

# HAI Surveillance Case Definitions 2020

*The following case definitions for the surveillance of healthcare-associated infections (HAIs) are used by all acute-care hospitals that participate in the Canadian Nosocomial Infection Surveillance Program (CNISP)*

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# Table of Contents

Surveillance for Clostridium difficile infection (CDI).....	4
CDI Case Definitions.....	4
1. Primary CDI case definition.....	4
2. Recurrent CDI case definition.....	4
CDI Case Classification.....	4
1. Healthcare-associated acquired in your acute-care facility (HA-YAF).....	4
2. Healthcare-associated acquired in any other healthcare facility (HA-Other).....	5
3. Healthcare-associated unable to determine which facility (HA-Unknown).....	5
4. Community-associated (CA).....	5
5. Indeterminate.....	5
Surveillance for Methicillin-Resistant and Methicillin-Susceptible <i>Staphylococcus aureus</i> Bloodstream Infections.....	6
MRSA and MSSA Case Definitions.....	6
Infection inclusion criteria.....	6
Criteria to determine NEW MSSA or MRSA BSI.....	6
Infection exclusion criteria.....	6
MRSA and MSSA Case Classification.....	6
1a. HA-YAF case definition for a MSSA or MRSA BSI:.....	6
1b. HA-YAF Newborn case definition for a MSSA or MRSA BSI.....	7
2. HA-Other case definition for MRSA BSI:.....	7
3. Community-associated (CA) case definition for MRSA BSI:.....	7
Surveillance for Carbapenemase-Producing Organisms (CPO).....	8
CPO Case Eligibility.....	8
CPO Laboratory Considerations.....	8
Determining carbapenem resistance and carbapenemase production in gram-negative bacilli: determining eligibility for inclusion of cases in surveillance.....	8
Surveillance for Central line-associated Bloodstream Infections (CLABSI).....	9
CLABSI Case Definitions.....	9
1. BSI case definition:.....	9
2. CLABSI.....	9
3. ICU-related CLABSI.....	10
4. Relapse vs. new infection.....	10
Surveillance for Vancomycin Resistant Enterococci Bloodstream Infections.....	11
Case Eligibility.....	11
Inclusion Criteria.....	11
Exclusion Criteria.....	11

Surveillance for Surgical Site Infections following Hip and Knee Arthroplasty.....	12
Hip and Knee SSI Case Eligibility .....	12
The following inclusion criteria apply: .....	12
The following exclusion criteria apply: .....	12
Surveillance for Healthcare Acquired Cerebrospinal Fluid (CSF) Shunt Associated Infections .....	13
Patient population Criteria .....	13
Patient Inclusions: .....	13
Patient Exclusions: .....	13
Surveillance period .....	13
Case Definitions .....	13
CSF Shunt-associated Surgical Site infection case definition .....	13
Re-infection case definition .....	13
Relapse case definition .....	13
Surveillance of Surgical Site Infections Following Pediatric Cardiac Surgery .....	14
Patient Population Criteria .....	14
Inclusion Criteria .....	14
Exclusion Criteria.....	14
Surveillance Period .....	14
Case Definitions .....	14
Case Classification .....	14
1. Superficial Incisional SSI .....	14
2. Deep Incisional SSI .....	15
3. Organ/space SSI .....	15
Surveillance of Antimicrobial Usage in CNISP Hospitals .....	16
Numerators .....	16
Inpatient antimicrobial usage .....	16
Denominators .....	16
Patient-day denominators .....	16
Surveillance of Antibigram Data from CNISP Hospitals .....	17
Specimens included .....	17
Mandatory Minimum Data.....	17
Summary of mandatory variables.....	17

# Surveillance for Clostridium difficile infection (CDI)

## CDI Case Definitions

### 1. Primary CDI case definition

A “primary” episode of CDI is defined as either the first episode of CDI ever experienced by the patient or a new episode of CDI which occurs greater than eight (8) weeks after the diagnosis of a previous episode in the same patient.

A patient is identified as having CDI if the patient meets one of the following criteria:

**Criterion 1:** has diarrhea or fever, abdominal pain and/or ileus AND a laboratory confirmation of a positive toxin assay or positive polymerase chain reaction (PCR) for *C. difficile* toxin gene(s) (without reasonable evidence of another cause of diarrhea).

