Case Study and Questions

Scenario:

On January 1st, 2018, a 23-year-old male with paraplegia secondary to T1 transverse myelitis is admitted to an inpatient medical ward. An implanted port and suprapubic catheter are present on admission both having been placed in June 2017. The un-accessed port is scheduled for removal January 3rd due to a history of recurrent polymicrobial bacteremias. The most recent bloodstream infection (BSI) occurred during a previous admission in late November for which the patient completed a 4-week course of antibiotics on December 31st. Blood cultures in November were positive for *Candida albicans*, *Chryseobacterium indolegenes*, and *Enterococcus faecalis*.

On January 3rd, @ 12:23 a.m. (Hospital day 3), the patient began complaining of 'itching at port insertion site". Documentation in the chart states, "Patient is scratching port site". Port insertion site is red, warm and tender to touch. The port is accessed for the first time during this admission, to collect blood cultures. One set is collected from the port and one from a peripheral venipuncture. The port is de-accessed after specimen collection and, previously planned, port removal is postponed pending blood culture results. Peripheral IV is placed for temporary access.

On January 4th, blood cultures collected on January 3rd are preliminarily resulted as no growth. The port is removed and the patient sleeps most of the afternoon.

On January 5th, the patient pulls his IV out. A right upper arm (RUA) Peripherally-Inserted Central Catheter (PICC) is inserted at 1:30 p.m. with verification of proper placement. Chart documentation shows "Patient continues to be non-compliant with medical care (specifically, refusing activities of daily living, wound care and medications except narcotics). The nurse witnessed patient tampering with PICC line (specifically, disconnecting the continuous infusion frequently against medical advice, picking at the dressing and itching aggressively around the new PICC insertion site)". Low-grade fever 99.8°F is noted at 8:00 p.m.

On January 6th at 11:00 am, patient complains of pain, severity 10/10. 15mg oxycodone is given. The patient is requesting to leave unit to smoke with visitors. The RN advises against it since he just took pain medicine and the patient agrees to wait half an hour but then insists on leaving at 11:20 am. The patient is alert and oriented, and the CL is disconnected and capped by nurse so patient can leave the floor. At 12:40 p.m., the patient returns to unit after being gone for over an hour, slurring words and unable to keep eyes open. He appears very sleepy with a marked change in level of consciousness (LOC) since leaving the floor. The safety cap is missing from the secondary port and the CL is un-clamped. The patient responds, "I don't know" when asked about the condition of the CL. The physician is informed of events, and arrives for patient assessment at 1:30 p.m. The physician agrees with patient assessment and notes the patient's current condition is inconsistent with current narcotic orders and previous response to administration of ordered pain medications. She orders to discontinue the PICC and all narcotics. At 5:15 p.m. the RUA PICC is removed and the patient is more alert, but very unhappy about removal of CL and discontinuation of narcotics.

On January 7th, the patient spikes a fever of 101.2°F, and the white blood cell (WBC) count is measured at

14,500/mm3. Two sets of blood cultures are collected, and one bottle from each set is positive for *Staphylococcus hominis*, *Klebsiella oxytoca* and *Enterococcus faecium*. The blood cultures collected on January 3rd are still showing no growth.

Table 1: ***Refer to the following reference table as needed to answer questions:***

	Jan. 1	Jan. 2	Jan. 3	Jan. 4	Jan. 5	Jan. 6	Jan. 7	Jan. 8	Jan. 9	Jan. 10	Jan. 11
CL	Unaccessed Port POA	Unaccessed Port	Port accessed then de-accessed	Port removed	RUA PICC placed	RUA PICC removed		LUA PICC placed	LUA PICC	LUA PICC	LUA PICC removed
Blood Specimen			BC x 2 No Growth				+BC x 2 *K. oxytoca, E. faecium, S. hominis*	+BC x 2 *E. faecium, P. aeruginosa*			

*1. **On January 7th how many CL days have occurred to determine if the BSI is a CLABSI?**

- a. 6 CL days
- b. 4 CL days
- c. 2 CL days
- d. 0, the BSI is not CL associated

*2. **What is the correct determination for the positive blood specimens collected on January 7th and how should the field for CL be completed?**

- a. LCBI 1; CL = No due to self-injection DOE 1/7
- b. LCBI 1; CL = Y (CLABSI) DOE 1/7
- c. LCBI 2; CL = No due to self-injection DOE 1/5
- d. LCBI 2; CL = Y (CLABSI) DOE 1/5
- e. No LCBI because patient is non-compliant and tampering with line

Scenario Continued:

On January 8th, a left upper arm PICC is placed for treatment of polymicrobial bacteremia. Repeat blood cultures are collected. A personal sitter is assigned to the patient, but no reason for this order is documented in the patient chart.

