Secondary BSI Attribution

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Objectives

- Apply foundational concepts from Chapter 2 and 4 regarding primary and secondary bloodstream infections (BSI’s)
- Utilize Appendix B Secondary BSI Guide and reference table (Chapter 4)
- Apply the two Scenarios for secondary BSI attribution using knowledge checks
Where to Locate Chapter 2 and Chapter 4?

**Bloodstream Infection (BSI) Events**

Central Line-Associated Bloodstream Infection (CLABSI) and non-central line-associated Bloodstream infection

**Protocols**

- **Chapter 2: Identifying Healthcare-associated Infections (HAI)s in NHSN – January 2022**
  - [PDF - 1 MB]
  - For full details on protocol definitions and the application of those definitions, please review the applicable protocol and Chapter 2: Identifying Healthcare-associated Infections (HAI)s in NHSN.

- **Chapter 4: Bloodstream Infection (BSI) Event – January 2022**
  - [PDF - 1 MB]
  - For full details on protocol definitions and the application of those definitions, please review the applicable protocol and Chapter 2: Identifying Healthcare-associated Infections (HAI)s in NHSN.
Table B1: Secondary BSI Guide: List of all NRGN primary site-specific definitions available for making secondary BSI determinations using Scenario 1 and Scenario 2.

<table>
<thead>
<tr>
<th>Site</th>
<th>Criteron</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANUB</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BONE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARD</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRK</td>
<td>1 to 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DRUG</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAP</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECT</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENDU</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EYE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GR</td>
<td>2a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRB</td>
<td>2ab (only if RBS &lt; 7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JNT</td>
<td>2ab (only if RBS &lt; 7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JRT</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KNE</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LUNG</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MND</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NER</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORAL</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DENT</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ONEP</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td>1 to 4a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PREU</td>
<td>2 or 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNEM</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLIM</td>
<td>1 to 20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SVRS</td>
<td>2a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UR</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VAC</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VASC</td>
<td>1 to 3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure B1: Secondary BSI Guide for eligible organisms

(Not applicable to Ventilator-associated Cevsep [VAC], see Figure B2)

**Exception:** The necrotizing enterocolitis (NEC) definition does not include criteria for a matching site-specific specimen, nor an organism identified from a blood specimen, however an exception for assigning a BSI secondary to NEC is provided. A BSI is considered secondary to NEC if the patient meets one of the two NEC criteria AND an organism identified from a blood specimen collected during the secondary BSI attribution period, is an NEC pathogen or the same common commensal is identified from 2 or more blood specimens drawn on separate occasions but on the same or consecutive days.
Where to Locate Chapter 17?
HAI Checklists

2022 NHSN HAI Site Specific Infections

- NHSN Laboratory Confirmed Bloodstream Infection (LCBI) Checklist [PDF - 350 KB]
- NHSN Pneumonia (PNEU) Checklist [PDF - 500 KB]
- NHSN Surgical Site Infection (SSI) Checklist [PDF - 300 KB]
- NHSN Urinary Tract Infection (UTI) Checklist [PDF - 350 KB]
- NHSN Ventilator Associated Event (VAE) Checklist [PDF - 400 KB]
- NHSN Pediatric Ventilator Associated Event (PedVAE) Checklist [PDF - 350 KB]

2022 NHSN Chapter 17 Site Specific Infections

- NHSN Bone and Joint Infection (BJI) Checklist [PDF - 300 KB]
- NHSN Cardiovascular (CVS) System Infection Checklist [PDF - 400 KB]
- NHSN Central Nervous System (CNS) Infection Checklist [PDF - 300 KB]
- NHSN Gastrointestinal System Infection (GI) Checklist [PDF - 350 KB]
- NHSN Lower Respiratory Infection (LRI) Checklist [PDF - 200 KB]
- NHSN Reproductive Tract Infection (RTI) Checklist [PDF - 250 KB]
- NHSN Skin and Soft Tissue (SST) Infection Checklist [PDF - 300 KB]

HAI Checklists

https://www.cdc.gov/nhsn/hai-checklists/index.html
## Primary BSI versus Secondary BSI – What’s the Difference?

