

New Hampshire Healthcare-Associated Infections Annual NHSN Workshop: May 4, 2017

Case Studies

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Overview: Case studies

- Purpose: Optimize inter-rater reliability, data quality, and learn how to use definitions correctly
- Surveillance \neq clinical
- For Surgical Site Infections (SSI)
 - BRST
 - HER
 - FX

SSI: Case 1

- A patient had a bilateral breast (BRST) implant during a single trip to the OR
 - Left BRST incision at 0823 and closed at 0950
 - Right BRST incision at 1003 and closed at 1133

SSI: Case 1

- Which statement is true?
 - One BRST procedure should be reported with a combined duration of 2 hrs and 57 mins
 - Two separate BRST procedures should be reported, each with a duration of 2 hrs and 57 mins
 - ➔ Two separate BRST procedures should be reported: L BRST with duration of 1 hr 27 mins and R BRST with duration of 1 hr 30 min

SSI: Case 1 rationale

- For bilateral operative procedures, two separate denominators for procedure records are recorded.
- To document the duration of the procedures, indicate the incision time to closure time for each procedure separately **OR**
- Take the total time for each procedures and split it evenly between the two

SSI: Case 2

- 6/18: 45 yo male had a hernia procedure
- 6/22: Patient's abdominal incision has purulent drainage from subcutaneous tissue and slight erythema and induration; incision is intact
 - Wound drainage specimen to lab for culture (6/24: Grew *Enterobacter* spp and *E. coli*)
 - Patient started on antibiotics

SSI: Case 2

- What should be reported to NHSN?
 - Nothing. The surgeon did not open the wound, so the criteria are not met.
 - Nothing. It is an SSI, but not an HAI
 - ➔ SSI - SIP
 - SSI - DIP

SSI: Case 2 rationale

- ➔ Infection occurs within 30 days after any NHSN operative procedure and
- ➔ Involves only skin and subcutaneous tissues of the incisions and
- ➔ Patient has at least one of the following:
 - ✦ Purulent drainage from superficial incision
 - ✦ Organisms isolated from aseptically-obtained culture or fluid or tissue for superficial incision
 - Superficial incision that is deliberately opened by a surgeon and is culture positive or not cultured AND patient has at least one of the following signs or symptoms: pain or tenderness; localized swelling, redness; or heat
 - Diagnosis of superficial incisional SSI by surgeon or attending physician

SSI: Case 3

- Patient is admitted to ASC on 4/12 for elective surgery, previous active MRSA screening test is positive
- Patient undergoes HER
- Postop course is unremarkable and patient goes home same day

SSI: Case 3

- On 4/29, patient is admitted to local hospital with complaints of acute incisional pain since day before. A surgeon opens the wound into the fascial level and sent drainage specimen for culture and sensitivities
- On 5/1, culture results are positive for MRSA

SSI: Case 3

- Is this an HAI?

 - ➔ YES

 - NO

- How would you find out about this case?

SSI: Case 3

- What infection should be reported?
 - SSI - SIP
 - SSI - SIS
 - ➔ SSI - DIP
 - SSI - DIS
 - SSI - IAB

SSI: Case 3 rationale

- ➔ Infection occurs within 30 or 90 days and
- ➔ Involves deep soft tissues of the incision (e.g., fascial and muscle layers) and
- ➔ Patient has at least one of the following:
 - Purulent drainage from deep incision
 - ★ A deep incision that spontaneously dehisces or is deliberately opened by a surgeon and is culture positive or not cultured AND patient has at least one of the following signs and symptoms: fever, localized pain or tenderness
 - An abscess or other evidence of infection involving deep incision
 - Diagnosis of DIP

***DIP criterion b**

SSI: Case 3

- If so, what is the date of the event?
 - 4/29, the date the last element used to meet the infection criterion occurred (i.e., date of deliberate wound opening and positive drainage specimen obtained)

Date of event	For an HAI (excludes VAE), the date of event is the date when the <u>last</u> element used to meet the CDC/NHSN site-specific infection criterion occurred. Synonyms: infection date, date of infection. (See Date of Onset for VAE reporting). Date of event must be within 30 days or 90 days of the date of procedure, depending on the operative procedure category (See Table 3; Chapter 9).
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SSI: Case 3

- When is it not an HAI?
 - Colonization (presence of microorganisms on skin, mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms)
 - Inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals

SSI: Case 4

- Patient has FX procedure with implant and goes home same day
- 34 days later, has purulent drainage
- Patient comes in for follow-up
 - Culture is positive for *S. aureus*
- Treated with antibiotics

SSI: Case 4

- Is this an SSI?

- ➔ Yes

- No

- How should this be reported?

- SSI - SIP

- SSI - DIP

- ➔ Don't report because of infection type and surveillance window

SSI: Case 4 rationale

- Infection meets criteria for superficial infection, except it doesn't occur within 30 days
- SSI - SIP is not reported after 30 days; only SSI - DIP or organ space infections can be reported after 30 days
- If infection continues in depth and severity AND meets SSI - DIP or organ space criteria within 90 days, you would need to report this case
 - All FX, HER, and BRST procedures have 90 day follow-up

SSI: Case 5

- 5/6: Patient has bilateral breast augmentation
 - Post-op course unremarkable and patient sent home
- 5/15: patient calls ASC with tenderness and redness at incision on right breast
- 5/16: patient goes in for follow-up visit
 - R breast incision has purulent drainage
 - L breast incision slightly red but no drainage

SSI: Case 5


- Is this an SSI?

