Public Health Agency of Canada | Agence de la santé publique du Canada

Canadian Nosocomial Infection Surveillance Program

Surveillance for Central Line Associated Blood Stream Infections (CLABSI) in Intensive Care Units

2017 CLABSI Surveillance Protocol

Revised November 7 2016

Please enter/upload case forms to www.cnphi-rcrsp.ca

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I. OBJECTIVES

The objective of this CNISP initiative is to continue ongoing surveillance for CLABSI in ICUs within the CNISP hospital network and provide national benchmark rates that hospitals may use for internal and external comparison.

A secondary objective is to reduce the rates of CLABSI in ICU. The literature suggests that the performance of surveillance for BSI and feedback of data to caregivers results in the reduction in infection rates. Routine standardized collection of data on infection rates also permits individual centres to evaluate specific infection prevention and control interventions.

For background information on CNISP CLABSI surveillance please e-mail cnisp-pcsin@phac-aspc.gc.ca

II. METHODS

A. Eligibility to participate

1. Hospitals that are part of the CNISP network
2. Able to perform year-round surveillance for CLABSI in at least one ICU[1]
3. Able to collect and submit the following data on a quarterly basis:
   - ICU specific CL[2]-days (central line days) and ICU specific patient-days for each participating ICU
   - For neonatal ICUs the ability to stratify CL days by birth weight group. Only level III and II/III NICUs are included[3].

B. Patient population

All ICU patients in **at least ONE** of the ICUs in the participating CNISP hospital.

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[1] ICU = nursing care area in an acute care hospital that provides intensive observation, diagnostic and supportive care to critically ill patients including, but not limited to, invasive intravascular hemodynamic monitoring, endotracheal intubation and mechanical ventilation. The type of ICU is determined by the service designation of the majority (e.g. >80%) of patients cared for by the unit. Bone marrow transplant, step-down, intermediate care or telemetry units only are excluded.

[2] CL = venous access device that terminates at or close to the heart or in one of the great vessels (18). The CDC/NHSN defines great vessels as: aorta, pulmonary artery, inferior and/or superior vena cava, brachiocephalic, internal jugular, subclavian, external iliac, common iliac, femoral veins, and umbilical artery and vein (1).
CLs include non-tunnelled (standard) CL, coated or not, peripherally inserted CL (PICC), tunnelled devices (e.g. Broviac, Hickman), tunnelled haemodialysis line, intra-cardiac catheters such as intra-atrial & and ventricular lines, dual function lines such as temperature/venous catheters e.g. Cool line catheters, Quattro catheters, introducers etc.), pulmonary artery catheters, umbilical artery and vein catheters and implanted catheters (including ports).

Other arterial catheters are NOT included. Pacemaker leads and other non-infusion devices (ECMO, IABP and VAD) inserted into central blood vessels or the heart are NOT included (1).

[3] *Since 2014 we no longer collect information on whether neonates have an umbilical catheter or another type of CVC. If a neonate has a UC this is identified as a CL.*

C. Surveillance period

The 2016 CLABSI surveillance period will begin January 1, 2017 and continue to December 31, 2017 inclusive.

D. Numerators

ONLY Central line-associated BSIs related to an ICU admission are to be reported.

1. **BSI case definition:** The BSI is **NOT** related to an infection at another site and it meets one of the following criteria.

   Criterion 1: Recognized pathogen cultured from at least one blood culture, unrelated to infection at another site.

   OR

   Criterion 2: At least one of: fever (>38°C core), chills, hypotension (if aged < 1 year: fever (>38°C core), hypothermia (<36°C core, apnea, or bradycardia) **AND** common skin contaminant[4] cultured from ≥ 2 blood cultures drawn on separate occasions [5] and positive laboratory results are unrelated to infection at another site.

2. **CLABSI**

   A laboratory-confirmed bloodstream infection where a central line catheter (CL) or umbilical catheter (UC) was in place for >2 calendar days on the date of the positive blood culture, with day of device placement being Day 1[6].

   AND

   A CL or UC was in place on the date of the positive blood culture or the day before. If a CL or UC was in place for >2 calendar days and then removed, the BSI criteria must be fully met on the day of discontinuation or the next day. If the patient is admitted or transferred into the ICU with a CL in place, the day of first access[7] is considered Day1.

3. **ICU-related**

   CLABSI onset during ICU stay and the CL has been in place > 2 calendar days. The CLABSI would be attributable to the ICU if it occurred on the day of transfer or the next calendar day after transfer out of the ICU.