<table>
<thead>
<tr>
<th><strong>Primary BSI</strong></th>
<th><strong>Secondary BSI</strong></th>
</tr>
</thead>
</table>
| • A Laboratory Confirmed Bloodstream Infection (LCBI) where an eligible BSI is identified and the BSI not secondary to an infection at another body site  
  • LCBI/ MBI-LCBI 1  
  • LCBI/ MBI-LCBI 2  
  • LCBI/ MBI-LCBI 3  
  • Reportable to NHSN | • A bloodstream infection that is associated with a site-specific infection at another body site which may have seeded the bloodstream  
  • IAB 1 with a secondary BSI  
  • PNEU with a secondary BSI  
  • GIT 2c with a secondary BSI  
  • **Not** reportable to NHSN |
Primary BSI vs. Secondary BSI

Primary BSI vs. Secondary BSI

- SUTI
- SSI
- PNU
- Site-specific Infections (Chapter 17)

Secondary BSI
Secondary BSI: Knowledge Check #1 True or False

A primary BSI can be deemed secondary to an eligible NHSN site-specific infection.

True or False

FALSE

*Primary bloodstream infection (BSI):* A Laboratory Confirmed Bloodstream Infection (LCBI) that is not secondary to an infection at another body site (see Appendix B. Secondary BSI Guide and CDC/NHSN Surveillance Definitions for Specific Types of Infection [Ch-17], UTI [Ch-7], Pneumonia (Ch-6), and SSI (Ch-9).
Important Key Terms

- **Infection Window Period (IWP)**
  - 7-days during which all site-specific infection criteria must be met.
  - 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.

- **Repeat Infection Timeframe (RIT)**
  - 14-day timeframe during which no new infections of the same type are reported.
Important Key Terms (cont.)

- **Secondary bloodstream infection attribution period (SBAP)**
  - The period in which a blood specimen must be collected for a secondary BSI to be attributed to a primary site of infection.
  - Includes the Infection Window Period (IWP) combined with the Repeat Infection Timeframe (RIT)
  - 14-17 days in length depending upon the date of event

- MEN 1 IWP: 2/1 – 2/7
- MEN 1 Date of Event: 2/4
- MEN RIT: 2/4 – 2/17
- MEN SBAP: 2/1 – 2/17
Endocarditis (ENDO) Criteria

- **ENDO Infection Window Period**
  - 21 days during which all site-specific infection criteria must be met.
    - 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.
Endocarditis (ENDO) Criteria (cont.)

- **ENDO RIT**
  - Extended to include the remainder of the patient’s current admission

- **ENDO SBAP**
  - Includes the 21-day infection window period and all subsequent days of the patient’s current admission.
  - Limited to organism(s) identified in blood specimen that match the organism(s) used to meet the ENDO definition
Meeting the Secondary BSI Requirements

**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 the NHSN site-specific infection criterion, and therefore is collected during the site-specific infection window period.
The **ONLY** Exception to the Secondary BSI Attribution Rules . . .

**NEC-Necrotizing enterocolitis**

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

1. Infant has at least one of the clinical and one of the imaging test findings from the lists below:
   - At least one clinical sign:
     a. bilious aspirate** (see Note)
     b. vomiting
     c. abdominal distension
     d. occult or gross blood in stools (with no rectal fissure)
   - And at least one imaging test finding which if equivocal is supported by clinical correlation (specifically, physician documentation of antimicrobial treatment for NEC):
     a. Pneumatosis intestinalis
     b. Portal venous gas (Hepatobiliary gas)
     c. Pneumoperitoneum
   **Note**: Bilious aspirate from a transpyloric feeding tube should be excluded

2. Surgical NEC: Infant has at least one of the following surgical findings:
   - surgical evidence of extensive bowel necrosis (>2 cm of bowel affected).
   - surgical evidence of pneumatosis intestinalis with or without intestinal perforation.

**Exception Notes:**

1. The necrotizing enterocolitis (NEC) definition does not include criteria for a matching site-specific specimen, nor an organism identified from a blood specimen that can be used as an element to meet the NEC criteria, however an *exception for assigning a BSI secondary to NEC* is provided.
   a. An BSI is considered secondary to NEC if the patient meets one of the two NEC criteria AND an organism identified from a blood specimen, collected during the secondary BSI attribution period, is an LCBI pathogen, or the same common commensal identified from two or more blood specimens drawn on separate occasions that are on the same or consecutive days.
**Important Secondary BSI Concept**

- A positive blood culture on admission does NOT necessarily set a BSI RIT.
  - 1/12: Patient admitted with positive blood culture *E. coli*
  - 1/21: Positive blood culture *S. aureus*

- Only primary BSIs set a 14-day BSI RIT

- Secondary BSIs do NOT- an RIT will be set for the primary type of infection

- It is necessary to determine if the *E. coli* BSI was primary or secondary to determine if the *S. aureus* BSI must be investigated as possible LCBI.

