

LABORATORY CONFIRMED BLOODSTREAM INFECTIONS (LCBI)

Surveillance Definitions

Case Studies

PRIMARY BSI

- Primary bloodstream infections (BSI)
 - Organism cultured from the blood that is not related to an infection at another site (meeting CDC/NHSN criteria)
 - Primary BSI's create a 14 day RIT

SECONDARY BSI

- ▶ Secondary blood stream infections
 - ▶ Organism cultured from the blood was seeded from another primary site specific source such as UTI, SSI, PNEU, or one from Chapter 17
 - ▶ Secondary BSI's do not create a BSI RIT. The primary site specific infection source of the BSI creates a 14 day RIT

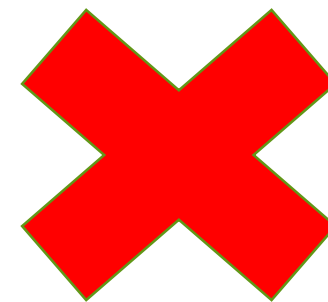
CENTRAL LINE ASSOCIATED BSI (CLABSI)

- A LCBI where central line (CL) or umbilical catheter (UC) was in place for > 2 calendar days on the date of event, with day of device placement being Day 1
- A CL or UC was in place on the date of event or the day before. *(If a CL or UC was in place for > 2 calendar days and then removed, the date of event of the LCBI must be the day of discontinuation or the next day.)*
- If the patient is admitted or transferred into a facility with a CL day of first access as an inpatient is considered Day 1

KEY TERM: CENTRAL LINE

- Central Line: *An intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring.*
 - Aorta
 - Pulmonary artery
 - Superior vena cava
 - Inferior vena cava
 - Brachiocephalic veins,
 - Internal jugular veins
 - Subclavian veins
 - External iliac veins
 - Common femoral veins
 - In neonates, the umbilical artery/vein

CENTRAL LINES (NOT)



- ▶ Arterial Catheters
- ▶ Arteriovenous fistula
- ▶ Arteriovenous graft
- ▶ Ventricular Assist Devices (VAD)
- ▶ Non-accessed central line
- ▶ Peripheral IV's
- ▶ Extracorporeal membrane oxygenation (ECMO)
- ▶ Femoral arterial catheters
- ▶ Intraaortic balloon pump (IABP) devices
- ▶ Hemodialysis reliable outflow (HeRO) dialysis catheters

TYPES OF CENTRAL LINES

- ▶ **Temporary Central Line:**
 - ▶ Non-tunneled or implanted catheter
- ▶ **Permanent Central Line:**
 - ▶ Tunneled catheters including certain dialysis catheters
 - ▶ Implanted catheters (including ports)
- ▶ **Umbilical catheter:**
 - ▶ Inserted through the umbilical artery or vein in a neonate

ACCESS

- ▶ Once (CL) accessed as an inpatient = eligible for a CLABSI event until **the day after** it is discontinued or the patient is discharged, whichever comes first
- ▶ An exclusion specifically for IVDA's who have documentation within the Infection Window Period (IWP) of observed or suspected injection into their vascular access
 - ▶ This will be an LCBI but Central Line? = NO
 - ▶ Does create a RIT

Patient
Access

KEY TERMS

- Device Days:
 - A daily count of the number of patients with a specific device in the patient care location during a time period. Count at the same time each day.
 - If electronic data used validate with manual count for a minimum of 3 months (+/- 5%)
- Patient Days:
 - A daily count of the number of patients in the patient care location during a time period. Count at the same time each day and sum at the end of the month.
 - If electronic data used validate with manual count for a minimum of 3 months (+/- 5%)

KEY TERMS

- Location of Attribution:
 - The inpatient location to which the event is being attributed.
 - LabID unit: the inpatient location where the specimen was obtained
- Transfer Rule :
 - If the date of event for a CLABSI is the **day of transfer or the next day**, the CLABSI is attributed to the transferring location or facility. Receiving facilities should share information about such HAIs with the transferring facility to enable reporting

BLOOD CULTURE SPECIMEN NOTE

- ▶ **All blood cultures (regardless of collection method) must be included in surveillance if participating in NHSN CLABSI surveillance**
 - ▶ Bloods collected via venipuncture
 - ▶ Bloods collected through vascular catheters
- ▶ Cannot be considered a contaminant unless single unmatched Common commensal (surveillance vs. clinical determination)

EXCLUDED BSI ORGANISMS

NEW
2017

- ▶ Campylobacter spp.
- ▶ C. difficile
- ▶ Enteropathogenic E. Coli
- ▶ Salmonella spp.
- ▶ Shigella spp.
- ▶ Listeria spp.
- ▶ Yersinia spp.

