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 (Refer to Chapter 9 Appendix for specific event types available for organ space SSI attribution for each NHSN operative procedure category). **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 or an eligible infection criterion in the Patient Safety manual 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.

Not all positive blood specimens are eligible for use as an element in Chapter 17 definitions (specifically for secondary BSI attribution). For example, a single common commensal blood specimen does not meet an LCBI criterion (two matching common commensals along with an eligible symptom) and therefore cannot be used to meet a site-specific criterion nor can it be considered a secondary BSI.

NOTES:

1. 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).

2. The term physician for the purpose of application of the NHSN criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (Advanced Practice Nurse [APN], Physician's Assistant [PA]).

3. Examples of "suspected infection" include but are not limited to the following:
    a. Physician documentation of the suspected infection
    b. Physician documentation of antimicrobial therapy for a specified infection
    c. Imaging tests performed on the suspected infection location
    d. Site-specific specimen collection

4. Organisms identified from implanted devices by culture or non-culture based microbiologic testing methods are eligible for use to meet applicable definitions.
   Examples include:
   a. Vascular graft explanted from a vessel and culture positive can be used to meet VASC 1.
   b. Screws or other fixation devices removed from bone and culture positive can be used to meet BONE 1.
   c. Explanted ventricular shunt device and culture positive may be used to meet MEN 1.
   d. Explanted joint prosthesis that is culture positive may be used to meet PJI element.

5. For NHSN reporting purposes, the term "organism(s)" in this chapter includes viruses.

6. Organisms that primarily cause community-associated infections and are not known to (or rarely) cause healthcare-associated infections, are excluded and cannot be used to meet any NHSN definition.
   - **Fungi:** *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus, Pneumocystis*
   - **Vector-borne bacteria:** *Anaplasma spp., Ehrlichia spp., Borrelia spp., Rickettsia spp.*

7. 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).

8. A **matching organism** is defined as one of the following:

   a. If genus and species are identified in both specimens, they must be the same.

      Example 1: An intraabdominal specimen is used as an element to meet an 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.

      Example 2: An intraabdominal specimen is used as an element to meet IAB definition and is growing *Enterococcus faecium.* A blood specimen with a collection date in the IAB secondary BSI attribution period is reported to be growing *Enterococcus faecalis.* These are **NOT** considered matching organisms as the species are different.

   b. 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.

      Example 1: 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.

      Example 2: 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.

c. There are two exceptions to the definition that involve infections **meeting LCBI 2** criteria with *Staphylococcus* or *Streptococcus*:

Example 1 - (*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 2 - (*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, two 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.

d. 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 1: A culture of tissue from the 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 2: 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.

Examples for Determining Matching Organisms (correct selection for NHSN reporting is bolded)

Identification # 1	Identification # 2	Matching Organisms Yes or No
Bacteroides vulgatus	*Bacteroides fragilis*	*No*
Enterococcus faecalis	*Enterococcus*	*Yes*
Enterococcus faecium	*Enterococcus faecalis*	*No*
Pseudomonas species	***Pseudomonas aeruginosa***	*Yes*
Coagulase-negative Staphylococcus	*Staphylococcus aureus*	*No*
Staphylococcus epidermidis	Coagulase-negative Staphylococcus	*Yes*
Staphylococcus species	Coagulase-positive Staphylococcus	*No*
Streptococcus species	*Streptococcus* Viridans Group	*No*
Yeast	***Candida*** species	*Yes*

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/infection) 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.

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BJ-BONE AND JOINT INFECTION

BONE-Osteomyelitis

When meeting the Osteomyelitis (BONE) definition:

- The BONE 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 BONE criterion was obtained, the 10 calendars 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 osteomyelitis and the extended antimicrobial treatment timeframes associated with the condition.
- The RIT for Osteomyelitis (BONE) is extended to include the remainder of the patient's current admission.
- When meeting the Osteomyelitis (BONE) 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 BONE is limited to organism(s) identified in blood specimen that match the organism(s) used to meet the BONE definition.
        - If the BONE definition was met using a site-specific specimen (bone culture) or using a blood specimen with Pseudomonas aeruginosa as the identified organism and subsequently a blood specimen collected during the BONE secondary BSI attribution period is positive for Pseudomonas aeruginosa and E. coli, while Pseudomonas aeruginosa can be assigned to the BONE 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 (Pseudomonas aeruginosa) used to meet BONE definition. If the blood specimen can be used to meet a BONE 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.

