2025 Bloodstream Infection Case Study: The Case of the Unusual Suspects

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Protocol and Training Team

Objectives

By the end of the case study, you will be able to:

1. Define key terms used in bloodstream infection surveillance(BSI): Laboratory Confirmed Bloodstream Infection (LCBI), Infection Window Period (IWP), Date of Event (DOE), Repeat Infection Timeframe (RIT), Secondary BSI Attribution Period (SBAP)
2. Demonstrate key concepts for bloodstream infection surveillance (BSI)
3. Apply key concepts using a bloodstream infection surveillance BSI case study

BSI Case Study with Knowledge Checks: Part 1

Concepts Included:
Laboratory Confirmed Bloodstream Infection (LCBI) Criteria
Healthcare Associated Infection (HAI)
Present on Admission (POA)
Date of Event (DOE)

BSI Case Study: Part 1

6/1	Mr. Izzy Septic is a 68 y/o male who presents to the emergency department (ED) w/ fever, chills, urinary retention, and BP 110/76
6/1	Blood cultures x2 are drawn and are positive for coagulase negative *Staphylococcus in one bottle*
6/2	Admitted to ICU, BP 100/60 and a right subclavian triple lumen catheter is inserted & vasopressors are initiated.
6/3	Fever of 38.2^{O}C noted
6/5	Blood cultures x2 are drawn & are positive for *Staphylococcus epidermidis* and *Candida albicans* in both sets.

BSI Case Study Part 1: Question 1

Which laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 2

B. MBI LCBI 1

C. LCBI 1

D. Both A and C

6/1	Mr. Izzy Septic is a 68 y/o male who presents to the emergency department (ED) w/ fever, chills, urinary retention, and BP 110/70
6/1	Blood cultures x2 are drawn and are positive for coagulase negative Staphylococcus in one bottle
6/2	Admitted to ICU, BP100/60 and a right subclavian triple lumen catheter is inserted & vasopressors are initiated.
6/3	Fever of 38.2^{O}C noted
6/5	Blood cultures x2 are drawn &are positive for Staphylococcus epidermidis and Candida albicans in both sets.

BSI Case Study Part 1: Question 1

Which laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 2

B. MBI LCBI 1

C. LCBI 1

D. Both A and C

Rationale:

The patient meets both LCBI 2 and LCBI 1 criteria. The patient has matching common commensals and an eligible symptom (LCBI 2) as well as a recognized pathogen(LCBI 1) identified. It is important to identify both because it could impact your date of event.

BSI Case Study Part 1: Question 2

What is the LCBI date of event (DOE)?

A. 6/1

B. 6/3

C. 6/5

D. I am unsure

6/1	Mr. Izzy Septic is a 68 y/o male who presents to the emergency department (ED) w/ fever, chills, urinary retention, and BP 110/70
6/1	Blood cultures x2 are drawn and are positive for coagulase negative *Staphylococcus in one bottle*
6/2	Admitted to ICU, BP100/60, and a right subclavian triple lumen catheter is inserted & vasopressors are initiated.
6/3	Fever of 38.2^{O}C noted
6/5	Blood cultures x2 are drawn & are positive for *Staphylococcus epidermidis* and *Candida albicans* in both sets.

BSI Case Study Part 1: Question 2

What is the LCBI date of event (DOE)?

A. 6/1

B. 6/3

C. 6/5

D. I am unsure

When more than one criterion of a **site-specific infection** definition is met, identify the IWP resulting in the earliest date of event. So, in this case study, the matching common commensal blood cultures are on 6/5. The blood cultures are used to create a BSI IWP of 6/2-6/8. However, the patient has a fever on 6/3; therefore, the LCBI 2 DOE is 6/3. Although the LCBI 1 DOE is 6/5, the earliest BSI DOE is 6/3. See Identifying HAIs for NHSN Surveillance pg. 2-5 Note 2.

NOTE: If documented blood pressure meets your facility parameters of hypotension on 6/2 the BSI DOE would then be 6/2.

BSI Case Study Part 1: Question 3

What type of event is reported in NHSN?