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[4] Diphtheroids, *Corynebacterium* spp., *Bacillus* spp, *Propionibacterium* spp., coagulase-negative staphylococci, (including *S. epidermidis*) viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp

[5] Different sites may include peripheral veins, CVCs, or separate lumens of a multiumen catheter. Different times include 2 blood cultures collected on the same or consecutive calendar days via separate venipunctures or catheter entries. The collection date of the first positive blood culture is the date used to identify the date of positive culture. Two positive blood culture bottles filled at the same venipuncture or catheter entry constitute only one positive blood culture.

01-Jan-2016	02-Jan-2016	03-Jan-2016	04-Jan-2016	Date of positive blood culture = 03-Jan-2016
CL in place Fever > 38° C, core	CL in place	CL in place S. epidermidis (1 of 2 blood cultures)	CL in place S. epidermidis *(1 of 2 blood cultures)*	

[6] NOTE: If admitted or transferred into a facility with a CL/UC in place (e.g., tunneled or implanted central line), day of first access is considered Day 1.

[7] "Access" is defined as line placement, infusion or withdrawal through the line.

Exclusions

- Infection already present on admission to ICU
- BSI in neonate < 48 hours old, unless epidemiologic evidence indicates acquisition in the neonatal ICU (e.g., procedure-associated; known endemic neonatal ICU strain)

4. Relapse vs. new infection[8]

Same microorganism (as best as can be determined by the data available – e.g. species, antibiotic sensitivity, etc.) isolated from a subsequent blood culture:

- 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**.
- 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

E. Data collection

Cases are to be identified by a multiple-character number that includes the CHEC identification number (3-character alphanumeric number, e.g., 09A), the surveillance year (2017), and the CLABSI case sequential number (three-digit number starting from 001) and continuing on with each additional case. An example of the first case in an institution would be 09A-17-001. An example of the thirty-fifth case would be 09A-17-035, and so on.

As a patient may have more than one episode of CLABSI during the same ICU admission, **sequential** episodes are to be identified by entering as a new case and 'linking' to the patient's original CLABSI by entering the original case ID at the end of the questionnaire.

Minimum dataset:

- Birth date
- Gender
- Date of admission to hospital
- Date of admission to ICU
- Date of first positive blood culture
- Type of ICU (e.g., adult medical, surgical, mixed, pediatric, neonatal, etc.)
- Criteria for diagnosis of CLABSI
- Microorganism(s) isolated
- Outcome at 30 days
- For neonatal ICU: Birth weight

[8] Definition of relapse vs new infection originated with 2005 CNISP CVC-BSI working group (WG). There was a need to be able to differentiate between infection and relapse and '10 days' was agreed upon by the WG to be an appropriate time frame

F. Case finding

Identification of patients with BSI:

- Daily (or, at a minimum, three times weekly) review of microbiology laboratory results.
- For each positive blood culture: determine if patient is in ICU or was in ICU within 2 calendar days of the time the positive blood culture was obtained.

  If yes, review patient's chart to determine if a CL/UC was present for >2 calendar days on the date of the positive blood culture, with day of device placement being Day 1. If so, determine if case definition for CLABSI is met. If so, fill in the patient questionnaire

G. Electronic data entry

All patient questionnaire data are to be submitted online through the Canadian Network for Public Health Intelligence (CNPHI) at www.cnphi-rcrsp.ca. For technical assistance, questions or comments, please contact CNISP at cnisp.pcsin@phac-aspc.gc.ca

Patient questionnaire data for each quarter are due at the end of the following quarter as follows

January 1 to March 31 2017 data are due by June 30 2017
April 1 to June 30, 2017 data are due by September 30, 2017
July 1 to September 30, 2017 data due by December 31, 2017
October 1 to December 31, 2017 data due by March 31, 2018

H. Denominators

Central lines that are removed and reinserted: If, after central line removal, the patient is without a central line for at least one full calendar day (NOT to be read as 24 hours), then the central line day count will start anew. If instead, a new central line is inserted before a full calendar day without a central line has passed, the central line day count will continue.

1. **CL-days (central line days)** If a patient has more than one CL or UC at the same time, only **one CL-day** is counted.

a. All Adult ICUs and PICUs

See example of daily Adult ICU and Paediatric ICU denominator data collection sheet in Appendix 2; these are **examples ONLY** and are **NOT** to be submitted. Centres may choose to use alternative methods of daily data collection. Quarterly aggregate denominator data should be submitted on the core quarterly denominator submission forms.

b. Neonatal ICU[9]

Neonatal ICU CLABSI rates will be stratified by 5 birth weight groups (< 750g, 750 -1000g, 1001-1500g, 1501-2500g, >2500g)

See sample daily NICU denominator data collection sheet in Appendix 3; this is an **example ONLY** and is **NOT** to be submitted; quarterly aggregate denominator data should be submitted on the annual CLABSI NICU denominator submission form (Appendix). Centres may choose to use alternative methods of daily data collection.

