



# CDC/NHSN Surveillance Definitions for Specific Types of Infections

## INTRODUCTION

This chapter contains the CDC/NHSN surveillance definitions and criteria for all specific types of infections. This chapter also provides additional required criteria for the specific infection types that constitute organ space surgical site infections (SSI) (for example, mediastinitis [MED] that may follow a coronary artery bypass graft, intra-abdominal abscess [IAB] after colon surgery, etc.). **Comments and reporting instructions that follow the site-specific criteria provide further explanation and are integral to the correct application of the criteria.** Refer to [Chapter 2 \(Identifying HAIs in NHSN\)](#) for specific guidance for making HAI determinations.

Infection criteria contained in this chapter may be necessary for determining whether a positive blood specimen represents a primary bloodstream infection (BSI) or is secondary to a different type of infection (see Appendix B [Secondary Bloodstream Infection \(BSI\) Guide](#)). A BSI that is identified as secondary to another site of infection must meet one of the infection criteria detailed in this chapter and meet other requirements. Secondary BSIs are not reported as Laboratory Confirmed Bloodstream Infections in NHSN, nor can they be associated with the use of a central line.

## NOTES:

- See individual protocol chapters for infection criteria for urinary tract infections ([UTI](#)), bloodstream infections ([BSI](#)), pneumonia ([PNEU](#)), ventilator-associated infections ([VAE](#)), and surgical site infections ([SSI](#)).
- Organisms belonging to the following genera cannot be used to meet any NHSN definition: *Blastomyces*, *Histoplasma*, *Coccidioides*, *Paracoccidioides*, *Cryptococcus* and *Pneumocystis*. These organisms are typically causes of community-associated infections and are rarely known to cause healthcare-associated infections, and therefore are excluded.
- Antibiograms of the blood and isolates from potential primary sites of infection do not have to match for purposes of determining the source of BSIs (see “matching organisms” below).
- A **matching organism** is defined as one of the following:
  1. If genus and species are identified in both specimens, they must be the same.
    - a. **Example:** An intraabdominal specimen is used as an element to meet IAB definition and is growing *Enterobacter cloacae*. A blood specimen with a collection date in the IAB secondary BSI attribution period is reported to be growing *Enterobacter cloacae*. These are considered matching organisms.
    - b. **Example:** An intraabdominal specimen is used as an element to meet IAB definition and is growing *Enterobacter aerogenes*. A blood specimen with a collection date in the IAB secondary BSI attribution period is reported to be growing *Enterobacter cloacae*. These are NOT considered matching organisms as the species are different.



2. If the organism is less definitively identified in one specimen than the other, the lesser identified organism must be identified to at least the genus level and at that level the organisms must be the same.
  - a. **Example:** A surgical wound growing *Pseudomonas* species is used to meet deep incisional SSI criteria and a blood specimen growing *Pseudomonas aeruginosa* is collected in the SSI secondary BSI attribution period. The organisms are considered matching at the genus level and therefore the BSI is secondary to the SSI.
  - b. **Example:** PCR identifying *Enterococcus faecalis* in CSF meets the MEN definition. A subsequent blood culture collected in the MEN secondary BSI attribution period is identified as *Enterococcus* species. The organisms are considered to be matching and therefore the BSI is secondary to MEN
3. There are two exceptions to the definition:
  - a. Infections **meeting LCBI 2** criteria with staphylococcus or streptococcus  
**Example-(staphylococcus):** A patient has a fever and a previous chest tube site is reddened, swollen and a culture is collected from the soft tissue. The chest tube site culture is reported positive for *Staphylococcus* species. SST/ST definition is met. The next day 2 blood culture sets are collected. The blood cultures are both positive for coagulase negative *Staphylococcus*. The organisms are NOT considered matching, because *Staphylococcus* species could represent a coagulase negative or a coagulase positive *Staphylococcus*. Therefore the BSI would not be considered secondary to SST/ST.  
**Example-(streptococcus):** A patient has a fever and a previous chest tube is reddened swollen and a culture is collected from the soft tissue. The chest tube site culture is reported positive for Streptococcus species. SST/ST definition is met. The next day 2 blood culture sets are collected. The blood cultures are both positive for Streptococcus, viridans group. The organisms are NOT considered matching, because Streptococcus species could represent a Streptococcus, viridans group or non-Streptococcus, viridans group. Therefore the BSI would not be considered secondary to SST/ST.
  - b. In cases where an organism is identified only as “yeast” or “yeast not otherwise specified”, the organism can be considered a match to other yeasts, when collected during the required timeframe, whether more fully identified or not.  
**Example:** A culture of tissue from ulcer margin of a decubiti reported positive for yeast is used as an element to meet DECU definition. A blood specimen collected in the secondary BSI attribution period of the DECU is reported as *Candida albicans*. In this example the two organisms are considered matching organisms as the organisms are complementary (specifically, *Candida* is a type of yeast) and because yeasts isolated from non-sterile sites are commonly not identified to the genus or genus and species level.  
NOTE: This exception is limited to yeast. It does not apply to identification of organisms as Gram positive cocci, Gram negative rods, etc.



**Example:** A culture of tissue from ulcer margin of a decubiti reported positive for Gram negative rod is used as an element to meet DECU definition. A blood specimen collected in the secondary BSI attribution period of the DECU is reported as *E.coli*. In this example the two organisms are NOT considered matching organisms.

## CRITERIA FOR SPECIFIC TYPES OF INFECTION

Infection criteria used for NHSN healthcare-associated infection surveillance have been grouped into 14 major types with some further categorized into specific infection types. For example, there are three specific types of central nervous system infections (intracranial infection, meningitis or ventriculitis, and spinal abscess without meningitis) that are grouped under the major type of CNS–Central Nervous System.

Infection criteria are listed in alphabetical order, according to their (abbreviated) major codes, and the criteria for each of the specific types of infection follow it.



