Have You Found Your Second-ary Wind?: Navigating Secondary BSI

LaTasha Boswell

NHSN Protocol and Training Team

Public Health Analyst
CACI Subcontractor to Leidos | Contractor for the Division of Healthcare Quality Promotion (DHQP)
National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)
Centers for Disease Control and Prevention

July 8, 2025

second wind noun

: renewed energy or endurance

second wind

noun [S]

UK /ˌsek.ᵊnd ˈwɪnd/ US /ˌsek.ᵊnd ˈwɪnd/

Add to word list

a return of strength or energy that makes it possible to continue in an activity that needs a lot of effort:

https://dictionary.cambridge.org/dictionary/english/second-wind

What Has Been the Hardest Concept You've Learned About Secondary BSI?

Objectives

By the end of this lesson, our users will be able to:

- Summarize the foundational concepts of secondary BSI.
- Determine scenarios for Secondary BSI attribution and the Necrotizing enterocolitis (NEC) exception.
- Apply secondary BSI attribution concepts to knowledge checks and case study.

Resources

Resources

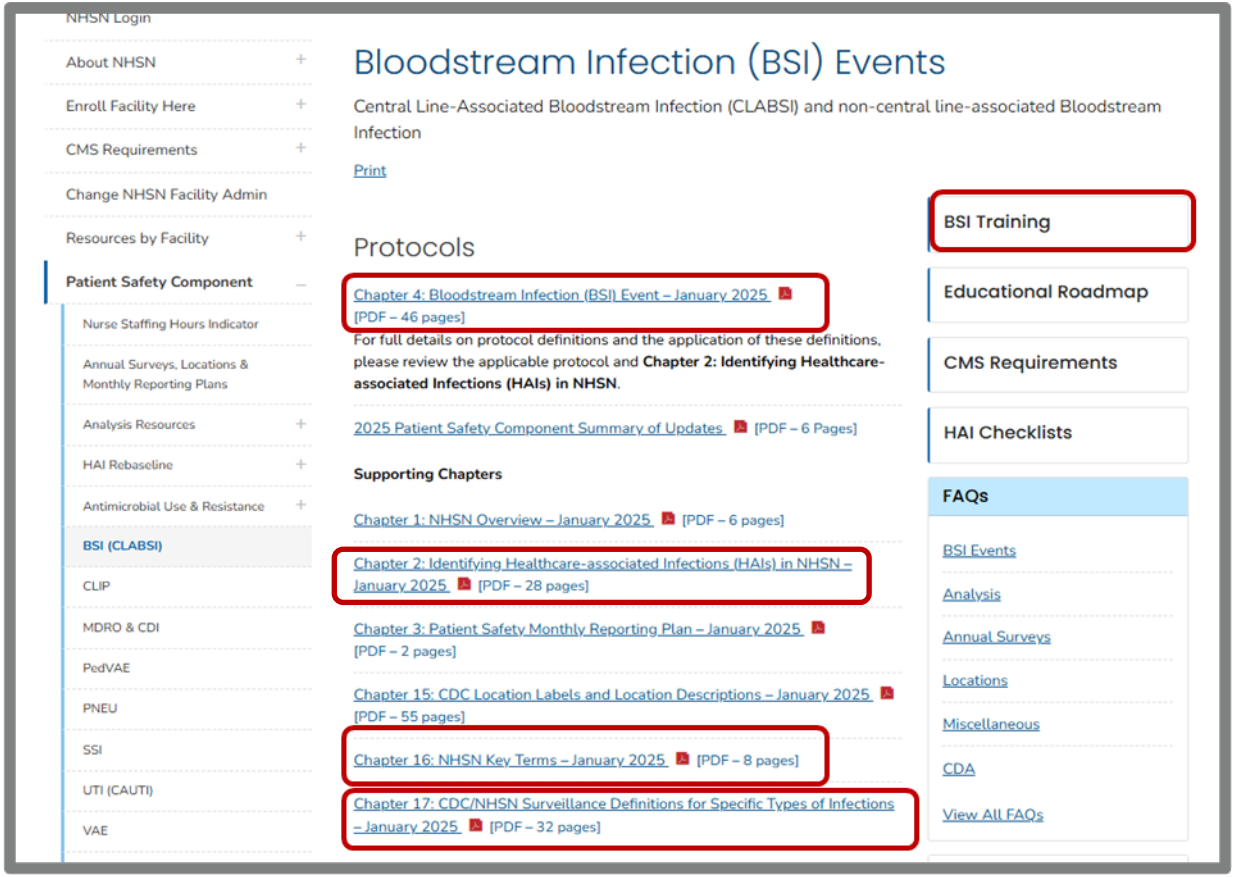

NHSN Login
About NHSN
Enroll Facility Here
CMS Requirements
Change NHSN Facility Admin
Resources by Facility
Patient Safety Component
Nurse Staffing Hours Indicator
Annual Surveys, Locations & Monthly Reporting Plans
Analysis Resources
HAI Rebaseline
Antimicrobial Use & Resistance
BSI (CLABSI)
CLIP
MDRO & CDI
PedVAE
PNEU
SSI
UTI (CAUTI)
VAE
Bloodstream Infection (BSI) Events
Central Line-Associated Bloodstream Infection (CLABSI) and non-central line-associated Bloodstream Infection
Print
Protocols
Chapter 4: Bloodstream Infection (BSI) Event – January 2025 [PDF – 46 pages]
For full details on protocol definitions and the application of these definitions, please review the applicable protocol and Chapter 2: Identifying Healthcare-associated Infections (HAIs) in NHSN.
2025 Patient Safety Component Summary of Updates [PDF – 6 Pages]
Supporting Chapters
Chapter 1: NHSN Overview – January 2025 [PDF – 6 pages]
Chapter 2: Identifying Healthcare-associated Infections (HAIs) in NHSN – January 2025 [PDF – 28 pages]
Chapter 3: Patient Safety Monthly Reporting Plan – January 2025 [PDF – 2 pages]
Chapter 15: CDC Location Labels and Location Descriptions – January 2025 [PDF – 55 pages]
Chapter 16: NHSN Key Terms – January 2025 [PDF – 8 pages]
Chapter 17: CDC/NHSN Surveillance Definitions for Specific Types of Infections – January 2025 [PDF – 32 pages]
BSI Training
Educational Roadmap
CMS Requirements
HAI Checklists
FAQs
BSI Events
Analysis
Annual Surveys
Locations
Miscellaneous
CDA
View All FAQs