*Diarrhea is defined as one of the following:*

- ✓ 6 or more watery/unformed stools in a 36-hour period
- ✓ 3 or more watery/ unformed stools in a 24-hour period and this is new or unusual for the patient (in adult patients only)

OR

**Criterion 2:** has a diagnosis of pseudomembranes on sigmoidoscopy or colonoscopy (or after colectomy) or histological/pathological diagnosis of CDI.

OR

**Criterion 3:** is diagnosed with toxic megacolon (in adult patients only).

### Exclusions

- Any patients under 1 year of age.
- Any pediatric patients (aged 1 year to less than 18 years) with alternate cause of diarrhea found (i.e. rotavirus, norovirus, enema or medication etc.) are excluded even if *C. difficile* diagnostic test result is positive.

*Note: Starting in 2017, we will no longer accept asymptomatic cases identified only by laboratory confirmation of a positive toxin assay or PCR for *C. difficile* (i.e. A patient must have diarrhea or fever, abdominal pain and/or ileus AND a laboratory confirmation of a positive toxin assay or PCR for *C. difficile* to be identified as having CDI).*

### 2. Recurrent CDI case definition

A recurrent case of CDI is defined as an episode of CDI that occurs in a patient less than or equal to eight (8) weeks following the diagnostic test date of the primary episode of CDI, providing the patient was treated successfully for the primary episode and symptoms of CDI resolved completely.



**NOTE:** A new episode of CDI that occurs after eight (8) weeks following the diagnostic test date of the primary episode of CDI is considered a new infection.

## CDI Case Classification

Once a patient has been identified with CDI, the infection will be classified further based on the following criteria and the best clinical judgment of the healthcare and/or infection prevention and control practitioner (ICP).

### 1. Healthcare-associated acquired in your acute-care facility (HA-YAF)

#### Related to the current hospitalization

- The patient’s CDI symptoms occur in your healthcare facility 3 or more days (or ≥72 hours) after admission.

#### Related to a previous hospitalization

- **Inpatient:** The patient’s CDI symptoms occur less than 3 days after the current admission (or <72 hours) AND the patient had been previously hospitalized at your healthcare facility and discharged within the previous 4 weeks.
- **Outpatient:** The patient presents with CDI symptoms at your ER or outpatient location AND the patient had been previously hospitalized at your healthcare facility and discharged within the previous 4 weeks.

*Outpatient location includes all of your outpatient clinics such as chemotherapy, radiation, dialysis, day surgery, day hospital, transfusion clinic, or interventional radiology, but may not be exhaustive.*

#### **Related to a previous healthcare exposure at your facility**

- **Inpatient:** The patient’s CDI symptoms occur less than 3 days after the current admission (or <72 hours) AND the patient had a previous healthcare exposure at your facility within the previous 4 weeks.
- **Outpatient:** The patient presents with CDI symptoms at your ER or outpatient location AND the patient had a previous healthcare exposure at your facility within the previous 4 weeks.

*Healthcare exposure: The patient had 2 or more interventions at any of the following locations: chemotherapy, radiation, dialysis, day surgery, day hospital, transfusion clinic, interventional radiology or emergency department OR had a single visit to the emergency department for more than or equal to 24 hours.*

## **2. Healthcare-associated acquired in any other healthcare facility (HA-Other)**

#### **Related to a previous hospitalization at any other healthcare facility**

- **Inpatient:** The patient’s CDI symptoms occur less than 3 days after the current admission (or <72 hours) AND the patient is known to have been previously hospitalized at any other healthcare facility and discharged/transferred within the previous 4 weeks.
- **Outpatient:** The patient presents with of CDI symptoms at your ER or outpatient location AND the patient is known to have been previously hospitalized at any other healthcare facility and discharged/transferred within the previous 4 weeks.

#### **Related to a previous healthcare exposure at any other healthcare facility**

- **Inpatient:** The patient’s CDI symptoms occur less than 3 days after the current admission (or <72 hours) AND the patient is known to have a previous healthcare exposure at any other healthcare facility within the previous 4 weeks.
- **Outpatient:** The patient presents with of CDI symptoms at your ER or outpatient location AND the patient is known to have a previous healthcare exposure at any other healthcare facility within the previous 4 weeks.