**Group B Strep: Excluded for the first 6 days of life
Is considered an LCBI but is NOT a CLABSI*



PRIMARY BLOODSTREAM INFECTION

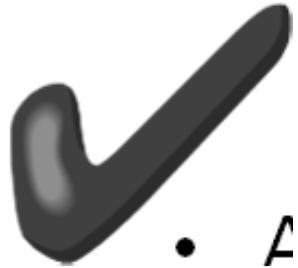


Very Important Point

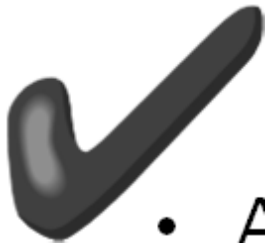
“...and organism cultured from blood is
not
related to an infection at another site...”

SECONDARY BSI GUIDE

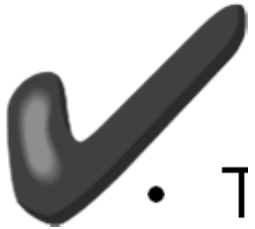
- ▶ In order for a bloodstream infection to be determined to be secondary to a primary infection site, (i.e. related to an infection at another site, such that the primary site of infection may have seeded the bloodstream secondarily), the patient must meet all three of the following.



1. Meet one of the NHSN site specific definitions (CDC/NHSN Surveillance Definitions for specific Types of Infections)



2. Have a positive blood culture within the Secondary BSI Attribution Period



3. Meet requirements in Secondary BSI Scenarios 1 or 2

SCENARIO1: BLOOD AND SITE-SPECIFIC SPECIMEN CULTURES MATCH FOR AT LEAST ONE ORGANISM:



Scenario1: Blood and site-specific specimen cultures match for at least one organism:

- In a Patient suspected of having an infection, if blood and a site-specific specimen are collected for culture and both are positive for at least one matching organism, AND if the site-specific culture is an element used to meet the infection site criterion, the BSI is considered secondary to that site-specific infection

Example: Patient meets criteria for symptomatic UTI with $>10^5$ E. coli, and blood culture collected during the SUTI secondary BSI attribution period grows E. coli

MATCHING ORGANISM

- ▶ Defined as one of the following:
 - ▶ If genus and species are identified in both specimens, they must be the same

Example: A blood specimen reported as *Enterobacter cloacae* and an intraabdominal specimen of *Enterobacter cloacae* are matching organisms.

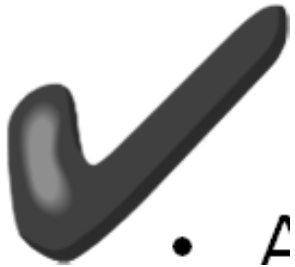
Example: A blood specimen reported as *Enterobacter cloacae* and an intraabdominal specimen of *Enterobacter aerogenes* are NOT matching organisms as the species are different.

- ▶ If the organism is less definitively identified in one specimen than the other, the identifications must be complementary.

Example: A surgical wound growing *Pseudomonas* spp. and a blood specimen growing *Pseudomonas aeruginosa* are considered a match at the genus level and therefore the BSI is reported as secondary to the SSI.

- ▶ **Example:** A blood specimen reported as *Candida albicans* and a culture from a decubitus reported as yeast not otherwise specified are considered to have matching organisms because the organisms are complementary, i.e. *Candida* is a type of yeast.

SCENARIO 2: BLOOD AND SITE-SPECIFIC SPECIMEN CULTURES DO NOT MATCH FOR AT LEAST ONE ORGANISM



Scenario 2: If the blood isolate is an element used to meet the site-specific criterion, then the BSI is considered secondary to that site-specific infection.