Table B1: Secondary BSI Guide

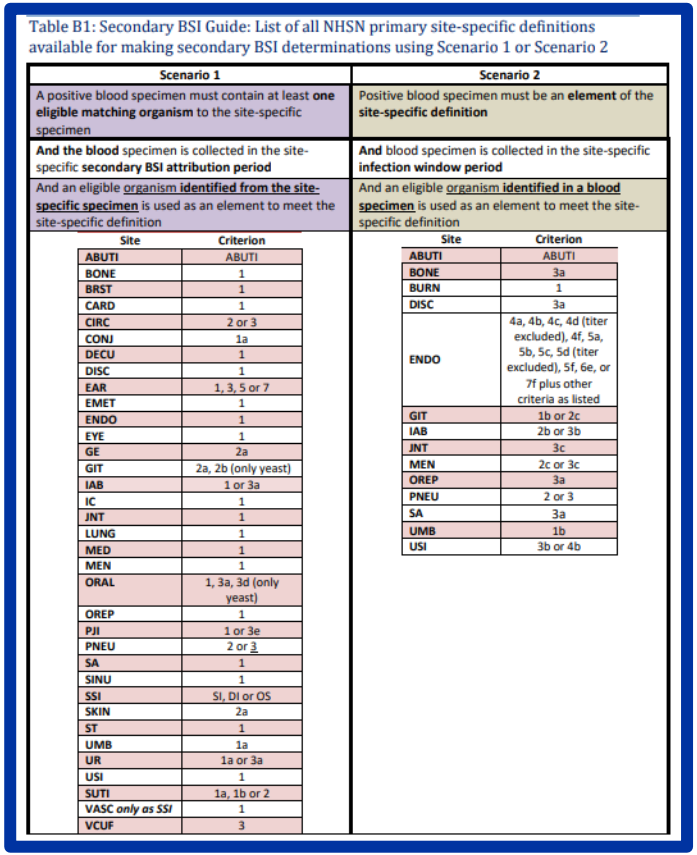


Table B1: Secondary BSI Guide: List of all NHSN primary site-specific definitions available for making secondary BSI determinations using Scenario 1 or Scenario 2

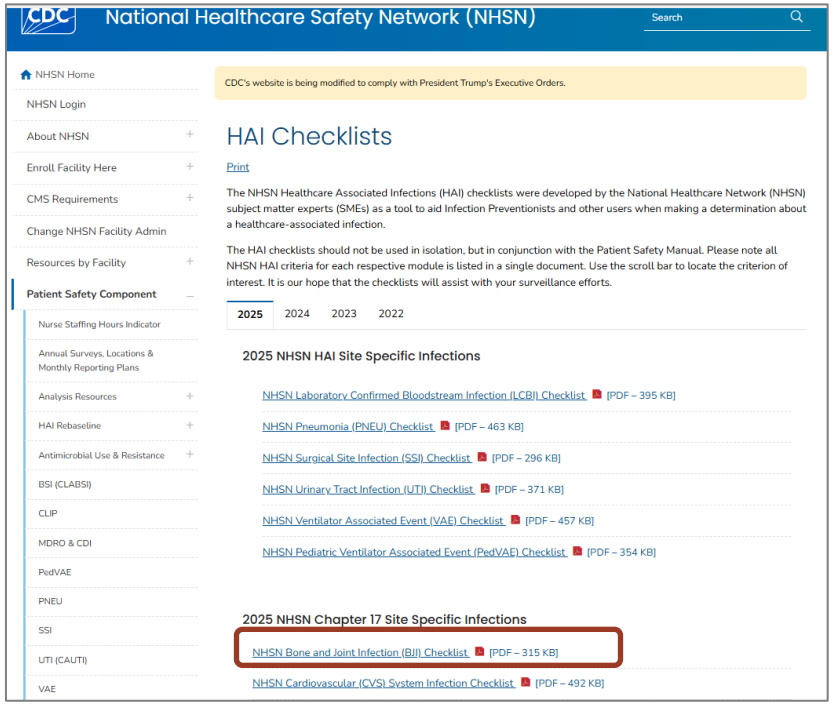
Scenario 1	Scenario 2
A positive blood specimen must contain at least **one eligible matching organism** to the site-specific specimen	Positive blood specimen must be an **element** of the **site-specific definition**
And the blood specimen is collected in the site-specific **secondary BSI attribution period**	**And** blood specimen is collected in the site-specific **infection window period**
And an eligible organism **identified from the site-specific specimen** is used as an element to meet the site-specific definition	And an eligible organism **identified in a blood specimen** is used as an element to meet the site-specific definition

Site	Criterion
ABUTI	ABUTI
BONE	1
BRST	1
CARD	1
CIRC	2 or 3
CONJ	1a
DECU	1
DISC	1
EAR	1, 3, 5 or 7
EMET	1
ENDO	1
EYE	1
GE	2a
GIT	2a, 2b (only yeast)
IAB	1 or 3a
IC	1
JNT	1
LUNG	1
MED	1
MEN	1
ORAL	1, 3a, 3d (only yeast)
OREP	1
PJI	1 or 3e
PNEU	2 or 3
SA	1
SINU	1
SSI	SI, DI or OS
SKIN	2a
ST	1
UMB	1a
UR	1a or 3a
USI	1
SUTI	1a, 1b or 2
VASC *only as SSI*	1
VCUF	3

Site	Criterion
ABUTI	ABUTI
BONE	3a
BURN	1
DISC	3a
ENDO	4a, 4b, 4c, 4d (titer excluded), 4f, 5a, 5b, 5c, 5d (titer excluded), 5f, 6e, or 7f plus other criteria as listed
GIT	1b or 2c
IAB	2b or 3b
JNT	3c
MEN	2c or 3c
OREP	3a
PNEU	2 or 3
SA	3a
UMB	1b
USI	3b or 4b

Page 4-34

HAI Checklists



2025 NHSN Bone and Joint Infection (BJ) Checklist

Documentation Review Checklist BJ - Bone and Joint Infection BONE-Osteomyelitis Criterion met: ☐ 1 ☐ 2 ☐ 3a ☐ 3b		
Element	**Element Met**	**Date**
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*	☐	
• 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.	☐	
**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.

Knowledge Check # 1

Which resources below can be used for Secondary BSI Attribution?