A. LCBI 2 with a DOE of 6/3 with the common commensal reported 1st and the recognized pathogen 2nd.

B. LCBI 2 with a DOE of 6/3 with the recognized pathogen reported 1st and the common commensal 2nd.

C. LCBI 1 with a DOE of 6/3 with the common commensal reported 1st and the recognized pathogen 2nd.

D. LCBI 1 with a DOE of 6/3 with the recognized pathogen reported 1st and the common commensal 2nd.

6/1	Mr. Izzy Septic is a 68 y/o male who presents to the emergency department (ED) w/ fever, chills, urinary retention, and BP 110/70
6/1	Blood cultures x2 are drawn and are positive for coagulase negative *Staphylococcus in one bottle*
6/2	Admitted to ICU, BP 100/60 and a right subclavian triple lumen catheter is inserted & vasopressors are initiated.
6/3	Fever of 38.2^{O}C noted
6/5	Blood cultures x2 are drawn & are positive for *Staphylococcus epidermidis* and *Candida albicans* in both sets.

BSI Case Study Part 1: Question 3

What type of event is reported in NHSN?

A. LCBI 2 with a DOE of 6/3 with the common commensal reported 1st and the recognized pathogen 2nd.

B. LCBI 2 with a DOE of 6/3 with the recognized pathogen reported 1st and the common commensal 2nd.

C. LCBI 1 with a DOE of 6/3 with the common commensal reported 1st and the recognized pathogen 2nd.

D. LCBI 1 with a DOE of 6/3 with the recognized pathogen reported 1st and the common commensal 2nd.

BSI Case Study Part 1: Question 3

Rationale:

The business rules within the NHSN application requires entering the pathogen first. If a patient meets both LCBI 1 and LCBI 2 or LCBI 3 criteria, report LCBI 1 with the recognized pathogen entered as pathogen #1 and the common commensal as pathogen #2. You can find this guidance at this link: Bloodstream Infections Pg. 4-7 Note 1.

BSI Case Study Part 1: Question 4

Is this a present on admission (POA) or healthcare associated infection (HAI) event?

A. Present on admission (POA)

B. Healthcare associated infection (HAI)

6/1	Mr. Izzy Septic is a 68 y/o male who presents to the emergency department (ED) w/ fever, chills, urinary retention, and BP 110/70
6/1	Blood cultures x2 are drawn and are positive for coagulase negative *Staphylococcus in one bottle*
6/2	Admitted to ICU, BP 100/60 and a right subclavian triple lumen catheter is inserted & vasopressors are initiated.
6/3	Fever of 38.2^{O}C noted
6/5	Blood cultures x2 are drawn & are positive for *Staphylococcus epidermidis* and *Candida albicans* in both sets.

BSI Case Study Part 1: Question 4

Is this a present on admission (POA) or healthcare associated infection (HAI) event?

A. Present on admission (POA)

B. Healthcare associated infection (HAI)

Rationale:

The patient was admitted to ICU on 6/2 and the LCBI DOE is 6/3. The LCBI DOE is within the POA timeframe.

BSI Case Study with Knowledge Checks: Part 2

Concepts Included:
Laboratory Confirmed Bloodstream Infection
(LCBI) Criteria
Date of Event (DOE)
Repeat Infection Timeframe (RIT)
Central Line Associated Bloodstream
Infection
(CLABSI)
Location of Attribution (LOA)

BSI Case Study: Part 2

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5^{o}F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida alibcans* x2.

BSI Case Study Part 2: Question 1

Which laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 1

B. LCBI 2

C. LCBI 3

D. MBI LCBI 1

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5°F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida albicans* x2.

BSI Case Study Part 2: Question 1

Which laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 1

B. LCBI 2

C. LCBI 3

D. MBI LCBI 1

Rationale:

LCBI 1 criterion is met using the positive blood cultures for *Candida albicans.* The positive blood culture is a recognized pathogen, so no additional elements (in other words, no sign or symptom such as fever) are required to meet criterion.

