

Introduction

Welcome to the fifth publication of a joint effort between the American Journal of Infection Control and the Centers for Disease Control and Prevention's National Healthcare Safety Network (NHSN).

This collaboration is a series of case studies representing surveillance scenarios faced everyday by infection preventionists (IPs) using NHSN definitions.

All individual participant answers will remain confidential. You may choose to record your answers as you proceed through the exercise, as only the correct answer will be displayed during the feedback.

All cases, answers, and explanations have been reviewed and approved by NHSN.

For each question, please select the **most correct answer**. Unless otherwise specified, each question has only one correct answer.

Case Study and Questions

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. 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 her white blood cell count is 15,000/cmm. 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 one of two blood cultures are positive for *Bacteroides uniformis*.

*** Does this patient have a healthcare-associated infection (HAI)?**

- 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.
- Yes, this patient has a central line-associated (CLABSI) as she meets the Laboratory-confirmed Bloodstream Infection (LCBI) criterion 1- recognized pathogen cultured from one or more blood cultures when a central line is present. She has no SSI because the wound was not cultured.
- Yes this patient has a superficial incisional primary (SIP) SSI.
- Yes, this patient meets criterion "b" of deep incisional primary (DIP) SSI. The bloodstream infection is secondary to the SSI.

CASE DETAILS REPEATED

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. 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 her white blood cell count is 15,000/cmm. 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 one of two blood cultures are positive for *Bacteroides uniformis*.

QUESTIONS CONTINUE BELOW

*What is the date of SSI?

- 7/2
- 7/3
- 7/4
- 7/11

*Which month will the SSI be attributed to?

- June
- July

*In adding to the scenario, the wound dehisces further, beyond the fascia and a fluid collection is aseptically drained and sent for culture where it grows *Bacteroides uniformis*. Does the patient have an HAI? (select the best answer)

- Yes this patient has a superficial incisional primary (SIP) SSI.
- Yes, this patient has an intraabdominal infection (IAB) organ/space surgical site infection (SSI-IAB).
- Yes, this patient has a deep incisional primary (DIP) SSI.
- Yes, this has both a DIP SSI and an IAB-SSI.

Demographics: Optional

The following questions are optional but would be considered particularly useful for determining educational needs. Please respond with regards to your role and geographic location of your usual place of employment. The next page contains the answers to this case study.

State:

Country if not US:

Which of the following best describes your title/position?

- Infection Preventionist (IP)
- Medical Director of Infection Prevention
- Public Health (EIS, state based HAI program etc)

Other (please specify)

Case Study and Answers

Case 5

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. 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 her white blood cell count is 15,000/cmm. 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 one of two blood cultures are positive for *Bacteroides uniformis*.

1. Does this patient have a healthcare-associated infection (HAI)?

- o 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.
- o Yes, this patient has a central line-associated (CLABSI) as she meets the Laboratory-confirmed Bloodstream Infection (LCBI) criterion 1- recognized pathogen cultured from one or more blood cultures when a central line is present. She has no SSI because the wound was not cultured.
- o Yes this patient has a superficial incisional primary (SIP) SSI.
- o **Yes, this patient meets criterion "b" of deep incisional primary (DIP) SSI. The bloodstream infection is secondary to the SSI.**

Explanation

This patient meets criteria "b" of DIP SSI: The infection occurred within 30 days of the operative procedure; appears related to the operative procedure; involves 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. ^{1,2}

2. What is the date of the SSI?

- 7/2
- 7/3
- 7/4
- 7/11

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.³ This patient's first symptom used to meet the criteria of SSI was the redness of the wound on 7/2.

3. Which month will the SSI be attributed to?

- July
- June

Explanation: SSIs are attributed to the operative procedure with which they are associated.⁴ 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. In adding to the scenario, the wound dehisces further, beyond the fascia and a fluid collection is aseptically drained and sent for culture where it grows *Bacteroides uniformis*. Does the patient have an HAI? (select the best answer)

- Yes this patient has a superficial incisional primary (SIP) SSI.
- Yes, this patient has an intraabdominal infection (IAB) organ/space surgical site infection (SSI-IAB). July
- Yes, this patient has a deep incisional primary (DIP) SSI.**
- Yes, this has both a DIP SSI and an IAB-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 reoperation and is considered a complication of the incision. Therefore, classify it as a deep incisional SSI."*⁵

References

¹Centers for Disease Control and Prevention *The National Healthcare Safety Network Manual*. June,2010. p. 4-3.

Retrieved from National Healthcare Safety Network website:

http://www.cdc.gov/nhsn/PDFs/pscManual/4PSC_CLABSCurrent.pdf

² Centers for Disease Control and Prevention *The The NHSN E-News May, 2009* May, 2009. p. 4. Retrieved from

National Healthcare Safety Network website: <http://www.cdc.gov/nhsn/PDFs/Newsletters/May09.pdf>

³ Centers for Disease Control and Prevention *The National Healthcare Safety Network Manual*. May, 2010. p. 14-28.

Retrieved from National Healthcare Safety Network website:

http://www.cdc.gov/nhsn/PDFs/pscManual/14_Tables_of_Instructions.pdf

⁴ Centers for Disease Control and Prevention *The National Healthcare Safety Network Manual*. June, 2010. p. 9-13.

Retrieved from National Healthcare Safety Network website:

<http://www.cdc.gov/nhsn/PDFs/pscManual/9pscSSIcurrent.pdf>

⁵ Centers for Disease Control and Prevention *The National Healthcare Safety Network Manual*. June, 2010. p. 9-10.

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