A. Chapter 4
B. Chapter 2
C. Chapter 17
D. All of the above

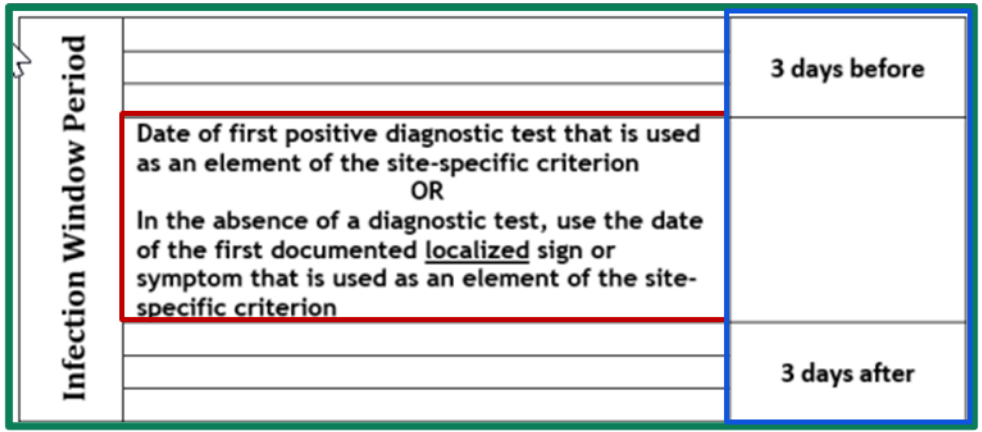
Answer: D – All of the above

Chapter 4, Chapter 2 and Chapter 17 are resources for secondary BSI attribution. Please review additional chapters for guidance on secondar y BSI attribution (examples SSI, PNEU, UTI chapters).

Key BSI Concepts

Infection Window Period (IWP)

- The 7-days during which all site-specific infection criteria must be met. It includes the collection date of the first positive diagnostic test that is used as an element to meet the site-specific infection criterion, the 3 calendar days before and the 3 calendar days after.
- 21-day ENDO IWP



Date of Event (DOE)

- The date the first element used to meet an NHSN site-specific infection criterion occurs for the first time within the seven-day infection window period.

HD	RIT	IWP
1		
2		
3		
4 DOE	1	**Urine culture:** >100,000 CFU/ ml *E. coli*
5	2	Fever > 38.0 C
6	3	Fever > 38.0 C
7	4	
8	5	
9	6	Urine culture: No growth
10	7	
11	8	
12	9	**Urine culture:** >100,000 CFU/ ml *S. aureus,* Fever > 38.0 C
13	10	
14	11	
15	12	
16	13	
17	14	
		UTI HAI **Date of Event: HD 4** **Pathogen: *E. coli, S. aureus***

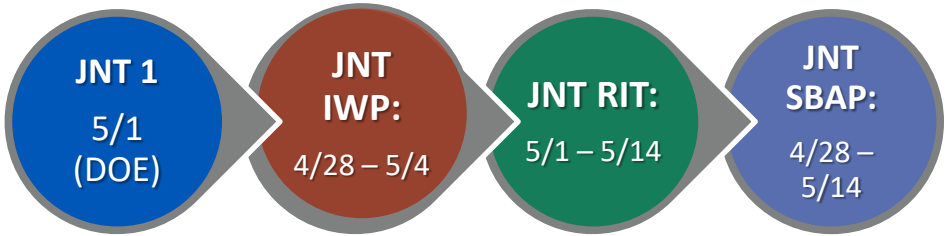
Repeat Infection Timeframe (RIT)

- A 14-day timeframe during which no new infections of the same type are reported.
- The date of event is Day 1 of the 14-day RIT.
- If criteria for the same type of infection are met and the date of event is within the 14-day RIT, a new event is not identified or reported.
- ENDO RIT - extended to include the remainder of the patient's current admission.

HD	RIT	IWP
1		
2		
3		
4 DOE	1	**Urine culture:** >100,000 CFU/ ml *E. coli*
5	2	Fever > 38.0 C
6	3	Fever > 38.0 C
7	4	
8	5	
9	6	Urine culture: No growth
10	7	
11	8	
12	9	**Urine culture:** >100,000 CFU/ ml *S. aureus,* Fever > 38.0 C
13	10	
14	11	
15	12	
16	13	
17	14	
		UTI HAI **Date of Event: HD 4** **Pathogen: *E. coli, S. aureus***

Secondary BSI Attribution Period (SBAP)

- The period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary site infection.
- Includes the infection window period combined with the repeat infection timeframe (RIT).
- 14-17 days in length depending upon the date of event.
- ENDO SBAP: included the 21-day IWP and the remainder of the patient's admission.



Knowledge Check # 2

Which statement is <u>false</u> about the secondary BSI attribution period (SBAP)?

A. It's 20 days in length.

B. A period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary site infection.

C. Includes the infection window period combined with the repeat infection timeframe (RIT).

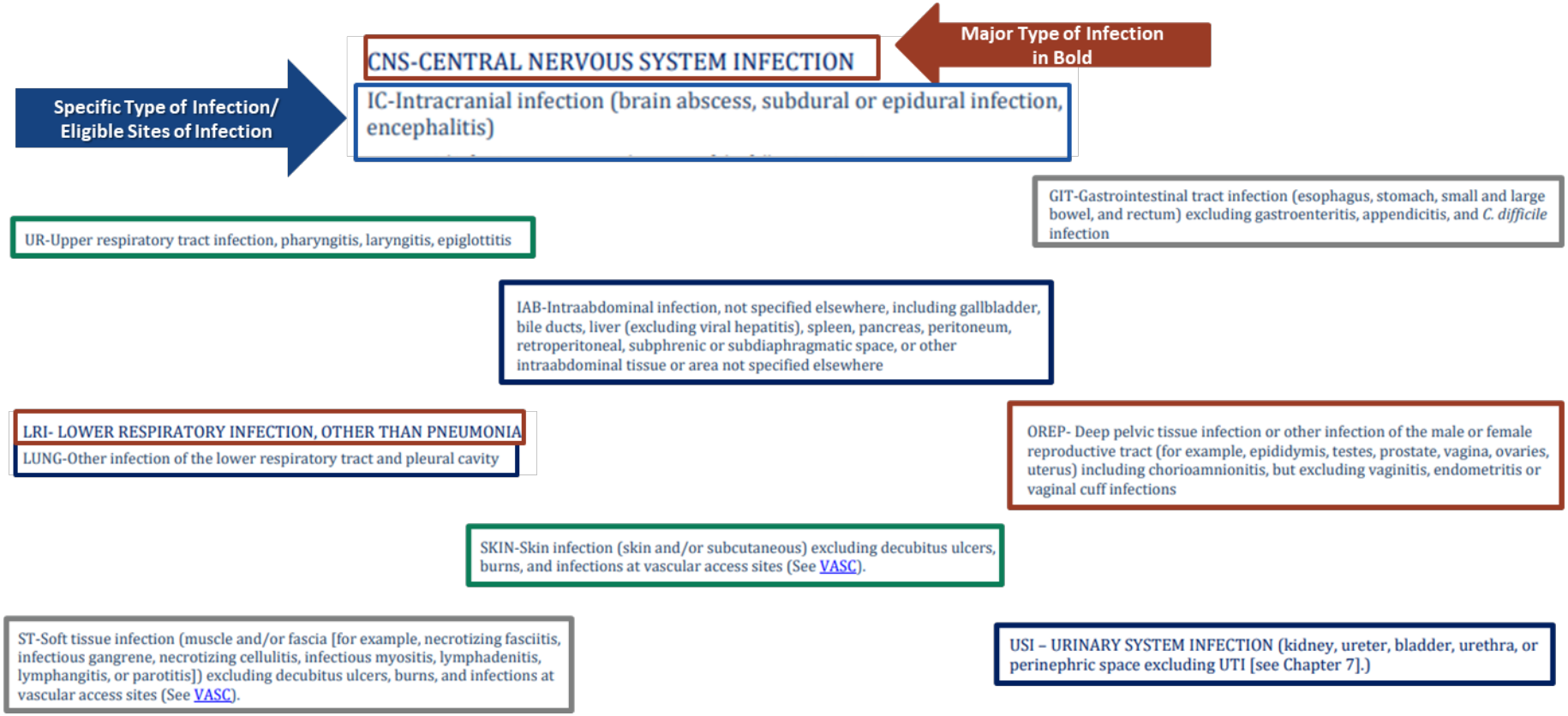
D. 14 – 17 days in length depending upon the date of event.