If the blood culture is used to meet the site-specific infection criterion it **MUST** be positive during the infection window.

Example: Postoperative patient becomes febrile and complains of nausea and abdominal pain. Blood and an aseptically-obtained T-tube drainage specimen are collected for culture. A CT scan done that day shows fluid collection suggestive of infection. Culture results show E. col from the T-tube drainage specimen but the blood grows Bacteroides fragilis. The patient meets criteria IAB 3b the blood is considered secondary. Both organisms would be listed as the IAB pathogens

KEY TERMS



- *Secondary BSI Attribution Period:*
 - Is the period in which a positive blood culture must be collected to be considered as a secondary bloodstream infection to a primary site infection
 - This period includes the Infection Window Period combined with the **Repeat Infection Timeframe (RIT)**. It is 14-17 days in length depending upon the date of event.
 - For SSI surveillance a 17 day period that includes the date of SSI event 3 days prior and 13 days after, is still used to attribute a BSI as secondary to an SSI



ADDITIONAL NOTES

- If the blood isolate by itself does not meet BSI criteria (e.g., only one positive blood culture of a common commensal), then that isolate may not be used to indicate the presence of a secondary BSI.
- Antibigrams of the blood and potential primary site isolates do not have to match.
- Pathogen Assignment:
 - Pathogens cultured from secondary BSIs should be added to those pathogens reported for the primary infection type. The Secondary BSI data collection field should be checked Yes.
 - A secondary BSI pathogen may be assigned to two different primary site infections

CRITERIA FOR LCBI

▶ Criterion 1:

- ▶ Patient of any age has a recognized pathogen cultured from one or more blood cultures

AND

- ▶ Organism cultured from blood is not related to an infection at another site (**Appendix 1 Secondary BSI Guide**)

Exceptions:

- Organisms belonging to the following genera cannot be used to meet any NHSN definition:
 - *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis.*
- These organisms are typically causes of community-associated infections and are rarely known to cause healthcare-associated infections, and therefore are excluded.

CRITERIA FOR LCBI CONT'

▶ Criterion 2

- ▶ Patient of any age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), chills, or hypotension

AND

- ▶ Positive laboratory results are not related to an infection at another site

AND

- ▶ The same common commensal is cultured from two or more blood cultures drawn on separate occasions.

- ▶ Blood cultures drawn on the same or consecutive calendar days (Frist blood draw is considered the date of event.)
- ▶ Criterion elements occur within the Infection Window Period

CRITERIA FOR NEONATES/INFANTS

▶ Criterion 3

- ▶ Patient <1 year of age has at least one of the following signs or symptoms: fever ($>38^{\circ}\text{C}$), hypothermia ($<36^{\circ}\text{C}$ core), apnea, or bradycardia

AND

- ▶ Positive laboratory results are not related to an infection at another site

AND

- ▶ The same common commensal is cultured from two or more blood cultures drawn on separate occasions.
 - ▶ Blood cultures drawn on the same or consecutive calendar days (Frist blood draw is considered the date of event.)
 - ▶ Criterion elements occur within the Infection Window Period

DEFINITIONS

- Common commensal organisms include but are not limited to:
 - *Diphtheroids*, *Bacillus* spp., *Aerococcus* spp., *Propionibacterium* spp., Viridans group *streptococci*, Coagulase negative *staphylococci*, *Micrococcus* spp.,

| | | | |
|-------------------------------------|---------|-----------|--|
| <i>Acinetobacter baumannii</i> | ACBA | 77043000 | <i>Acinetobacter baumannii</i> (organism) |
| <i>Acinetobacter johnsonii</i> | ACJH | 252000 | <i>Acinetobacter johnsonii</i> (organism) |
| <i>Acinetobacter junii</i> | ACJU | 13879009 | <i>Acinetobacter junii</i> (organism) |
| <i>Acinetobacter lwoffii</i> | ACLW | 83088009 | <i>Acinetobacter lwoffii</i> (organism) |
| <i>Acinetobacter lwoffii</i> | ACLW | 83088009 | <i>Acinetobacter lwoffii</i> (organism) |
| <i>Acinetobacter radioresistans</i> | ACIRADI | 113381003 | <i>Acinetobacter radioresistans</i> (organism) |
| <i>Acinetobacter radioresistans</i> | ACIRADI | 113381003 | <i>Acinetobacter radioresistans</i> (organism) |
| <i>Acinetobacter schindleri</i> | ACISCHI | 423732001 | <i>Acinetobacter schindleri</i> (organism) |