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

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

** 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 signs or symptoms: fever (>38.0°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 definitive for infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician or physician designee documentation of antimicrobial treatment for vertebral disc space infection.
   b. imaging test evidence definitive for infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician or physician designee 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 a suspected joint or bursa infection and at least two of the following signs or symptoms: 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 definitive for infection (for example, x-ray, CT scan, MRI, radiolabel scan [gallium, technetium, etc.]), which if equivocal is supported by clinical correlation, specifically, physician or physician designee 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)

Periprosthetic 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, purulence, or other gross anatomic evidence of infection.
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/µL) 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).
f. Synovial fluid alpha-defensin positive.
g. Physician diagnosis of periprosthetic joint infection.

* 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 or a single hardware organism for criterion 3e.

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 definitive for infection (for example, ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram), which if equivocal is supported by clinical correlation, specifically, physician or physician designee 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 ≤1 year of age has at least ***two*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°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 definitive for infection, (for example, ultrasound, CT scan, MRI, radionuclide brain scan, or arteriogram), which if equivocal is supported by clinical correlation,

specifically, physician or physician designee 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/infection (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 suspected meningitis or ventriculitis and at least ***two*** of the following:
   i. fever (>38.0°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 ≤1 year of age has suspected meningitis or ventriculitis and at least ***two*** of the following elements:
   i. fever (>38.0°C), hypothermia (<36.0°C), 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

- Organisms identified from explanted ventricular shunts are eligible for MEN 1.
- Seizures does not meet the cranial nerve sign element for MEN 2 or MEN 3.
- 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/infection (SA) are present together.

SA-Spinal abscess/infection (spinal abscess, spinal subdural or epidural infection)

Spinal abscess/infection must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from abscess or from purulent material found 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 or other evidence of spinal infection 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 definitive for spinal abscess/infection, which if equivocal is supported by clinical correlation, specifically, physician or physician designee documentation of antimicrobial treatment for spinal abscess/infection.
   b. imaging test evidence definitive for a spinal abscess/infection (for example, myelography, ultrasound, CT scan, MRI, or other scans [gallium, technetium, etc.]) which if equivocal is supported by clinical correlation, specifically, physician or physician designee documentation of antimicrobial treatment for spinal abscess/infection.

** With no other recognized cause*

Reporting Instruction

- Report as SA if meningitis (MEN) and spinal abscess/infection (SA) are present together after operation.

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°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 ≤1 year of age has at least ***two*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°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*

ENDO-Endocarditis – *Please see ENDO Appendix*

MED-Mediastinitis

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

1. Patient has organism(s) identified from mediastinal tissue or mediastinal 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°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 ≤1 year of age has at least ***one*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°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.
- MED 4b: Mediastinal stranding, mediastinal fluid collection, mediastinal edema, and mediastinal abscess are eligible imaging findings to meet the "mediastinal widening on imaging test" element.

VASC-Arterial or venous infection excluding infections involving vascular access devices with organisms identified in the blood

Note: If a patient meets the criteria for an LCBI in the presence of an arterial or vascular infection (VASC) 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 ≤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.

