Practice Question:
Surgical Site Infections

SSI #1

- A 49 year-old woman is admitted postoperatively on 6/29 following an exploratory laparotomy and right hemicolectomy. Medical history is positive for insulin dependent diabetes mellitus and asthma.
- On 6/30 the patient’s abdominal incision is clean but slightly moist. She is afebrile, her breath sounds are diminished bilaterally, and no bowel sounds are present on auscultation. She has ambulated once in the hallway and is taking ice chips by mouth.
- On 7/2 the patient’s abdominal incision is slightly red and warm to the touch; her staples are intact. Her temperature has ranged between 37.2°C and 37.6°C and her lungs are clear bilaterally. She is ambulating with assistance. Bowel sounds are present in the 2 upper abdominal quadrants only. She continues to take only ice chips by mouth.
- On 7/3 the patient’s abdominal incision is more reddened, swollen and hot to touch. She complains of incisional pain. Her temperature has spiked at 38.4°C. Bowel sounds are now present in all 4 quadrants of the abdomen. Her lungs remain clear and the white blood cell count is 15,000. A peripherally inserted central catheter (PICC) is placed in her right upper arm. She is empirically started on Ampicillin.
- On 7/4 the patient’s incision has dehisced to the fascia. A wound vacuum is placed to the incision. No wound cultures are sent.
- On 7/9 the patient continues to run intermittent fevers. The PICC site is clean and dry without redness. She denies suprapubic tenderness or costovertebral angle pain. 2 sets of blood cultures are collected and sent to the laboratory along with a straight catheter urine culture.
- On 7/11 blood cultures were 1 of 2 positive for Bacteroides uniformis

1. Does this patient have a healthcare-associated infection (HAI)?
   a. No, because no culture was taken, this patient does not meet criteria of an HAI. The organism in the blood culture is a common skin contaminant and therefore because only one of the blood culture bottles is positive, this is not a bloodstream infection (BSI). She has no surgical site infection (SSI) because the wound was not cultured.
   b. Yes, this patient has a central line-associated (CLABSI) as she meets the Laboratory-confirmed Bloodstream Infection (LCBI) criterion 1-recognized pathogen from one or more blood cultures when a central line is present. She has no SSI because the wound was not cultured.
   c. Yes, this patient has a superficial incisional primary (SIP) SSIs.
   d. Yes, this patient meets criterion “b” of deep incisional primary (DIP) SSIs. The bloodstream infection is secondary to the SSI.

2. What is the date of the SSI?
   a. 7/2
   b. 7/3
   c. 7/4
   d. 7/11

3. Which month will the SS be attributed to?
   a. July
   b. June

4. In adding to the scenario, the wound dehisces further, beyond the fascia and a fluid collection is aseptically drained and sent for culture where is grows Bacteroides uniformis. Does this patient have an HAI? (Select the best answer).
   a. Yes, this patient has a superficial incisional primary (SIS) SSI.
   b. Yes, this patient has an Intraabdominal infection (IAB) organ/space surgical site infection (SSI-IAB) attributed to July
   c. Yes, this patient has a deep incisional primary (DIP) SSI.
   d. Yes, this patient has both a DIP SSI and IAB-SSI.
Answers:

- **#1 - (d) Yes, this patient meets criterion “b” of deep incisional primary (DIP) SSIs. The bloodstream infection is secondary to the SSI.**

  **Explanation:** The patient meets criteria “b” of DIP SSI: the infection occurred within 30 days of the operative procedure; appears related to the operative procedure; involves the deep soft tissue (e.g., fascial and muscle layers of the incision); the deep incision spontaneously dehisced and was not cultured; and the patient has fever and localized pain. Since the blood culture is positive for an organism that is common to the gastrointestinal tract, and no culture was taken from the wound, the BSI is considered secondary to the SSI. CLABSI must not be related to an infection at another site.

- **#2 – (a) 7/2**

  **Explanation:** HAIs are attributed to the date that the first clinical evidence occurred or the date the specimen used to make or confirm the diagnosis was first detected. The patient’s first symptom used to meet the criteria of SSI was the redness of the wound on 7/2.