<b>Table 1: CDC/NHSN Major and Specific Types of Infections</b>	<b>Page</b>
<b>Type</b>	
<b>BJ – Bone and Joint Infection</b>	<a href="#"><u>6</u></a>
BONE – Osteomyelitis	<a href="#"><u>6</u></a>
DISC – Disc space infection	<a href="#"><u>6</u></a>
JNT – Joint or bursa infection	<a href="#"><u>7</u></a>
PJI – Prosthetic joint infection	<a href="#"><u>7</u></a>
<b>CNS – Central Nervous System</b>	<a href="#"><u>8</u></a>
IC – Intracranial infection	<a href="#"><u>8</u></a>
MEN – Meningitis or ventriculitis	<a href="#"><u>9</u></a>
SA – Spinal abscess without meningitis	<a href="#"><u>10</u></a>
<b>CVS – Cardiovascular System Infection</b>	<a href="#"><u>10</u></a>
CARD – Myocarditis or pericarditis	<a href="#"><u>10</u></a>
ENDO – Endocarditis	<a href="#"><u>11</u></a>
MED – Mediastinitis	<a href="#"><u>14</u></a>
VASC – Arterial or venous infection	<a href="#"><u>14</u></a>
<b>EENT – Eye, Ear, Nose, Throat, or Mouth Infection</b>	<a href="#"><u>16</u></a>
CONJ – Conjunctivitis	<a href="#"><u>16</u></a>
EAR – Ear, mastoid infection	<a href="#"><u>16</u></a>
EYE – Eye infection, other than conjunctivitis	<a href="#"><u>17</u></a>
ORAL – Oral cavity infection (mouth, tongue, or gums)	<a href="#"><u>17</u></a>
SINU – Sinusitis	<a href="#"><u>18</u></a>
UR – Upper respiratory tract infection, pharyngitis, laryngitis, epiglottitis	<a href="#"><u>18</u></a>
<b>GI – Gastrointestinal System Infection</b>	<a href="#"><u>19</u></a>
CDI- <i>Clostridium difficile</i> Infection	<a href="#"><u>19</u></a>
GE – Gastroenteritis	<a href="#"><u>20</u></a>
GIT – Gastrointestinal (GI) tract infection	<a href="#"><u>20</u></a>
IAB – Intraabdominal infection, not specified elsewhere	<a href="#"><u>21</u></a>
NEC – Necrotizing enterocolitis	<a href="#"><u>22</u></a>
<b>LRI – Lower Respiratory System Infection, Other Than Pneumonia</b>	<a href="#"><u>23</u></a>
LUNG – Other infection of the lower respiratory tract	<a href="#"><u>23</u></a>
<b>REPR – Reproductive Tract Infection</b>	<a href="#"><u>23</u></a>
EMET – Endometritis	<a href="#"><u>23</u></a>
EPIS – Episiotomy infection	<a href="#"><u>24</u></a>
OREP – Other infection of the male or female reproductive tract	<a href="#"><u>24</u></a>
VCUF – Vaginal cuff infection	<a href="#"><u>25</u></a>



<b>SST-Skin and Soft Tissue Infection</b>	<a href="#"><u>25</u></a>
BRST – Breast abscess or mastitis	<a href="#"><u>25</u></a>
BURN – Burn Infection	<a href="#"><u>25</u></a>
CIRC– Newborn circumcision infection	<a href="#"><u>26</u></a>
DECU – Decubitus ulcer infection (also known as pressure injury infection)	<a href="#"><u>26</u></a>
SKIN – Skin infection	<a href="#"><u>26</u></a>
ST – Soft tissue infection	<a href="#"><u>28</u></a>
UMB – Omphalitis	<a href="#"><u>28</u></a>
<b>USI – Urinary System Infection</b>	<a href="#"><u>28</u></a>
References	<a href="#"><u>30</u></a>



## BJ-BONE AND JOINT INFECTION

### BONE-Osteomyelitis

Osteomyelitis must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from bone by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has evidence of osteomyelitis on gross anatomic or histopathologic exam.
3. Patient has at least **two** of the following localized signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), swelling\*, pain or tenderness\*, heat\*, or drainage\*

**And at least one of the following:**

- a. organism(s) identified from blood by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)

**AND**

imaging test evidence suggestive of infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for osteomyelitis.

- b. imaging test evidence suggestive of infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for osteomyelitis.

\* *With no other recognized cause*

### Reporting instructions

- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.
- If a patient meets both organ space JNT and BONE report the SSI as BONE
- After an HPRO or a KPRO if a patient meets both organ space PJI and BONE report the SSI as BONE

### DISC-Disc space infection

Vertebral disc space infection must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from vertebral disc space by culture or non-culture based microbiologic testing method, which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has evidence of vertebral disc space infection on gross anatomic or histopathologic exam.
3. Patient has at least **one** of the following: fever ( $>38.0^{\circ}\text{C}$ ) or pain\* at the involved vertebral disc space

**And at least one of the following:**

- a. organism(s) identified from blood by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)

**AND**



imaging test evidence suggestive of infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for vertebral disc space infection.

- b. imaging test evidence suggestive of infection ( for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for vertebral disc space infection.

\* *With no other recognized cause*

### **JNT-Joint or bursa infection (not for use as Organ/Space SSI after HPRO or KPRO procedures)**

Joint or bursa infections must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from joint fluid or synovial biopsy by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has evidence of joint or bursa infection on gross anatomic or histopathologic exam.
3. Patient has at least **two** of the following: swelling\*, pain\* or tenderness\*, heat\*, evidence of effusion\*, or limitation of motion\*.

**And at least one of the following:**

- a. elevated joint fluid white blood cell count (per reporting laboratory's reference range) **OR** positive leukocyte esterase test strip of joint fluid
- b. organism(s) and white blood cells seen on Gram stain of joint fluid
- c. organism(s) identified from blood by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST).
- d. imaging test evidence suggestive of infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for joint or bursa infection.

\* *With no other recognized cause*

### **Reporting instruction**

If a patient meets both organ space JNT and BONE report the SSI as BONE

### **PJI – Periprosthetic Joint Infection (for use as Organ/Space SSI following HPRO and KPRO only)**

Joint or bursa infections must meet at least **one** of the following criteria:

1. **Two** positive periprosthetic specimens (*tissue or fluid*) with at least one matching organism, identified by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. A sinus tract\* communicating with the joint identified on gross anatomic exam.
3. Having **three** of the following minor criteria:



- a. elevated serum C-reactive protein (CRP; >100 mg/L) **and** erythrocyte sedimentation rate (ESR; >30 mm/hr.)
- b. elevated synovial fluid white blood cell (WBC; >10,000 cells/ $\mu$ L) count **OR** “++” (or greater) change on leukocyte esterase test strip of synovial fluid
- c. elevated synovial fluid polymorphonuclear neutrophil percentage (PMN% >90%)
- d. positive histological analysis of periprosthetic tissue (>5 neutrophils (PMNs) per high power field)
- e. organism(s) identified from a single positive periprosthetic specimen (*tissue or fluid*) by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST)

\* A sinus tract is defined as a narrow opening or passageway that can extend in any direction through soft tissue and results in dead space with potential for abscess formation.