<u>Answer: A – It's 20 days in length</u>

The SBAP is 14 – 17 days in length depending upon the date of event.

Secondary BSI Concepts

Chapter 17 Section Headers



Knowledge Check #3

I have a patient with an imaging that reveals “infectious colitis”. I should review IAB for eligibility. (*True or False)*

A. True

B. False

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

Answer: B.-False

Because the imaging reveals infectious colitis that is confined to the lumen of the GI tract, GIT must be reviewed.

Key Concepts: Definitive Imaging Findings

- Confirms the presence of an infection on an imaging test.
- Does not require clinical correlation (antimicrobial therapy for a specific infection).
  - **Examples:**
    - “Abscess visualized in the LLQ”
    - “Infected seroma”
    - “Pyelonephritis”
    - "Osteomyelitis"
    - "Discitis"

Equivocal Imaging Findings

Equivocal imaging	Findings from medical imaging studies that do not definitively identify an infection or infectious process. Equivocal imaging findings must be clinically correlated specifically physician documentation of antimicrobial therapy treating the infection or infectious process. • **Example of definitive imaging**: abscess visualized in the right lower quadrant. • **Example of equivocal imaging**: fluid collection visualized in the right lower quadrant.

Clinical correlation	Physician documentation of antimicrobial treatment for site-specific infection related to equivocal findings (not clearly identified) of infection on imaging test. For example, when applying intraabdominal infection (IAB) criterion "3b", the finding of 'fluid collection seen in the lower abdominal cavity' on an imaging test, may or may not represent an infection. This finding is not clearly identified as an infection and should be confirmed with clinical evidence that an infection is present. In the case of IAB criterion "3b", the clinical evidence that is required, is physician documentation of antimicrobial therapy for treating the intraabdominal infection.

Abscess vs. Hematoma

Biliary Ductal Dilatation (IAB)

Infectious vs Inflammatory

Suspected Abscess

Imaging Findings are not Equivocal or Definitive

- **The following imaging findings are not considered equivocal or definitive:**
  - Free fluid
  - Trace fluid
  - Ascites
  - Hydronephrosis
  - Peritonitis
  - Colitis
  - Bowel wall thickening
  - Cholecystitis
  - Pancreatitis
- **Clinical correlation does not make these imaging findings eligible.**

Knowledge Check #4

Which imaging finding is equivocal?

A. Abscess
B. Infectious vs. Inflammatory
C. Pyelonephritis
D. Osteomyelitis

Answer: B – Infectious vs. Inflammatory

Because the imaging finding does not confirm the presence of an infection (infectious vs. inflammatory), this is considered an equivocal finding.

Knowledge Check #5

Imaging finding: “Ascites”

Physician documentation: Intrabdominal infection - Started on Zosyn IV (clinical correlation).

Is this imaging eligible for IAB?

A. Yes

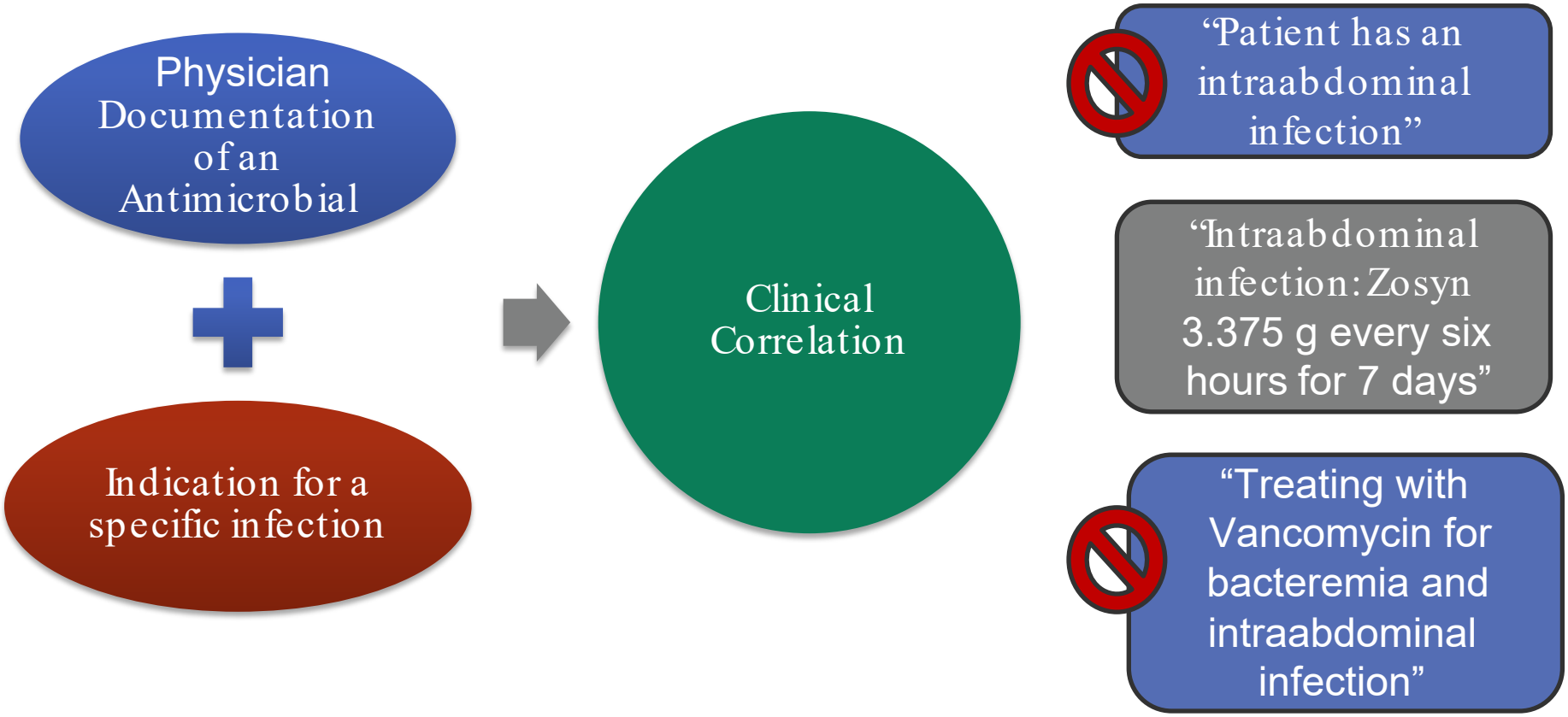
B. No

C. Not Sure

Answer: B – No

Ascites is not an eligible imaging finding. Clinical correlation is **only** indicated for equivocal imaging findings. Clinical correlation alone **cannot** make an imaging test eligible.