** Occasionally, a patient with both an eligible central line and another vascular access device will have pus at the other access site. If there is pus at the site of one of the following vascular access devices and a specimen collected from that site has at least one matching organism to an organism identified in the blood during the BSI IWP, report such events marking the "pus at the vascular access site" field as "Yes." Vascular access devices included in this exception are limited to:

- Arterial catheters unless in the pulmonary artery, aorta or umbilical artery
- Arteriovenous fistulae
- Arteriovenous grafts
- Hemodialysis reliable outflow (HERO) dialysis catheters
- Intra-aortic balloon pump (IABP) devices
- Non-accessed CL (those neither inserted nor used during current admission)
- Peripheral IV or Midlines

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

CONJ-Conjunctivitis

1. Patient has at least ***one*** of the following signs or symptoms: pain, erythema, or swelling of conjunctiva or around eye.

   And at least *one* of the following:

   a. Patient has organism(s) 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).
   b. WBCs and organism(s) seen on Gram stain of exudate.
   c. purulent exudate.
   d. multinucleated giant cells seen on microscopic examination of conjunctival exudate or scrapings.
   e. 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 ($AgNO_3$), 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 (labyrinthitis) 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 or physician designee 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 definitive for infection (for example, CT scan), which if equivocal is supported by clinical correlation, specifically, physician or physician designee 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 or physician designee initiates antimicrobial therapy within ***two*** days of onset or worsening of symptoms.

** With no other recognized cause*

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 or physician designee 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*, tachypnea*, nasal discharge*, or purulent exudate in throat*
   And at least *one* of the following:
   a. organism(s) identified from upper respiratory site (specifically: nasal cavity, larynx, nasopharynx, 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 or physician designee diagnosis of an upper respiratory infection.
2. Patient has an abscess on gross anatomical or histopathologic exam or imaging test.
3. Patient ≤1 year of age has at least ***two*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°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: nasal cavity, larynx, nasopharynx, 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 they are not upper respiratory specimens.
   b. diagnostic single antibody titer (IgM) or ≥4-fold increase in paired sera (IgG) for organism.
   c. physician or physician designee diagnosis of an upper respiratory infection.

** With no other recognized cause*

GI-GASTROINTESTINAL SYSTEM INFECTION

CDI- *Clostridioides difficile* Infection

Clostridioides 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).
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) with 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 a stool or rectal swab by culture or a 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,* STEC: Shiga toxin-producing *E. coli,* ETEC: Enterotoxigenic *E. coli,* EPEC: Enteropathogenic *E. coli,* EIEC: Enteroinvasive *E. coli,* EAEC: Enteroaggregative *E. coli,* DAEC: Diffusely adherent *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 (See Reporting Instructions)
   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 from the NHSN Terminology Browser.
2. Patient has at least ***two*** of the following signs or symptoms compatible with infection of the organ or tissue involved: fever (>38.0°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 from the NHSN Terminology Browser.
   AND
   imaging test evidence definitive for gastrointestinal infection (for example, endoscopic exam, MRI, CT scan), which if equivocal is supported by clinical correlation, specifically, physician or physician designee documentation of antimicrobial treatment for gastrointestinal tract infection.
   d. imaging test evidence definitive for gastrointestinal infection (for example, endoscopic exam, MRI, CT scan), which if equivocal is supported by clinical correlation, specifically, physician or physician designee documentation of antimicrobial treatment for gastrointestinal tract infection.

** With no other recognized cause*

Reporting Instructions

- 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.
- For GIT 1b: If an organism is identified on histopathologic exam, the blood specimen must contain a matching organism.
- In patients > 1 year, pneumatosis intestinalis is considered an equivocal imaging finding for a gastrointestinal tract infection (GIT). For patients ≤ 1 year, please review the NEC criteria.

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. (See Reporting Instructions)
      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 from the NHSN Terminology Browser.
3. Patient has at least ***two*** of the following signs or symptoms: 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 from the NHSN Terminology Browser.
      AND
      imaging test evidence definitive for 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 or physician designee documentation of antimicrobial treatment for intraabdominal infection. †

** With no other recognized cause*

Reporting Instructions

- †Biliary ductal dilatation is considered an equivocal finding for cholangitis.
- For IAB 2b: If an organism is identified on histopathologic exam, the blood specimen must contain a matching organism to the organism identified on histopathologic exam.
- 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.
- Eligible laboratory results that represent transaminase levels include: serum glutamic oxaloacetic transaminase (SGOT), serum glutamic pyruvic transaminase (SGPT), alanine transaminase (ALT) or aspartate transaminase (AST). Consider the requirement for elevated transaminase level(s) met if at least one is elevated as per the normal range provided by the laboratory.