Ch. 4, page 4-12
Example: POA BSI

1/12/18: 55-year-old patient admitted with fever (102.4°F) of unknown origin, work-up in progress. UA, Urine for C&S and blood cultures x 2 collected. Results:

Urine positive > 10⁵ CFU/ml *E. coli*, & 1 of 2 BCs positive for *E. coli*

1/21/18: Repeat BC’s collected positive *S. aureus*. 

Primary POA SUTI 1b non-catheter associated, DOE 1/12 secondary *E. coli* BSI
<table>
<thead>
<tr>
<th>Hospital Day/Date</th>
<th>First Diagnostic Test</th>
<th>Infection Window Period</th>
<th>Date of Event</th>
<th>Repeat Infection Timeframe</th>
<th>Secondary BSI Attribution Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/10/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/11/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. - 1/12/2018 - Admit Date</td>
<td>✓</td>
<td>✓</td>
<td>UA + E. coli</td>
<td>Fever 102.4°F</td>
<td>- POA</td>
</tr>
<tr>
<td>2. - 1/13/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. - 1/14/2018</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. - 1/15/2018</td>
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</tr>
<tr>
<td>5. - 1/16/2018</td>
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<td></td>
</tr>
<tr>
<td>6. - 1/17/2018</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7. - 1/18/2018</td>
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<tr>
<td>8. - 1/19/2018</td>
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<td>9. - 1/20/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. - 1/21/2018</td>
<td>✓</td>
<td>✓</td>
<td>+BC S. aureus</td>
<td>HAI</td>
<td></td>
</tr>
<tr>
<td>11. - 1/22/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. - 1/23/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. - 1/24/2018</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>14. - 1/25/2018</td>
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<tr>
<td>15. - 1/26/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. - 1/27/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Primary POA SUTI 1b non-catheter associated, DOE 1/12 secondary *E. coli* BSI

Primary HAI LCBI 1 with *S. aureus* DOE 1/21
Secondary Bloodstream Infections

Scenario 1
Secondary BSI 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).
### Matching Organisms Table

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

<table>
<thead>
<tr>
<th>Identification # 1</th>
<th>Identification # 2</th>
<th>Matching Organisms Yes or No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteroides vulgatus</td>
<td>Bacteroides fragilis</td>
<td>No</td>
</tr>
<tr>
<td><strong>Enterococcus faecalis</strong></td>
<td>Enterococcus</td>
<td>Yes</td>
</tr>
<tr>
<td>Enterococcus faecium</td>
<td>Enterococcus faecalis</td>
<td>No</td>
</tr>
<tr>
<td>Pseudomonas species</td>
<td><strong>Pseudomonas aeruginosa</strong></td>
<td>Yes</td>
</tr>
<tr>
<td>Coagulase-negative Staphylococcus</td>
<td>Staphylococcus aureus</td>
<td>No</td>
</tr>
<tr>
<td><strong>Staphylococcus epidermidis</strong></td>
<td>Coagulase-negative Staphylococcus</td>
<td>Yes</td>
</tr>
<tr>
<td>Staphylococcus species</td>
<td>Coagulase-positive Staphylococcus</td>
<td>No</td>
</tr>
<tr>
<td>Streptococcus species</td>
<td>Streptococcus Viridans Group</td>
<td>No</td>
</tr>
<tr>
<td>Yeast</td>
<td><strong>Candida</strong> species</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Chapter 17, page 17-3
An Important Note about Scenario 1 . . .

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

Pathogens excluded from specific infection definitions (for example, yeast in UTI, or Enterococcus spp. in PNEU) 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) (see Example 3)

   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 (see Example 4)
“Scooping Non-matching Organisms”
Blood Culture Guidance

- Pay close attention to your blood cultures!!!!
- If a single blood culture contains an organism that matches the site-specific specimens and an organism that does not match:
  - “Scoop up” the non-matching organism (non-matching organism)
  - The non-matching organism is “scooped up” one time only
  - If there are subsequent blood cultures with the non-matching organism, you must assess these blood cultures for LCBI criteria.
- If you have a blood culture that only contains a non-matching blood culture, it must be assessed for an LCBI.
“Scooping Non-matching Organisms - Example

<table>
<thead>
<tr>
<th>Hospital Day</th>
<th>Date</th>
<th>First Diagnostic Test</th>
<th>Infection Window Period</th>
<th>RIT</th>
<th>SBAP</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>5-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>6-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>8-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>10-Mar</td>
<td>Urine culture - 100k E.coli</td>
<td>IWP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>11-Mar</td>
<td>103°F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>12-Mar</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>13-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>14-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>15-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>16-Mar</td>
<td>Blood culture – E. coli/Enterococcus sp.</td>
<td>IWP</td>
<td></td>
<td>SBAP</td>
</tr>
<tr>
<td>11</td>
<td>17-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>18-Mar</td>
<td></td>
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<tr>
<td>13</td>
<td>19-Mar</td>
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<td>14</td>
<td>20-Mar</td>
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<td>15</td>
<td>21-Mar</td>
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<td></td>
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<tr>
<td>16</td>
<td>22-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>23-Mar</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUTI &amp; Secondary BSI Date of Event: 3/10 Pathogen(s): E. coli/Enterococcus sp.</td>
<td></td>
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</tr>
</tbody>
</table>
Secondary BSI Scenario 1: LUNG 1 Example