2. Patient-days

This information is not required for calculation of infection rates but is used for the calculation of central line utilization per ICU (see rate calculations).

a. All Adult ICUs and PICUs

See sample adult ICU and pediatric ICU denominator data collection sheet in Appendix 2; this is an **example ONLY** and is **NOT** to be submitted. Centres may choose to use alternative methods of daily data collection. Quarterly aggregate denominator data should be submitted on the core quarterly denominator submission forms.

b. Neonatal ICUs (NICU) [10]

See sample NICU denominator data collection sheet in Appendix 3; this is an **example ONLY** and is **NOT** to be submitted. Centres may choose to use or already use alternative methods of daily data collection).

For centres unable to supply NICU patient-days by birth weight group, please supply total NICU patient-days. CL utilization rates will be calculated for the NICU but not stratified for birth weight).

Denominator data is collected using the core quarterly denominator submission forms and submitted to the CNISP Surveillance Office

Adult ICU, PICU and NICU denominator data for each quarter are due at the end of the following quarter as follows:

January 1 to March 31 2017 data are due by June 30 2017
April 1 to June 30, 2017 data are due by September 30, 2017
July 1 to September 30, 2017 data due by December 31, 2017
October 1 to December 31, 2017 data due by March 31, 2018

[9] *If a neonate has a UC it is counted as a CL.*

I. Rate Calculations

Preliminary calendar year rates will be calculated by June 30th of the following calendar year and finalized by the end of the following calendar year.

Overall, for each ICU and by criterion 1 & 2:

Infection rate: CVC-associated BSI rate = $\frac{\text{Number of CLABSI's}}{\text{Number of CL-days}} \times 1000$

Device utilization rate: CVC-utilization rate = $\frac{\text{Number of CL-days}}{\text{Number of patient-days}}$

For each type of ICU (depending on data collected)**:**

- Data (numerators and denominators) from participating centres will be pooled to determine pooled mean infection rates.
- Individual rates for participating centres will be used to calculate median, percentile and mean infection and device utilization rates.

Adult ICU:

- Numbers of specific types of adult ICU types may be insufficient to permit calculation of meaningful percentiles. If so, data from all adult ICUs will be pooled for calculation of percentiles. If numbers permit, percentiles will be calculated for specific types of adult ICU.

Neonatal ICU:

- Pooled mean, median, percentile and mean infection rates will be calculated for birth weight groups.
- Device utilization rates by birth weight group will be calculated for those centres submitting patient-days stratified by birth weight group. For those able to only submit **total** neonatal ICU patient days, individual device utilization rates will be calculated for the total neonatal ICU population.
- Pooled mean, median, percentile and mean device utilization rates will be calculated for birth weight groups and for the total neonatal ICU population.

III. ETHICS

This surveillance project is observational and does not involve any alteration in patient care. Surveillance for healthcare associated infections is a routine component of quality assurance and patient care in Canadian healthcare institutions and therefore informed consent will not be required. All data submitted to the Public Health Agency of Canada are kept strictly confidential. Each questionnaire will be identified by a unique number and no personal identifiers will be transmitted to the Public Health Agency of Canada. This unique number will be linked to the patient's name or hospital number only at the local CHEC site and will be kept strictly confidential under secure conditions.

IV. PUBLIC ACCESS TO INDIVIDUAL CNISP SITE DATA

There is current demand for public disclosure of hospital-associated adverse events. Any data released by CNISP will be in summary format and will not identify individual hospitals. CNISP participants should anticipate that they may be approached to release hospital specific data, especially if the results of this surveillance are published. Hospital administrators should be made aware that national reporting will be occurring.

V. WORKLOAD

Cases

- Review of microbiology laboratory blood culture results
- Determining location of patients with positive cultures
- Chart review to determine if patient fulfills criteria for CLABSI
- Filling of the case data collection form
- Assessing outcome at 30 days
- Submission of questionnaires (on-line) quarterly within 3 months of the end of the quarter (e.g., data from April 1 – June 30, 2017 will be due by Sept 30, 2017)

Denominators

- Daily collection of CVC days
- Collation of data on CVC days
- Collection and collation of data on patient-days quarterly

For neonatal ICU Daily collection of data on CL days and patients-days by birth weight group

- Collation of data on CL days and patient-days by birth weight group

CLABSI Denominator Information Form

- Adult ICU, PICU & NICU denominators are to be submitted quarterly within 3 months of the end of the quarter using the core surveillance quarterly denominator data submission form.