BSI Case Study Part 2: Question 2

What is the LCBI date of event (DOE)?

A. 6/18

B. 6/20

C. 6/21

D. 6/22

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5°F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida albicans* x2.

BSI Case Study Part 2: Question 2

What is the LCBI date of event (DOE)?

A. 6/1

B. 6/20

C. 6/21

D. 6/22

Rationale:

The BSI date of event is 6/20. The LCBI 1 DOE is always the collection date of the first positive blood specimen used to set the BSI IWP.

BSI Case Study Part 2: Question 3

What is the BSI repeat infection timeframe (RIT).

A. 6/18-7/1

B. 6/20-7/3

C. 6/21-7/4

D. 6/22-7/5

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5^{o}F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida albicans* x2.

BSI Case Study Part 2: Question 3

What is the BSI repeat infection timeframe (RIT).

A. 6/18-7/1

B. 6/20-7/3

C. 6/21-7/4

D. 6/22-7/5

Rationale:

The 14-day BSI RIT is a timeframe during which no new infections of the same type are reported. The BSI date of event is 6/20, and this is Day 1 of the BSI RIT. The BSI RIT is established using 6/20 as day 1 and then adding 13 days. In this case, the BSI RIT is 6/20-7/3.

NOTE: Only primary BSIs create a 14-day BSI RIT.

BSI Case Study Part 2: Question 4

What is the location of attribution (LOA)?

A. ICU

B. ED

C. Medical ward

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5^{o}F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida albicans* x2.

BSI Case Study Part 2: Question 4

What is the location of attribution (LOA)?

A. ICU

B. ED

C. Medical ward

Rationale:

The LOA is the ICU. Mr. Izzy septic is transferred to the medical ward on 6/18. However, due to resuscitation efforts he is later transferred to the ICU on the same day. He remains in the ICU & positive blood cultures are collected on 6/20. On the BSI DOE, Mr. Izzy Septic is in the ICU; therefore, the LOA is the ICU.

BSI Case Study Part 2: Question 5

Is the BSI event a central line associated BSI (CLABSI).

A. Yes

B. No

C. Not enough information

6/18	Mr. Izzy Septic condition improves & he is transferred to the medical ward. After transfer, he codes & during resuscitation efforts staff are unable to infuse medication through two of the 3 lumens of TLC (still in place since).
6/18	Blood cultures are collected and are negative x2. A midline is placed in the upper L arm, & the patient is transferred back to ICU.
6/20	Mr. Izzy spikes a fever (100.5^{o}F) & blood specimens are collected.
6/21	Per physician orders, antimicrobials are administered on 6/21 & over the next few days his health improves.
6/22	The blood specimens are positive for *Candida albicans* x2.

BSI Case Study Part 2: Question 5

Is the BSI event a central line associated BSI (CLABSI).

A. Yes

B. No

C. Not enough information

Rationale:

The BSI event is a CLABSI. The triple lumen catheter (TLC) is inserted on 6/2. Although fluids are unable to be infused through 2 of 3 lumens, the TLC remains in place on the BSI DOE. On the BSI DOE (6/20), the TLC is in place >2 consecutive calendar days.

BSI Case Study with Knowledge Checks: Part 3

Concepts Included:

Laboratory Confirmed Bloodstream Infection
(LCBI) Criteria

Date of Event (DOE)

Infection window period (IWP)

Central Line Associated Bloodstream
Infection
(CLABSI)

CLABSI Exclusion

BSI Case Study: Part 3

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3^{o}F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 1

Which laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 1

B. LCBI 2

C. LCBI 3

D. MBI LCBI 1

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3°F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 1

What laboratory confirmed bloodstream infection (LCBI) criterion is met?

A. LCBI 1

B. LCBI 2

C. LCBI 3

D. MBI LCBI 1

Rationale:

LCBI 1 criterion is met using the positive blood culture for *Staphylococcus aureus.* The positive blood culture is a recognized pathogen, so no additional elements (in other words, no sign or symptom such as fever) are required to meet criterion.