More About Clinical Correlation …



Knowledge Check #6

If it is documented that a patient has an intraabdominal infection, the clinical correlation criterion is met.

A. True

B. False

Answer: B – False

To meet the clinical correlation, you must have physician documentation of an antimicrobial therapy for an intraabdominal infection.

Clinical correlation	Physician documentation of antimicrobial treatment for site-specific infection related to equivocal findings (not clearly identified) of infection on imaging test.

What is Meant by “Suspected Joint Infection” or “Suspected Meningitis”?

- **A suspicion in the patient medical record can be met by:**
  - A documented suspicion in the patient’s medical record
  - Imaging test ordered
  - Lab test ordered
- **Examples:**
  - *Joint infection suspicion*
    - Documented suspicion of a joint infection
    - Imaging tests
    - Joint fluid collected
  - *Meningitis suspicion*
    - Documented suspicion of meningitis
    - Imaging tests
    - Cerebrospinal fluid collected

Gross Anatomical Exam

Must be seen with the eye!

Imaging findings are **not** eligible for use to meet this element.

Gross anatomical exam	Gross anatomic evidence of infection is evidence of infection elicited or visualized on physical examination or observed during an invasive procedure. This includes findings elicited on physical examination of a patient during admission or subsequent assessments of the patient and may include findings noted during a medical/invasive procedure, dependent upon the location of the infection as well as the NHSN infection criterion. For examples and additional detail please see Chapter 9.

Purulence

Q1. Does NHSN have a definition for purulence?

There is no standard, clinically agreed upon definition for purulence. For NHSN surveillance purposes, the descriptors "pus" or "purulence" are sufficient gross anatomic evidence of infection. When the terms 'pus' or 'purulence' are not written in the medical record, NHSN has allowed determinations for purulence based off descriptors. Documentation that uses a color descriptor and a consistency descriptor (from the list below) in combination is acceptable to indicate 'purulence'. For example, fluid only described as yellow, or only described as thick, is not sufficient. However, if the terms are combined, then they may be more representative of purulence (for example: fluid described as thick and yellow). **ONLY the following descriptors are eligible for use to meet the definition of purulence [there must be at least one color descriptor and at least one consistency descriptor]:**

Color

Green

Yellow

Consistency

Milky

Thick

Creamy

Opaque

Viscous

Must have an eligible color AND descriptor!!

NOTE: The following descriptors cannot be used to define purulence/infection: 'Cloudy', 'turbid', 'murky' or the odor of a wound.

Gram stain results such as WBCs or PMNs cannot be used to define purulence within the SSI protocol.

Meningeal Signs

Meningeal Signs*

- Brudzinski signs (chin to chest evokes hip flexion)
- Kernig sign (resistance to knee extension evokes pain in hamstrings)
- Nuchal rigidity

*NHSN recognizes that neonates may not display meningeal and cranial nerve signs. The NHSN Neonatal workgroup has revised the age-specific meningitis criteria in patients < 12 months.

2027 is our tentative ETA for publication.

Cranial Nerve Signs

- There are 12 cranial nerves and depending on which ones are impacted the patient could have different signs.
- NHSN does not endorse this link explaining the 12 cranial nerves, however, the link below may be helpful for case reviews.

http://www.healthhype.com/cranial-nerve-function-testing-and-disease-symptoms.html

*NHSN recognizes that neonates may not display meningeal and cranial nerve signs. The NHSN Neonatal workgroup has revised the age-specific meningitis criteria in patients < 12 months.
2027 is our tentative ETA for publication.

Important Secondary BSI Concepts

- **Only primary BSIs set a 14-day BSI RIT**
- **Secondary BSIs do NOT a RIT. . Primary infections set the RIT.**
- **A positive blood culture on admission does NOT necessarily set a BSI RIT.**
  - 3/2: Patient admitted with positive blood culture *Staphylococcus aureus*
  - 3/8: Positive blood culture *Proteus mirabilis*
- **It is necessary to determine if the *POA* BSI was primary or secondary to determine if the *subsequent* BSI must be investigated as possible LCBI.**

An Important Note about Secondary BSI Attribution . . .

- The organism in the positive blood culture must be eligible for use in the site-specific infection criteria
- Chapter 2, page 2-22

Pathogen Assignment - Special Considerations

Pathogens excluded from specific infection definitions (for example, yeast in UTI, Example 3 or *Enterococcus* spp. in PNEU, Example 4) are also excluded as pathogens for BSIs secondary to that type of infection (specifically they cannot be added to one of these infections as a pathogen). The excluded organism must be accounted for as either:

1) A primary bloodstream infection (BSI/CLABSI)

OR

2) A secondary BSI attributed to another primary infection (for example, to an IAB or SINU), in accordance with Appendix B, Secondary BSI Guide of the BSI Event protocol

Scenarios For Secondary BSI

The Scenarios for Secondary BSI Attribution

Scenario 1

At least one organism from the blood specimen matches an organism identified from the site-specific specimen that is used as an element to meet the NHSN site-specific infection criterion

AND

the blood specimen is collected during the secondary BSI attribution period (infection window period + repeat infection timeframe).

Scenario 2

An organism identified in the blood specimen is an element that is used to meet a NHSN site-specific infection criterion

AND

therefore, is collected during the site-specific infection window period.

The NEC Exception

NEC Exception

A BSI is considered secondary to NEC if the patient meets one of the two NEC criterion below

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 calendar days.

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 or physician designee 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

Knowledge Check #7

The 3 options for secondary BSI attribution are:

A. Scenario 4, Scenario 3 and NEC
B. Scenario 1, NEC, and Scenario X
C. Scenario 1, Scenario 2, and NEC exception
D. Not sure

Answer: C – Scenario 1, Scenario 2, and NEC exception

To deem a blood specimen secondary, you must apply Scenario 1, Scenario 2 or the NEC exception. If none of these can be applied, the blood is a primary BSI.