Navigation: All Organisms | Top Organisms | Common Commensals | MBI Organisms | UTI Bacteria | (+)

<https://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html>

MUCOSAL BARRIER INJURY LABORATORY-CONFIRMED BLOODSTREAM INFECTION (*MBI-LCI*)

▶ MBI-LCBI 1

- ▶ Patient of any age meets criterion 1 for LCBI with at least one blood culture identified by a culture or non-culture based microbiologic testing method with ONLY intestinal organisms from the MBI Organism List

AND

- Patient meets at least one of the following:
 - 1. Allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
 - Grade III or IV GI graft versus host disease (GI GVHD)
 - ≥ 1 liter diarrhea in a 24 hour period (< 18 years ≥ 20 ml/kg in a 24 hour period) with onset on or within 7 calendar days before the date the positive culture was obtained
 - 2. Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC) < 500 cells/mm³ within a seven-day time period which includes the date the positive blood culture was collected (Day 1), the 3 calendar days before and the 3 calendar days after.

MUCOSAL BARRIER INJURY LABORATORY-CONFIRMED BLOODSTREAM INFECTION (*MBI-LCI*)

- MBI-LCBI 2
 - Patient of any age meets criterion 2 for LCBI when the blood cultures are growing only viridans group streptococci with no other organisms isolated
- MBI-LCBI 3
 - Patient ≤ 1 year of age meets criterion 3 for LCBI when the blood cultures are growing only viridans group streptococci with no other organisms isolated

And

- Patient meets at least one of the following:
 - 1. Allogeneic hematopoietic stem cell transplant recipient within the past year with one of the following documented during same hospitalization as positive blood culture:
 - Grade III or IV GI graft versus host disease (GI GVHD)
 - ≥ 1 liter diarrhea in a 24 hour period (< 18 years ≥ 20 ml/kg in a 24 hour period) within onset on or within 7 calendar days before the date the positive culture was obtained
 - 2. Is neutropenic, defined as at least 2 separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC) < 500 cells/mm³ within a seven-day time period which includes the date the positive blood culture was collected (Day 1), the 3 calendar days before and the 3 calendar days after

| | | Day -7 | Day -6 | Day -5 | Day -4 | Day -3 | Day -2 | Day -1 | Day 1* | Day 2 | |
|---|---------|--------------------|-----------|-----------|-----------|-----------|-----------|-----------|--|----------|--|
| A | W BC | 100 | 800 | 400 | 300 | ND | ND | 320 | 400 | 230 | |
| | | MCBI-LCBI 1 | | | | | | | + BC w/Candida spp. x1 | | |
| B | AN C | ND | 410 | 130 | ND | ND | 120 | 110 | ND | 110 | |
| | | MCBI-LCBI 2 | | | | | | | + BC with Viridans strep x2 and fever > 38°C | | |



MUCOSAL BARRIER INJURY LABORATORY-CONFIRMED BLOODSTREAM INFECTION

MBI-LCBI

- ▶ ANC/WBC levels should NOT be used to set the date of MBI-LCB. The date the patient first meets the LCBI criteria is the date of the MBI-LCBI
- ▶ When reporting an LCBI, it is required to indicate which of the underlying conditions of the MBI-LCBI criterion was met, if any.
- ▶ All CLABSI, whether LCBI or MBI-LCBI, must be reported if CLABSI is part of your Monthly Reporting Plan
- ▶ CLABSI events reported to NHSN as MBI-LCBI will be excluded from the numerator when performing risk-adjustment of 2015 CLABSI data
- ▶ These events will be removed from the new CLABSI SIRs that will be available with the 2015 re-baseline.
- ▶ When another blood specimen is collected during the RIT of an identified MBI-LCBI, which is positive for an organism excluded from MBI-LCBI criteria, the MBI-LCBI event is edited to become an LCBI and the organism is added.