BSI Case Study Part 3: Question 2

What is the LCBI date of event (DOE)?

A. 7/4

B. 7/5

C. 7/6

D. 7/7

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3°F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 2

What is the LCBI date of event (DOE)?

A. 7/4

B. 7/5

C. 7/6

D. 7/7

Rationale:

The BSI date of event is 7/6. The LCBI 1 DOE is always the collection date of the first positive blood specimen used to set the BSI IWP.

BSI Case Study Part 3: Question 3

What is the BSI infection window Period (IWP)?

A. 7/3-7/6

B. 7/2-7/8

C. 7/3-7/9

D. 7/4- 7/10

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3°F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 3

What is the BSI infection window period (IWP)?

A. 7/3-7/6

B. 7/2-7/8

C. 7/3-7/9

D. 7/4- 7/10

Rationale:

The IWP is 7/3-7/9. LCBI 1 criterion is met using the positive blood culture for *Staphylococcus aureus.* Because *S. aureus* is a recognized pathogen, the positive blood culture is used to set the infection window period (IWP). The IWP is set using the diagnostic test (positive blood culture), the 3 calendar days before and the 3 calendar days after.

BSI Case Study Part 3: Question 4

Is the BSI event a central line associated BSI (CLABSI).

A. Yes

B. No

C. Not enough information

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3°F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 4

Is the BSI event a central line associated BSI (CLABSI).

A. Yes

B. No

C. Not enough information

Rationale:

The BSI event is a CLABSI. The triple lumen catheter (TLC) inserted on 6/2 remains in place. On the BSI DOE (7/6), the TLC is in place >2 consecutive calendar days.

BSI Case Study Part 3: Question 5

What CLABSI exclusion is met?

A. Patient-injection

B. Epidermolysis bullosa (EB)

C. Pus at the vascular access site

D. Munchausen Syndrome by Proxy (MSBP)

7/5	During Mr. Izzy Septic's line care assessment, the nurse notices redness and purulence at the midline site.
7/5	He reports pain at the site, and there is a culture collected from the midline site that is positive for *Staph aureus*.
7/6	Fever (102.3°F) is documented and a blood specimen is collected positive for *Staph aureus*.
7/7	The midline is removed due to infection and a new CL is placed per ID recommendation.
7/7	Antimicrobials are administered for 14 days.

BSI Case Study Part 3: Question 5

What CLABSI exclusion is met?

A. Patient-injection

B. Epidermolysis bullosa (EB)

C. Pus at the vascular access site

D. Munchausen Syndrome by Proxy (MSBP)

Rationale:

The pus at the vascular access site requires a patient to have both an eligible central line and another vascular access device with pus at the site. There is purulence noted on 7/5 at the midline site and the organism identified matches the S. aureus identified from the blood (7/6). Because all required elements are identified during the BSI IWP (7/3-7/9), the pus at the vascular access site CLABSI exclusion is met.

BSI Case Study with Knowledge Checks: Part 4

Concepts Included:
Secondary BSI Attribution
Joint Criterion
Suspected Infection

BSI Case Study: Part 4

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration is performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: “Continue antibiotics for Staphylococcus aureus bacteremia.”

BSI Case Study Part 4: Question 1

What event can be cited in this case?

A. BONE 1
B. JNT 3c
C. JNT 1
D. Not sure

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

BSI Case Study Part 4: Question 1 Rationale

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

BC's set 7/22-7/28 JNT IWP

Two eligible symptoms during JNT IWP.

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 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*

JNT 3c cited on 7/25

BSI Case Study Part 4: Question 2

What documentation can be used to meet the "suspected joint infection" criterion?

A. Joint fluid aspiration/culture

B. Imaging test

C. 7/28 Physician documentation

D. Not sure

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

BSI Case Study Part 4: Question 2 Rationale

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

The collection of the joint fluid meets the "suspected joint infection" criterion

BSI Case Study Part 4: Question 3

Can the blood specimens be deemed secondary?

A. Yes

B. No

C. Not sure

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: “Continue antibiotics for Staphylococcus aureus bacteremia.”