-  Yes

- No

- How should it be reported?

- Report/link SSI on right breast to both procedures

-  Report/link SSI on the right breast to procedure for right breast

- Report/link SSI on the right to procedure on right AND report/link SSI on the left breast to procedure for left breast

SSI: Case 5 rationale

- Infection should only be attributed to the procedure that most likely caused infection
 - Not both incisions, because this would be a duplicate SSI event
 - The redness on the left incision is not enough to meet criteria

SSI: Case 5

- 5/26:
 - Patient goes to primary care and purulent drainage is noted from the left incision
 - Culture positive for MRSA
- Is this reportable?
 - ➔ Yes, because this is a different incision with separate denominator form filled out in NHSN
 - No, because already reported and infection could be attributed to infection from right incision

SSI: Case 6

- 1/22: Patient has laparoscopic HER procedure
- 2/1: Abdominal pain with purulent drainage in 2 of 3 trocar sites, temp 38.4 C
- 2/3: Patient goes to ER and surgeon opens wounds in ER and noted purulent material in the fascial layer; specimens to lab for culture; antibiotics begun
- 2/5: Cultures come back positive for *Pseudomonas aeruginosa*

SSI: Case 6

● Is this an SSI?

➔ Yes

● No

● What type of SSI?

➔ DIP

● SIP

A deep incisional SSI must meet one of the following criteria:

✓ ■ Infection occurs within 30 or 90 days after the NHSN operative according to the list in Table 3.

and

✓ ■ involves deep soft tissues of the incision (e.g., fascial and muscle layers) of the incision

and

patient has at least one of the following:

✓ ■ a. purulent drainage from the deep incision

■ b. a deep incision spontaneously dehisces...

■ c. And abscess or other evidence of infection is found...

SSI: Case 7

- Patient had an open reduction external fixation of the L. tibia (FX procedure) on Nov 12
- Patient was readmitted on Dec 3 with purulent drainage growing MRSA from the proximal pin site, which is not contiguous with the incision
 - Patient also had a matching positive blood culture

SSI: Case 7

- What should be reported?
 - SSI - SIP and secondary BSI
 - Primary BSI
 - SSI - SIP only
 - ➔ None of the above

SSI: Case 7 rationale

- The infection is at the pin site and not the incision site
- The positive blood culture may make you suspect osteomyelitis, but the organ/space SSI criteria are not met
- The pin site infection and BSI occurred more than 2 calendar days after the procedure/discharge, and cannot be associated with the ASC procedure

SSI: Question 1

- Which of the following does not meet the criteria for superficial incisional SSI if identified within 30 days after the procedure?
 - Physician documents “superficial wound infection”
 - Purulent drainage noted from upper aspect of incision
 - ➔ Physician documents “cellulitis”
 - MRSA grows from an aseptically obtained swab of the superficial incision

SSI: Question 2

- Are pins in ORIF (FX) procedures considered implants?
 - No, because they are not permanently placed. Any screws, plates, or rods used are considered implants

SSI: Question 3

- An infection following a procedure at your facility is detected at another facility.
- Do you need to report this?
 - ➔ Yes
 - No

9. **SSI detected at another facility:** It is required that if an SSI is detected at a facility other than the one in which the operation was performed, the IP of the index facility will be provided with enough detail so the infection can be reported to NHSN. When reporting the SSI, the index facility should indicate that Detected = RO – (Readmission to facility other than where procedure was performed).

SSI: Question 4

● How long do you need to follow a procedure?

- BRST?
- HER?
- FX?

All need to be followed for 90 days unless it is SSI SIP.

90-day Surveillance	
Code	Operative Procedure
BRST	Breast surgery
CARD	Cardiac surgery
CBGB	Coronary artery bypass graft with both chest and donor site incisions
CBGC	Coronary artery bypass graft with chest incision only
CRAN	Craniotomy
FUSN	Spinal fusion
FX	Open reduction of fracture
HER	Herniorrhaphy
HPRO	Hip prosthesis
KPRO	Knee prosthesis
PACE	Pacemaker surgery
PVBY	Peripheral vascular bypass surgery
RFUSN	Refusion of spine
VSHN	Ventricular shunt

NOTE: Superficial incisional SSIs are only followed for a 30-day period for all procedure types.

Resources

- NHSN protocols
- NHSN expertise in the state:
 - NH HAI program
 - NHCQF
 - Foundation for Healthy Communities
 - Other ICPs
- NHSN at CDC
 - Email: nhsn@cdc.gov
 - Case study webinars:
<http://www.cdc.gov/nhsn/acute-care-hospital/ssi/index.html>



Acknowledgements

- Case studies adopted from:
 - CDC NHSN SSI protocol
 - <https://www.signup4.net/Upload/AVAR10A/TEST2089E/5-%20SSI%20case%20studies%20answers%20final.pdf>
 - NH ASCs/Hospitals

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