Scenario 1

Scenario 1

Scenario 1

At least one organism from the blood specimen matches an organism identified from the site-specific specimen that is used as an element to meet the NHSN site-specific infection criterion

AND

the blood specimen is collected during the secondary BSI attribution period (infection window period + repeat infection timeframe).

Blood and site-specific specimen has at least one matching organism

Site-specific specimen is used as an element to meet a primary infection criterion

Positive blood specimen collected during the SBAP of the site-specific infection

Applying Scenario 1

7/4	Patient admitted with dizziness, headache and nuchal rigidity. CSF collected: Negative.
7/6	Redness, warmth, and abscess documented at CSF collection Subcutaneous abscess incised and drained Drainage culture: *Enterococcus faecalis (VRE)*
7/8	Blood cultures x 2 *Enterococcus faecalis.*
7/11	Patient discharged.
7/15	IP cites an HAI SKIN 2a using the 7/6 redness, 7/6 warmth and 7/6 subcutaneous abscess drainage. • Date of event 7/6. • SKIN IWP: 7/3 – 7/9 • HAI SKIN RIT: 7/6 – 7/19 • SKIN SBAP: 7/3 – 7/19 ○ Because the 7/8 E. faecalis blood specimens match an organism in the skin culture and collected during the SKIN SBAP, these blood cultures are deemed secondary.

Blood and site-specific specimen has at least one matching organism 1

Site-specific specimen is used as an element to meet a primary infection criterion 2

Positive blood specimen collected during the SBAP of the site-specific infection 3

Please review SKIN 2a, page 17-24

About Matching Organisms

- 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.

Examples below are considered matching:

- MRSA wound culture and MSSA blood culture
- Enterococcus faecalis and Enterococcus faecalis (VRE)
- Klebsiella pneumoniae and Klebsiella pneumoniae (CRE)

Knowledge Check #8

On 5/3, Mr. Payne had joint fluid culture positive for Klebsiella pneumoniae (CRE). Met for an HAI JNT 1. On 5/7, the blood culture positive for Klebsiella pneumoniae. Can the 5/7 blood specimen be deemed secondary?

A. Yes

B. No

Answer: A – Yes

The 5/3 joint fluid and the 5/7 blood specimen are considered matching organisms for NHSN surveillance purposes.

“Capturing Non-matching Organisms”: Blood Culture Guidance

- **If a single blood culture contains an organism that matches the site-specific specimens and an organism that does not match:**
  - Capture the non-matching organism
  - The non-matching organism is “captured” only when it is in the same specimen with a matching organism
    - *The non-matching organism must be an eligible for the NHSN site-specific infection*
- **If there are subsequent blood cultures with the non-matching organism, you must assess these blood cultures for LCBI criteria.**

To Capture or Not Capture the Non-matching Organism in the SBAP?

Site-Specific Culture:
MRSA
Blood Culture:
MRSA/
E. coli

Captured

Site-Specific Culture:
MRSA
Blood Culture:
Pseudomonas aeruginosa

Not Captured

Site-Specific Culture:
Enterococcus faecalis
Blood Culture 1:
Enterococcus faecalis/E. coli
Blood Culture 2:
E. coli

Capture: Blood Culture 1
Not Captured: Blood Culture 2

Site-Specific Culture:
Serratia marcescens
Blood Culture 1:
Serratia marcescens/
Bacteriodes fragilis
Blood Culture 2:
Bacteroides fragilis

Capture: Blood Culture 1
Not Captured: Blood Culture 2

Scenario 2

Scenario 2

Scenario 2

An organism identified in the blood specimen is an element that is used to meet a NHSN site-specific infection criterion

AND

therefore, is collected during the site-specific infection window period.

Organism in the blood is an element used to meet the primary-site infection criterion

Blood specimen is collected in the IWP (or surveillance period if a surgical site infection or SSI)

Applying Scenario 2

5/1	Patient admitted with 103°F temperature hypotension and abdominal pain. Pt becomes unresponsive. Imaging test reveals intraabdominal abscess. Patient not stable enough to drain. TLC placed in RIJ. Transferred to ICU
5/2	Patient in ICU.
5/4	Patient now stable. IR performed that 100 cc's of purulent drainage collected. Culture negative
5/6	101°F; Blood cultures x 2 with Proteus mirabilis
5/10	IP cites an HAI IAB 2b on 5/4 using the 5/4 purulent drainage and 5/6 Proteus blood cultures. • Date of event: 5/4 • IAB IWP: 5/3 – 5/9 • HAI IAB RIT: 5/4 – 5/17 • IAB SBAP: 5/3- 5/17 Because the 5/6 Proteus blood cultures were used as an element to meet IAB 2b, the blood cultures are deemed secondary.
5/12	Pt. expired.

Organism in the blood is an element used to meet the primary-site infection criterion

1

Blood specimen is collected in the IWP (or surveillance period if a surgical site infection or SSI)

2

Knowledge Check #9

To apply Scenario 2, the blood specimen must be captured during a 7-day IWP, 21-day ENDO IWP or an SSI surveillance period.

A. True

B. False

Answer: A – True

To apply Scenario 2, the blood specimen is used as an element and captured during a 7-day IWP, 21-day ENDO IWP or SSI surveillance period.

NEC Exception

NEC Exception

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 or physician designee 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

NEC 1 or 2
Exception is met

Positive blood specimen collected during the SBAP of NEC criterion

NEC Exception

5/1	Neonate born at 32 weeks with respiratory failure. Intubated UVC/UAC placed. Admitted to NICU
5/2	Stable. Vented. UVC/UAC still in place.
5/8	Abdominal distended; Abdominal imaging – "Mildly dilated bowel"
5/9	Abdominal imaging –" Mildly dilated bowel; No pneumatosis intestinalis; no pneumoperitoneum; no portal venous gas."
5/10	Abdominal imaging – "Pneumatosis intestinalis"
5/12	Blood noted in stool.
5/15	102°F; Blood culture x 1: E. coli.
5/20	Infection Preventionist identified an HAI NEC 1 using the 5/8 abdominal distension, 5/12 blood in stool and 5/9 pneumatosis intestinalis on imaging. • NEC IWP: 5/6 – 5/12 • NEC RIT: 5/8 – 5/21 • NEC SBAP: 5/6 – 5/21 ○ 5/15 E. coli blood specimen captured in NEC SBAP

NEC 1 or 2
Exception is met

1

Positive blood specimen collected during the SBAP of NEC criterion

2

Knowledge Check #10

If a NEC 1 or 2 criterion is met, all eligible positive blood specimens collected during the NEC SBAP are captured and deemed secondary.