BSI Case Study Part 4: Question 3 Rationale

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, Patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

Yes!
Because the Staphylococcus aureus blood specimens were used as an element to cite JNT 3c, they are deemed secondary.
Scenario 2

BSI Case Study Part 4: Question 4

What other criteria can be cited in this case?

A. JNT 1
B. JNT 2
C. No other event can be cited
D. Not sure

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: “Continue antibiotics for Staphylococcus aureus bacteremia.”

BSI Case Study Part 4: Question 4 Rationale

7/24	Mr. Izzy Septic is still admitted with TLC in place. Currently in a ward location.
7/25	103°F; Blood cultures collected x 2 positive for Staphylococcus aureus.
7/26	During night shift, patient complains of bilateral knee pain and swelling.
7/27	On the morning shift, a joint aspiration performed. Culture negative. Yellow, thick fluid noted.
7/28	Physician documentation: "Continue antibiotics for Staphylococcus aureus bacteremia."

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 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*

BSI Case Study with Knowledge Checks: Part 5

Concepts Included:
Secondary BSI Attribution
Joint Criterion
Endocarditis Criterion

BSI Case Study: Part 5

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – “Mild tricuspid regurgitation”.
8/25	Physician documents, “Endocarditis – Starting IV ceftazidime.

BSI Case Study Part 5: Question 1

In reviewing the JNT definition, can an event be cited?

A. Yes

B. No

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – “Mild tricuspid regurgitation”.
8/25	Physician documents, “Endocarditis – Starting IV ceftazidime.

BSI Case Study Part 5: Question 2

What event can be cited if applicable

A. BONE 1
B. PJI 1
C. JNT 1
D. No event can be cited.

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – "Mild tricuspid regurgitation".
8/25	Physician documents, "Endocarditis – Starting IV ceftazidime.

BSI Case Study Part 5: Question 2 Rationale

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – "Mild tricuspid regurgitation".
8/25	Physician documents, "Endocarditis – Starting IV ceftazidime.

The 8/16 positive joint fluid culture meets for a JNT 1.

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 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*

BSI Case Study Part 5: Question 3

Can the blood specimens be deemed secondary?

A. Yes, all of the positive blood specimens.

B. No, not all the blood specimens

C. Just the Enterococcus blood specimens

D. Just the MRSA blood specimens

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – "Mild tricuspid regurgitation".
8/25	Physician documents, "Endocarditis – Starting IV ceftazidime.

BSI Case Study Part 5: Question 3 Rationale

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – "Mild tricuspid regurgitation".
8/25	Physician documents, "Endocarditis – Starting IV ceftazidime.

The MRSA positive joint fluid culture meets for a JNT 1.
JNT IWP: 8/13 8/19
JNT RIT: 8/16 8/29
JNT SBAP: 8/13 8/29 This JNT SBAP will capture all matching blood specimens on 8/19 and 8/21.

BSI Case Study Part 5: Question 4

Can another event be cited in this case?

A. ENDO 4
B. ENDO 5
C. ENDO 6
D. HAI LCBI 1/CLABSI
E. No, events can be cited.

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – “Mild tricuspid regurgitation”.
8/25	Physician documents, “Endocarditis – Starting IV ceftazidime.

BSI Case Study Part 5: Question 4 Rationale

8/15	Mr. Izzy Septic is still here; TLC still in place; Pt has developed severe congestive heart failure and being monitored closely by Cardiology.
8/16	Right knee is swollen and tender. Joint fluid collected and cultured. MRSA positive. Antibiotics started.
8/19	Blood culture positive for MSSA.
8/21	Blood culture positive for MRSA.
8/23	Blood culture positive Enterococcus faecalis x 2.
8/24	TEE – Severe tricuspid regurgitation; Previous TEE (1 year before) – "Mild tricuspid regurgitation".
8/25	Physician documents, "Endocarditis – Starting IV ceftazidime.

HAI LCBI 1/ CLABSI , 8/23

Non-matching organism

Imaging not eligible for ENDO because of previous valvular regurgitation

For any 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