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Appendix 1

2017 Patient Questionnaire for CLABSI IN INTENSIVE CARE UNITS

1. CHEC Site: _____

2. Unique Patient ID _____ 17 _____
(CHEC site #) (year) (case number)

8. Does this patient meet the criteria for a CLABSI? If yes, please identify which criteria the CLABSI meets.
Note: **Only** CLABSIs[10] related to an ICU admission are to be reported

Please check **ONE** of the following two options:

☐ Criterion 1 Recognised pathogen cultured from one or more blood cultures, unrelated to infection at another site

☐ Criterion 2 At least one of: fever (>38°C), chills, hypotension (if aged < 1 year: fever, hypothermia (<36°C), apnea, or bradycardia)

AND

Common skin contaminant[11] cultured from ≥ 2 blood cultures drawn on separate occasions and positive laboratory results are unrelated to infection at another site

3. Date of birth _____/_____/_____ **OR** Age _____
DD MMM YYYY ☐ Years ☐ Months ☐ Days

4. Gender ☐ Male ☐ Female

5. Birth weight* (grams) _____
*NICU only: refers to weight at time of birth & should **NOT** be changed when the infant gains weight

6. Date of admission to hospital _____ / _____ / _____
DD MMM YYYY

7. Date of admission to ICU _____ / _____ / _____
DD MMM YYYY

9. Date of patient's first positive blood culture for this infection _____ / _____ / _____
DD MMM YYYY

[10] CLABSI: A laboratory-confirmed bloodstream infection where a central line (CL) or umbilical catheter (UC) was in place for >2 calendar days on the date of the positive blood culture with day of device placement being Day 1 **AND** A CL or UC was in place on the date of the positive blood culture or the day before. If a CL or UC was in place for >2 calendar days and then removed, the BSI criteria must be fully met on the day of discontinuation or the next day. If the patient is admitted or transferred into the ICU with a CL in place and that is the patient's only CL, day of first access is considered Day1. NOTE: If admitted or transferred into a facility with a CL/UC in place (e.g., tunneled or implanted central line (port), day of first access is considered Day 1

[11] Diphtheroids, *Corynebacterium* spp., *Bacillus* spp, *Propionibacterium* spp., coagulase-negative staphylococci, (including *S. epidermidis*) viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp

10. Microorganism(s) isolated, please check all that apply:

- ☐ Acinetobacter
- ☐ Bacillus
- ☐ Candida albicans
- ☐ Candida other
- ☐ Candida other
- ☐ Citrobacter
- ☐ Coagulase negative staphylococcus (CONS)
- ☐ Coagulase negative staphylococcus (CONS)
- ☐ Other, specify: _____
- ☐ Escherichia coli
- ☐ Enterobacter
- ☐ Enterococcus (vancomycin susceptible)
- ☐ Fungi other, specify
- ☐ Klebsiella
- ☐ MRSA
- ☐ Other, specify: _____
- ☐ MSSA
- ☐ Pseudomonas
- ☐ Serratia
- ☐ Stenotrophomonas
- ☐ Streptococcus
- ☐ VRE
- ☐ Other, specify: _____

10a Antibiogram results

	Gram negative organisms							
	Acinetobacter	**Citrobacter**	**Klebsiella**	**Pseudomonas**	**Serratia**	**Stenotrophomonas**	**Other _____**	**Other _____**
Antibiotic	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**
Amikacin								
Ampicillin								
Cefazolin								
Cefepime								
Ceftriaxone								
Ciprofloxacin								
Colistin								
Ertapenem								
Gentamycin								
Imipenem								
Levofloxacin								
Meropenem								
Piperacillin								
Piperacillin-tazobactam								
Ticarcillin-clavulanic acid								
Tobramycin								
Trimethoprim-sulfamethoxazole								
Other _____								
Other _____								
Other _____								

	Gram positive organisms								
	Bacillus	**Coagulase negative staphylococcus (CONS)**	**Enterococcus (Vancomycin susceptible)**	**Enterococcus (Vancomycin resistant – VRE)**	**MRSA**	**MSSA**	**Streptococcus**	**Other _____**	**Other _____**
Antibiotic	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**
Ampicillin									
Cefazolin									
Cefepime									
Ceftriaxone									
Clindamycin									
Cloxacillin/Oxacillin									
Ertapenem									
Imipenem									
Levofloxacin									
Linezolid									
Meropenem									
Penicillin									
Piperacillin									
Piperacillin-tazobactam									
Ticarcillin-clavulanic acid									
Trimethoprim-sulfamethoxazole									
Vancomycin									
Other _____									
Other _____									
Other _____									

	Fungi				
	Candida albicans	**Candida other**	**Fungi other _____**	**Fungi other _____**	**Fungi other _____**
Anti-fungal	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**
Amphotericin B					
Caspofungin					
Fluconazole					
Micafungin					
Voriconazole					
Other _____					
Other _____					
Other _____					

11. Type of ICU where BSI was acquired: (Check one only)[12]

☐ Adult Medical ☐ Pediatric (PICU)
☐ Adult Surgical ☐ Neonatal (NICU)
☐ Adult Mixed[13] ☐ Other, specify_____
☐ Adult Cardiovascular Surgery