## **3. Healthcare-associated unable to determine which facility (HA-Unknown)**

- The patient with CDI meets both definitions of healthcare-associated (acquired in your facility) and healthcare-associated (acquired in any other healthcare facility), but the facility which the case is primarily attributable to is unable to be determined.

*Any other healthcare facility which includes: other acute-care, psychiatric, rehabilitation, or long-term care facility.*

## **4. Community-associated (CA)**

- **Inpatient:** The patient’s CDI symptoms occur less than 3 days (or <72 hours) after admission, with no history of hospitalization or any other healthcare exposure within the previous 12 weeks.
- **Outpatient:** The patient presents with CDI symptoms at your ER or outpatient location with no history of hospitalization or any other healthcare exposure within the previous 12 weeks.

## **5. Indeterminate**

- The patient with CDI does NOT meet any of the definitions listed above for healthcare-associated or community-associated CDI. The symptom onset was more than 4 weeks but less than 12 weeks after the patient was discharged from any healthcare facility or after the patient had any other healthcare exposure.

# Surveillance for Methicillin-Resistant and Methicillin-Susceptible *Staphylococcus aureus* Bloodstream Infections

## MRSA and MSSA Case Definitions

MSSA	MRSA
<p>Isolation of <i>Staphylococcus aureus</i> from blood  <b>AND</b>            Patient must be admitted to the hospital  <b>AND</b>            Is a "newly identified <i>S. aureus</i> infection" at a CNISP hospital at the time of hospital admission or identified during hospitalization.</p>	<p>Isolation of <i>Staphylococcus aureus</i> from blood  <b>AND</b>            Resistance of isolate to oxacillin and/or laboratory confirmation of <i>mec</i> (phenotypic or genotypic)  <b>AND</b>            Patient must be admitted to the hospital  <b>AND</b>            Is a "newly identified MRSA infection" at a CNISP hospital at the time of hospital admission or identified during hospitalization.</p>

### Infection inclusion criteria

- MSSA or MRSA BSIs identified for the first time during this current hospital admission.
- MSSA or MRSA BSIs that have already been identified at your site or another CNISP site but are new infections.

#### Criteria to determine NEW MSSA or MRSA BSI

Once the patient has been identified with a MSSA or MRSA BSI, they will be classified as New MSSA or MRSA if they meet the following criteria: > 14 days since previously treated MSSA or MRSA BSI and in the judgement of Infection Control physicians and practitioners represents a new infection

### Infection exclusion criteria

- Emergency, clinic, or other outpatient cases who are **NOT admitted** to the hospital.

## MRSA and MSSA Case Classification

Once the patient has been identified with a MSSA or MRSA BSI, they will be classified as one of the following, based on the case criteria and the best clinical judgement of the healthcare and/or infection prevention and control practitioner (IPC):

1. **Healthcare-associated your acute-care facility (HA-YAF)**
  - a. HA-YAF
  - b. HA-YAF Newborn cases
2. Healthcare-associated any other healthcare exposure (HA-Other)
3. Community-associated (CA)

### 1a. HA-YAF case definition for a MSSA or MRSA BSI:

- Patient is on or beyond calendar day 3 of their hospitalization  
**OR**
- Patient has been hospitalized in your facility in the last 7 days or up to 90 days depending on the source of infection  
**OR**
- Patient has had a healthcare exposure at your facility that would have resulted in this bacteremia (using best clinical judgement)

*For example, a MSSA/MRSA bacteremia from a surgical wound that occurs 3 weeks after a surgical procedure completed in your facility should be considered HA-YAF (up to 90 days after procedure if implant). A MSSA/MRSA bacteremic pneumonia occurring >7 days after discharge from your facility should not be considered HA-YAF*

### **1b. HA-YAF Newborn case definition for a MSSA or MRSA BSI**

- The newborn is on or beyond calendar day 3 of their hospitalization

*Calendar day 1 is the day of hospital admission*

- The mother was **NOT** known to have MRSA on admission and there is no epidemiological reason to suspect that the mother was colonized prior to admission, even if the newborn is < 48 hours of age.
- In the case of a newborn transferred from another institution, MSSA or MRSA BSI may be classified as HA-YAF if the organism was NOT known to be present and there is no epidemiological reason to suspect that acquisition occurred prior to transfer



**NOTE:** *The following definitions apply to MRSA BSI only. Starting January 1, 2020, we are not collecting data on MSSA BSI acquired through any other healthcare exposure or community acquired BSI*

### **2. HA-Other case definition for MRSA BSI:**

- Any patient who has a bacteremia not acquired at your facility that is thought to be associated with any other healthcare exposure (e.g. another acute-care facility, long-term care, rehabilitation facility, clinic, ER visit or exposure to a medical device).