#### Comments:

- A matching organism is defined on page 17 -1.Organism(s) identified from hip or knee hardware can be used to meet criterion 1.
- The NHSN definition of PJI is closely adapted from the Musculoskeletal Infection Society’s (MSIS’s) definition of PJI (*Proceedings of the International Consensus Meeting on Periprosthetic Joint Infection, 2013*).
- The standard laboratory cutoff values in criteria 3a - 3d are provided by NHSN for HPRO and KPRO SSI surveillance purposes only. The NHSN laboratory cutoffs are not intended to guide clinicians in the actual clinical diagnosis and management of acute or chronic PJI. Clinicians should refer to the MSIS consensus definition for clinical use.

#### Reporting Instruction:

After an HPRO or a KPRO if a patient meets both organ space PJI and BONE report the SSI as BONE

### CNS-CENTRAL NERVOUS SYSTEM INFECTION

#### IC-Intracranial infection (brain abscess, subdural or epidural infection, encephalitis)

Intracranial infection must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from brain tissue or dura by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has an abscess or evidence of intracranial infection on gross anatomic or histopathologic exam
3. Patient has at least **two** of the following signs or symptoms: headache\*, dizziness\*, fever (>38.0°C), localizing neurologic signs\*, changing level of consciousness\*, or confusion\*

#### **And at least one of the following:**

- a. organism(s) seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or during an invasive procedure or autopsy.



- b. imaging test evidence suggestive of infection (for example, ultrasound, CT scan MRI, radionuclide brain scan, or arteriogram), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for intracranial infection.
  - c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism
4. Patient  $\leq 1$  year of age has at least **two** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), hypothermia ( $<36.0^{\circ}\text{C}$ ), apnea\*, bradycardia\*, localizing neurologic signs\*, or changing level of consciousness\* ,for example, irritability, poor feeding, lethargy

**And at least one of the following:**

- a. organism(s) seen on microscopic examination of brain or abscess tissue obtained by needle aspiration or during an invasive procedure or autopsy
- b. imaging test evidence suggestive of infection, (for example, ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram), which if equivocal is supported by clinical correlation ,specifically, physician documentation of antimicrobial treatment for intracranial infection.
- c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism

\* With no other recognized cause

### Reporting instructions

- Report as MEN if meningitis (MEN) and encephalitis (IC) are present together.
- Report as IC if meningitis (MEN) and a brain abscess (IC) are present together after operation.
- Report as SA if meningitis (MEN) and spinal abscess (SA) are present together.

### MEN-Meningitis or ventriculitis

Meningitis or ventriculitis must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from cerebrospinal fluid (CSF) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least **two** of the following:
  - i. fever ( $>38.0^{\circ}\text{C}$ ) or headache (Note: Elements of “i” alone may not be used to meet the two required elements)
  - ii. meningeal sign(s)\*
  - iii. cranial nerve sign(s)\*

**And at least one of the following:**

- a. increased white cells, elevated protein, and decreased glucose in CSF (per reporting laboratory’s reference range)
  - b. organism(s) seen on Gram stain of CSF
  - c. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
  - d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism
3. Patient  $\leq 1$  year of age has at least **two** of the following elements:
- i. fever ( $>38.0^{\circ}\text{C}$ ), hypothermia ( $<36.0^{\circ}\text{C}^{\pm}$ ), apnea\*, bradycardia\*, or irritability\* (Note: Elements of “i” alone may not be used to meet the required two elements).
  - ii. meningeal signs\*
  - iii. cranial nerve signs\*

**And at least one of the following:**

- a. increased white cells, elevated protein, and decreased glucose in CSF (per reporting laboratory's reference range)
- b. organism(s) seen on Gram stain of CSF
- c. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
- d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism.

*\* With no other recognized cause*

**Reporting instructions**

- Report CSF shunt infection as SSI-MEN if it occurs within 90 days of placement; if later or after manipulation/access, it is considered CNS-MEN but is not reportable as an SSI
- Report as MEN if meningitis (MEN) and encephalitis (IC) are present together
- Report as IC if meningitis (MEN) and a brain abscess (IC) are present together after operation  
Report as SA if meningitis (MEN) and spinal abscess (SA) are present together

**SA-Spinal abscess**

An abscess of the spinal epidural or subdural space, without involvement of the cerebrospinal fluid or adjacent bone structures, must meet at least one of the following criteria:

1. Patient has organism(s) identified from abscess in the spinal epidural or subdural space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has an abscess in the spinal epidural or subdural space on gross anatomic or histopathologic exam.
3. Patient has at least one of the following localized signs or symptoms: fever (>38.0°C), back pain\* or tenderness\*, radiculitis\*, paraparesis\*, or paraplegia\*

**And at least one of the following:**

- a. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)

**AND**

imaging test evidence of spinal abscess, which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for spinal abscess.

- b. imaging test evidence of a spinal abscess (for example, myelography, ultrasound, CT scan, MRI, or other scans [gallium, technetium, etc.]) which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for spinal abscess.

*\* With no other recognized cause*

**Reporting instructions**

- Report as IC if meningitis (MEN) and a brain abscess (IC) are present together after operation.
- Report as SA if meningitis (MEN) and spinal abscess (SA) are present together.



## CVS-CARDIOVASCULAR SYSTEM INFECTION

### CARD-Myocarditis or pericarditis

Myocarditis or pericarditis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from pericardial tissue or fluid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
2. Patient has at least ***two*** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), chest pain\*, paradoxical pulse\*, or increased heart size\*

**And at least *one* of the following:**

- a. abnormal EKG consistent with myocarditis or pericarditis
  - b. evidence of myocarditis or pericarditis on histologic exam of heart tissue
  - c. 4-fold rise in paired sera from IgG antibody titer
  - d. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.
3. Patient  $\leq 1$  year of age has at least ***two*** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), hypothermia ( $<36.0^{\circ}\text{C}$ ), apnea\*, bradycardia\*, paradoxical pulse\*, or increased heart size\*

**And at least *one* of the following:**

- a. abnormal EKG consistent with myocarditis or pericarditis
- b. histologic examination of heart tissue shows evidence of myocarditis or pericarditis.
- c. 4-fold rise in paired sera from IgG antibody titer
- d. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography

\* With no other recognized cause

#### Comment:

- Most cases of post cardiac surgery or post myocardial infarction pericarditis are not infectious.