12. What was the outcome of this patient 30 days after positive culture? (Check one response only)

☐ Patient survived, discharged or transferred Date of discharge/transfer _____ (DD/MMM//YYYY)
☐ Patient alive, still in hospital (out of ICU)
☐ Patient alive, still in ICU
☐ Patient died, date of death _____ (DD/MMM//YYYY)
☐ Unknown

Original Unique Patient ID: _____ for patients with more than one episode of CVC associated BSI during the same ICU admission

[12] Please ensure that the type of ICU where the BSI was acquired (e.g., Adult medical ICU) you are submitting the case for, matches the type of ICU you will be submitting denominator data for in this quarter using the 'core quarterly denominator data submission form'.

[13] Adult mixed ICUs are any combination of patients (e.g., medical/surgical; medical/neurological; surgical/trauma; med/surg/trauma etc.)

APPENDIX 2

Data Dictionary - definitions and notes for

Patient Questionnaire (Appendix 1)

1. **CHEC Site #**
   This will be the **3-character** alphanumeric number assigned to your institution. It will always begin with the two digit number assigned to your CHEC member e.g., 07, 15, and a letter assigned by the CHEC member for that specific institution e.g., A, B, C, etc. The CHEC site # for each institution should always be the same for all the CHEC/CNISP surveillance projects and will always have all three alphanumeric digits reported as the CHEC site #, e.g., 07A, 15A.

2. **Unique identifier code**
   This number should never be longer than 8 characters. The 8 characters should consist of the 3 character CHEC site # (e.g., 09A), the surveillance year the infection occurred in (e.g., 14), and a consecutive number starting at 001 and continuing on with each additional case. An example of the first case in an institution would be 09A-17-001. An example of the thirty-fifth case would be 09A-14-035, and so on.

   Note: Always label the laboratory isolate with this ID number.

3. **Date of Birth**
   Please enter Day (26), Month (May) and Year (1973) in this order. Please write out the month (eg Jan, Mar, Aug etc.). If the date of birth is not available please enter the patient's age (in years, months or days) at the time of positive culture.

4. **Gender**
   Check male or female gender as appropriate.

5. **Birth weight**
   Please provide the weight of the infant at birth in grams. This refers to the weight of the infant **at the time of birth** and should **NOT** be changed as the infant gains weight. For example, if a neonate weighs 1006 grams at birth but remains in the NICU for two months and has a body weight of 1650 grams when it develops a CLABSI, the recorded birth weight should still be 1006 grams on the patient questionnaire.

6. **Date of admission to hospital**
   Please indicate the date when the patient was admitted to the hospital. Please enter Day (26), Month (May) and Year (2017) in this order. Please write out the month (eg Jan, Mar, Aug etc.).

7. **Date of admission to ICU**
   Please indicate the date when the patient was admitted to the intensive care unit (ICU). Please enter Day (26), Month (May) and Year (2017) in this order. Please write out the month (eg Jan, Mar, Aug etc.).

8. **Does this patient have or meet criteria for a CLABSI?**
   This question applies only to CL-associated BSIs related to an ICU admission. Please check only **ONE** of the two options available (e.g. criterion 1 **OR** criterion 2).

9. **Date of patient's first positive blood culture for this admission**

For the current admission, please indicate when the first positive blood culture was obtained. Please enter Day (26), Month (May) and Year (2017) in this order. Please write out the month (eg Jan, Mar, Aug etc.).

10. Microorganism(s) isolated

Please select all microorganisms isolated for the BSI as reported by the laboratory.

Microorganism	**Definition**
Acinetobacter	Includes any Acinetobacter (A.) species or species not identified
Bacillus	Includes any Bacillus species or species not identified
Candida albicans	Includes Candida albicans
Candida other	Includes any other Candida species or species not identified
Citrobacter	Includes any Citrobacter (C.) species or species not identified
Coagulase negative staphylococcus (CONS)	Includes all species of CONS (e.g., S. epidermidis, capitis, warnerii, hominis) and CONS species not identified
Escherichia coli	Includes Escherichia (E.) coli
Enterobacter	Includes any Enterobacter (E.) species or species not identified
Enterococcus	Includes any vancomycin-susceptible enterococcus species or species not identified
Fungi	Includes non-candidal fungi and fungal species not identified
Klebsiella	Includes any Klebsiella (K.) species or species not identified
Staphylococcus aureus methicillin resistant (MRSA)	Includes MRSA, S. aureus MRSA
Staphylococcus aureus methicillin sensitive (MSSA)	Includes MSSA , S. aureus MSSA, or S. aureus methicillin sensitivity not stated
Pseudomonas	Includes any Pseudomonas (P.) species or species not identified
Serratia	Includes any Serratia (S.) species or species not identified
Stenotrophomonas	Includes any Stenotrophomonas (S.) species or species not identified
Streptococcus	Includes alpha hemolytic streptococci, beta hemolytic streptococci, viridans streptococcus group, streptococcus parasanguinous, avium, bovis, constellatus, mitis, milleri, pyogenes and other species not identified
Vancomycin-resistant enterococci	Includes vancomycin-resistant E. faecalis, faecium, gallinarum or VRE not speciated
Other, specify	Includes any microorganism(s) not included in the drop down list