### **3. Community-associated (CA) case definition for MRSA BSI:**

- No exposure to healthcare that would have resulted in this bacteremia (using best clinical judgment) and does not meet the criteria for a healthcare-associated BSI.

*Consideration should be given to the frequency and nature of exposure to a medical device and/or procedure. For example, pediatric patients with clinic visits for otitis media, asthma, well-baby etc., may or may not be considered as HA while pediatric patients with clinic visits that involved invasive procedures or day surgery may be more likely to be considered HA. Adult patients attending dialysis, receiving chemotherapy, outpatient visits involving invasive procedures or day surgery may be more likely to be considered HA compared to adult patients with occasional outpatient or community health clinic visits.*

# Surveillance for Carbapenemase-Producing Organisms (CPO)

## CPO Case Eligibility

1. Patient admitted to participating CNISP hospitals **OR** a CNISP hospital emergency department **OR** a CNISP hospital-based outpatient clinic.
2. Laboratory confirmation of carbapenem resistance or carbapenemase production in *Enterobacterales* and *Acinetobacter spp.*



**NOTE:** Following molecular testing, only isolates determined to be harbouring a carbapenemase will be included in surveillance.

## CPO Laboratory Considerations

### Determining carbapenem resistance and carbapenemase production in gram-negative bacilli: determining eligibility for inclusion of cases in surveillance

All *Enterobacterales* and *Acinetobacter spp.* that meet at least **ONE** of the following criteria should be submitted to the NML:

1. Tested **fully resistant** to a carbapenem based on the current CLSI.2019.M100-ED29 zone diameters and/or MIC values as listed below:

At least ONE of the following carbapenems:	<i>Enterobacterales:</i>		<i>Acinetobacter:</i>	
	MIC ( $\mu\text{g/ml}$ )	Disk diffusion (mm)	MIC ( $\mu\text{g/ml}$ )	Disk diffusion (mm)
<b>Imipenem</b>	$\geq 4$	$\leq 19$	$\geq 8$	<b><math>\leq 18</math></b>
<b>Meropenem</b>	$\geq 4$	$\leq 19$	$\geq 8$	$\leq 14$
<b>Doripenem</b>	$\geq 4$	$\leq 19$	$\geq 8$	$\leq 14$
<b>Ertapenem</b>	$\geq 2$	$\leq 18$	n/a	

CLSI. Performance standards for antimicrobial susceptibility testing; 24th informational supplement. CLSI document M11-S27. CLSI, Wayne, PA.

2. Tested **positive** for a carbapenemase in **laboratories that conduct molecular testing** (PCR) or immunochromatographic lateral flow assay for specific enzymes (*e.g. K-SeT*).  
  
Laboratories should be aware that commercial tests may include only the most common carbapenemases *i.e. KPC, OXA-48, NDM, and may not include more rare ones i.e. VIM, IMP, GES, NMC-A/IMI, SME, and others.*  
  
If the molecular test is negative but a laboratory suspects the presence of a carbapenemase, the isolate should be further tested by the submitting laboratory, their Provincial Laboratory, or the NML. Isolates then confirmed to harbour a carbapenemase are eligible for inclusion in surveillance.
3. Tested **positive** for carbapenemase production by **a phenotypic test** such as the mCIM, CARBA-NP or a commercial equivalent, or Beta-Carba test. These tests can help determine if a suspected CPO that was negative by molecular testing does in fact harbour a carbapenemase.

Note however, that these tests can produce false negatives for poorly expressed enzymes (likely have low MICs), enzymes that only slowly hydrolyze carbapenems (*e.g. OXA-48-group, GES-type*), or non-specificity of the test for certain enzymes (*e.g. SME, NMC-A/IMI, GES-type by Beta-Carba test*).



# Surveillance for Central line-associated Bloodstream Infections (CLABSI)

## CLABSI Case Definitions

*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 cultured from ≥ 2 blood cultures drawn on separate occasions, or at different sites, unrelated to infection at another site.

Recognized pathogens: Diphtheroids (*Corynebacterium* spp. not *C. diphtheria*), *Bacillus* spp. (not *B. anthracis*), *Propionibacterium* spp., coagulase-negative staphylococci, (including *S. epidermidis*) viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp and *Rhodococcus* spp

Different sites may include peripheral veins, CVCs, or separate lumens of a multilumen 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-2019	02-Jan-2019	03-Jan-2019	04-Jan-2019	Date of positive blood culture =
CL in place Fever > 38° C, core	CL in place	CL in place <i>S. epidermidis</i> (1 of 2 blood cultures)	CL in place <i>S. epidermidis</i> (1 of 2 blood cultures)	03-Jan-2019

### 2. CLABSI

**A CLABSI must meet one of the following criteria:**

**Criterion 1:** A laboratory-confirmed bloodstream infection (LCBSI) 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.

OR

**Criterion 2:** A LCBSI where CL or UC was in place >2 calendar days and then removed on the day or one day before positive blood culture drawn.

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


### 3. ICU-related CLABSI

A CLABSI is related to an ICU if it meets one of the following criteria:

**Criterion 1:** CLABSI onset after two days of ICU stay

OR

**Criterion 2:** If the patient is discharged or transferred out of the ICU, the CLABSI would be attributable to the ICU if it occurred on the day of transfer or the next calendar day after transfer out.

 **NOTE:** *If the patient is transferred into the ICU with the CL and the blood culture was positive on the day of transfer or the next calendar day then the CLABSI would be attributed to the unit where the line was inserted.*

*Exclusions: Infection already present upon admission to ICU.*

### 4. Relapse vs. new infection

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**

# Surveillance for Vancomycin Resistant Enterococci Bloodstream Infections

## Case Eligibility

### Inclusion Criteria

**Criterion 1:** Isolation of *Enterococcus faecalis* or *faecium* from blood

**AND**

**Criterion 2:** Vancomycin MIC  $\geq$  8 ug/ml

**AND**

**Criterion 3:** Patient must be admitted to the hospital

**AND**

**Criterion 4:** Is a **“newly identified VRE BSI”** at a CNISP hospital at the time of hospital admission or identified during hospitalization.



*A newly identified VRE BSI is defined as a positive VRE blood isolate > 14 days after completing of therapy for a previous infection and felt to be unrelated to previous infection in accordance with best clinical judgement by Infection Control physicians and practitioners*

### Exclusion Criteria

Emergency, clinic, or other outpatient cases who are **NOT admitted** to the hospital.

# Surveillance for Surgical Site Infections following Hip and Knee Arthroplasty

## Hip and Knee SSI Case Eligibility

### The following inclusion criteria apply:

- ✓ Primary total, hemi and other (e.g. unicondylar) arthroplasties
- ✓ Only clean procedures
- ✓ Admitted patients and patients undergoing same-day surgery

### The following exclusion criteria apply:

- ⊗ Revisions and resurfacings
- ⊗ Surgeries in which the patient died in the operating room or within 24 hours of surgery.
- ⊗ Surgeries where the skin incision is not entirely closed at procedure's end.

# Surveillance for Healthcare Acquired Cerebrospinal Fluid (CSF) Shunt Associated Infections

## Patient population Criteria

### Patient Inclusions:

Person of any age admitted to a CNISP hospital who undergoes placement or revision of a CSF shunting device **AND** has an infection that occurs within **90 days** (3 months) of surgery.

**Adult patients:** Aged 18 years and older

**Pediatric patients:** Aged less than 18 years

### Patient Exclusions:

- Patients with transcutaneous or external shunting devices or non-shunting devices (e.g. Ommaya reservoir).
- Patients whose CSF was culture positive (bacterial or fungal) at the time of placement of the shunt.
- Infections in which the device associated with the positive organism was not placed at the hospital where the infection was identified, i.e. the hospital should not report the infection.

## Surveillance period

CSF shunt-associated Infections that develop within **90 days** (3 months) of the shunt procedure will be included.

## Case Definitions

### CSF Shunt-associated Surgical Site infection case definition

A patient is identified as having CSF shunt SSI if the patient meets the following criteria:

**Criterion 1:** An internalized CSF shunting device is in place

**AND**

**Criterion 2:** A bacterial or fungal pathogen(s) is identified from the cerebrospinal fluid

**AND**

**Criterion 3:** The pathogen is associated with at least **ONE** of the following:

1. fever (temperature  $\geq 38^{\circ}$  C);

**OR**

2. neurological signs or symptoms;

**OR**

3. abdominal signs or symptoms;

**OR**

4. signs or symptoms of shunt malfunction or obstruction.

### Re-infection case definition

Re-infection of a shunt is an infectious episode occurring after diagnosis of a CSF shunt infection and/or completion of antibiotic therapy, with a CSF bacterial or fungal isolate *different* from the previous infection. Such a patient would be eligible to be counted as a new CSF shunt-associated infection.

### Relapse case definition

Relapse of a shunt infection is an infectious episode occurring within 1 month of completion of therapy with an isolate of the same genus. This event is **NOT** eligible to be counted as a new CSF shunt SSI.

*The date of the CSF shunt associated surgical site infection is assigned to the date of procedure.*

# Surveillance of Surgical Site Infections Following Pediatric Cardiac Surgery

## Patient Population Criteria

Ongoing, prospective surveillance of SSI in children (< 18 years of age) following open-heart cardiac surgeries.

### Inclusion Criteria

- ✓ Surgery performed at your CNISP site
- ✓ Surgeries where patient is on cardiopulmonary bypass
- ✓ SSI identified at your CNISP site (if SSI identified at your hospital but surgery performed at another CNISP site please report the SSI to that CNISP site)

### Exclusion Criteria

Surgeries in which the patient died in the operating room or within 24 hours of surgery.

## Surveillance Period

Infections that develop within 90 days (3 months) of surgery (or 30 days if classified as superficial SSI) will be included and reported retrospectively based on date of surgery.

## Case Definitions

The primary outcome measure is a healthcare-associated SSI following open-heart surgery with cardiopulmonary bypass among pediatric patients, defined according to the National Health and Safety Network (NHSN) definitions as outlined in the [CASE CLASSIFICATION](#) section below.

Patients less than 18 years of age with post open-heart cardiac surgery SSIs with cardiopulmonary bypass will be identified at each CNISP site through the most comprehensive method to detect procedures and SSI cases. This may include:

- Review of microbiology laboratory results
- Review of patient charts
- Review of physician notes
- Notifications by clinical personnel
- Review of internal patient safety data collection systems

## Case Classification

### 1. Superficial Incisional SSI

Infection occurs within 30 days after the operative procedure and involves only skin and subcutaneous tissue of the incision and meets at least **ONE** of the following criteria:

**Criteria 1:** Purulent drainage from the superficial incision.

**Criteria 2:** Organisms isolated from an aseptically-obtained culture of fluid or tissue from the superficial incision.

**Criteria 3:** Patient has at least one of the following signs or symptoms: localized pain or tenderness; localized swelling; erythema; or heat AND superficial incision that is deliberately opened by a surgeon, attending physician\* or other designee and culture or non-culture based testing of the superficial incision or subcutaneous tissue is not performed.

**Criteria 4:** Diagnosis of superficial incisional SSI by the surgeon or attending physician.

## 2. Deep Incisional SSI

Infection occurs within 90 days (3 months) after the operative procedure and the infection appears to be related to the operative procedure **AND** involves deep soft tissues (e.g., facial and muscle layers) of the incision **AND** the patient has at least **ONE** of the following:

**Criteria 1:** Purulent drainage from the deep incision but not from the organ/space component of the surgical site.

**Criteria 2:** Deep incision spontaneously dehisces or is deliberately opened by the surgeon, attending physician\* or other designee and is culture-positive or not cultured and the patient has at least one of the following signs or symptoms: fever (>38°C), or localized pain or tenderness.

**Criteria 3:** An abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

## 3. Organ/space SSI

Infection occurs within 90 days (3 months) after the operative procedure and the infection appears to be related to the operative procedure **AND** infection involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure **AND** patient has at least **ONE** of the following:

**Criteria 1:** Purulent drainage from a drain that is placed into the organ/space.

**Criteria 2:** Organisms isolated from culture of fluid or tissue in the organ/space for purposes of clinical diagnosis or treatment.

**Criteria 3:** An abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination.

**AND** meets at least one of the following criterion for a specific organ/space infection site listed in the table below:

Category	Specific Site	Category	Specific Site
<b>BONE</b>	Osteomyelitis	<b>MED</b>	Mediastinitis
<b>CARD</b>	Myocarditis or pericarditis	<b>ENDO</b>	Endocarditis
<b>IAB</b>	Intraabdominal, not specified elsewhere	<b>LUNG</b>	Other infections of the lower respiratory tract
<b>VASC</b>	Arterial or venous infection		

# Surveillance of Antimicrobial Usage in CNISP Hospitals

## Numerators

### Inpatient antimicrobial usage

AMU separated by adult and pediatric populations, by parenteral and oral administration routes, and by ICU vs. non-ICU wards. Pediatric AMU data is collected in days of therapy. Sites may submit adult AMU data as 'quantities of antimicrobial used' (e.g. in grams/MU) and/or as defined daily doses (DDD); it is requested that sites submit quantity data so that changes in DDD values can be accounted for over time. Please note that:

- a) ER patients that are admitted as inpatients are to be included in the 'other' or 'Non-ICU' category (depending on your data submission format) for both the AMU and patient days data.
- b) Units/wards designated as Long-term Care (LTC) units should not be included in the AMU or patient days data.

## Denominators

### Patient-day denominators

Patient-days for all ward/ward groups used for submitting the above AMU data.



# Surveillance of Antibiogram Data from CNISP Hospitals

## Specimens included

All *E. coli*, *K. pneum*, *S. aureus*, (MRSA, MSSA if able to separate) bacterial isolates (non-screening specimen isolates with duplicates removed) to be included in the annual antibiogram data.

*Duplicate removal period is 365 days per surveillance period. Types of accepted duplicate removal processes:*

- a. *inclusion of only the first isolate per patient irrespective of specimen type, or*
- b. *inclusion of the first isolate per patient with a hierarchy by specimen type, e.g., blood isolate replace isolate from all other specimen types from the same patient during the period analyzed, or*
- c. *inclusion of the first isolate per patient by specific specimen type in the period analyzed, i.e., including both first blood isolate and first urine isolate from the same patient during the period analyzed*
- d. *inclusion of first isolate per patient per site but has the possibility of duplicated isolates from a patient within the site or hospital network or health authority not differentiated by specimen type*

## Mandatory Minimum Data

### Summary of mandatory variables

- ✓ **Patient population**
  - Depending on data availability, all patients can be submitted as either:
    - a. Inpatients & outpatients combined, **OR**
    - b. Inpatients only and/or outpatients only (as separate groups).
 For hospitals with mixed adults and pediatric patients, ideally data are provided separately for **pediatric** and **adult** groups otherwise, 'all patients' will be 'all patients' with no age separation
- ✓ **Calendar year**
- ✓ **Does your antibiogram represent more than one CNISP hospital (CHEC site)?**
- ✓ **Does your antibiogram include hospitals that do not participate in CNISP?**
- ✓ **Will you be submitting antibiogram data for more than one CHEC site, patient type, specimen type, and/or age bracket?**
- ✓ **Unique ID**
- ✓ **# isolates tested against specified antibiotics**
- ✓ **# isolates susceptible to specified antibiotics**
- ✓ **Specimen type**
  - Note that 'All specimen types' includes clinical (non-blood such as respiratory, skin, soft tissue, surgical sites etc.), blood and urine.
- ✓ **Isolate inclusion criteria**
  - Type of inclusion criteria for isolates included in the antibiogram.
- ✓ **Patient inclusion criteria**
  - Type of inclusion criteria for patient population included in the antibiogram. For example, "Inpatient and outpatient combined (inpatients and patients seen at hospital clinics or emergency department who might or might not have been admitted)".