian veins
- External iliac veins, common iliac veins
- Femoral veins
- Umbilical artery/vein in neonates.



Counting central line-days

- Line-days are the denominator used for reporting CLABSI rates since the presence of the central line is the risk factor for acquisition of a CLABSI. Line-days data are collected either electronically or by manual count. For both methods, the number of patients with **one or more eligible central lines** is counted at the same time once each day (i.e. a patient with more than one central line counts as only one line-day). In this methodology, patients are not included if a central line is inserted then discontinued within 24h but not crossing time of counting. For example, if a central line inserted at 10am and discontinued at 3am next day, that patient would not be included in the count at 8am on either day.

Electronic central line-days query

- The CLABSI Data Quality Working Group has worked with the clinical and technical team for the intensive care units electronic charting system (eCritical) to create an electronic query for line-days, including defining central line types for inclusion in the line-days denominator. Note that neither the insertion site nor the type of device is used to determine if a line qualifies as a central line. The device must terminate in one of the great vessels or in or near the heart and be used for one of the purposes outlined above, to qualify as an eligible central line for this surveillance.

The eCritical line-days are available through the Critical Care dashboard:
https://tableau.albertahealthservices.ca/#/views/Line_Days/LineDaysDashboard?:iid=1

There is a useful guide to using Tableau Workbook so you can get the most out of the eCritical line-days reports, and you can set up a subscription to be mailed to you every Monday morning.

http://insite.albertahealthservices.ca/ecritical/tms-ecrt-tracer-tableau-notes.pdf

Note that line-days for the last reporting quarter are preliminary until all patient charts have been closed by the Quality Assurance eCritical team, **this may take up to six weeks following the end of the quarter.**

Neonate-specific denominator (used for CNISP surveillance, refer to CNISP protocol)

- Line-days are reported by **each** birth weight group.
- The neonatal population is stratified into five distinct categories based on weight at the time of birth and is not changed as the infant gains weight.

These categories are:

1. ≤ 750g
2. 751-1000g
3. 1001-1500g
4. 1501-2500g
5. >2500g

Central lines INCLUDED in the eCritical electronic line-days query

FLO_DISP_NAME
Introducer
Single Lumen Implantable Port
UVC Single Lumen
UVC Double Lumen
UVC Triple Lumen
Umbilical Artery Catheter
PICC Single Lumen (Ped)
PICC Double Lumen (Ped)
PICC Triple Lumen (Ped)
CVC Quadruple Lumen
Heat Exchange Catheter
Hemodialysis Cath Double Lumen
Hemodialysis Cath Triple Lumen
Dual Lumen Implantable Port
PA Catheter
Multi-Access Catheter
CVC 5 Lumen Polyurethane
PICC Single Lumen
PICC Double Lumen
PICC Triple Lumen
CVC Single Lumen
CVC Double Lumen
CVC Triple Lumen
Hemodialysis Catheter

Central lines EXCLUDED from the eCritical line-days query

- Pacemaker wires and other non-lumened devices inserted into central blood vessels or the heart are not considered central lines, because fluids are not infused, pushed, nor withdrawn through such devices.
- Extracorporeal membrane oxygenation (ECMO) devices

- Femoral arterial lines
- Intra-aortic balloon pump (IABP) devices
- Hemodialysis reliable outflow (HeRO) dialysis catheters
- Rapid Infusion catheters – antecubital, external jugular insertion sites
- Angio lines (axilla, brachial, popliteal, radial);
- Arterial lines - axillary, brachial, dorsal, femoral, radial, ulnar insertion sites
- Thrombolytic sheath (axillary, brachial, femoral)
- Arteriovenous fistula
- Arteriovenous graft
- Non-accessed central line (not accessed nor inserted during the hospitalization)
- Peripheral intravenous or Midlines
- Ventricular Assist Device (VAD).

Notes on eligible central lines

1. Central lines included and excluded from the eCritical line-days query have been reviewed by Clinical expert for eCritical and approved by the IPC CLABSI Data Quality Working Group. These are considered central lines since all terminate in eligible large vessels.
2. An introducer is considered an intravascular catheter, and depending on the location of its tip and use, may be a central line. The eCritical clinical experts have indicated that these devices are used as central lines in the eCritical system.
3. The eCritical query includes pulmonary arterial catheters since the critical care clinical experts have indicated that these are long lines that terminate in great vessels and are used as central lines.
4. Rapid Infusion catheters (RIC) are short lines (2 inches) so are only included in the eCritical query if inserted directly into a central vein; therefore, RIC from internal jugular or femoral insertion sites are included, but those from other sites (see exclusion list) are not.
5. If the patient is admitted or transferred into the intensive care unit with an implanted central line in place and that is the patient's only central line, day of first access (line placement, infusion, or withdrawal through the line) is considered Day 1. Such lines remain eligible for the eCritical query once they are accessed until they are either discontinued or the day after the patient is discharged.

Note: The "de-access" of a port does not result in the patient's removal from the line-days count.

CLABSI surveillance

- Provincial surveillance for central line-associated bloodstream infection (CLABSI) is performed in critical care (intensive care unit, general systems-burn intensive care unit, neurosciences intensive care unit, cardiovascular intensive care unit, coronary care unit, pediatric intensive care unit, and pediatric cardiac intensive care unit in AHS and Covenant Health acute care facilities.

Appendix E: BSI surveillance process

1. **Identification of patients with BSI**
    - Review of microbiology laboratory results by infection control professionals
    - For each positive blood culture: determine if patient is an inpatient when the specimen was obtained.
    - Determine if case definition for New BSI is met and determine case classification of BSI
    - Determine if BSI meets definition for Primary or Secondary bacteremia.
        - Refer to National Healthcare Safety Network definitions to determine if Secondary BSI
        - If patient meets definition for Primary BSI, determine the type of primary infection (line-related (central or peripheral), maternal, MBI, unknown)
        - If Primary CLABSI, determine if attributable to critical care (intensive care unit, general systems-burn intensive care unit, neurosciences intensive care unit, cardiovascular intensive care unit, coronary care unit, pediatric intensive care unit, and pediatric cardiac intensive care unit).
    - Complete data entry through the provincial surveillance platform BSI data entry module. Follow-up at 30 days to determine outcome and finalize data entry.
2. **Provincial process: CLABSI surveillance in critical care**

    These include intensive care unit, general systems-burn intensive care unit, neurosciences intensive care unit, cardiovascular intensive care unit, coronary care unit, pediatric intensive care unit, and pediatric cardiac intensive care unit.
3. **Communication**
    - The infection control professional or designate will enter the CLABSI case in the provincial surveillance platform BSI data entry module
    - The infection control professional or designate will notify the intensive care unit clinicians of the case.
4. **Responsibilities**
    - The intensive care unit infection control professional(s) is responsible for identification, notification and verification of cases for their site, including data entry into provincial surveillance platform and to the intensive care unit clinicians. The intensive care unit infection control professional will ensure an intensive care unit contact receives the surveillance reports.
    - IPC Surveillance and Standards team will confirm that the infection control professional has communicated to critical care prior to generating any reporting of CLABSIs through communication with the reporting infection control professional.