10a Antibiogram results

Please indicate the organism(s) susceptibility/resistance. (S = Susceptible, I = Intermediate or R = Resistant) to the antibiotics tested. For example if MRSA was the microorganism identified and was subsequently tested to determine its susceptibility to vancomycin, if resistant you would enter the following into the table (See row highlighted in green)

	Gram positive organisms								
	Bacillus	**Coagulase negative staphylococcus (CONS)**	**Enterococcus (Vancomycin susceptible)**	**Enterococcus (Vancomycin resistant – VRE)**	**MRSA**	**MSSA**	**Streptococcus**	**Other _____**	**Other _____**
Antibiotic	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**
Ampicillin									
Cefazolin									
Cefepime									
Ceftriaxone									
Clindamycin									
Cloxacillin									
Ertapenem									
Imipenem									
Levofloxacin									
Linezolid									
Meropenem									
Penicillin									
Piperacillin									
Piperacillin-tazobactam									
Ticarcillin-clavulanic acid									
Trimethoprim-sulfamethoxazole									
Vancomycin					R				
Other _____									
Other _____									
Other _____									

OR if susceptible

	Gram positive organisms								
	Bacillus	**Coagulase negative staphylococcus (CONS)**	**Enterococcus (Vancomycin susceptible)**	**Enterococcus (Vancomycin resistant – VRE)**	**MRSA**	**MSSA**	**Streptococcus**	**Other _____**	**Other _____**
Antibiotic	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**	**Susceptibility**
Ampicillin									
Cefazolin									
Cefepime									
Ceftriaxone									
Clindamycin									
Cloxacillin									
Ertapenem									
Imipenem									
Levofloxacin									
Linezolid									
Meropenem									
Penicillin									
Piperacillin									
Piperacillin-tazobactam									
Ticarcillin-clavulanic acid									
Trimethoprim-sulfamethoxazole									
Vancomycin					S				
Other _____									
Other _____									
Other _____									

11. Type of ICU where BSI acquired

Please check the box that identifies the type of ICU where the BSI was acquired. Please ensure that the type of ICU where the BSI was acquired (e.g. adult medical ICU) that you are submitting for the case **matches** the type of ICU on the core quarterly (cvc-days) denominator form.

If the intensive care unit includes a combination of patients e.g., medical/surgical, surgical/trauma, medical/neurosurgical, burn patients as part of its ICU patient mix, please select adult mixed. If none of these identifies the type of ICU, then the 'other' box should be checked and the type of ICU described under 'specify'.

12. Outcome 30 days after date of first positive culture

Thirty days after the date of first positive culture please select only one of the options available. For responses requiring a date (date of discharge, transfer or death), please enter Day (26), Month (May) and Year (2017) in this order. Please write out the month (eg Jan, Mar, Aug etc.).

APPENDIX 3

Example* of daily denominator collection form for Adult ICU & PICU

Daily denominator collection form for Adult ICU & PICU

CHEC site_____ Month_____ Year_____ Type of ICU [1] _____

Date	# Patients [2]	# Patients with one or more CL [3]
1		
2		
3		
4		
5		
6		
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30		
31		
Total	Patient days =	CL days =

[1] Type of ICU: specify e.g., Adult medical, Adult surgical, Adult Mixed, PICU, etc.

[2] In some hospitals this data may be more easily obtained by administrative period from hospital administrative databases than by noting number of patients each day.

[3] Number of patients with one or more CL. Only count **ONE** CL day per patient even if patient has > one CL

APPENDIX 4
Example* of daily denominator collection form for Neonatal Intensive Care Unit (NICU)

*****This is an example ONLY and is NOT to be submitted; quarterly aggregate denominator data should be submitted on the core quarterly denominator submission forms. Centres may choose to use or already use alternative methods of daily data collection.