- 8/21 - 35-year-old female, history of recent breast CA relapse
- 8/25 – Thoracentesis performed. Pleural fluid culture: **MRSA**.
- 8/26 – Blood cultures collected: **MRSA** in both specimens
Secondary BSI Scenario 1: Knowledge Check

- 3/19 - Admitted 60 y/o male.
- 3/23 - Blood culture(s): E coli, peripheral site.

Can the 3/23 blood cultures be deemed secondary?
Scenario BSI Scenario 1: Knowledge Check #1

- **Answer:** YES!

- **3/22:** HAI IAB 1 with secondary BSI cited 3/22:
  - IAB IWP: 3/19 – 3/25
  - HAI IAB RIT: 3/22 – 4/4
  - HAI IAB SBAP: 3/19 – 4/4
- **3/23:** E. coli blood culture secondary to an IAB 1.
Secondary BSI Scenario 1: Knowledge Check # 2

- 9/6 - Admitted to Cardiac ICU, Central line placed.
- 9/25 - Trach placed
- 11/18 – Erythema, swelling noted at trach site
- 11/19 - Superficial trach site culture: MRSA
- 11/23 - Fever; Blood cultures: Klebsiella pneumoniae

Can the 11/23 blood cultures be deemed secondary?
Secondary BSI Scenario 1: Knowledge Check #2 Rationale

- Answer: NO. Non-matching organisms
- SKIN 2a is cited on 11/18
  - SKIN IWP: 11/16 – 11/22
  - SKIN RIT: 11/18 – 12/1
  - SKIN SBAP: 11/16 – 12/1
- HAI LCBI 1/CLABSI cited on 11/23
  - Blood culture: Klebsiella pneumoniae
  - Eligible central line in place on 11/23
Secondary Bloodstream Infections

Scenario 2
Scenario 2

An organism identified in the blood specimen is an element that is used to meet the 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)
Secondary BSI Scenario 2: Omphalitis (UMB)

- 10/1 – Born at 29 weeks via C-section admitted to NICU location
- 10/4 – Erythema and induration noted at umbilicus site
- 10/5 – Blood culture collected. Positive for E. coli

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)
Secondary BSI Scenario 2: Knowledge Check #1

- 8/15 - Admitted. Four-year-old patient with third degree burns to the face
- 8/25 - Blood culture: *Pseudomonas aeruginosa*
- 8/26 - ID note: “Possible facial *Pseudomonas* infection. Face now with green film on the cheeks”.

Can the 8/25 blood cultures be deemed secondary?
Secondary BSI Scenario 2: Knowledge Check # 1 Rationale

- **Answer**: YES!
- **HAI BURN 1 with secondary BSI cited 8/25**
  - **HAI BURN IWP**: 8/22 – 8/28
  - **8/26 MD documentation**: “Face now with green film on the cheeks” captured during BURN IWP
- **HAI BURN RIT**: 8/25 – 9/7
- **HAI BURN SBAP**: 8/22 – 9/7
Secondary BSI Scenario 2: Knowledge Check #2

- 2/19 - Readmitted for pain and nausea control, left upper chest PORT in use
- 2/21 - Pain
- 2/23 - Progress/Consult notes: altered mental status, pain, nausea. Start Rocephin for empiric ABX – GI/GU coverage
- 2/24 - Progress notes: N/V, pain
- 2/24 - Bld cx positive for C. glabrata
- 2/25 - CT: Abscess in small bowel
- 2/26 - Pt expired

Can the 2/24 blood cultures be deemed secondary?
Secondary BSI Scenario 2: Knowledge Check # 1 Rationale

- Answer: YES!
- HAI GIT 2c with secondary BSI cited 2/21
  - HAI GIT IWP: 2/21 – 2/26 (pt. expired)
    - 2/21 Pain
    - 2/23 Nausea
    - 2/24 Candida glabrata blood culture
    - 2/25 Small bowel abscess
- HAI GIT RIT: 2/21 – 2/26
- HAI GIT SBAP: 2/21 – 2/26
Pathogen Assignment – Attributing a Positive Blood Culture to More Than One Infection