NEC-Necrotizing enterocolitis (*See Chapter 4)*

Necrotizing enterocolitis (NEC) criteria include neither a site-specific specimen nor organism identified from blood specimen. The pathophysiology of NEC is multifactorial. NEC definitions are provided to facilitate the provision of an exception for assigning a BSI secondary to NEC and should not be used for HAI surveillance as they are not designed, tested, or intended for this purpose.

LRI- LOWER RESPIRATORY INFECTION, OTHER THAN PNEUMONIA

LUNG-Other infection of the lower respiratory tract and pleural cavity

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 within 24 hours of chest tube placement) 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 or physician designee 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.
- Lung tissue or pleural fluid are the only specimens eligible for LUNG.
- Lower respiratory tract secretions (such as sputum, endotracheal/tracheal aspirate, bronchoalveolar lavage) **are not** eligible for LUNG.

*If a pleural fluid specimen is collected after a chest tube is repositioned **OR** after 24 hours of chest tube placement, this pleural fluid specimen is not eligible for LUNG 1. Repositioning must be documented in the patient record by a healthcare professional.

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 **suspected endometritis** with 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 endometritis.

EPIS-Episiotomy infection

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

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

OREP- Pelvic tissue/space infection or other infection of the male or female reproductive tract (for example, 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 one of the specified OREP sites (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 or physician designee 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 the patient meets for an OREP (HAI or organ/space SSI) and UTI criterion, report both events.

VCUF-Vaginal cuff infection (following HYST and VHYS procedures ONLY)

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

1. Purulent drainage from the vaginal cuff on gross anatomic exam.
2. Abscess or other evidence of infection at the vaginal cuff on gross anatomic exam.
3. 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 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).
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 or physician designee initiates antimicrobial therapy within 2 days of onset or worsening of symptoms.

Reporting Instructions

- 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' is not eligible as an Organ/Space SSI following a BRST procedure.

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).

Reporting Instructions

- Report BURN in the setting of an infected burn covered with a temporary graft or dressing.
- In the setting of a permanent skin graft (autograft) over a burn wound, use the SKIN or ST criteria.

CIRC-Newborn circumcision infection

Circumcision infection in a newborn (≤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 or physician designee initiates antimicrobial therapy within ***two*** days of 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 decubitus 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) excluding decubitus ulcers, burns, and infections at vascular access sites (See VASC).

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 two or more common commensal organisms without a recognized pathogen is not eligible for use. Common commensal organisms include, but not 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., *Micrococcus* spp., and *Rhodococcus* spp. Common commensals can be accessed from the NHSN Terminology Browser.
   b. multinucleated giant cells seen on microscopic examination of affected tissue.
   c. 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.
- Report SKIN or ST criteria in the setting of a permanent skin graft (autograft) over a burn wound.
- 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 a burn covered with a temporary graft or dressing that is infected as BURN.
- Report breast abscesses or mastitis as HAI BRST. If a breast infection is identified after an NHSN operative procedure, assess for an SSI.
- 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, burns, and infections at vascular access sites (See VASC).

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

- Report SKIN or ST criteria in the setting of a permanent skin graft (autograft) over a burn wound.
- Apply the site-specific definitions identified below (not ST) for the following:
  - Report infected decubitus ulcers as DECU.
  - Report infected burns as BURN. Report a burn covered with a temporary graft or dressing that is infected as BURN.
  - Report breast abscesses or mastitis as BRST. If a breast infection is identified after an NHSN operative procedure, assess for an SSI.
  - 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 (≤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 instruction

- Report infection of the umbilical artery or vein related to umbilical catheterization as VASC if there is no accompanying organism identified from blood specimen. However, if the patient meets criteria for LCBI, report as a LCBI (see VASC).
- Catheterized umbilical venous catheter (UVC) or umbilical arterial catheter (UAC) sites are not eligible for UMB criteria.

USI – URINARY SYSTEM INFECTION (kidney, ureter, bladder, urethra, or perinephric space excluding UTI [see Chapter 7].)

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

1. Patient has organism(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°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 definitive for 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 or physician designee documentation of antimicrobial treatment for urinary system infection.
4. Patient ≤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*
   - 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 definitive for 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 or physician designee documentation of antimicrobial treatment for urinary system infection.

** With no other recognized cause*

Reporting Instructions

- Report infections following circumcision in newborns as SST-CIRC.

ENDO Appendix

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 calendars 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:

ENDO 1[1]

Organism(s) identified from cardiac vegetation[2], cardiac tissue, explanted prosthetic valve or sewing ring, ascending aortic graft (with evidence of valve involvement[3]), endovascular intracardiac implantable electronic device (CIED), or arterial embolus 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).

ENDO 2

Endocarditis[4] seen on histopathologic examination of cardiac vegetation, cardiac tissue, explanted prosthetic valve, or sewing ring, ascending aortic graft (with evidence of valve involvement[3]), endovascular intracardiac implantable electronic device (CIED), or embolus 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).

ENDO 3

Intraoperative evidence of endocarditis on gross anatomical exam during a cardiac operative procedure.

ENDO 4

At least ***one*** of the following echocardiographic or cardiac CT imaging test evidence of endocarditis[5]: i. vegetation on cardiac valve or supporting structures[2] ii. valvular/leaflet perforation iii. valvular/leaflet aneurysm iv. perivalvular or peri graft abscess v. pseudoaneurysm vi. intracardiac fistula vii. significant new valvular regurgitation as compared with previous imaging (on echocardiography only)[6] viii. new partial dehiscence of prosthetic valve (compared with previous imaging)	**OR**	At least **one** of the following 18 F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) imaging test(s) shows evidence of endocarditis[5]: ix. abnormal metabolic activity involving a native or prosthetic valve[7], ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other intracardiac prosthetic material >3 months after cardiac surgery. x. abnormal metabolic activity ≤3 months after implantation of prosthetic valve[7], ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other intracardiac prosthetic material.

AND

At least *one* of the following:

a. typical infectious endocarditis organism(s): S*taphylococcus aureus, Staphylococcus lugdunensis, Enterococcus faecalis*, all streptococcal species (except for *Streptococcus pneumoniae* and *Streptococcus pyogenes*), *Granulicatella* spp., *Abiotrophia spp*., *Gemella spp.,* HACEK group microorganisms *(Haemophilus* species*, Aggregatibacter actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens,* and *Kingella kingae*) identified from ≥2 matching blood collections drawn on separate occasions with no more than 1 calendar day between specimen collection 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. typical infectious endocarditis organism(s) in the presence of prosthetic material: *coagulase-negative Staphylococci, Corynebacterium striatum, Corynebacterium jeikeium, Serratia marcescens, Pseudomonas aeruginosa, Cutibacterium acnes,* non-tuberculous mycobacteria, and *Candida* spp. identified from ≥2 matching blood collections drawn on separate occasions with no more than 1 calendar day between specimen collection 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).
c. non-typical infectious endocarditis organism(s) identified from ≥3 matching blood collections drawn on separate occasions with no more than 1 calendar day between specimen collection 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. *Coxiella burnetii* identified by anti-phase I IgG antibody titer >1:800 or identified from a single 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).
e. indirect immunofluorescence assays (IFA) for detection of IgM and IgG antibodies to *Bartonella henselae* or *Bartonella quintana* with IgG titer ≥1:800.
f. *Coxiella burnetii, Bartonella* species, or *Tropheryma whipplei* identified in blood by PCR or other non-culture-based testing method.

ENDO 5

At least ***three*** of the following ***(Note: Meaning one element from i, ii, iii, iv, or v and only one condition within each element can be used.)***

i. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease[8], more than mild valvular regurgitation or valvular stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use[9].
ii. fever (>38.0°C)
iii. new valvular regurgitation on auscultation (when an echocardiogram is not available).
iv. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic abscess, cerebral 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.
v. immunologic phenomena: immune complex-mediated glomerulonephritis[10] (documented in medical record), Osler's nodes, Roth's spots, or positive rheumatoid factor.

AND

At least *one* of the following:

a. typical infectious endocarditis organism(s): *Staphylococcus aureus, Staphylococcus lugdunensis, Enterococcus faecalis*, all Streptococcal species (except for *Streptococcus. pneumoniae* and *Streptococcus pyogenes*), *Granulicatella* spp., *Abiotrophia* spp., *Gemella* spp., HACEK microorganisms group *(Haemophilus* species*, Aggregatibacter actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens,* and *Kingella kingae*) identified from ≥2 matching 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. typical infectious endocarditis organism(s) in the presence of prosthetic material: *coagulase negative staphylococci, Corynebacterium striatum; C. jeikeium, Serratia marcescens, Pseudomonas aeruginosa, Cutibacterium acnes, non-tuberculous mycobacteria, and Candida spp*. identified from ≥2 matching 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).

c. non-typical infectious endocarditis organism(s) identified from ≥3 matching blood collections drawn on separate occasions with no more than 1 calendar day between specimen collections 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. *Coxiella burnetii* identified by anti-phase I IgG antibody titer >1:800 or 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).

e. indirect immunofluorescence assays (IFA) for detection of IgM and IgG antibodies to *Bartonella henselae* or *Bartonella quintana* with IgG titer >1:800.

f. *Coxiella burnetii*, *Bartonella* species, or *Tropheryma whipplei* identified in blood by PCR or other non-culture-based testing method.

ENDO 6

At least ***one*** of the following echocardiographic or cardiac CT imaging test evidence of endocarditis[5]: i. vegetation on cardiac valve or supporting structures[2] ii. perivalvular or peri graft abscess iii. new partial dehiscence of prosthetic valve iv. valvular/leaflet perforation v. valvular/leaflet aneurysm vi. pseudoaneurysm vii. intracardiac fistula viii. significant new valvular regurgitation as compared with previous imaging (on echocardiography only)[6]	**OR**	At least one of the following 18 F-fluorodeoxyglucose positron emission tomography/computed tomography (FDG PET/CT) imaging test evidence of endocarditis[5]: ix. abnormal metabolic activity involving a native or prosthetic valve[7], ascending aortic graft (with accompanying evidence of valve involvement), intracardiac device leads or other intracardiac prosthetic material >3 months after cardiac surgery. x. abnormal metabolic activity ≤3 months implantation of prosthetic valve[7], ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other intracardiac prosthetic material.

AND

At least one condition from three of the following elements (Note: Meaning one element from a, b, c, d, or e and only one condition within each element can be used.):

a. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease[8], more than mild valvular regurgitation or valvular stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use[9]

b. fever (>38.0°C)

c. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic abscess, cerebral 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: immune complex-mediated glomerulonephritis[10] (documented in medical record), 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 ≥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).

ENDO 7

One condition from each of the following elements (a, b, c, d, e, and f):

a. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease[8], more than mild valvular regurgitation or valvular stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use[9].
b. fever (>38.0°C)
c. new valvular regurgitation on auscultation (when an echocardiogram is not available).
d. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic abscess, cerebral 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.
e. immunologic phenomena: immune complex-mediated glomerulonephritis[10] (documented in medical record), Osler's nodes, Roth's spots, or positive rheumatoid factor.
f. 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 ≥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).

ENDO Footnotes

1. The following are also eligible to ENDO 1:
    - Positive culture from a pacemaker/defibrillator lead or ventricular assist device (VAD) components within the heart.
2. Cardiac vegetation can be found on a cardiac valve, endovascular CIED (including pacemaker/defibrillator leads), explanted prosthetic valve or sewing ring, or ventricular assist device (VAD) components within the heart.
3. "with evidence of valve involvement" is defined as **one** of the following:
    - Echocardiography and/or cardiac CT showing aortic valve vegetation, valvular/leaflet perforation, valvular/leaflet aneurysm.
    - Significant new aortic valve regurgitation on echocardiography as compared with previous imaging.
    - New partial dehiscence of prosthetic aortic valve as compared with previous imaging.
    - Positron emission computed tomography with 18F-FDG: abnormal metabolic activity involving prosthetic aortic valve (implanted >3 months ago) or involving native aortic valve.
    - Aortic valve vegetation, valvular/leaflet perforation, valvular/leaflet aneurysm, or partial dehiscence of prosthetic aortic valve documented by direct inspection during heart surgery.
4. Endocarditis is defined as:
    - Active endocarditis—vegetations, leaflet destruction, or adjacent tissue of native or prosthetic valves showing variable degrees of inflammatory cell infiltrates and healing.
    - Acute endocarditis—vegetations or cardiac/aortic tissue lesions of native or prosthetic valves showing active inflammation without significant healing or organizational change.
    - Subacute/chronic endocarditis—vegetations or cardiac/aortic tissue lesions of native or prosthetic valves demonstrating evidence of healing or attempted healing: maturing granulation tissue and fibrosis showing variable mononuclear cell infiltration and/or calcification.
5. Which if equivocal is supported by clinical correlation (specifically, physician or physician designee documentation of antimicrobial treatment for endocarditis).
6. "Significant new valvular regurgitation" is defined as moderate or severe valvular regurgitation. This imaging finding is valve-specific and cannot be pre-existing. Worsening of this condition is **not** eligible for use (ex. mild to moderate tricuspid regurgitation).
7. For prosthetic valve endocarditis (PVE): intense, focal/multifocal, or heterogeneous FDG uptake patterns; for native valve endocarditis and cardiac device leads, any abnormal uptake pattern.
8. Includes cyanotic CHD (tetralogy of Fallot, univentricular heart, complete transposition, truncus arteriosus, hypoplastic left heart); endocardial cushion defects; ventricular septal defect; left-sided lesions (bicuspid aortic valve; aortic stenosis and insufficiency, mitral valve prolapse, mitral stenosis and insufficiency); right-sided lesions (Ebstein anomaly, anomalies of the pulmonary valve, congenital tricuspid valve disease); patent ductus arteriosus; and other congenital anomalies, with or without repair.
9. Elements of 5i, 6a and 7a documented during the current admission:
    - May be documented outside of the ENDO infection window period or SSI surveillance period.

- Should not be used to set the ENDO date of event.

10. Immune complex-mediated glomerulonephritis is defined as **one** of the following:

    a. Unexplained presence of either acute kidney injury (new reduction of estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m^2)

    OR

    b. Unexplained acute on chronic kidney injury (for example: from "moderately decreased" to "severely decreased"; or from "severely decreased" to "kidney failure." (Interpretive ranges for eGFR: normal ≥60 mL/min/1.73 m^2; moderately decreased 30–59 mL/min/1.73 m^2; severely decreased 15–29 mL/min/1.73 m^2; kidney failure)

    AND

    Two of the following: hematuria, proteinuria, cellular casts on inspection of urinary sediment, hypocomplementemia, cryoglobulinemia, and/or presence of circulating immune complexes.

    c. Renal biopsy consistent with immune complex-mediated renal disease.

Reference

1. Fowler VG, Durack DT, Selton-Suty C, et al. The 2023 Duke-International Society for Cardiovascular Infectious Diseases criteria for infective endocarditis: Updating the modified Duke Criteria. *Clin Infect Dis*. 2023;77(4):518-526. doi:10.1093/cid/ciad271