Daily denominator collection form for Neonatal Intensive Care Unit (NICU)
CHEC site_____ Month _____ Year_____

Date	Birth weight ≤ 750 gms		Birth weight 751-1000 gms		Birth weight 1001-1500 gms		Birth weight 1501-2500 gms		Birth weight >2500 gms	
	# Pts	#CL	# Pts	#CL	# Pts	#CL	# Pts	#CL	# Pts	#CL
1										
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3										
4										
5										
6										
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31										
Total										

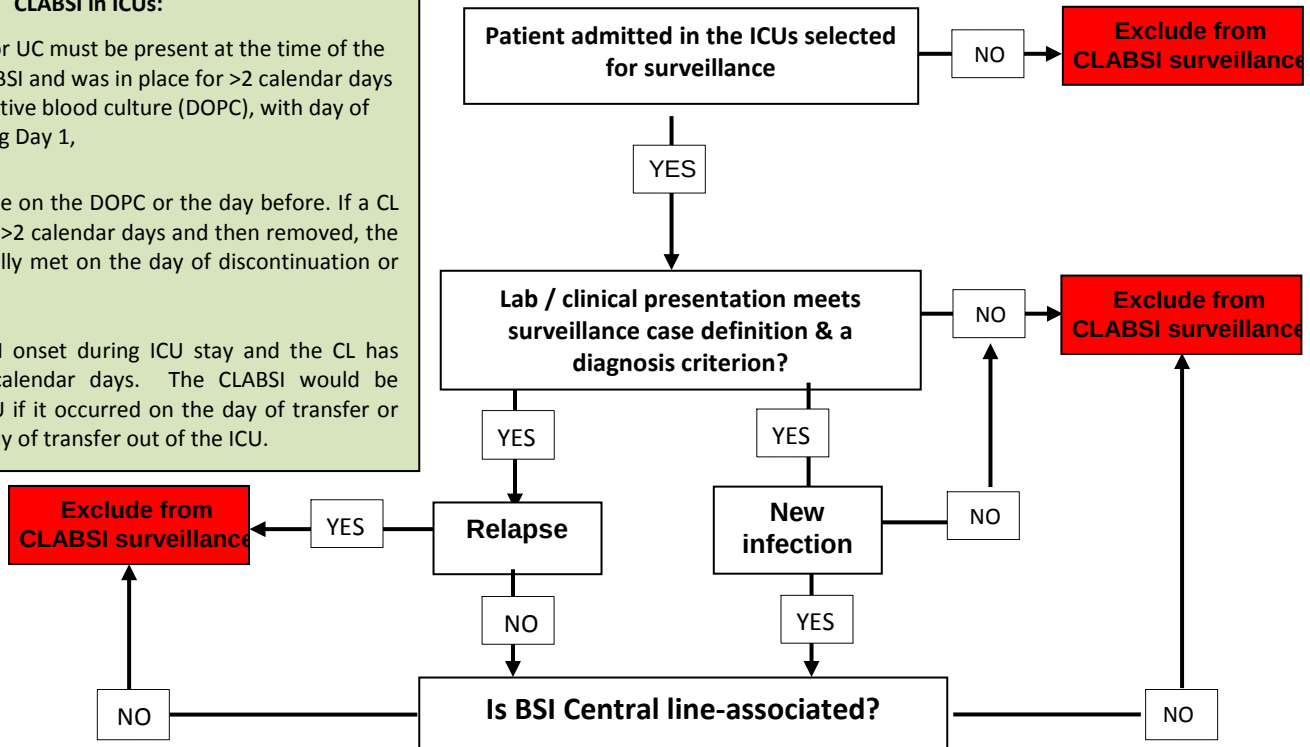
Number of patients with one or more CL including UC. Only count ONE CL day per patient even if patient has > one CL or UC

ALGORITHM FOR CNISP Central Line Associated Bloodstream Infections (CLABSI) SURVEILLANCE
ONLY CLABSIs related to an ICU admission are to be reported

CLABSI in ICUs:

Case Definition: A CL or UC must be present at the time of the laboratory-confirmed BSI and was in place for >2 calendar days on the date of the positive blood culture (DOPC), with day of device placement being Day 1,
AND
A CL or UC was in place on the DOPC or the day before. If a CL or UC was in place for >2 calendar days and then removed, the BSI criteria must be fully met on the day of discontinuation or the next day

ICU – related: CLABSI onset during ICU stay and the CL has been in place > 2 calendar days. The CLABSI would be attributable to the ICU if it occurred on the day of transfer or within one calendar day of transfer out of the ICU.



Criteria for diagnosis of CLABSI

1) *Recognized pathogen cultured from one or more blood cultures, unrelated to infection at another site*

OR

2) *At least one off: fever (>38°C), chills, hypotension (if aged < 1 year: fever, hypothermia (<36 °C), apnea, or bradycardia)*

AND

common skin contaminant cultured from ≥ 2 blood cultures drawn on separate occasions and positive laboratory results are unrelated to infection at another site.*

RELAPSE

Same microorganism (using available data – e.g. species, antibiotic sensitivity, etc.) isolated from a subsequent blood culture; if ≤10 days from a negative culture **OR** ≤10 days from completion of appropriate antibiotic therapy, it is a relapse. Do **NOT** complete another questionnaire.