- An organism may be attributed as secondary to more than 1 type of infection
- Example
  - Chapter 4, page 4-40
Pathogen Assignment – Re-meeting an NHSN Site-Specific Infection to Capture Non-Matching Organisms

**Example 3: Pathogen Assignment (continued)**

<table>
<thead>
<tr>
<th>Hospital Day (HD)</th>
<th>IAB SBAP</th>
<th>IAB RIT</th>
<th>IAB Infection Window Period</th>
<th>IAB Infection Window Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admit</td>
<td></td>
<td>Abdominal pain &amp; distention</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PICC placed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>US guided drainage-5L purulent peritoneal fluid: <em>Klebsiella pneumoniae</em> and <em>E.coli</em></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td>Abdominal pain</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td>CTS multiple liver abscesses</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td>Blood culture: <em>C. glabrata</em>, <em>L. casei</em></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td>jaundice, fever</td>
<td></td>
</tr>
</tbody>
</table>

**Infection Window Period**
- (First positive diagnostic test, 3 days before and 3 days after)

**Repeat Infection Timeframe (RIT)**
- (date of event = day 1)

**Secondary BSI Attribution Period (SBAP)**
- (Infection Window Period = RIT)

**Date of Event (DOE)**
- Date the first element occurs for the first time within the infection window period

**IAB 1 DOE = HD 4**
- Pathogens: *K. pneumoniae*, *E. coli*

**IAB 3b & Secondary BSI DOE = HD 4**
- Pathogens: *C. glabrata*, *L. casei*
MBI-LCBI Exception Revision

MBI RIT Exception – A non-MBI organism is NOT assigned to an MBI-LCBI (primary BSI) event when a blood culture with the non-MBI organism is collected during a BSI (MBI-LCBI)-RIT and also deemed secondary to an NHSN site-specific infection. The MBI-LCBI designation will not change to an LCBI event. Please see Example 5 in the Secondary BSI Guide section of this protocol and Chapter 2 Pathogen Assignment (Example 2b).

MBI-RIT Exception: An MBI-LCBI designation will not change to an LCBI event if the following criteria are met:

1. The blood culture with the non-MBI organism is collected during an existing BSI (MBI-LCBI) RIT AND
2. The blood culture with the non-MBI organism is deemed secondary to an NHSN site-specific infection

Please see Example 5 in the Secondary BSI Guide section of this protocol and Chapter 2 Pathogen Assignment (Example 2b).
MBI-LCBI Exception

MBI-RIT Exception: An MBI-LCBI designation will not change to an LCBI event if the following criteria are met:

1. The blood culture with the non-MBI organism is collected during an existing BSI (MBI-LCBI) RIT AND
2. The blood culture with the non-MBI organism is deemed secondary to an NHSN site-specific infection

Please see Example 5 in the Secondary BSI Guide section of this protocol and Chapter 2 Pathogen Assignment (Example 2b).

Chapter 2, page 2-21
When Submitting a Secondary BSI Case to NHSN, Please Send the Following:

- 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 or not 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)
There are only 2 ways to make a secondary BSI determination*:

1. **Scenario 1**: Organism in the site-specific specimen is used to meet criteria, and the blood, collected in the secondary BSI attribution period matches at least one site-specific organism.

2. **Scenario 2**: Organism identified in the blood specimen is used as an element to meet the site-specific infection criterion, and therefore must be collected in the IWP.

If neither scenario is met, the BSI is a primary infection. The only exception to this rule is when NEC criteria are met.

POA BSIs must be investigated when a subsequent positive blood specimen is identified within 14 days—otherwise an incorrect determination can be made.

- Only a primary BSI creates a 14-day BSI RIT
Summary continued...

• Blood specimens occurring in the SBAP must contain at least one matching organism to the site-specific specimen that was used to meet the definition initially, otherwise it must be investigated as being primary or secondary in nature.
  • Sometimes a patient will meet more than 1 criterion for a type of infection. If this occurs, consider all potential IWPs to identify possible primary sites of BSIs.

• The training videos, quick reference tools and the worksheet generator on the NHSN website are valuable resources that can improve your understanding of HAI surveillance, the application of the NHSN definitions and NHSN reporting.
Resources for Secondary BSI Attribution

- Chapter 2: Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance
  
  https://www.cdc.gov/nhsn/pdfs/pscmanual/2psc_identifyinghais_nhsncurrent.pdf

  
  https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

- Chapter 17: Surveillance Definitions for Specific Types of Infections
  
Questions?
For more information, contact CDC
1-800-CDC-INFO (232-4636)

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.