Central Line Associated Bloodstream Infection (CLABSI) in the Adult Intensive Care Unit

Surveillance protocol

**Central line associated bloodstream infection (CLABSI)surveillance protocol in the adult intensive care unit.**

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# Background

This surveillance protocol outlines a consistent method for data collection and reporting for surveillance of central line associated bloodstream infection (CLABSI) in the adult intensive care unit (ICU) for Tasmanian public hospitals.

All information in this protocol has been adapted from the Australian Commission on Safety and Quality in Health Care (ACSQHC) ‘Implementation guide for surveillance of central line associated bloodstream infection’ at [Australian Commission on Safety and Quality in Health Care website](https://www.safetyandquality.gov.au/wp-content/uploads/2016/04/Implementation-Guide-for-Surveillance-of-Central-Line-Associated-Bloodstream-Infection-2016-Edition.pdf), the ‘Centers for Disease Control/National Healthcare Safety Network (CDC/NHSN) CLABSI Module January 2017’ at the [Centre for Disease Control website](https://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf) and the Australian and New Zealand Intensive Care Society (ANZICS) information on CLABSI

Refer to ANZICS guideline for more detailed information on CLABSI prevention and surveillance at the [ANZICS website](http://www.anzics.com.au/pages/CLABSI.aspx).

CLABSI surveillance as outlined in this surveillance protocol should be undertaken in acute Tasmanian public hospitals: Royal Hobart Hospital (RHH), Launceston General Hospital (LGH) and the North West Regional Hospital (NWRH).

# Definitions

**Adult Intensive Care Unit (ICU)** – a designated adult ward of a hospital which is staffed and equipped to provide observation, care and treatment to adult patients with actual or potential life-threatening illnesses, injuries or complications, from which recovery is possible.

For the purposes of this surveillance protocol:

* include all patients within the intensive care unit including co-located high dependency patients treated by the same nursing and medical staff
* where paediatric patients are admitted to an adult ICU, report data from these patients with the data from adult patients.

**Central line** –a permanentor temporary intravascular access device or catheter that ends in or near the heart or in one of the great vessels – aorta, pulmonary artery, superior vena cava, inferior vena cava, brachiocephalic veins, internal jugular vein, subclavian vein, external iliac vein, common iliac vein, femoral – where the line may be used for infusion, withdrawal of blood and haemodynamic monitoring.

* Inclusions – tunnelled and non-tunnelled central venous catheters, implanted ports, pulmonary artery catheters, dialysis or haemofiltration catheters in a great vessel, peripherally inserted central catheter and introducers where the tip is situated in a great vessel.
* Exclusions – extracorporeal membrane oxygenation (ECMO), arterial catheters, intra-aortic balloon pump devices, haemodialysis reliable outflow dialysis catheters, pacemaker wires and other non-lumened devices.

**Central line days –** number of patients with one or more central lines in the unit under surveillance. The count can be done in one of two ways with the first option preferred.

1. Count the number of patients with one or more central lines in situ each day, preferably at the same time each day. The totals are summated for each calendar month under surveillance.

Option 1 demontrates counting the number of patients with a central line for each calendar day and the total count at the end of the month.

1. If a facility is unable to perform a daily line count, calculate a monthly central line day number by extrapolating from sampling using the following method:
   * count the number of patients with one or more central lines in situ on a minimum of three non-consecutive days per week.
   * divide the total number of central lines counted by the number of days on which the count was done
   * multiply by the number of days in that month.

**Options 2 demonstrates counting the number of patients with central lines three times each week and extrapolating the count over a month to estimate a total.**

**Notes on permanent central lines**

* Permanent central lines that are not accessed during the ICU admission are not counted as part of the central line denominator days.
* Permanent central lines that are accessed during the ICU admission are counted as part of the central line denominator days until the patient is discharged from ICU or the permanent central line is removed.

**CLABSI Criterion**

Criterion elements must occur within a timeframe of no more than 24 hours between any two element – e.g. positive blood culture and temperature >38°C.

* + **Criterion 1** -the patient has a recognised pathogen1 cultured from one or more blood cultures and the organism is not related to an infection at another body site2 including mucosal barrier injury3.
  + **Criterion 2** – thepatient has the same (matching) potential contaminant organism4 cultured from two or more blood cultures drawn on separate occasions and the organism is not related to an infection at another body site2 including mucosal barrier injury3.

**AND**

* + Patient has at least one of the following: temperature >38°C, chills or hypotension.

**OR**

* + Patient ≤1 year of age has at least one of the following signs or symptoms of core fever >38°C, core hypothermia <36°C, apnoea or bradycardia.

1Recognised pathogens can include *Staphylococcus aureus, Enterococcus spp., Enterobacter spp., Escherichia coli, Klebsiella spp., Proteus spp., Providencia spp., Pseudomonas aeruginosa* and *Candida spp.*

2 For information and guidance on definitions of ‘infection at another body site’, refer to the CDC NHSN surveillance definition within the ‘CDC/NHSN CLABSI Module January 2017’ at the [Centre for Disease Control website](https://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf)

3 For information and guidance on the definition of ‘mucosal barrier injury, refer to the ACSQHC ‘Implementation guide for surveillance of central line associated bloodstream infection’ at [Australian Commission on Safety and Quality in Health Care website](https://www.safetyandquality.gov.au/wp-content/uploads/2016/04/Implementation-Guide-for-Surveillance-of-Central-Line-Associated-Bloodstream-Infection-2016-Edition.pdf)

4Potential contaminant organisms include diphtheroids *(Corynebacterium spp.), Bacillus spp.* (excluding *B. anthracis*), *Propionibacterium spp., coagulase negative staphylococci* (including *S. epidermidis*), *viridans group streptococci, Aerococcus spp., Micrococcus spp.,* and *Rhodococcus spp.*

Refer to the identifying microbiology laboratory or infectious diseases physician if uncertain if the organism identified is a recognised pathogen or a potential contaminant.

**Date of CLABSI** – date the first positive blood culture was collected

**CLABSI Rate** –

Numerator - Number of CLABSI

Denominator - Number of central line days

Use the same time period for collecting the numerator and the denominator.

# Case definition

* A central line associated bloodstream infection (CLABSI) is a laboratory confirmed bloodstream infection in a patient in the adult ICU or within 48 hours of discharge from the ICU, who fulfils either Criterion 1 **OR** Criterion 2 **AND**:
  + where a central line was in place for >48 hours on the day the first positive blood culture was collected **and**
  + the central line was in situ on the day of, or the day before, the first positive blood culture was collected. If the central line was in place for >48 hours and then removed, the CLABSI criteria must be met on the day of removal or the following day.
* All CLABSI that meet the case definition **and** occur within an adult ICU or within 48 hours of discharge from the ICU, will be included in the numerator.
* Seek a clinical review if CLABSI criteria are met again within 14 days of the initial CLABSI **and** the same organism (s) is identified, to determine if the CLABSI is the same event or a new event.

# Surveillance process

* Data is collected by the participating hospitals.
* Data submitted to the ANZICS CORE database consists of two data points - central line days per calendar month and number of CLABSI per calendar month.
* Data is submitted monthly via a csv file to the ANZICS CORE database by the participating hospital

# Reporting

* Report CLABSI rates internally to the relevant committees at least quarterly at each of the participating sites.
* TIPCU will report annual CLABSI rates for each acute public hospital within ICU in the TIPCU HAI Surveillance Report.

# Data validation

Data validation should be performed by the infection prevention and control unit or delegate at the participating site prior to data submission to the ANZICS CORE data entry portal.

# 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*.

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

# Quality Improvement

For issues of governance and quality improvement, healthcare management must be informed in line with organisational governance protocols where results cause concern. Issues raised from surveillance are to be used within the organisation’s own quality improvement frameworks.

# Contact details

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