On January 9th, the blood cultures from January 8th are positive for *E. faecium* and *P. aeruginosa*.

On January 11th, the physician progress note states: "Patient with continued non-compliant behavior despite repeated attempts to explain the serious health consequences. Recurrent polymicrobial bacteremia's with workup negative for a

focus of infection. Likely represents on-going contamination of CL from patient injecting illicit drugs in light of his past medical history of significant substance abuse. It is in the patient's best interest to discontinue the CL and change to oral antibiotics. Left upper arm PICC removed at 2:40 p.m."

On January 13th, repeat blood cultures are collected and all are negative for growth. A physician progress note states: "PICC removed January 11th, recent blood cultures clear."

*3. **Which statement about counting device days for reporting January CL summary denominator data is correct?**

- a. Total device days reported for this patient for January CL summary denominator data: 6 device days
- b. Total days reported for this patient for January CL summary denominator data: 8 device days
- c. Total device days reported for this patient for January CL summary denominator data: 9 device days
- d. Total device CL days reported for this patient for January CL summary denominator data: 10 device days

Table 2: ***CL day count for making CLABSI determinations and Device day count for January denominator data in this case:***

	Jan. 1	Jan. 2	Jan. 3	Jan. 4	Jan. 5	Jan. 6	Jan. 7	Jan. 8	Jan. 9	Jan. 10	Jan. 11
CL	Unaccessed Port POA	Unaccessed Port	Port accessed then de-accessed	Port removed	RUA PICC placed	RUA PICC removed		LUA PICC placed	LUA PICC	LUA PICC	LUA PICC removed
CL day for CLABSI determination			CL day 1	CL day 2	CL day 3 becomes an eligible CL	CL day 4, eligible for CLABSI event	Remains eligible for CLABSI event	CL day 1	CL day 2	CL day 3	CL day 4
Device day for denominator data	CL day 1	CL day 2	CL day 3	CL day 4	CL day 5	CL day 6	-	CL day 7	CL day 8	CL day 9	CL day 10

*4. **Which of these documented notes would meet criteria for use of the patient self-injection exclusion, assuming LCBI criteria are met and documentation is within the BSI infection window period (IWP)?**

1. "Patient is manipulating his CL by scratching around it aggressively and interfering with line maintenance by refusing care".

2. "Patient is very non-compliant with medical care (refusing activities of daily living, wound care, CL care, and medications except narcotics). Have witnessed patient tampering with PICC line (disconnecting tubing to go outside to smoke with friends, picking at dressing, itching aggressively around insertion site)".

3. "At 11:00am, patient complaining of pain 10/10, 15 oxy given per MAR. Several friends came to visit requesting to go

out to smoke. RN advised against it since he just took pain medicine. Patient agreed to wait half an hour but insisted on leaving at 11:20 am-patient off the floor with friends. Patient back on unit at 12:40 p.m. (gone for over an hour), slurring words with difficulty keeping eyes open and appears very sleepy. Vital signs per flow sheet. Safety cap was missing from the secondary port and the line was un-clamped. Physician informed of events".

4. "Changed to PO antibiotics due to misuse and contamination of intravascular line".

5. "Patient with continued polymicrobial bacteremia's with workup negative for a focus of infection. Likely represents contamination of CL from patient using the line to inject unknown substance in light of his P.M.H of significant substance abuse. CL removed and recent blood cultures are clear".

Note: The NHSN BSI protocol states: "A BSI meeting LCBI criteria that is accompanied by documentation of observed or suspected patient injection into the vascular access line, within the BSI Infection Window Period, will be considered an LCBI but not a CLABSI for NHSN reporting purposes".

- a. 1, 2 & 4
- b. 1 & 4
- c. 3 only
- d. 5 only
- e. all of the above