### ENDO-Endocarditis

*When meeting the Endocarditis (ENDO) definition:*

- *The ENDO Infection Window Period is defined as the 21 days during which all site-specific infection criteria must be met. It includes the date the first positive diagnostic test that is used as an element of the ENDO criterion was obtained, the 10 calendar days before and the 10 calendar days after. The Infection Window Period is lengthened for this event to accommodate the **extended** diagnostic timeframe that is frequently required to reach a clinical determination of endocarditis.*
- *The RIT for Endocarditis (ENDO) is extended to include the remainder of the patient's current admission.*
- *When meeting the Endocarditis (ENDO) definition, the secondary BSI attribution period includes the 21-day infection window period **and all subsequent days of the patient's current admission.***



- *As a result of this lengthy secondary BSI attribution period, secondary BSI pathogen assignment for ENDO, is limited to organism(s) identified in blood specimen that match the organism(s) used to meet the ENDO definition.*

**Example:** *If the ENDO definition was met using a site-specific specimen (for example, cardiac vegetation) or using a blood specimen with S.aureus as the identified organism, if a blood specimen collected during the ENDO secondary BSI attribution period is positive for S. aureus and E.coli, while the S. aureus can be assigned to the ENDO event, it cannot be assumed the E.coli can be assigned as a secondary BSI pathogen. The blood organism (E.coli) does not match the organism (S.aureus) used to meet the ENDO definition. If the blood specimen can be used to meet an ENDO definition criterion both organisms can be assigned. Otherwise the E.coli will need to be investigated as a separate BSI and identified as a secondary BSI to another site-specific infection or determined to be a primary BSI.*

Endocarditis of a natural or prosthetic heart valve must meet at least **one** of the following criteria:

1. Organism(s) identified from cardiac vegetation\*, embolized vegetation ( for example, solid-organ abscess) documented as originating from cardiac source, or intracardiac abscess by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Organism(s) seen on histopathologic examination of cardiac vegetation, embolized vegetation, for example, solid organ abscess, documented as originating from cardiac source, or intracardiac abscess.
3. Endocarditis seen on histopathologic examination of cardiac vegetation or intracardiac abscess.
4. At least **one** of the following echocardiographic evidence of endocarditis\*†:
  - i. vegetation on cardiac valve or supporting structures
  - ii. intracardiac abscess
  - iii. new partial dehiscence of prosthetic valve

**And at least one of the following:**

- a. typical infectious endocarditis organism(s) (specifically, Viridans group streptococci, *Streptococcus bovis*, *Haemophilus* spp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* spp., *Staphylococcus aureus*, *Enterococcus* spp.) identified from  $\geq 2$  blood collections drawn on separate occasions with no more than 1 calendar day between specimens by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
  - b. *Coxiella burnetii* identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST) or identified by anti-phase I IgG antibody titer  $>1:800$
5. At least **three** of the following:
    - i. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use
    - ii. fever ( $>38.0^{\circ}\text{C}$ )
    - iii. vascular phenomena: major arterial emboli ( specifically, embolic stroke, renal infarct, splenic infarct or abscess, digital ischemic/gangrene from embolic source), septic



- pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented
- iv. immunologic phenomena: glomerulonephritis (documented or chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor

**And at least one of the following:**

- a. typical infectious endocarditis organism(s) (specifically, Viridans group streptococci, *Streptococcus bovis*, *Haemophilus* spp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* spp., *Staphylococcus aureus*, *Enterococcus* spp.) identified from  $\geq 2$  blood collections drawn on separate occasions with no more than 1 calendar day between specimens by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
- b. *Coxiella burnetii* identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST) or identified by anti-phase I IgG antibody titer  $>1:800$
6. At least one of the following\*†:
- i. vegetation on cardiac valve or supporting structures seen on echocardiogram
- ii. intracardiac abscess seen on echocardiogram
- iii. new partial dehiscence of prosthetic valve seen on echocardiogram

**And at least three of the following:**

- a. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use
- b. fever ( $>38.0^{\circ}\text{C}$ )
- c. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic infarct or abscess, digital ischemic/gangrene from embolic source), septic pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented
- d. immunologic phenomena: glomerulonephritis (documented in chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor
- e. identification of organism(s) from the blood by at least one of the following methods:
- recognized pathogen(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
  - same common commensal organism(s) identified from  $\geq 2$  blood collections drawn on separate occasions on the same or consecutive days by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
7. All of the following criteria:
- a. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use
- b. fever ( $>38.0^{\circ}\text{C}$ )



- c. vascular phenomena: major arterial emboli ( specifically, embolic stroke, renal infarct, splenic infarct or abscess, digital ischemic/gangrene from embolic source), septic pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented
- d. immunologic phenomena: glomerulonephritis (documented or chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor
- e. identification of organism(s) from the blood by at least **one** of the following methods:
  - recognized pathogen(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST).
  - same common commensal organism(s) identified from  $\geq 2$  blood collections drawn on separate occasions on the same or consecutive days by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment ,for example, not Active Surveillance Culture/Testing (ASC/AST).

\*"Cardiac vegetation" includes vegetation on a pacemaker/ defibrillator lead or ventricular assist devices (VAD) components within the heart

† Which if equivocal is supported by clinical correlation (specifically, physician documentation of antimicrobial treatment for endocarditis).

### **MED-Mediastinitis**

Mediastinitis must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from mediastinal tissue or fluid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
2. Patient has evidence of mediastinitis on gross anatomic or histopathologic exam.
3. Patient has at least **one** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), chest pain\*, or sternal instability\*

**And at least one of the following:**

- a. purulent drainage from mediastinal area
  - b. mediastinal widening on imaging test
4. Patient  $\leq 1$  year of age has at least **one** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), hypothermia ( $<36.0^{\circ}\text{C}$ ), apnea\*, bradycardia\*, or sternal instability\*

**And at least one of the following:**

- a. purulent drainage from mediastinal area
- b. mediastinal widening on imaging test

\* With no other recognized cause

### **Comment:**

- The mediastinal space is the area under the sternum and in front of the vertebral column, containing the heart and its large vessels, trachea, esophagus, thymus, lymph nodes, and other structures and tissues. It is divided into anterior, middle, posterior, and superior regions.

**Reporting instruction**

- Report mediastinitis (MED) following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.

**VASC-Arterial or venous infection**

**Note: If a patient meets the criteria for an LCBI in the presence of an intravascular infection report as an LCBI not as a VASC. \*\***

Arterial or venous infection must meet at least one of the following criteria:

1. Patient has organism(s) from extracted arteries or veins identified by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has evidence of arterial or venous infection on gross anatomic or histopathologic exam.
3. Patient has at least one of the following signs or symptoms: fever (>38.0°C), pain\*, erythema\*, or heat at involved vascular site\*

**AND**

More than 15 colonies cultured from intravascular cannula tip using semi-quantitative culture method.

4. Patient has purulent drainage at involved vascular site
5. Patient  $\leq 1$  year of age has at least one of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°C), apnea\*, bradycardia\*, lethargy\*, pain\*, erythema\*, or heat at involved vascular site\*

**AND**

More than 15 colonies cultured from intravascular cannula tip using semi-quantitative culture method

\* *With no other recognized cause*

**Reporting instructions**

- Report infections of an arteriovenous graft, shunt, fistula or intravascular cannulation site without organism(s) identified from blood as CVS-VASC.
- Report Organ Space VASC infections as an SSI and not an LCBI when you have an SSI with secondary BSI.

\*\* Report intravascular infections with organism(s) identified from the blood and meeting the LCBI criteria, as BSI-LCBI. However, if the BSI meets the CLABSI criteria and **BOTH** of the following are present within the infection window period, mark the data field for risk factor “Central line” as “No”:

- Pus at the site

**AND**

- Specimen collected from the site of one of the following, has at least one matching organism to organism(s) identified in a blood specimen:
  - Arterial catheters
  - Arteriovenous fistula
  - 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 central line (not accessed nor inserted during the hospitalization)
- Peripheral IV or Midlines

## EENT-EYE, EAR, NOSE THROAT, OR MOUTH INFECTION

### CONJ-Conjunctivitis

Conjunctivitis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) or virus identified from conjunctival scraping or purulent exudate obtained from the conjunctiva or contiguous tissues, ( for example, eyelid, cornea, meibomian glands, or lacrimal glands) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has pain or redness of conjunctiva or around eye  
**And at least *one* of the following:**
  - a. WBCs and organism(s) seen on Gram stain of exudate
  - b. purulent exudate
  - c. multinucleated giant cells seen on microscopic examination of conjunctival exudate or scrapings
  - d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism

### Reporting instructions

- Report other infections of the eye as EYE.
- Do not report chemical conjunctivitis, caused by silver nitrate (AgNO<sub>3</sub>), as a healthcare-associated infection.
- Do not report a separate case of conjunctivitis (CONJ) that occurs as a part of another viral illness (for example, UR).

### EAR-Ear, mastoid infection

Ear and mastoid infections must meet at least ***one*** of the following criteria:

Otitis externa must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from purulent drainage from ear canal by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least ***one*** of the following: fever (>38.0°C), pain\*, or erythema\*  
**AND**  
organism(s) seen on Gram stain of purulent drainage from ear canal.

Otitis media must meet at least ***one*** of the following criteria:



3. Patient has organism(s) identified from fluid from middle ear obtained during an invasive procedure ( for example, tympanocentesis) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
4. Patient has at least **two** of the following: fever (>38.0°C), pain \*, inflammation\*, retraction\* or decreased mobility of eardrum\*, or fluid behind eardrum\*.

Otitis interna must meet at least **one** of the following criteria:

5. Patient has organism(s) identified from fluid from inner ear obtained during an invasive procedure by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
6. Patient has a physician diagnosis of inner ear infection.

Mastoiditis must meet at least **one** of the following criteria:

7. Patient has organism(s) identified from fluid or tissue from mastoid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example not Active Surveillance Culture/Testing (ASC/AST).
8. Patient has at least **two** of the following: fever (>38.0°C), pain or tenderness\*, post auricular swelling\*, erythema\*, headache\*, or facial paralysis\*

**And at least one of the following:**

- a. organism(s) seen on Gram stain of fluid or tissue from mastoid
- b. imaging test evidence suggestive of infection ( for example, CT scan), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for mastoid infection.

*\* With no other recognized cause*

### **EYE-Eye infection, other than conjunctivitis**

An infection of the eye, other than conjunctivitis, must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from anterior or posterior chamber or vitreous fluid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least **two** of the following signs or symptoms with no other recognized cause: eye pain, visual disturbance, or hypopyon

**AND**

physician initiates antimicrobial therapy within **two** days of onset or worsening of symptoms

### **ORAL-Oral cavity infection (mouth, tongue, or gums)**

Oral cavity infections must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from abscess or purulent material from tissues of oral cavity by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).



2. Patient has an abscess or other evidence of oral cavity infection found on invasive procedure, gross anatomic exam, or histopathologic exam.
3. Patient has at least ***one*** of the following signs or symptoms with no other recognized cause: ulceration, raised white patches on inflamed mucosa, or plaques on oral mucosa.

**And at least *one* of the following:**

- a. virus identified from mucosal scrapings or exudate by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
- b. multinucleated giant cells seen on microscopic examination of mucosal scrapings or exudate
- c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism.
- d. fungal elements seen on microscopic exam of mucosal scrapings or exudate (for example, Gram stain, KOH )
- e. physician initiates antimicrobial therapy within 2 days of onset or worsening of symptoms.

**Reporting instruction**

- Report healthcare-associated primary herpes simplex infections of the oral cavity as ORAL; recurrent herpes infections are not healthcare associated.

**SINU-Sinusitis**

Sinusitis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from fluid or tissue from the sinus cavity obtained during an invasive procedure by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least ***one*** of the following signs or symptoms: fever (>38.0°C), pain or tenderness over the involved sinus\*, headache\*, purulent exudate\*, or nasal obstruction\*

**AND**

Imaging test evidence of sinusitis (for example, x-ray, CT scan)

\* *With no other recognized cause*

**UR-Upper respiratory tract infection, pharyngitis, laryngitis, epiglottitis**

Upper respiratory tract infections must meet at least ***one*** of the following criteria:

1. Patient has at least ***two*** of the following signs or symptoms: fever (>38.0°C), erythema of pharynx\*, sore throat\*, cough\*, hoarseness\*, or purulent exudate in throat\*

**And at least *one* of the following:**

- a. organism(s) identified from upper respiratory site [ specifically: larynx, pharynx, and epiglottis] by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). Note: excludes sputum and tracheal aspirate because these are not upper respiratory specimens
- b. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism
- c. physician diagnosis of an upper respiratory infection



2. Patient has an abscess on gross anatomical or histopathologic exam or imaging test.
3. Patient  $\leq 1$  year of age has at least **two** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), hypothermia ( $<36.0^{\circ}\text{C}$ ), apnea\*, bradycardia\*, nasal discharge\*, or purulent exudate in throat\*

**And at least one of the following:**

- a. organism(s) identified from upper respiratory site [ specifically larynx, pharynx, and epiglottis] by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). Note: excludes sputum because sputum is not an upper respiratory specimen
- b. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism
- c. physician diagnosis of an upper respiratory infection

\* With no other recognized cause

## GI-GASTROINTESTINAL SYSTEM INFECTION

### CDI-*Clostridium difficile* Infection

*Clostridium difficile* infection must meet at least **one** of the following criteria:

1. Positive test for toxin-producing *C. difficile* on an unformed stool specimen (conforms to the shape of the container).<sup>1,2</sup>
2. Patient has evidence of pseudomembranous colitis on gross anatomic (includes endoscopic exams) or histopathologic exam.

**Note:**

- When using a multi-testing methodology for CD identification, the result of the last test finding, which is placed onto the patient medical record, will determine if GI-CDI criterion 1 is met.

**Comments:**

- The date of event for CDI criterion 1, will always be the specimen collection date of the unformed stool, specifically, not the date of onset of unformed stool.
- A positive test for toxin-producing *C. difficile* and an unformed stool specimen is a single element and both are required to meet criterion .

**Reporting instructions**

- Report the CDI and the GE or GIT if additional enteric organism(s) are identified and criteria are met for GE or GIT.
- Report each new GI-CDI according to the Repeat Infection Timeframe (RIT) rule for HAIs (see NHSN HAI definitions in [Chapter 2](#) for further details and guidance).
- CDI laboratory-identified event (LabID Event) categorizations (for example, recurrent CDI assay, incident CDI assay, healthcare facility-onset, community-onset, community-onset healthcare facility-associated) do **not** apply to HAIs; including *C. difficile* associated gastrointestinal infections (GI-CDI).

**GE-Gastroenteritis (excluding *C. difficile* infections)**

Gastroenteritis must meet at least one of the following criteria:

1. Patient has an acute onset of diarrhea (liquid stools for > 12 hours) and no likely noninfectious cause (for example, diagnostic tests, therapeutic regimen other than antimicrobial agents, acute exacerbation of a chronic condition, or psychological stress information).
2. Patient has at least two of the following signs or symptoms: nausea\*, vomiting\*, abdominal pain\*, fever (>38.0°C), or headache\*

**And at least one of the following:**

- a. an enteric pathogen is identified from stool or rectal swab by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
- b. an enteric pathogen is detected by microscopy on stool
- c. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism

\* With no other recognized cause

**Comment:**

- The reference to “enteric pathogens” describes pathogens that are not considered to be normal flora of the intestinal tract. Enteric pathogens identified on culture or with the use of other diagnostic laboratory tests include *Salmonella*, *Shigella*, *Yersinia*, *Campylobacter*, *Listeria*, *Vibrio*, *Enteropathogenic* or *Enterohemorrhagic E.coli* or *Giardia*.

**Reporting instruction**

- Report only GI-GIT using the event date as that of GI-GIT if the patient meets criteria for both GI-GE and GI-GIT.

**GIT-Gastrointestinal tract infection (esophagus, stomach, small and large bowel, and rectum) excluding gastroenteritis, appendicitis, and *C. difficile* infection**

Gastrointestinal tract infections, excluding, gastroenteritis and appendicitis, must meet at least one of the following criteria:

1. Patient has one of the following:
  - a. an abscess or other evidence of gastrointestinal tract infection on gross anatomic or histopathologic exam.
  - b. abscess or other evidence of gastrointestinal tract infection on gross anatomic or histopathologic exam**AND**

organism(s) identified from blood by a culture or non-culture based microbiologic testing method, which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one MBI organism. (See Appendix A of the BSI protocol)



2. Patient has at least **two** of the following signs or symptoms compatible with infection of the organ or tissue involved: fever ( $>38.0^{\circ}\text{C}$ ), nausea\*, vomiting\*, pain\* or tenderness\*,odynophagia\*, or dysphagia\*

**And at least one of the following:**

- a. organism(s) identified from drainage or tissue obtained during an invasive procedure or from drainage from an aseptically-placed drain by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
- b. organism(s) seen on Gram stain or fungal elements seen on KOH stain or multinucleated giant cells seen on microscopic examination of drainage or tissue obtained during an invasive procedure or from drainage from an aseptically-placed drain
- c. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one MBI organism (See Appendix A of the BSI protocol)

**AND**

- d. imaging test evidence suggestive of gastrointestinal infection ( for example, endoscopic exam, MRI, CT scan), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for gastrointestinal tract infection.
- d. imaging test evidence suggestive of infection ( for example, endoscopic exam, MRI, CT scan), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for gastrointestinal tract infection.

\* *With no other recognized cause*

**Reporting instruction**

- Report only GI-GIT using the event date as that of GI-GIT if the patient meets criteria for both GI-GE and GI-GIT

**IAB-Intraabdominal infection, not specified elsewhere, including gallbladder, bile ducts, liver (excluding viral hepatitis), spleen, pancreas, peritoneum, retroperitoneal, subphrenic or subdiaphragmatic space, or other intraabdominal tissue or area not specified elsewhere**

Intraabdominal infections must meet at least **one** of the following criteria:

1. Patient has organism(s) identified from an abscess or from purulent material from intraabdominal space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least one of the following:
  - a. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam
  - b. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam

**AND**

organism(s) identified from blood by a culture or non-culture based microbiologic testing method, which is performed for purposes of clinical diagnosis or treatment, for example, not



- Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one MBI organism. See Appendix A of the BSI protocol
3. Patient has at least **two** of the following: fever (>38.0°C), hypotension, nausea\*, vomiting\*, abdominal pain or tenderness\*, elevated transaminase level(s), or jaundice\*

**And at least *one* of the following:**

- a. organism(s) seen on Gram stain and/or identified from intraabdominal fluid or tissue obtained during invasive procedure or from an aseptically-placed drain in the intraabdominal space (for example, closed suction drainage system, open drain, T-tube drain, CT guided drainage) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
- b. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one MBI organism(See Appendix A of the BSI protocol)

**AND**

imaging test evidence suggestive of infection ( for example, ultrasound, CT scan, MRI, ERCP, radiolabel scans [gallium, technetium, etc.] or on abdominal x-ray), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for intraabdominal infection †

\* With no other recognized cause

**Reporting instruction**

- †Biliary ductal dilatation is considered an equivocal finding for cholangitis.
- Do not report pancreatitis (an inflammatory syndrome characterized by abdominal pain, nausea, and vomiting associated with high serum levels of pancreatic enzymes) unless it is determined to be infectious in origin.