NEW INFECTION

Same microorganism (using available data) isolated from a subsequent blood culture; if more than 10 days from a negative culture (if culture was done) AND more than 10 days from completion of appropriate antibiotic therapy, it is a **NEW** infection. Complete another questionnaire.

* Diphtheroids, *Corynebacterium* spp., *Bacillus* spp, *Propionibacterium* spp., coagulase-negative staphylococci, (including *S. epidermidis*) viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp

REFERENCES

1. CDC The National Healthcare Safety Network (NHSN) Manual. Patient Safety Component, Device-Associated Module: Central Line-Associated Bloodstream Infection (CLABSI) Event, Guidelines and procedures for monitoring CLABSI, January 2015.
URL: http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABScurrent.pdf
Accessed April 2015.

Revision History

June 10 2014 – Incorrect dates in questionnaire & unique ID – all changed to 2014 – now Final v2

January 12 2015

1. BSI case definition revised - the sentence in criterion 2 '…or signs of infection of insertion site or catheter tunnel… 'Removed as it is not in the NHSN definition and may lead to overestimation.

Criterion 2 **now** reads as 'At least one of: fever (>38°C), chills, hypotension (if aged < 1 year: fever, hypothermia (<36°C), apnea, or bradycardia) ***AND*** common skin contaminant cultured from ≥ 2 blood cultures drawn on separate occasions and positive laboratory results are unrelated to infection at another site'

Previously it read as….
At least one of: fever (>38°C core), chills, hypotension (if aged < 1 yr: fever (>38°C core), hypothermia (<36°C core, apnea, or bradycardia) or signs of infection of insertion site or catheter tunnel ***AND*** common skin contaminant cultured from ≥ 2 blood cultures drawn on separate occasions and positive laboratory results are unrelated to infection at another site.

2. Question 10a = Addition of antibiogram results to microorganism(s) identified in order to capture susceptibility/resistance patterns

November 2015

Footnote 2, p.3 - CVC devices revised to include intra-cardiac catheters such as intra-arterial &and ventricular lines, dual function lines such as temperature/venous catheters e.g. Cool line catheters, Quattro catheters, introducers etc.)

Footnote3, p. 3 – Clarification regarding umbilical catheters (UCs) – if a neonate has only a UC this is considered a CVC.

BSI case definition – p.4 – An additional reminder that the CLABSI cannot be related to an infection at another site. The following statement was added - The BSI is NOT related to an infection at another site.

CVC-associated BSI – p.4 – Clarification regarding if classified as CVC-associated if CVC removed. Now reads as '. If a CVC or UC was in place for >2 calendar days and then removed, the BSI criteria must be fully met on the day of discontinuation or the next day.'

ICU-related BSI – p.4 – Clarification regarding attribution of CLABSI to the ICU. Now reads as 'CLABSI onset during ICU stay and the CVC has been in place > 2 calendar days. The CLABSI would be attributable to the ICU if it occurred on the day of transfer or the next calendar day after transfer out of the ICU.'

Footnote 5 – p.4 – Clarification regarding criterion 2 ;;;'blood drawn on separate occasions' The footnote now reads 'Different times include 2 blood cultures collected on the same or consecutive calendar day via separate venipunctures or catheter entries.'

Denominators

p 6 – An explanation regarding the removal and reinsertion of central lines and whether they would be included in the count of CVC-days. The following statement taken from the NHSN was added.

'Central lines that are removed and reinserted: If, after central line removal, the patient is without a central line for at least one full calendar day (NOT to be read as 24 hours), then the central line day count will start anew. If instead, a new central line is inserted before a full calendar day without a central line has passed, the central line day count will continue'

Microorganisms

p.11 – Some microorganisms were duplicated in order to account for more than one species – e.g. Candida other; CONS; More ' other, specify were added to capture organisms not listed.

CROs removed from list of options – as these are captured in the existing microorganisms list and resistance will be captured in the antibiogram tables.

Antibiogram tables

p. 11-13 – Will ensure that CNPHI is able to capture multiple entries of the same organisms e.g. CONS, candida etc. ; Trimethoprim-sulfamethoxazole added to list of antibiotics

Algorithm – p. 22 updated

November 2016

Name of surveillance changed to Central line associated bloodstream infections (CLABSI) –all references to CVC-BSI in protocol changed to CLABSI or CL (Central line)

p.4 Clarification of relapse vs new infection is < or = not just <

Same microorganism (as best as can be determined by the data available – e.g. species, antibiotic sensitivity, etc.) isolated from a subsequent blood culture:

- 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**.
- 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