- **#3 - (b) June**

  **Explanation:** SSIs are attributed to the operative procedure with which they are associated. This patient’s procedure was performed in June, although the date of the event (SSI) was not until July. This SSI will be included in the June SSI rates.

- **#4 – (c) Yes, this patient has a deep incisional primary (DIP) SSI.**

  **Explanation:** While the patient does have an abscess in the abdomen, because the infection involved the deep incisional layers as well as the organ/space, this is viewed as a complication of the incision. A reporting instruction in the NHSN SSI protocol states that “Occasionally an organ/space infection drains through the incision. Such infection generally does not involve re-operation and is considered a complication of the incision. Therefore, classify it as a deep incisional SSI.”
SSI #2

A 26 year-old female delivers a baby by C-Section on 8/23.

She is discharged on 8/27; her incision is clean, dry and there is no discomfort.

On her first postpartum visit to on 9/20, the physician notes yellow purulent drainage in the superficial incision.

1. Does this patient have a SSI (surgical site infection)?
   a. No, this patient did not have fever or pain at the site.
   b. Yes, this patient has a DIP (deep incisional primary) SSI.
   c. Yes, this patient has a SIP (superficial incisional primary) SSI.

Answer:
• #1 – (c) Yes, this patient has a SIP (superficial incisional primary) SSI.

Explanation: A superficial incisional primary infection is identified in the primary incision in a patient that has had an operation with one or more incisions.

A superficial incisional SSI occurs within 30 days of the procedure, involves only skin and subcutaneous tissue, and has at least one of the following (purulent drainage from the incision, organisms obtained from an aseptically cultured fluid or tissue) or one of the symptoms (pain or tenderness, localized swelling, redness, or heat) AND the incision is deliberately opened and is culture positive or not cultures, or diagnosis by the physician. A culture negative finding does not meet this criterion.
SSI #3

A 45 year-old man is admitted to the hospital on 6/18 for a colon resection (COLO). The surgery is uneventful, and the patient is now on the surgical floor.

On 6/22, the patient’s abdominal incision has purulent drainage and slight erythema and induration; the incision remains intact. A wound culture is obtained and sent to the lab. Subsequent results revealed *Enterobacter* species and *E. coli*. The patient is started on antibiotics.

1. **Does this patient have a SSI?**
   a. No, the surgeon did not have to reopen the sound, so the criteria are not met.
   b. Yes, this is a SSI-DIP.
   c. Yes, this is a SSI-SIP.

2. In adding to the scenario, the patient also spiked a temperature to 38.6°C on 6/22 and had blood cultures done along with the wound culture. The patient still had the subclavian TLC that was placed in the OR. The blood cultures subsequently revealed 1 of 2 *E. coli*. Would this change what is reported, if anything?
   a. Yes, the patient has a central line-associated blood stream infection in addition to the SSI since the patient had a central line in place at the time of the blood cultures.
   b. No, since the blood cultures were only 1 of 2 positive for *E. coli*, this probably represents a contaminant and only the SSI would be reported.
   c. Yes, the patient does have a SSI, but also has a secondary BSI.

Answers:
- #1 - (c) Yes, this is a SSI-SIP.
  **Explanation:** A superficial incisional primary infection is identified in the primary incision in a patient that has had an operation with one or more incisions.

  A superficial incisional SSI occurs within 30 days of the procedure, involves only skin and subcutaneous tissue, and has at least one of the following (purulent drainage from the incision, organisms obtained from an aseptically culture of fluid or tissue) or one of the symptoms (pain or tenderness, localized swelling, redness, or heat) AND the incision is deliberately opened and is culture positive or not cultures, or diagnosis by the physician. A culture negative finding does not meet this criterion.

- #2 - (c) Yes, the patient does have a SSI, but also has a secondary BSI.
  **Explanation:** The patient meets the criteria to a superficial incisional SSI and is the primary infection. The blood cultures revealed the same organism (*E. coli*) as identified at the incision site, so it is secondary. A primary BSI is not related to an infection at another site.