**NEC-Necrotizing enterocolitis**

Necrotizing enterocolitis in infants (≤1 year of age) must meet one of the following criteria:

1. Infant has at least **one** of the clinical and **one** of the imaging test findings from the lists below:

**At least *one* clinical sign:**

- a. bilious aspirate\*\* (see **Note**)
- b. vomiting
- c. abdominal distention
- d. occult or gross blood in stools (with no rectal fissure)

**And at least *one* imaging test finding which if equivocal is supported by clinical correlation (specifically, physician documentation of antimicrobial treatment for NEC):**

- a. Pneumatosis intestinalis
- b. Portal venous gas (Hepatobiliary gas)
- c. Pneumoperitoneum

**\*\*Note:** Bilious aspirate from a transpyloric feeding tube should be excluded

2. Surgical NEC: Infant has at least **one** of the following surgical findings:
- a. surgical evidence of extensive bowel necrosis (>2 cm of bowel affected)



- b. surgical evidence of pneumatosis intestinalis with or without intestinal perforation

**Reporting instruction**

- Necrotizing enterocolitis (NEC) criteria include neither a site-specific specimen nor organism identified from blood specimen, however an **exception** for assigning a BSI secondary to NEC is provided. A BSI is considered secondary to NEC if the patient meets one of the two NEC criteria **AND** an organism identified from blood specimen collected during the secondary BSI attribution period is an LCBI pathogen, or the same common commensal is identified from two or more blood specimens drawn on separate occasions collected on the same or consecutive days.

**LRI- LOWER RESPIRATORY INFECTION, OTHER THAN PNEUMONIA****LUNG-Other infection of the lower respiratory tract**

Other infections of the lower respiratory tract must meet at least ***one*** of the following criteria:

1. Patient has organism(s) seen on Gram stain of lung tissue or pleural fluid or identified from lung tissue or pleural fluid (when pleural fluid was obtained during thoracentesis or initial placement of chest tube and NOT from an indwelling chest tube) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has a lung abscess or other evidence of infection (for example, empyema) on gross anatomic or histopathologic exam.
3. Patient has imaging test evidence of abscess or infection (excludes imaging test evidence of pneumonia) which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for lung infection).

**Reporting instruction**

- If patient meets LUNG and PNEU report as PNEU only, unless the LUNG is a surgical site organ/space infection, in which case, report both PNEU and SSI-LUNG.

**REPR-REPRODUCTIVE TRACT INFECTION****EMET-Endometritis**

Endometritis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from endometrial fluid or tissue by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least ***two*** of the following signs or symptoms: fever (>38.0°C), pain or tenderness (uterine or abdominal)\*, or purulent drainage from uterus.

\* *With no other recognized cause*

**Reporting instructions**

- Do not report an HAI chorioamnionitis as EMET (see OREP).
- Do not report subsequent postpartum endometritis after a vaginal delivery as an HAI if a patient is admitted with POA chorioamnionitis (OREP). (See next bullet for endometritis following a C-section).
- Report as an organ space SSI-EMET if a C-section was performed on a patient with chorioamnionitis, and the patient later develops endometriti.

**EPIS-Episiotomy infection**

Episiotomy infections must meet at least one of the following criteria:

1. Postvaginal delivery patient has purulent drainage from the episiotomy
2. Postvaginal delivery patient has an episiotomy abscess

**Comment:**

Episiotomy is not considered an operative procedure in NHSN.

**OREP- Deep pelvic tissue infection or other infection of the male or female reproductive tract (epididymis, testes, prostate, vagina, ovaries, uterus) including chorioamnionitis, but excluding vaginitis, endometritis or vaginal cuff infections**

Other infections of the male or female reproductive tract must meet at least one of the following criteria:

1. Patient has organism(s) identified from tissue or fluid from affected site (excludes urine and vaginal swabs) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has an abscess or other evidence of infection of affected site on gross anatomic or histopathologic exam.
3. Patient has **suspected infection of** one of the listed OREP sites and two of the following localized signs or symptoms: fever (>38.0°C), nausea\*, vomiting\*, pain or tenderness\*, or dysuria\*

**And at least one of the following:**

- a. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
- b. physician initiates antimicrobial therapy within two days of onset or worsening of symptoms

\* With no other recognized cause

**Reporting instructions**

- Report endometritis as EMET.
- Report vaginal cuff infections as VCUF.
- If patient has epididymitis, prostatitis, or orchitis and meets OREP criteria, and they also meet UTI criteria, report UTI only, unless the OREP is a surgical site organ/space infection, in which case, only OREP should be reported.



### **VCUF-Vaginal cuff infection**

Vaginal cuff infections must meet at least ***one*** of the following criteria:

1. Post hysterectomy patient has purulent drainage from the vaginal cuff on gross anatomic exam.
2. Post hysterectomy patient has an abscess or other evidence of infection at the vaginal cuff on gross anatomic exam.
3. Post hysterectomy patient has organism(s) identified from fluid or tissue obtained from the vaginal cuff by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

#### **Reporting instruction**

- Report vaginal cuff infections as SSI-VCUF

### **SST-SKIN AND SOFT TISSUE INFECTION**

#### **BRST-Breast infection or mastitis**

A breast abscess or mastitis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from affected breast tissue or fluid obtained by invasive procedure by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has a breast abscess or other evidence of infection on gross anatomic or histopathologic exam.
3. Patient has fever (>38.0°C) and local inflammation of the breast,  
**AND**  
Physician initiates antimicrobial therapy within 2 days of onset or worsening of symptoms

#### **Reporting instruction**

- For SSI after a BRST procedure: if the infection is in the subcutaneous region report as a superficial incisional SSI, and if the infection involves the muscle/fascial level report as a deep incisional SSI.
- BRST Criterion 3, above, cannot meet organ/space Surgical Site Infections.

#### **BURN-Burn infection**

Burn infections must meet the following criteria:

1. Patient has a change in burn wound appearance or character, such as rapid eschar separation, or dark brown, black, or violaceous discoloration of the eschar,  
**AND**  
Organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).