A. True
B. False
C. I don't know

Answer: A – True

Because neither a site-specific specimen nor blood specimen is used to cite a NEC criterion, all eligible blood specimens collected during the SBAP are captured. Single common commensal blood specimens cannot be captured.

ENDO Criterion

General Imaging Tests Updates

Found in ENDO 4 and 6.

2024 ENDO Criterion 4

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

- New eligible imaging findings
- Cardiac CT and FDG PET/CT imaging now available

2025 ENDO Criterion 4

ENDO 4		
At least ***one*** of the following echocardiographic or cardiac CT imaging test evidence of endocarditis§: i. vegetation on cardiac valve or supporting structures† 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 to with previous imaging (on echocardiography only) 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) that shows evidence of endocarditis§: ix. abnormal metabolic activity involving a native or prosthetic valve‖, ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other prosthetic material >3 months after cardiac surgery. x. abnormal metabolic activity ≤3 months after implantation of prosthetic valve‖, ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other prosthetic material.

Imaging Test Updates – "Other Prosthetic Material"

ENDO 4		
At least ***one*** of the following echocardiographic or cardiac CT imaging test evidence of endocarditis[§]: i. vegetation on cardiac valve or supporting structures[†] 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 to with previous imaging (on echocardiography only) 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) that shows evidence of endocarditis[§]: ix. abnormal metabolic activity involving a native or prosthetic valve[‖], ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other prosthetic material >3 months after cardiac surgery. x. abnormal metabolic activity ≤3 months after implantation of prosthetic valve[‖], ascending aortic graft (with evidence of valve involvement), intracardiac device leads or other prosthetic material.

- **NOT** Hip or Knee Prosthetics!!!
- Refers to intracardiac prosthetic material
  - Prosthetic valves
  - Bioprosthetic valves
  - Prosthetic rings
  - ASD patches
  - Cardiovascular Implantable Electronic Devices (CIED)

“Significant New Valvular Regurgitation” on Imaging

Significant new valvular regurgitation as compared to with previous imaging (on echocardiography only)	• Must be moderate or severe. • Cannot be pre-existing. • Valve-specific. • Worsening or changing of preexisting valvular regurgitation not eligible. • No acceptable timeframe between the previous and current imaging test. (Imaging tests can be years apart if the previous imaging is available) • If a prior imaging test is not available, the current imaging test can be used if the valvular regurgitation is moderate or severe.

History Element Update - Updates

Found in ENDO 5, 6, and 7.

2024 ENDO Criterion 7

7. ***One condition from each of the following elements (a, b, c, d, and e):***
   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°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: glomuleronephritis (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 ≥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).

2025 ENDO Criterion 7

ENDO 7

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

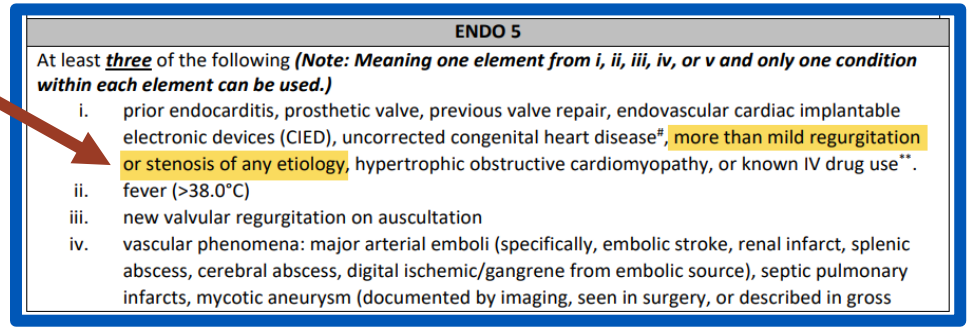
a. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease[§], more than mild regurgitation or stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use[**].
b. fever (>38.0°C)
c. new valvular regurgitation on auscultation
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 glomuleronephritis (documented in chart), 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

- New history elements in 2025.
- Examples of "uncorrected congenital disease" in criteria footnotes.
- Cannot be used to set the date of event.

History Element Update – Valvular Regurgitation And Stenosis

Found in ENDO 5, 6, and 7.

- Must be prior to the admission
- Documented during the current admission
- Cannot be used to set the date of event.
- Must be moderate or severe



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[#], more than mild regurgitation or stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use[**].

ii. fever (>38.0°C)

iii. new valvular regurgitation on auscultation

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

New Element Update – Valvular Regurgitation On Auscultation

- Murmur cannot be pre-existing
- Worsening murmur is not eligible
- This element cannot be used if an echocardiogram is available.

Found in ENDO 5 and 7.

ENDO 7

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

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

b. fever (>38.0°C)

c. new valvular regurgitation on auscultation

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 glomuleronephritis (documented in chart), 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

Vascular Phenomena Update – Splenic Abscess/ Infarcts

2024 ENDO Criterion 7

7. ***One condition from each of the following elements (a, b, c, d, and e):***
   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°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: glomuleronephritis (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 ≥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).

2025 ENDO Criterion 7

ENDO 7

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

a. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease#, more than mild regurgitation or stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use**.
b. fever (>38.0°C)
c. new valvular regurgitation on auscultation
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 glomuleronephritis (documented in chart), 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

- ENDO 5iii, 6c, and 7d.
- "Splenic infarcts" element removed in 2025.
- "Splenic abscesses" are available only in 2025.

Immunologic Phenomena Update – Immune Complex-Mediated Glomuleronephritis

2024 ENDO Criterion 7

7. ***One condition from each of the following elements (a, b, c, d, and e):***
   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°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: glomuleronephritis (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 ≥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).

2025 ENDO Criterion 7

ENDO 7

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

a. prior endocarditis, prosthetic valve, previous valve repair, endovascular cardiac implantable electronic devices (CIED), uncorrected congenital heart disease#, more than mild regurgitation or stenosis of any etiology, hypertrophic obstructive cardiomyopathy, or known IV drug use**.
b. fever (>38.0°C)
c. new valvular regurgitation on auscultation
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 glomuleronephritis (documented in chart), 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

Immunologic Phenomena Update – Immune Complex-Mediated Glomerulonephritis

ENDO 5v, 6d, and 7e

Immune complex-mediated glomerulonephritis	Immune complex-mediated glomerulonephritis defined as **one** of the following: **1.** Unexplained presence of either acute kidney injury (new reduction of estimated glomerular filtration rate (eGFR) <60 mL/min/1.73 m^2) **OR** 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. **2.** Renal biopsy consistent with immune complex-mediated renal disease. **3.** Documentation of immune complex-mediated glomerulonephritis in the patient medical record.

Typical Infectious Endocarditis Organisms Blood Specimens - Update

Found in ENDO 4 and 5

2024 ENDO Criterion 5

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 ≥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).

2025 ENDO Criterion 5

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 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).