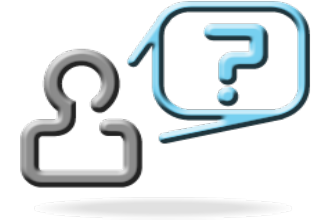
INVESTIGATING A POSITIVE BLOOD CULTURE AS POSSIBLE CLABSI

- ▶ Determine the Infection Window Period (IWP)
- ▶ Determine elements present in IWP
- ▶ Determine Date of Event (DOE)
- ▶ Determine if POA or HAI
 - ▶ If POA 
- ▶ If HAI determine device association and location of attribution
- ▶ Determine Repeat Infection Timeframe (RIT)
- ▶ Determine if another site specific source of infection present
 - ▶ If secondary 
- ▶ If not: determine LCBI 1, LCBI 2, or LCBI 3 based on above

CASE STUDY 1

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------------|--|--|
| Day 1 (Adm) | 72 y/o admitted for syncopal episode. PMH includes aortic stenosis | UA normal; CXR no acute process noted |
| Day 2 | Transferred to CCU 2ndary to hypotension and arrhythmias. | Chem profile normal |
| Day 3 | To OR for aortic valve replacement. CVL, foley catheter inserted and patient on mechanical ventilation | |
| Day 4 | Patient spikes a temp of 37.5 C; hypotensive | |
| Day 5 | Temp 38.8, Blood cultures, urine cultures and Chest x-ray obtained | Blood ½ + MRSA UC + <50,000 col E. coli CXR + for new LLL infiltrate |

QUESTIONS



▶ Select the correct response:

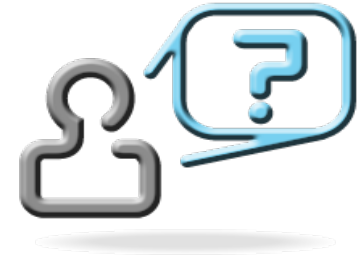
1. Patient has a LCBI
2. Patient has pneumonia with secondary BSI
3. Patient has a Central line-associated BSI
4. Patient does not meet the definition of an HAI



CASE STUDY 2

| Timeline | Physical findings | Diagnostic Studies/Results |
|-------------|---|---|
| Day 1 (Adm) | Seen in the ED. CL inserted and IV fluids begun. FC inserted and admitted to trauma ICU | |
| Day 2 | To OR for closed reduction and traction. Returned to trauma ICU | |
| Day 3 | Temp 38.5°C | |
| Day 4 | Still febrile with temp of 38.5 C; | 1 set of BC collected and + for <i>S. epidermidis</i> |
| Day 5 | Temp 37.8, Blood cultures, urine cultures and Chest x-ray obtained | Blood ½ + <i>S. epidermidis</i> UC + mixed flora CXR + for new LLL infiltrate |

WHAT DO YOU THINK?

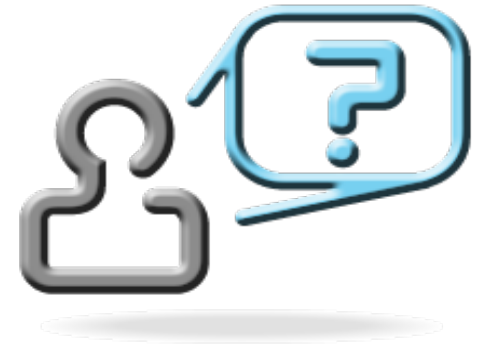


- A. This is a BSI POA
- B. This is a CLABSI attributable to ED
- C. This is NOT a BSI
- D. This is a CLABSI attributable to Trauma Unit

CASE STUDY 3

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|---|---|
| Day 1 | Patient admitted for total knee replacement. Taken to the OR and surgery uneventful | Pre-op workup negative |
| Day 2 | Patient spikes a temp of 38.4 C | |
| Day 3 | Patient complains of fatigue, and painful urination. UC obtained and sent to lab | Urine + > 100,000 col of <i>Enterococcus</i> |
| Day 4 | Antibiotics started | |
| Day 6 | Afebrile, voiding well and being prepared for discharge | |
| Day 8 | Patient spikes another temp of 38.2 C and blood cultures are obtained | Blood cultures positive for <i>Enterococcus</i> |

QUESTIONS



- Select the correct response:
 1. Patient has a SUTI with a secondary BSI
 2. HAI criteria are not met
 3. Patient has a SUTI
 4. Patient has a primary BSI
 5. Both 1 and 2
 6. Both 3 and 4

CASE STUDY 4

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|---|---|
| Day 1 | <p>29 year old male in MVA. EMS responded, placed central line and intubated patient prior to transport to ED.</p> <p>Patient admitted to the ICU, intubated, CVL and foley catheter in place</p> | <p>Chest x-ray, ABGs and Chem profile ordered</p> <p>CXR negative for acute process</p> |
| Day 2 | <p>Patient has a low grade temp (100 F), and drop in Oxygen sats. FIO2 increased to .60; STAT ABGs, urine culture, blood culture and chest x-ray repeated</p> | <p>Questionable opacity seen bilateral LL</p> <p>Blood culture negative</p> |
| Day 3 | <p>Patient becomes hypotensive, unresponsive and O2 sats drop to 70.</p> <p>FIO2 increased to 100 %.</p> <p>Patient pan cultured (urine, blood, and ET aspirate). Orders given for stat CXR and chest CT.</p> | <p>Chest x-ray + for bibasilar A/S disease</p> <p>ET aspirate gram stain >10 squamous cells with gram positive cocci</p> <p>Blood culture positive for <i>Enterococcus</i></p> <p>Urine culture positive for mixed flora</p> |

QUESTION?

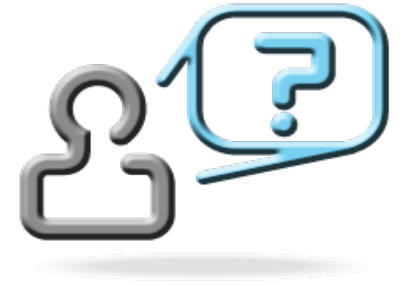


- **Select the correct response!**
 1. Patient has a BSI secondary to pneumonia .
 2. Patient has a BSI but it is present on admission
 3. Patient meets the definition of a central line-associated BSI but is not attributed to the ICU (CL inserted in the field).
 4. Patient has a HAI CLABSI attributed to the ICU

CASE STUDY 5

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|--|--|
| Day 1 | 63 year old nursing home resident admitted to MICU for pneumonia. She has a central line placed for continuous infusion and antibiotic administration. Foley catheter placed for accurate I&O. | CXR positive for chronic COPD |
| Day 2 | Patient responding well to antibiotic therapy and course is unremarkable. | |
| Day 3 | Patient is transferred out of the MICU to 3W. Foley cath removed but central line maintained for continued antibiotic therapy. | |
| Day 4 | Patient spikes a temp of 102, chills, increased cough and sputum production, complains of dysuria and frequency. | CXR, blood cultures x2 and urinalysis and urine culture sent. CXR: No change Blood Culture 2 of 2 + for <i>enterococcus</i> and Yeast Urine Culture + for > 100,000 CFU <i>enterococcus</i> |

QUESTION?

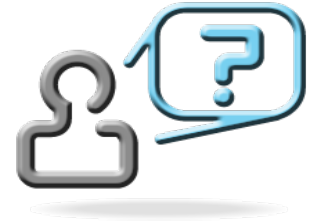


- Select the Best Response!
 1. Patient has a central line associated BSI and it is attributed to 3W.
 2. Patient has a central line associated BSI and it is attributed to the MICU.
 3. Patient has a BSI that is secondary to the catheter associated UTI and is attributed to the MICU
 4. Both 1 and 3 are correct
 5. Both 2 and 3 are correct

CASE STUDY 6

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|---|--|
| Day 1 | <p>23 year old nursing student newly diagnosed with leukemia. A port-a-cath has been placed in preparation for chemotherapy.</p> <p>Patient has been exposed to a family member with norovirus and is now admitted for profuse vomiting and diarrhea. Patient made NPO and PIV inserted for hydration</p> | |
| Day 2 | <p>Patient responding well with no additional vomiting but continues to have diarrhea</p> | |
| Day 3 | <p>Patient complains of extreme fatigue but is beginning to take small amounts po. Plans to d/c IV tomorrow and for discharge within the next 2 days.</p> | |
| Day 4 | <p>Patient spikes a temp of 102, increased weakness and malaise.</p> <p>Port-a-cath accessed for antibiotic administration</p> | <p>CXR, blood cultures x2 and urinalysis and urine culture sent.</p> <p>Blood culture 2/2 + for Staph aureus</p> <p>All other studies negative</p> |

QUESTION?

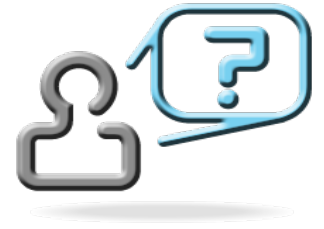


- Select the correct response
 1. Patient has a central line-associated BSI
 2. Patient has a primary BSI HAI
 3. Infection does not meet criteria for HAI
 4. Patient has a MBI-LCBI

CASE STUDY 7

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|---|--|
| Day 1 | 45 year old male admitted with abdominal pain and nausea and vomiting. In the ED patient has a temp of 39.0 C. Work up done including CT of abdomen, placement of CVL and foley catheter. Antibiotic therapy initiated. | CT reading “abscess noted with possible free air” |
| Day 2 | Patient is febrile with temp of 102 F, increase in abdominal pain. Repeat CT scan ordered with CT guided aspirate of abdominal fluid collection. 60 cc of purulent material aspirated. | |
| Day 5 | Patient responding to therapy but continues to have low grade fever. | |
| Day 6 | Due to continued low grade fevers physician orders BC x 2 and UC | Blood cultures 2/2 positive for <i>Pseudomonas aeruginosa</i> Urine culture mixed flora |

WHAT DO YOU THINK???



- A. Patient has an IAB POA with a secondary BSI
- B. Patient has a HAI central line associated BSI with pseudomonas aeruginosa
- C. Patient has a primary BSI

CASE STUDY 8

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|--|---|
| Day 1 | 85 year old male admitted with complaints of diarrhea for the past 24 hours. Patient has been on antibiotic therapy for treatment of a UTI. | Urine culture and stool specimen obtained UC + for >100,000 E. coli Stool specimen + for C. difficile |
| Day 2 | Patient afebrile but continues to have profuse diarrhea. | |
| Day 3 | Patient spikes a temperature of 100.8. Blood cultures obtained and UC repeated. | Urine culture + for mixed flora, Blood culture 1/2 + for CNS |
| Day 4 | Patient continues to be febrile (101) and have diarrhea; requires placement of Central line for hydration. | Blood cultures repeated and are negative |
| Day 5 | Temperature up to 102, patient now with vomiting and diarrhea. Chills and hypotensive. Infectious Disease consult and workup includes repeat blood cultures. | Blood cultures positive for CNS (1/2) |

QUESTION?



- Select the correct response!
 - A. Patient has a LCBI secondary to C difficile colitis.
 - B. Patient has a central line associated BSI with CNS
 - C. Patient has a primary BSI present on admission
 - D. Patient does not meet the definition of HAI

CASE STUDY 9

| Timeline | Physical findings | Diagnostic Studies/Results |
|----------|--|---|
| Day 1 | 23 year old female admitted to ICU with drug overdose. Central line, foley catheter inserted in the ED. Patient also requires mechanical ventilation. | Drug screens are positive for heroine |
| Day 2 | Patient beginning to response to verbal stimuli, afebrile and urine output good. Vent weaning progressing. | |
| Day 4 | Patient alert and responses appropriately. Trach collar trials are successful and patient is extubated. Nursing notes from pm “patient found touching central line dressing and tubing”. | |
| Day 5 | Patient’s foley catheter and central line are removed and patient is transferred to the medical unit at 10 am. At 3 pm patient spikes a temperature of 101 F with complaints of dysuria. PIV inserted and antibiotics initiated. | Blood and urine cultures are obtained |
| Day 6 | Patient remains febrile with chills. ID consult obtained | Blood cultures positive for MRSA X 2 Urine culture “mixed flora” |

QUESTION:

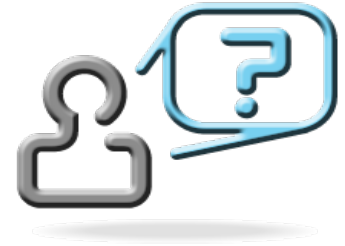


- Select the correct response:
 - A. Patient has a primary bloodstream infection attributable to ICU
 - B. Patient has a secondary BSI to UTI
 - C. Patient does not meet definition of LCBI, because it was documented she was touching her CL dressing
 - D. Patient has a CLABSI attributable to ICU

CASE STUDY 10

- Mr. Anderson is hospitalized following a fall with left femur fracture. He has an ORIF and is in traction. He has a tunneled central line in place for dialysis which he received on day 2 and 5 of admission. On hospital day 5 he spikes a fever of 38.1°C; His right knee, which is a native joint, is painful, swollen and warm to the touch. Two blood culture sets and one knee joint fluid culture are collected. Joint fluid culture shows no growth. The blood cultures from two separate blood draws are positive for *Group B Streptococcus*.

QUESTION



- A. Mr. Anderson has a BSI that is secondary to his surgical site
- B. Mr. Anderson has a primary BSI
- C. Mr. Anderson has a secondary BSI to his right knee

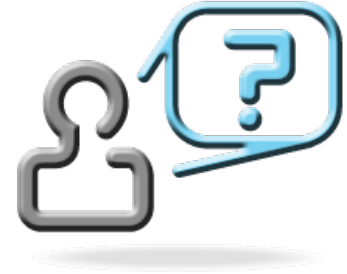
CASE STUDY NUMBER 11

- April 1: Ms. A is transferred to your facility with pancreatic cancer and a PICC, which is first accessed on Day 1.
- April 7: Blood culture collected on April 5th is growing *Providencia stuartii*. No other organisms isolated. Patient started on antibiotics.

Additional laboratory values as follows:

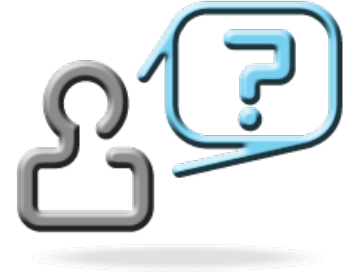
| April 1 | April 2 | April 3 | April 4 | April 5 | April 6 | April 7 |
|------------|------------|------------|------------|------------|------------|------------|
| WBC 900 | WBC 800 | WBC 600 | WBC 600 | WBC 500 | WBC 400 | WBC 500 |
| ANC... | | | 400 | | | 600 |

QUESTION



- Does this patient have an HAI?
 1. YES
 2. NO

QUESTIONS CONT'



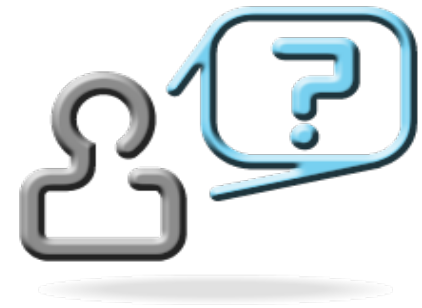
► What type of HAI and date of event?

1. Primary CLABSI on April 5th
2. Secondary BSI on April 5th
3. MBI-LCBI on April 4th
4. MBI-LCBI on April 5th

CASE STUDY NUMBER 12

- ▶ Mr. Smith has a Whipple procedure on May 1st. On May 4th he spikes a temp and complains of nausea and abdominal pain. Blood and an aseptically-obtained T-tube drainage specimen which is purulent, are collected for culture.
- ▶ On May 5th, a CT scan shows loculated fluid collection. Culture results from 5/4 collection show *Escherichia coli* from the purulent drainage specimen but the blood grows *Bacteroides fragilis*

QUESTION



- Given the information we have, is Mr. Smith's BSI primary or secondary
 1. Primary
 2. Secondary



QUESTIONS
COMMENTS
DISCUSSION