### **CIRC-Newborn circumcision infection**

Circumcision infection in a newborn ( $\leq 30$  days old) must meet at least **one** of the following criteria:

1. Newborn has purulent drainage from circumcision site.
2. Newborn has at least **one** of the following signs or symptoms at circumcision site: erythema\*, swelling\*, or tenderness\*,  
**AND**  
Pathogen identified from circumcision site by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
3. Newborn has at least **one** of the following signs or symptoms at circumcision site: erythema\*, swelling\*, or tenderness\*,  
**AND**  
Common commensal is identified from circumcision site by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST),  
**AND**  
Physician initiates antimicrobial therapy within **two** days on onset or worsening of symptoms.

\* *With no other recognized cause*

### **DECU-Decubitus ulcer infection (also known as pressure injury infection), including both superficial and deep infections**

Decubitus ulcer infections must meet the following criterion:

1. Patient has at least **two** of the following signs or symptoms: erythema\*, tenderness\*, or swelling of decubitus wound edges\*,  
**AND**  
Organism(s) identified from needle aspiration of fluid or biopsy of tissue from ulcer margin by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

\* *With no other recognized cause*

### **SKIN-Skin infection (skin and /or subcutaneous) excludes decubitus ulcers and burns**

Skin infections must meet at least **one** of the following criteria:

1. Patient has at least **one** of the following:
  - purulent drainage
  - pustules
  - vesicles
  - boils (excluding acne)
2. Patient has at least **two** of the following localized signs or symptoms: pain\* or tenderness\*, swelling\*, erythema\*, or heat\*

**And at least one of the following:**

- a. organism(s) identified from aspirate or drainage from affected site by a culture or non-culture based testing method which is performed for purposes of clinical diagnosis and treatment for example, not Active Surveillance Culture/Testing (ASC/AST). Identification of 2 or more common commensal organisms without a recognized pathogen is not eligible for use. Common Commensal organisms include, but are not limited to, diphtheroids (*Corynebacterium* spp. not *C. diphtheria*), *Bacillus* spp. (not *B. anthracis*), *Propionibacterium* spp., coagulase-negative staphylococci (including *S. epidermidis*), viridans group streptococci, *Aerococcus* spp.
- b. *Micrococcus* spp, and *Rhodococcus* spp. For a full list of Common Commensals see the Common Commensal tab of the NHSN organisms list.
- c. multinucleated giant cells seen on microscopic examination of affected tissue
- d. diagnostic single antibody titer (IgM) or 4-fold increase in paired sera (IgG) for organism

\* *With no other recognized cause*

**Reporting instructions**

- Do not report acne as a skin/soft tissue HAI.
- Apply the site specific definition (not SKIN) for the following:
  - Report omphalitis in infants as UMB
  - Report infections of the circumcision site in newborns as CIRC
  - For decubitus ulcers, apply the DECU infection.
  - Report infected burns as BURN
  - Report breast abscesses or mastitis as BRST
  - Report localized infection at a vascular access site as a VASC unless there is an organism identified from blood, meeting LCBI criteria, which should instead be reported as an LCBI (see VASC definition)

**ST-Soft tissue infection (muscle and/or fascia [for example, necrotizing fasciitis, infectious gangrene, necrotizing cellulitis, infectious myositis, lymphadenitis, lymphangitis, or parotitis] excluding decubitus ulcers and burns)**

Soft tissue infections must meet at least one of the following criteria:

1. Patient has organism(s) identified from tissue or drainage from affected site by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
2. Patient has purulent drainage at affected site.
3. Patient has an abscess or other evidence of infection on gross anatomic or histopathologic exam

**Reporting instructions**

- Apply the site-specific definitions identified below (not ST) for the following:
- Report infected decubitus ulcers as DECU.
- Report infected burns as BURN.
- Report infection of deep pelvic tissues as OREP.
- Report localized infection at a vascular access site as a VASC unless there is an organism identified from blood, then it should be reported as an LCBI (see VASC definition).



## UMB-Omphalitis

Omphalitis in a newborn ( $\leq 30$  days old) must meet at least ***one*** of the following criteria:

1. Patient has erythema or drainage from umbilicus  
**And at least *one* of the following:**
  - a. organism(s) identified from drainage or needle aspirate by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
  - b. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has erythema and purulence at the umbilicus

### Reporting instructions

- Report infection of the umbilical artery or vein related to umbilical catheterization as VASC if there is no accompanying organism identified from blood specimen.
- If the patient meets criteria for LCBI, report as a LCBI (see [VASC](#)).

## USI – Urinary System Infection [formerly OUTI] (kidney, ureter, bladder, urethra, or perinephric space)

Urinary system infections must meet at least ***one*** of the following criteria:

1. Patient has microorganism(s) identified from fluid (not urine) or tissue from affected site by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)
2. Patient has an abscess or other evidence of infection on gross anatomical exam, during invasive procedure, or on histopathologic exam.
3. Patient has ***one*** of the following signs or symptoms:
  - fever ( $>38.0^{\circ}\text{C}$ )
  - localized pain or tenderness\*

### And at least ***one*** of the following:

- a. purulent drainage from affected site
- b. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

### AND

imaging test evidence suggestive of infection, for example, ultrasound, CT scan, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for urinary system infection.

4. Patient  $\leq 1$  year of age has at least ***one*** of the following signs or symptoms:
  - fever ( $>38.0^{\circ}\text{C}$ )
  - hypothermia ( $<36.0^{\circ}\text{C}$ )
  - apnea\*



- bradycardia\*
- lethargy\*
- vomiting\*

**And at least one of the following:**

- a. purulent drainage from affected site
- b. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST)

**AND**

imaging test evidence suggestive of infection, for example, ultrasound, CT scans, magnetic resonance imaging [MRI], or radiolabel scan [gallium, technetium]), which if equivocal is supported by clinical correlation, specifically, physician documentation of antimicrobial treatment for urinary system infection.

*\* With no other recognized cause*

**Reporting instructions**

- Report infections following circumcision in newborns as SST-CIRC.
- If patient meets USI criteria and they also meet UTI criteria, report UTI only, unless the USI is a surgical site organ/space infection, in which case, only USI should be reported.



## REFERENCES

- <sup>1</sup>McDonald LC, Coignard B, Dubberke E, Song, X, Horan T, Kutty PK. Recommendations for surveillance of Clostridium difficile-associated disease. *Infection Control Hospital Epidemiology* 2007; 28: 140-5.
- <sup>2</sup>Cohen SH, Gerding DN, Johnson S, Kelly CP, Loo VG, McDonald LC, et al. Clinical practice guidelines for Clostridium difficile infection in adults: 2010 update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases Society of America (IDSA). *Infection Control and Hospital Epidemiology* 2010; 31:431-455.