- **Updated list of typical infectious endocarditis organism in 2025.**
- **The highlighted organisms are new.**

Typical Infectious Endocarditis Organisms in the Presence of Prosthetic Material Blood Specimens – New Element

2025 ENDO Criterion 5

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.

New list in 2025 for ENDO 4 & 5

Non-Typical Infectious Endocarditis Organisms Blood Specimens – New Element

2025 ENDO Criterion 5

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.

New element in 2025 for ENDO 4 & 5

Other Blood Specimens - Updates

Found in ENDO 4 and 5

2024 ENDO Criterion 4

b. *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).

2025 ENDO Criterion 4

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.

2025 Reporting Instructions

Reporting Instructions

* The following is also eligible to ENDO 1:

- Positive culture from a pacemaker/defibrillator lead or ventricular assist device (VAD) components within the heart.

† 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.

‡ "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.

¶ 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.

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

|| 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.

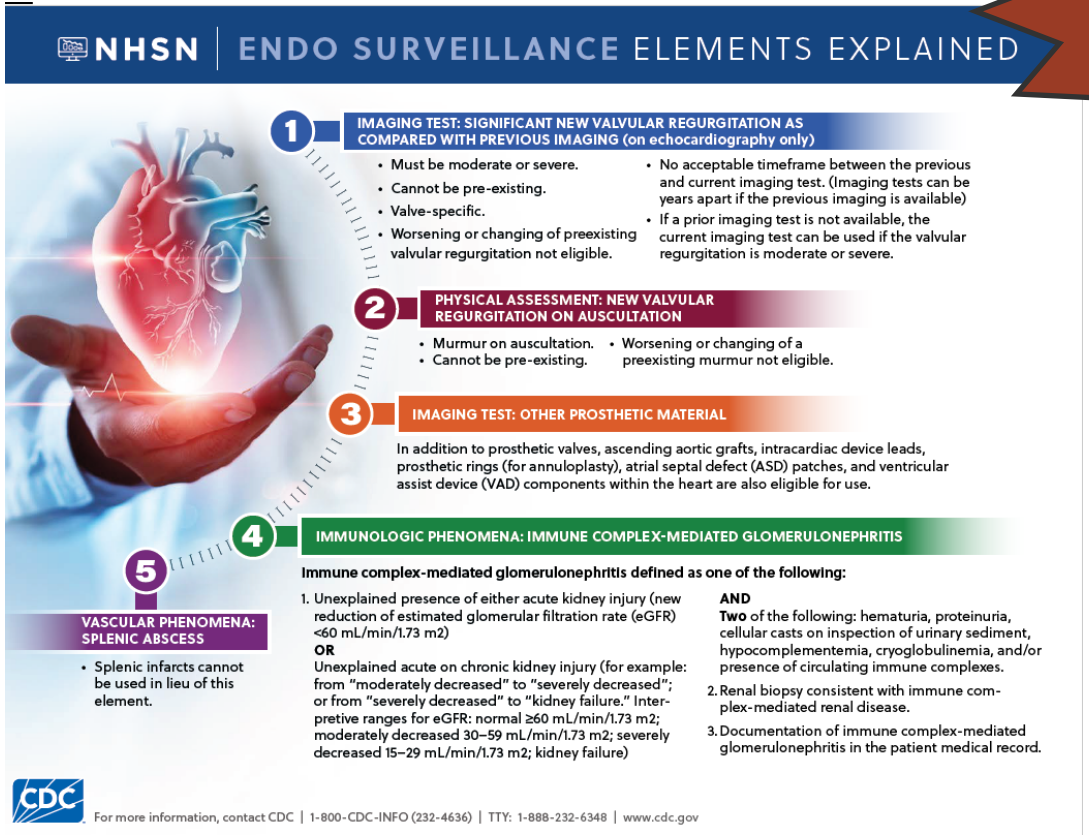
Includes cyanotic CHD (tetralogy of Fallot, univentricular heart, complete transposition, truncus arteriosus, hypoplastic left heart); endocardial cushion defects; ventricular septal defect; left-sided lesions (bicuspid aortic valve; aortic stenosis and insufficiency, mitral valve prolapse, mitral stenosis 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

** 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.

ENDO Reference Guide

Available now in the Service Now AT Community



Submitting a BSI case review to NHSN

Q29. What information is needed to assist with a primary BSI or secondary BSI determination?

For NHSN to assist with a primary or secondary BSI case determination please send the following information to the NHSN Helpdesk:

If investigating a positive blood culture:

- Admission date
- Central line insertion date
- Central line discontinuation date if applicable
- Date(s) and results of any positive blood cultures
- All organisms identified in the blood culture(s)
- Signs/symptoms and associated dates if evaluating LCBI-2/3 criteria
- Date of first access in an inpatient location (if patient is admitted with a central line in place)
- MBI LCBI risk factors (if evaluating MBI LCBI criteria)

If evaluating for a secondary BSI:

- Site specific infection under consideration (for example Chapter 17 infections, SSI, UTI, PNEU)
- Supporting documentation (for example any positive blood cultures, imaging results, or sign/symptoms and associated dates if applicable)
- Date(s) and results of any positive blood cultures
- All organisms identified in the blood culture(s) (include information on whether the organisms are in the same blood culture or two separate blood cultures)
- Any information on recent NHSN surgical procedures (including the operative report and any imaging performed)

Summary

- **The following secondary BSI attribution resources are:**
  - Chapter 2
  - Chapter 4 (Secondary BSI Guide)
    - Table B1
  - HAI Checklists
- **There are two scenarios to apply secondary BSI attribution and one exception. They are as follows:**
  - Scenario 1
  - Scenario 2
  - NEC Exception

Summary

- A positive blood culture on admission does NOT necessarily set a BSI RIT.
  - It is necessary to determine if the *POA* BSI was primary or secondary to determine if the *subsequent* BSI must be investigated as possible LCBI.
- You may be able to capture non-matching organism in the SBAP if a matching organism is in the same blood specimen.
- There were significant updates to ENDO in 2025. Apply them correctly.
- **There's a learning curve with secondary BSI attribution. Use your resources and ask questions.**
- ***Find your second wind! You got this!***

Resources

- **PSC Manual Chapter 2:**
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/2psc_identifyinghais_nhsncurrent.pdf
- **PSC Manual Chapter 4:**
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf
- **PSC Manual Chapter 16:**
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/16psckeyterms_current.pdf
- **PSC Manual Chapter 17:**
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosinfdef_current.pdf
- **SSI FAQ:**
  - https://www.cdc.gov/nhsn/faqs/faq-ssi.html

For NHSN questions or concerns, contact the NHSN Helpdesk

- **NHSN-ServiceNow** to submit questions to the NHSN Help Desk.
- Access new portal at **https://servicedesk.cdc.gov/nhsncsp** .
- If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov