Patient Safety Component
Surgical Site Infection Event (SSI) Case Studies

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Objectives

By the end of this lesson, you will be able to:

- Correctly apply the SSI protocol utilizing case study scenarios
- Clarify areas of the SSI protocol using case study scenarios
- Review and understand Frequently Asked Questions (FAQs) in the context of case study scenarios

Additional SSI Training

- On-demand: *Surgical Site Infection (SSI) Surveillance: Where to start?*
  - Identify data points necessary to perform effective SSI surveillance and reporting to NHSN
  - Navigate the NHSN website effectively to access protocols and resources and to report SSI events and procedures
- 3/22: *Surgical Site Infection Event (SSI) Surveillance*
  - Foundational concepts of SSI surveillance
  - Defining the NHSN operative procedure and SSI event
  - Definitions and reporting instructions for accurate denominator for procedure and SSI event determinations
- This training will not address data analysis

Resources

- NHSN Surgical Site Infection (SSI) Events
  - https://www.cdc.gov/nhsn/psc/ssi/index.html
- Patient Safety Component Manual Chapter 9: Surgical Site Infection Event (SSI) Protocol
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf
- Patient Safety Component Manual Chapter 17: CDC/NHSN Surveillance Definitions for Specific Types of Infections
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosinfdef_current.pdf
- FAQs:
  - Surgical Site Infections (SSI) Events
    - https://www.cdc.gov/nhsn/faqs/faq-ssi.html
  - Surgical Site Procedure Codes
    - https://www.cdc.gov/nhsn/faqs/faq-ssi-proc-codes.html

Surgical Site Infection Case Scenarios

Scenario 1

- On 1/8, a 39-year-old female underwent a HYST (Abdominal Hysterectomy) procedure and was designated as ‘observation’ status. The patient was discharged on 1/9. On 1/15. the patient is seen in the provider office where it is noted by the Nurse Practitioner the lower aspect of the abdominal incision with ‘slight thick yellow drainage’. A culture of this drainage was performed (which subsequently resulted “No Growth”) and an antibiotic was ordered out of caution.

Scenario 1: Knowledge Check 1a

Is this HYST procedure an NHSN inpatient operative procedure or an NHSN outpatient operative procedure?

A. NHSN inpatient operative procedure
B. NHSN outpatient operative procedure

Scenario 1: Knowledge Check 1a – Answer and Rationale

Correct answer:

A. NHSN inpatient operative procedure

- The admission and discharge dates are different calendar days.
  - 1/8 admit
  - 1/9 discharge
- The local billing status of 'observation' has no bearing on the NHSN determination. This approach allows for standardization and consistency in reporting across all NHSN reporting facilities.

NHSN Inpatient Operative Procedure:
An NHSN operative procedure performed on a patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

Scenario 1: Knowledge Check 1b

Does the patient have an SSI?

A. Yes – Superficial Incisional SSI ‘a’ met
B. No – The culture performed was No Growth

Scenario 1: Knowledge Check 1b – Answer and Rationale

Correct answer:

A. Superficial Incisional SSI ‘a’ met

- Descriptors ‘*thick, yellow*’ are acceptable as purulence
- The fact that the culture was No Growth doesn’t exclude Superficial Incisional SSI ‘a’ citation

SSI Events FAQ #9

Clarification of SSI Criterion – Purulence

Q9. Does NHSN have a definition for purulence?

There is no standard, clinically agreed upon definition for purulence. For NHSN surveillance purposes, the descriptors "pus" or "purulence" are sufficient gross anatomic evidence of infection. When the terms 'pus' or 'purulence' are not written in the medical record, NHSN has allowed determinations for purulence based off descriptors. Documentation that uses a color descriptor and a consistency descriptor (from the list below) in combination is acceptable to indicate 'purulence'. For example, fluid only described as yellow, or only described as thick, is not sufficient. However, if the terms are combined, then they may be more representative of purulence (for example: fluid described as thick and yellow).

Color

Green

Yellow

Consistency

Milky

Thick

Creamy

Opaque

Viscous

NOTE: The following descriptors cannot be used to define purulence/infection: 'Cloudy', 'turbid', 'murky' or the odor of a wound.

Gram stain results such as WBCs or PMNs cannot be used to define purulence within the SSI protocol [PDF – 1 MB].

Scenario 1: Knowledge Check 1c

Should you continue to monitor this patient for a deeper level of SSI?

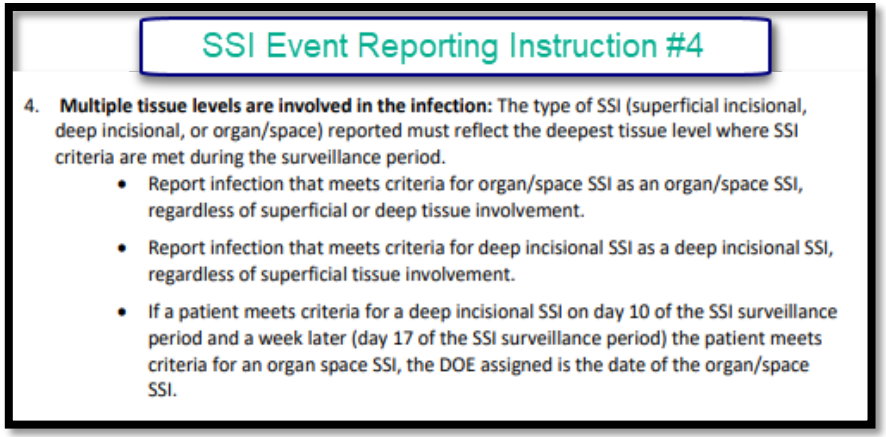
A. No – This finding is sufficient for SSI event reporting
B. Yes – Continue to monitor the patient for a deeper level of SSI within the surveillance period

Scenario 1: Knowledge Check 1c – Answer and Rationale

Correct answer:

B. Yes – Continue to monitor the patient for a deeper level of SSI within the surveillance period

- All procedures included in the NHSN monthly surveillance plan are monitored for superficial incisional, deep incisional, and organ/space SSI events and the type of SSI reported must reflect the deepest tissue level where SSI criteria are met during the surveillance period.



SSI Event Reporting Instruction #4

4. **Multiple tissue levels are involved in the infection:** The type of SSI (superficial incisional, deep incisional, or organ/space) reported must reflect the deepest tissue level where SSI criteria are met during the surveillance period.
   - Report infection that meets criteria for organ/space SSI as an organ/space SSI, regardless of superficial or deep tissue involvement.
   - Report infection that meets criteria for deep incisional SSI as a deep incisional SSI, regardless of superficial tissue involvement.
   - If a patient meets criteria for a deep incisional SSI on day 10 of the SSI surveillance period and a week later (day 17 of the SSI surveillance period) the patient meets criteria for an organ space SSI, the DOE assigned is the date of the organ/space SSI.

Scenario 2

- On 5/20, a patient went to the OR for COLO (Colon surgery) and SB (Small bowel surgery) procedures where the operative narrative described a large phlegmonous collection in the anterior pelvis. On 5/24, the patient began to complain of intense abdominal pain with a fever recorded of 101.9. On 5/24, a CT of the abdomen/pelvis was performed that noted a new fluid collection within the right lower quadrant. The patient was taken back to surgery on 5/25, for another COLO where an abscess was seen within the intraabdominal cavity.

- On 5/29, the patient complained of abdominal tenderness and returned to the OR on 5/29, for an XLAP (Exploratory laparotomy) procedure to explore the surgical site. Some debridement occurred within the deep soft tissues into the organ/space but no cultures were performed from any tissue level. The patient was hospitalized from 5/20 until 6/8.

Scenario 2: Knowledge Check 2a

The facility monitors inpatient COLO, SB, and XLAP in their Monthly Reporting Plan. How many COLO procedures are reported for this patient for May?

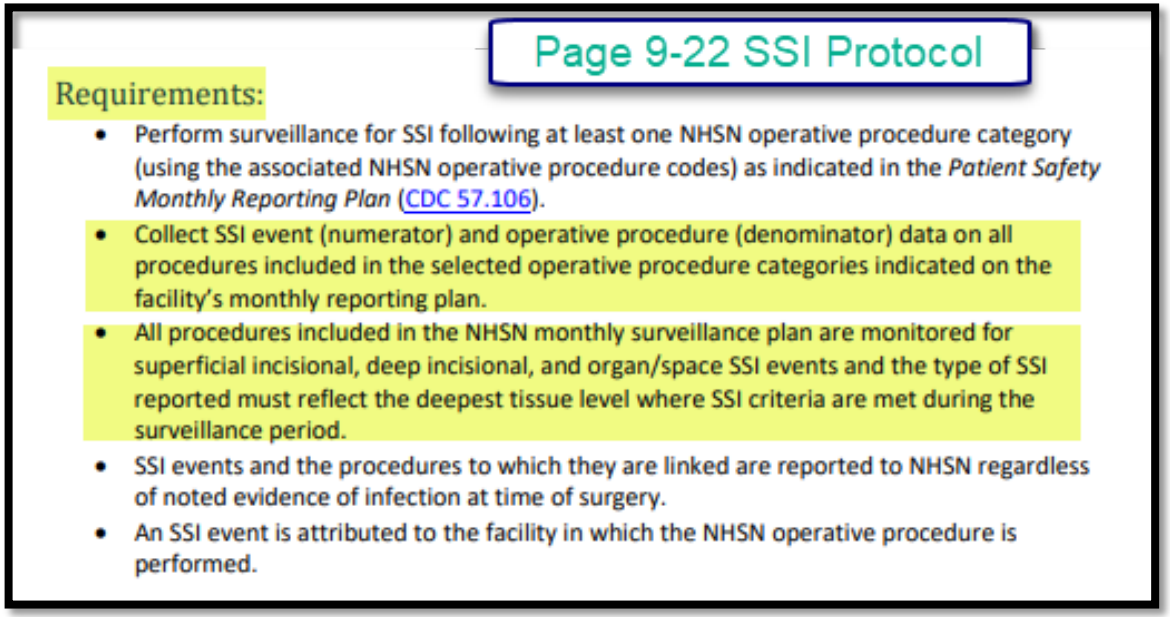
A. 1
B. 2

Scenario 2: Knowledge Check 2a – Answer and Rationale

Correct answer:

B. 2

- All qualifying COLO procedures get reported and monitored for SSI for this patient



Scenario 2: Knowledge Check 2b

Is there an SSI event linked to the 5/20 operative episode?

A. Yes
B. No

Scenario 2: Knowledge Check 2b – Answer and Rationale

Correct answer:

A. Yes

- General organ/space SSI criterion ‘c’ met
- IAB (Intraabdominal infection) criterion ‘2a’ met

On 5/20 a patient went to the OR for COLO (Colon surgery) and SB (Small bowel surgery) procedures where the operative narrative described a large phlegmonous collection in the anterior pelvis. On 5/24 the patient began to complain of intense abdominal pain with a fever recorded of 101.9. On 5/24 a CT of the abdomen/pelvis was performed that noted a new fluid collection within the right lower quadrant. The patient was taken back to surgery on 5/25 for another COLO where an abscess was seen within the intraabdominal cavity.

Scenario 2: Knowledge Check 2b

Organ/Space SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure

AND

patient has at least ***one*** of the following:

a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage)

b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])

c. an abscess or other evidence of infection involving the organ/space detected on:

- gross anatomical exam or
- histopathologic exam or
- imaging test evidence definitive or equivocal for infection

AND

meets at least ***one*** criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections (Chapter 17).

IAB-Intraabdominal infection, not specified elsewhere, including gallbladder, bile ducts, liver (excluding viral hepatitis), spleen, pancreas, peritoneum, retroperitoneal, subphrenic or subdiaphragmatic space, or other intraabdominal tissue or area not specified elsewhere

Intraabdominal infections must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from an abscess or from purulent material from intraabdominal space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least one of the following:
   a. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam.
   b. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam
   (See Reporting Instructions)
   AND
   organism(s) identified from blood by a culture or non-culture based microbiologic testing method, which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one MBI organism on the NHSN Organism List that can be accessed via the spreadsheet or the new NHSN Terminology Browser.

How do I know which Chapter 17 definition corresponds with the surgical procedure category?

- Appendix A

COLO - Colon surgery	DIP - Deep Incisional Primary GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere OREP - Deep pelvic tissue infection or other infection of the male or female reproductive tract SIP - Superficial Incisional Primary USI - Urinary System Infection

APPENDIX A

Specific event types available for SSI attribution by NHSN procedure category

Operative Procedure Category	Specific Event Type
AAA - Abdominal aortic aneurysm repair	DIP - Deep Incisional Primary ENDO - Endocarditis GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary VASC - Arterial or venous infection
AMP - Limb amputation	BONE - Osteomyelitis DIP - Deep Incisional Primary JNT - Joint or bursa SIP - Superficial Incisional Primary
APPY - Appendix surgery	DIP - Deep Incisional Primary GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary
AVSD - AV shunt for dialysis	DIP - Deep Incisional Primary SIP - Superficial Incisional Primary VASC - Arterial or venous infection
BILI - Bile duct, liver or pancreatic surgery	DIP - Deep Incisional Primary GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary
BRST - Breast surgery	BRST - Breast abscess or mastitis DIP - Deep Incisional Primary DIS - Deep Incisional Secondary SIP - Superficial Incisional Primary SIS - Superficial Incisional Secondary
CARD - Cardiac surgery	BONE - Osteomyelitis CARD - Myocarditis or pericarditis DIP - Deep Incisional Primary ENDO - Endocarditis

Scenario 2: Knowledge Check 2c

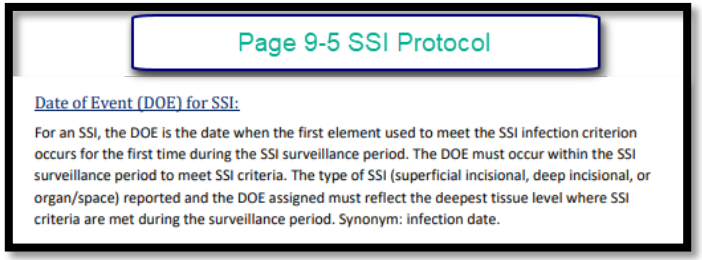
What is the SSI Date of Event (DOE)?

A. 5/20
B. 5/24
C. 5/25
D. No SSI therefore no SSI DOE

Scenario 2: Knowledge Check 2c – Answer and Rationale

Correct answer:

B. 5/24


Page 9-5 SSI Protocol

Date of Event (DOE) for SSI:

For an SSI, the DOE is the date when the first element used to meet the SSI infection criterion occurs for the first time during the SSI surveillance period. The DOE must occur within the SSI surveillance period to meet SSI criteria. The type of SSI (superficial incisional, deep incisional, or organ/space) reported and the DOE assigned must reflect the deepest tissue level where SSI criteria are met during the surveillance period. Synonym: infection date.

- The SSI DOE is the date when the first element used to meet the SSI infection criterion occurs for the first time during the SSI surveillance period.

On 5/20 a patient went to the OR for COLO (Colon surgery) and SB (Small bowel surgery) procedures where the operative narrative described a large phlegmonous collection in the anterior pelvis. On 5/24 the patient began to complain of intense abdominal pain with a fever recorded of 101.9. On 5/24 a CT of the abdomen/pelvis was performed that noted a new fluid collection within the right lower quadrant. The patient was taken back to surgery on 5/25 for another COLO where an abscess was seen within the intraabdominal cavity.

Scenario 2: Knowledge Check 2d

What do you indicate for the Infection Present at Time of Surgery (PATOS) question found on the SSI event form?

A. PATOS = Yes
B. PATOS = No
C. No SSI therefore you don’t review for PATOS

Scenario 2: Knowledge Check 2d – Answer and Rationale

Correct answer:

A. PATOS = Yes

Examples of verbiage that is considered evidence of infection include but are not limited to: abscess, infection, purulence/pus, phlegmon, osteomyelitis, or "feculent peritonitis". A ruptured/perforated appendix is evidence of infection at the organ/space level.

- Organ/space infection noted at time of the 5/20 surgery within the operative narrative.
- Subsequent organ/space SSI [IAB] event.
- Same tissue level of infection

SSI Event Reporting Instruction #3

a) Only select PATOS = YES when it applies to the depth of the SSI that is being attributed to the procedure. Examples:
   - When a patient has documentation of an intraabdominal infection at time of surgery and then later returns with an organ/space SSI, PATOS = YES.
   - When a patient has documentation of an intraabdominal infection at time of surgery and then later returns with a superficial or deep incisional SSI, PATOS = NO.

On 5/20 a patient went to the OR for COLO (Colon surgery) and SB (Small bowel surgery) procedures where the operative narrative described a large phlegmonous collection in the anterior pelvis.

Scenario 2: Knowledge Check 2e

Which procedure gets the SSI attribution?

A. COLO
B. SB
C. No SSI therefore do not need to determine SSI attribution

Scenario 2: Knowledge Check 2e – Answer and Rationale

Correct answer:

A. COLO

- Table 4 used since SSI attribution not clear
- SSI attribution to COLO

SSI Event Reporting Instruction #9

9. **SSI attribution after multiple categories of NHSN procedures are performed during a single trip to the OR:** When more than one NHSN operative procedure category is performed through a single incision/laparoscopic site(s) during a single trip to the operating room, attribute the SSI to the procedure associated to the infection. When attribution is not clear, as is often the case when the infection is an incisional SSI, use the NHSN Principal Operative Procedure Category Selection Lists (Table 4) to select the operative procedure to which the SSI should be attributed. For example, when a patient meets criteria for an SSI after a single trip to the OR in which both a COLO and SB were performed, and the source of the SSI is not apparent, assign the SSI to the COLO procedure per Table 4. The final decision for SSI attribution lies with the local facility based on the full details of the case.

Table 4. NHSN Principal Operative Procedure Category Selection List

(The categories with the highest risk of SSI are listed before those with lower risks.)

Priority	Category	Abdominal Operative Procedures
1	LTP	Liver transplant
2	COLO	Colon surgery
3	BILI	Bile duct, liver or pancreatic surgery
4	SB	Small bowel surgery
5	REC	Rectal surgery
6	KTP	Kidney transplant
7	GAST	Gastric surgery
8	AAA	Abdominal aortic aneurysm repair
9	HYST	Abdominal hysterectomy
10	CSEC	Cesarean section
11	XLAP	Laparotomy
12	APPY	Appendix surgery
13	HER	Herniorrhaphy
14	NEPH	Kidney surgery
15	VHYS	Vaginal hysterectomy
16	SPLE	Spleen surgery
17	CHOL	Gall bladder surgery
18	OVRY	Ovarian surgery
Priority	**Category**	**Thoracic Operative Procedures**
1	HTP	Heart transplant
2	CBGB	Coronary artery bypass graft with donor incision(s)
3	CBGC	Coronary artery bypass graft, chest incision only
4	CARD	Cardiac surgery
5	THOR	Thoracic surgery
Priority	**Category**	**Neurosurgical (Brain/Spine) Operative Procedures**
1	VSHN	Ventricular shunt
2	CRAN	Craniotomy
3	FUSN	Spinal fusion
4	LAM	Laminectomy
Priority	**Category**	**Neck Operative Procedures**
1	NECK	Neck surgery
2	THYR	Thyroid and or parathyroid surgery

Scenario 2: Knowledge Check 2f

Is there an SSI event linked to the 5/25 operative episode (COLO)? If so, what type of SSI?

A. No SSI event is linked to the 5/25 COLO
B. Yes, Deep Incisional SSI event
C. Yes, Organ/Space IAB event

Scenario 2: Knowledge Check 2f – Answer and Rationale

Correct answer:

B. Yes, Deep Incisional SSI Event

- Deep Incisional SSI criterion 'b' is met
- Documentation doesn't support organ/space SSI.
- SSI DOE = 5/29

On 5/29 the patient complained of abdominal tenderness and returned to the OR on 5/29 for an XLAP (Exploratory laparotomy) procedure to explore the surgical site. Some debridement occurred within the deep soft tissues into the organ/space but no cultures were performed from any tissue level. The patient was hospitalized from 5/20 until 6/8.

Deep incisional SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves deep soft tissues of the incision (for example, fascial and muscle layers)

AND

patient has at least ***one*** of the following:

a. purulent drainage from the deep incision

b. a deep incision that is deliberately opened or aspirated by a surgeon, physician* or physician designee or spontaneously dehisces

AND

organism(s) identified from the deep soft tissues of the incision by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST]) or culture or non-culture based microbiologic testing method is not performed. A culture or non-culture based test from the deep soft tissues of the incision that has a negative finding does not meet this criterion.

AND

patient has at least ***one*** of the following signs or symptoms: fever (>38°C); localized pain or tenderness

c. an abscess or other evidence of infection involving the deep incision detected on gross anatomical exam, histopathologic exam, or imaging test

* The term physician for the purpose of application of the NHSN SSI criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).

Scenario 2: Knowledge Check 2g

How is the PATOS question answered on the SSI event form for the SSI linked to the 5/25 COLO procedure?

A. PATOS = Yes

B. PATOS = No

Scenario 2: Knowledge Check 2g – Answer and Rationale

Correct answer:

B. PATOS = No

- Organ/space infection noted at time of the 5/25 surgery within the operative narrative.
- Subsequent Deep Incisional SSI event
- Different tissue levels of infection, therefore PATOS = No.

> The patient was taken back to surgery on 5/25 for another COLO where an abscess was seen within the intraabdominal cavity.

Scenario 3

- On 2/11 a patient undergoes bilateral KPRO (Knee prosthesis) procedures with qualifying KPRO codes assigned to each procedure. The patient was discharged on 2/22 with plans to follow up with the surgeon in one week. At time of follow up, on 2/28, the patient is noted with redness and pain at their right KPRO surgical site. There is some slight yellow drainage at the superficial tissue level of the right knee that the surgeon cultures and *Staphylococcus aureus* is identified. The left KPRO side was noted clean/dry/intact (C/D/I). The surgeon elects to monitor the right knee and wants to see the patient back within the next week.

- On 3/2 the patient is seen in the Emergency Department with complaints of increased pain at the right knee surgical site. An aspiration of the right knee joint is performed and *Staphylococcus aureus* is subsequently identified. Blood cultures are performed and *Staphylococcus aureus* is subsequently identified. The patient is admitted on 3/2 and goes to the OR on 3/3 where additional cultures from the knee joint are performed and *Staphylococcus aureus* is identified. The left KPRO surgical site continues to be CDI and is not of concern.

Scenario 3: Knowledge Check 3a

How many KPRO procedures are reported for this patient (KPRO is included in the facility MRP)?

A. 1

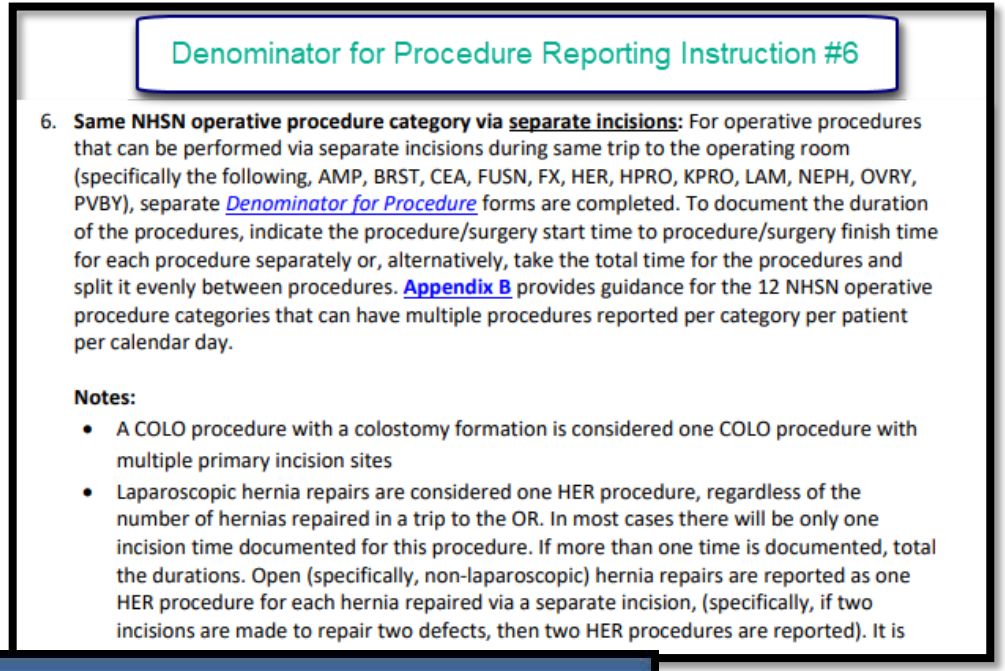
B. 2

Scenario 3: Knowledge Check 3a – Answer and Rationale

Correct answer:

B. 2

- Two KPRO procedures are performed, a right KPRO and a left KPRO.
- See appendix B of the protocol



Denominator for Procedure Reporting Instruction #6

6. **Same NHSN operative procedure category via separate incisions:** For operative procedures that can be performed via separate incisions during same trip to the operating room (specifically the following, AMP, BRST, CEA, FUSN, FX, HER, HPRO, KPRO, LAM, NEPH, OVRY, PVBY), separate *Denominator for Procedure* forms are completed. To document the duration of the procedures, indicate the procedure/surgery start time to procedure/surgery finish time for each procedure separately or, alternatively, take the total time for the procedures and split it evenly between procedures. **Appendix B** provides guidance for the 12 NHSN operative procedure categories that can have multiple procedures reported per category per patient per calendar day.

Notes:

- A COLO procedure with a colostomy formation is considered one COLO procedure with multiple primary incision sites
- Laparoscopic hernia repairs are considered one HER procedure, regardless of the number of hernias repaired in a trip to the OR. In most cases there will be only one incision time documented for this procedure. If more than one time is documented, total the durations. Open (specifically, non-laparoscopic) hernia repairs are reported as one HER procedure for each hernia repaired via a separate incision, (specifically, if two incisions are made to repair two defects, then two HER procedures are reported). It is

Operative Procedure Category	Maximum # Of Procedures Per Day	Explanation
KPRO - Knee prosthesis	2	Corresponds to the left knee and right knee.

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Scenario 3: Knowledge Check 3b

An infection is identified at the right KPRO surgical site, what should be reported?

A. Superficial Incisional SSI
B. Deep Incisional SSI
C. Organ/space SSI PJI – Periprosthetic Joint Infection
D. No SSI is reported – invasive manipulation of the right knee surgical site occurred in the ED

Scenario 3: Knowledge Check 3b – Answer and Rationale

Correct answer:

C. Organ/Space SSI PJI - Periprosthetic Joint Infection

- General organ/space SSI criterion ‘b’ met
- PJI (Periprosthetic joint infection) criterion ‘1’ met

On 3/2 the patient is seen in the Emergency Department with complaints of increased pain at the right knee surgical site. An aspiration of the right knee joint is performed and *Staphylococcus aureus* is subsequently identified. Blood cultures are performed and *Staphylococcus aureus* is subsequently identified. The patient is admitted on 3/2 and goes to the OR on 3/3 where additional cultures from the knee joint are performed and *Staphylococcus aureus* is identified. The left KPRO surgical site continues to be CDI and is not of concern.

Scenario 3: Knowledge Check 3b - Rationale

Organ/Space SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure

AND

patient has at least ***one*** of the following:

a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage)

b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])

c. an abscess or other evidence of infection involving the organ/space detected on:

- gross anatomical exam or
- histopathologic exam or
- imaging test evidence definitive or equivocal for infection

AND

meets at least ***one*** criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections (Chapter 17).

PJI – Periprosthetic Joint Infection (for use as Organ/Space SSI following HPRO and KPRO only)

Joint or bursa infections must meet at least ***one*** of the following criteria:

1. ***Two*** positive periprosthetic specimens (*tissue or fluid*) with at least one matching organism, identified by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. A sinus tract* communicating with the joint identified on gross anatomic exam.
3. Having ***three*** of the following minor criteria:
   a. elevated serum C-reactive protein (CRP; >100 mg/L) ***and*** erythrocyte sedimentation rate (ESR; >30 mm/hr.)
   b. elevated synovial fluid white blood cell (WBC; >10,000 cells/μL) count *OR* "++" *(or greater)* change on leukocyte esterase test strip of synovial fluid.
   c. elevated synovial fluid polymorphonuclear neutrophil percentage (PMN% >90%)
   d. positive histological analysis of periprosthetic tissue (>5 neutrophils (PMNs) per high power field).
   e. organism(s) identified from a single positive periprosthetic specimen (*tissue or fluid*) by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

* A sinus tract is defined as a narrow opening or passageway that can extend in any direction through soft tissue and results in dead space with potential for abscess formation.

Comments:

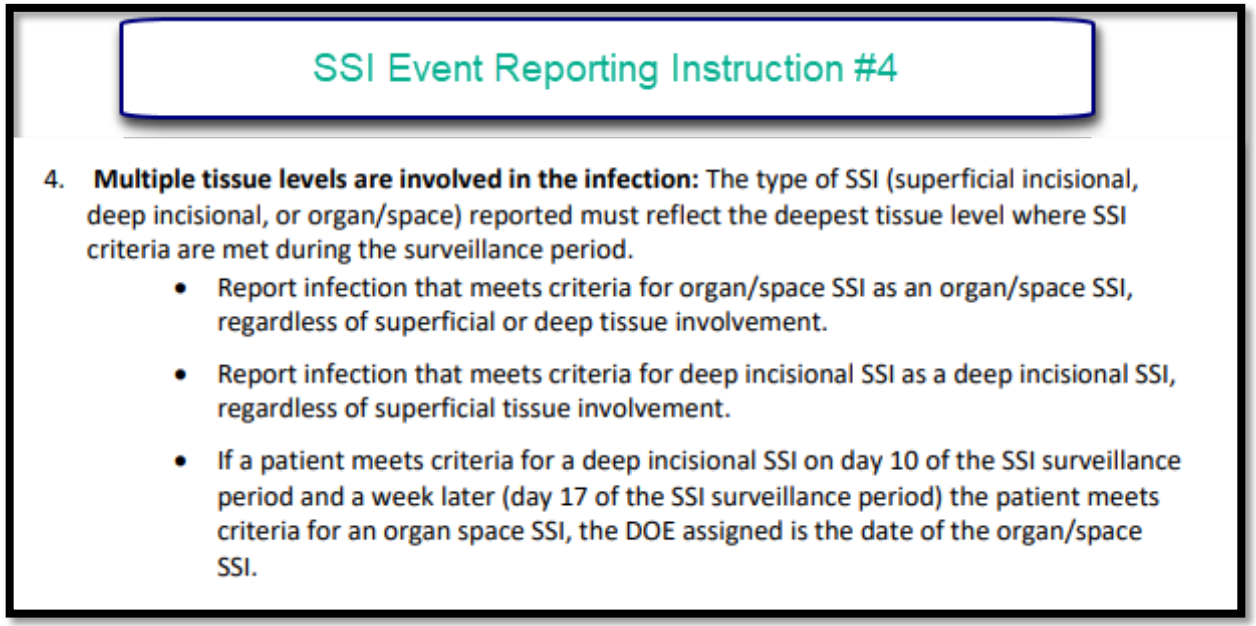
- A matching organism is defined on page 17-1. Organism(s) identified from hip or knee hardware can be used to meet criterion 1.
- The NHSN definition of PJI is closely adapted from the Musculoskeletal Infection Society's (MSIS's) definition of PJI (*Proceedings of the International Consensus Meeting on Periprosthetic Joint Infection, 2013*).
- The standard laboratory cutoff values in criteria 3a - 3d are provided by NHSN for HPRO and KPRO SSI surveillance purposes only. The NHSN laboratory cutoffs are not intended to guide clinicians in the actual clinical diagnosis and management of acute or chronic PJI. Clinicians should refer to the MSIS consensus definition for clinical use.

Reporting Instruction

- After an HPRO or a KPRO if a patient meets both organ space PJI and BONE report the SSI as BONE.

Scenario 3: Knowledge Check 3b – Rationale cont.

- SSI events are cited at the deepest tissue level where SSI criteria are met.



SSI Event Reporting Instruction #4

4. **Multiple tissue levels are involved in the infection:** The type of SSI (superficial incisional, deep incisional, or organ/space) reported must reflect the deepest tissue level where SSI criteria are met during the surveillance period.
    - Report infection that meets criteria for organ/space SSI as an organ/space SSI, regardless of superficial or deep tissue involvement.
    - Report infection that meets criteria for deep incisional SSI as a deep incisional SSI, regardless of superficial tissue involvement.
    - If a patient meets criteria for a deep incisional SSI on day 10 of the SSI surveillance period and a week later (day 17 of the SSI surveillance period) the patient meets criteria for an organ space SSI, the DOE assigned is the date of the organ/space SSI.

Scenario 3: Knowledge Check 3b – Rationale – cont.

- Why isn't SSI Event Reporting Instruction #10 (Invasive Manipulation) applied due to the ED accession of the joint space?

10. **SSI following invasive manipulation or accession of the operative site:** An SSI will **NOT** be attributed when the following 3 criteria are ALL met:

- during the post-operative period there is no suspicion or evidence of infection related to the surgical site/space.

And

- an invasive manipulation or accession of the site/space is performed for diagnostic or therapeutic purposes (for example, needle aspiration, accession of ventricular shunts, accession of breast expanders).

And

- an infection subsequently develops in a tissue level which was entered during the manipulation/accession.

Notes:

- Suspicion or evidence of infection may include signs and symptoms of infection (for example, fever, abdominal pain) depending on the site of the procedure.
- Tissue levels not manipulated/accessed are still eligible for SSI. For example, a superficial debridement following a COLO procedure, where the muscle/fascia and organ/space is not entered, a subsequent deep incisional or organ/space SSI following the debridement may be an SSI attributable to the COLO procedure.
- This reporting instruction does NOT apply to closed manipulation (for example, closed reduction of a dislocated hip after an orthopedic procedure).
- Invasive manipulation does not include wound packing or changing of wound packing materials as part of postoperative care.
- Routine flushing of catheters as part of the facility's standard care and maintenance is not considered invasive manipulation.

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Scenario 3: Knowledge Check 3c

What is the SSI Date of Event (DOE)?

A. 2/28
B. 3/2
C. 3/3

Scenario 3: Knowledge Check 3c – Answer and Rationale

Correct answer:

B. 3/2

- The SSI DOE is assigned based on the SSI-PJI event.
- For an SSI, the DOE is the date when the first element used to meet the SSI infection criterion occurs for the first time during the SSI surveillance period.

On 2/11 a patient undergoes bilateral KPRO (Knee prosthesis) procedures with qualifying KPRO codes assigned to each procedure. The patient was discharged on 2/22 with plans to follow up with the surgeon in one week. At time of follow up, on 2/28, the patient is noted with redness and pain at their right KPRO surgical site. There is some slight yellow drainage at the superficial tissue level of the right knee that the surgeon cultures and *Staphylococcus aureus* is identified. The left KPRO side was noted clean/dry/intact (C/D/I). The surgeon elects to monitor the right knee and wants to see the patient back within the next week.

On 3/2 the patient is seen in the Emergency Department with complaints of increased pain at the right knee surgical site. An aspiration of the right knee joint is performed and *Staphylococcus aureus* is subsequently identified. Blood cultures are performed and *Staphylococcus aureus* is subsequently identified. The patient is admitted on 3/2 and goes to the OR on 3/3 where additional cultures from the knee joint are performed and *Staphylococcus aureus* is identified. The left KPRO surgical site continues to be CDI and is not of concern.

Scenario 3: Knowledge Check 3d

Is there a Secondary Bloodstream Infection (BSI) to the SSI event?

A. Yes
B. No
C. There is no SSI event to report therefore no secondary BSI to an SSI event.

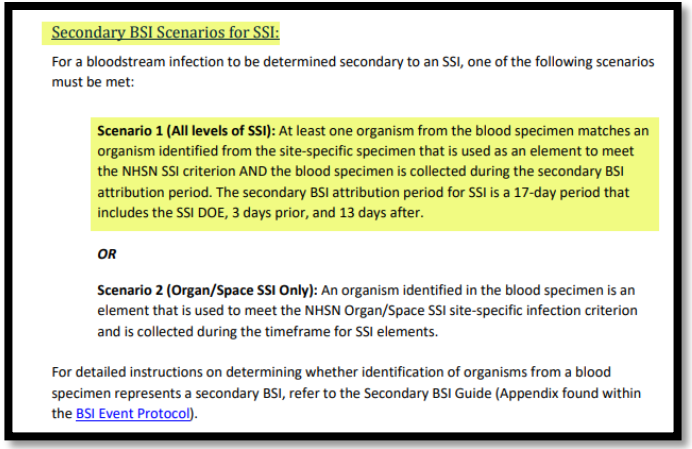
Scenario 3: Knowledge Check 3d – Answer and Rationale

Correct answer:

A. Yes

- SSI DOE 3/2
- *Staphylococcus aureus* identified in blood 3/3
- Secondary BSI attribution period:

  2/27 – 3/15



Secondary BSI Scenarios for SSI:

For a bloodstream infection to be determined secondary to an SSI, one of the following scenarios must be met:

Scenario 1 (All levels of SSI): At least one organism from the blood specimen matches an organism identified from the site-specific specimen that is used as an element to meet the NHSN SSI criterion AND the blood specimen is collected during the secondary BSI attribution period. The secondary BSI attribution period for SSI is a 17-day period that includes the SSI DOE, 3 days prior, and 13 days after.

OR

Scenario 2 (Organ/Space SSI Only): An organism identified in the blood specimen is an element that is used to meet the NHSN Organ/Space SSI site-specific infection criterion and is collected during the timeframe for SSI elements.

For detailed instructions on determining whether identification of organisms from a blood specimen represents a secondary BSI, refer to the Secondary BSI Guide (Appendix found within the BSI Event Protocol).

On 3/2 the patient is seen in the Emergency Department with complaints of increased pain at the right knee surgical site. An aspiration of the right knee joint is performed and *Staphylococcus aureus* is subsequently identified. Blood cultures are performed and *Staphylococcus aureus* is subsequently identified. The patient is admitted on 3/2 and goes to the OR on 3/3 where additional cultures from the knee joint are performed and *Staphylococcus aureus* is identified. The left KPRO surgical site continues to be CDI and is not of concern.

Scenario 3: Knowledge Check 3d - Rationale

Table B1: Secondary BSI Guide: List of all NHSN primary site-specific definitions available for making secondary BSI determinations using Scenario 1 or Scenario 2

Scenario 1	Scenario 2
A positive blood specimen must contain at least **one eligible matching organism** to the site-specific specimen	Positive blood specimen must be an **element** of the **site-specific definition**
And the blood specimen is collected in the site-specific **secondary BSI attribution period**	**And** blood specimen is collected in the site-specific **infection window period**
And an eligible organism **identified from the site-specific specimen** is used as an element to meet the site-specific definition	And an eligible organism **identified in a blood specimen** is used as an element to meet the site-specific definition

Site	Criterion
ABUTI	ABUTI
BONE	1
BRST	1
CARD	1
CIRC	2 or 3
CONJ	1a
DECU	1
DISC	1
EAR	1, 3, 5 or 7
EMET	1
ENDO	1
EYE	1
GE	2a
GIT	2a, 2b (only yeast)
IAB	1 or 3a
IC	1
JNT	1
LUNG	1
MED	1
MEN	1
ORAL	1, 3a, 3d (only yeast)
OREP	1
PJI	1 or 3e
PNEU	2 or 3
SA	1
SINU	1
SSI	SI, DI or OS
SKIN	2a
ST	1
UMB	1a
UR	1a or 3a
USI	1
SUTI	1a, 1b or 2
VASC *only as SSI*	1
VCUF	3

Site	Criterion
ABUTI	ABUTI
BONE	3a
BURN	1
DISC	3a
ENDO	4a, 4b, 5a or 5b (specific organisms) 6e or 7e plus other criteria as listed
GIT	1b or 2c
IAB	2b or 3b
JNT	3c
MEN	2c or 3c
OREP	3a
PNEU	2 or 3
SA	3a
UMB	1b
USI	3b or 4b

Scenario 4

- On 9/5, a patient undergoes a CABG (Coronary artery bypass graft) x2 with endoscopic harvest of the left greater saphenous vein. Based on the procedure details and procedure codes assigned there is a chest incision (performed via open approach) and a secondary (leg) incision (performed via a scope). A CBGB (Coronary bypass with chest & donor incisions) is reported to NHSN. The procedure finish time is 3:50 PM. Within 6 hours, at 9:30 PM, the patient returns to the OR for a mediastinal exploration of a post-operative bleed.

- On 9/9, while in the hospital, the patient's leg incision is noted to be extremely tender with sanguineous drainage and the surgical Physician Assistant (PA) documents a superficial infection of the leg incision.

- On 9/12, the patient spikes a fever of 38.5°C and complains of chest pain. A CT scan is performed indicating a moderate pericardial effusion. The patient returns to the OR on 9/13, and a pericardial window is performed. The surgeon documents no concerns regarding the leg incision.

Scenario 4: Knowledge Check 4a

CBGB/CBGC is monitored on the facility MRP. Does a CBGB get reported to NHSN?

A. Yes

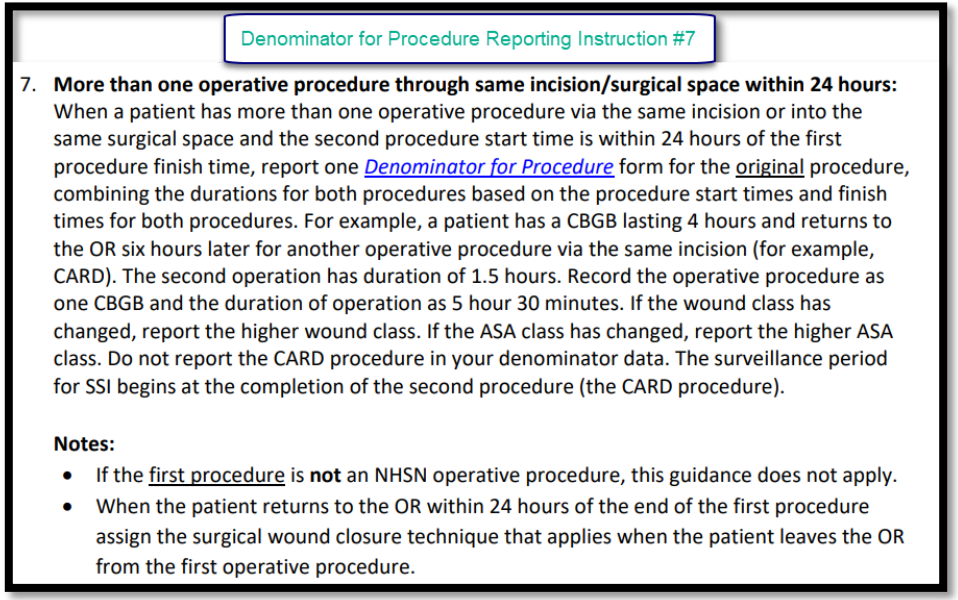
B. No – the mediastinal exploration ended the CBGB SSI surveillance period

Scenario 4: Knowledge Check 4a – Answer and Rationale

Correct answer:

A. Yes

- The mediastinal exploration following the CBGB does not end the SSI surveillance period.
- Denominator Reporting Instruction #7 is applied (and procedure details are combined).
- The CBGB gets reported to NHSN and monitored for SSI.



Denominator for Procedure Reporting Instruction #7

7. **More than one operative procedure through same incision/surgical space within 24 hours:** When a patient has more than one operative procedure via the same incision or into the same surgical space and the second procedure start time is within 24 hours of the first procedure finish time, report one *Denominator for Procedure* form for the original procedure, combining the durations for both procedures based on the procedure start times and finish times for both procedures. For example, a patient has a CBGB lasting 4 hours and returns to the OR six hours later for another operative procedure via the same incision (for example, CARD). The second operation has duration of 1.5 hours. Record the operative procedure as one CBGB and the duration of operation as 5 hour 30 minutes. If the wound class has changed, report the higher wound class. If the ASA class has changed, report the higher ASA class. Do not report the CARD procedure in your denominator data. The surveillance period for SSI begins at the completion of the second procedure (the CARD procedure).

Notes:

- If the first procedure is **not** an NHSN operative procedure, this guidance does not apply.
- When the patient returns to the OR within 24 hours of the end of the first procedure assign the surgical wound closure technique that applies when the patient leaves the OR from the first operative procedure.

Scenario 4: Knowledge Check 4b

How is the Scope* field answered on the CBGB denominator for procedure form?

A. Scope = Yes
B. Scope = No
C. No CBGB is reported, therefore no not need to answer the Scope question

*An instrument used to reach and visualize the site of the operative procedure. In the context of an NHSN operative procedure, use of a scope involves creation of several small incisions to perform or assist in the performance of an operation rather than use of a traditional larger incision (specifically, open approach).

Scenario 4: Knowledge Check 4b – Answer and Rationale

Correct answer:

B. Scope = No

- **Scope is reported based on the primary incision site.**
  - If an open and scope code is assigned to procedures in the same NHSN procedure category, then the procedure should be reported to NHSN as Scope = NO.
  - The open designation is considered a higher risk procedure.

On 9/5 a patient undergoes a CABG (Coronary artery bypass graft) x2 with endoscopic harvest of the left greater saphenous vein. Based on the procedure details and procedure codes assigned there is a chest incision (performed via open approach) and a secondary (leg) incision (performed via a scope). A CBGB (Coronary bypass with chest & donor incisions) is reported to NHSN. The procedure finish time is 3:50 PM. Within 6 hours, at 9:30 PM, the patient returns to the OR for a mediastinal exploration of a post-operative bleed.

Scenario 4: Knowledge Check 4b - Rationale

Page 9-9 SSI Protocol

Scope:

An instrument used to reach and visualize the site of the operative procedure. In the context of an NHSN operative procedure, use of a scope involves creation of several small incisions to perform or assist in the performance of an operation rather than use of a traditional larger incision (specifically, open approach).

ICD-10-PCS codes can be helpful in answering this scope question. The fifth character indicates the approach to reach the procedure site:

ICD-10 5th Character	Approach	NHSN Scope Designation
0	Open	NO
3	Percutaneous (Included only in CRAN and VSHN categories- procedures with BURR holes)	NO
4	Percutaneous endoscopic	YES
7	Via natural or artificial opening	NO
8	Via natural or artificial opening with endoscopic	NO
F	Via natural or artificial opening with percutaneous endoscopic assistance	YES

For CPT codes, the scope question can be answered based on the procedure code description. Using HYST code 58570 as an example, the procedure code description indicates Laparoscopy, surgical, with total hysterectomy. Laparoscopy is **Scope = YES**.

HYST	58570	Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less

Note: Scope is reported based on the primary incision site. If an ***open and scope*** code is assigned to procedures in the same NHSN procedure category, then the procedure should be reported to NHSN as **Scope = NO**. The ***open*** designation is considered a higher risk procedure.

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Scenario 4: Knowledge Check 4c

How many SSI events should be considered following the 9/5 CBGB procedure?

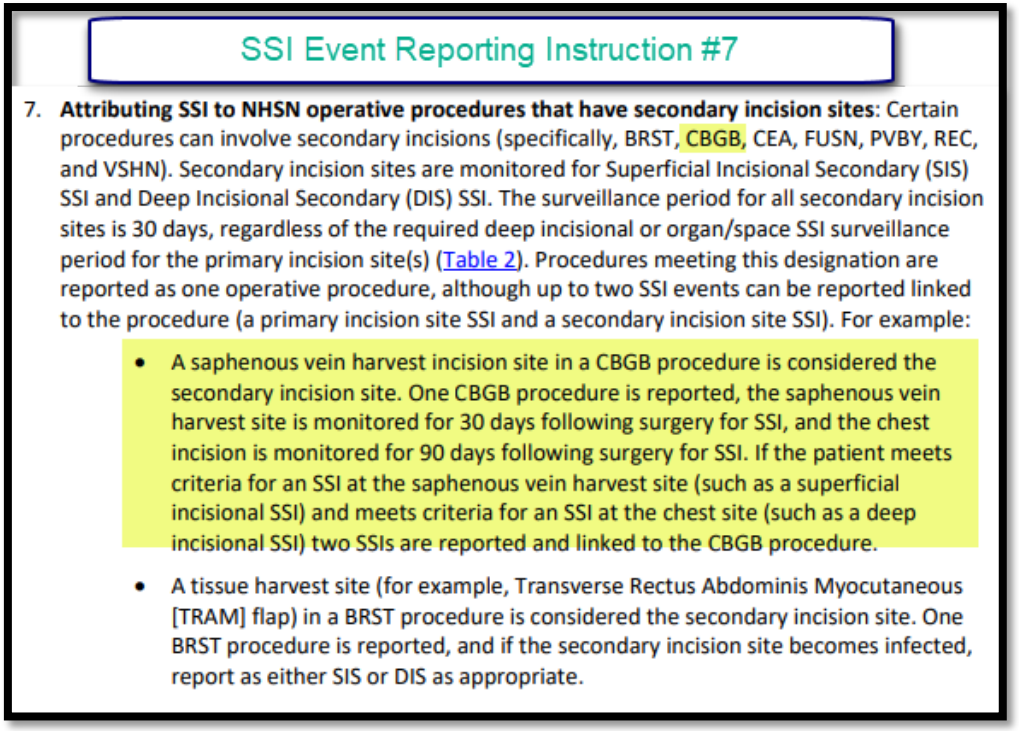
A. One SSI event
B. Two SSI events
C. No SSI events should be considered since the mediastinal exploration ended the CBGB SSI surveillance period

Scenario 4: Knowledge Check 4c – Answer and Rationale

Correct answer:

B. Two SSI events

- One SSI event involving the primary incision site
- One SSI event involving the secondary incision site



SSI Event Reporting Instruction #7

7. **Attributing SSI to NHSN operative procedures that have secondary incision sites**: Certain procedures can involve secondary incisions (specifically, BRST, CBGB, CEA, FUSN, PVBY, REC, and VSHN). Secondary incision sites are monitored for Superficial Incisional Secondary (SIS) SSI and Deep Incisional Secondary (DIS) SSI. The surveillance period for all secondary incision sites is 30 days, regardless of the required deep incisional or organ/space SSI surveillance period for the primary incision site(s) (Table 2). Procedures meeting this designation are reported as one operative procedure, although up to two SSI events can be reported linked to the procedure (a primary incision site SSI and a secondary incision site SSI). For example:

   - A saphenous vein harvest incision site in a CBGB procedure is considered the secondary incision site. One CBGB procedure is reported, the saphenous vein harvest site is monitored for 30 days following surgery for SSI, and the chest incision is monitored for 90 days following surgery for SSI. If the patient meets criteria for an SSI at the saphenous vein harvest site (such as a superficial incisional SSI) and meets criteria for an SSI at the chest site (such as a deep incisional SSI) two SSIs are reported and linked to the CBGB procedure.
   - A tissue harvest site (for example, Transverse Rectus Abdominis Myocutaneous [TRAM] flap) in a BRST procedure is considered the secondary incision site. One BRST procedure is reported, and if the secondary incision site becomes infected, report as either SIS or DIS as appropriate.

Scenario 4: Knowledge Check 4d

Is there an SSI event linked to the CBGB primary incision site?

A. Yes, Superficial Incisional SSI event
B. Yes, Deep Incisional SSI event
C. Yes, Organ/Space SSI event
D. No SSI event of the CBGB primary incision site

Scenario 4: Knowledge Check 4d – Answer and Rationale

Correct answer:

C. Yes, Organ/Space SSI event

- General organ/space SSI criterion ‘c’ met
- CARD (Myocarditis or pericarditis) ‘2d’ met

On 9/5 a patient undergoes a CABG (Coronary artery bypass graft) x2 with endoscopic harvest of the left greater saphenous vein. Based on the procedure details and procedure codes assigned there is a chest incision (performed via open approach) and a secondary (leg) incision (performed via a scope). A CBGB (Coronary bypass with chest & donor incisions) is reported to NHSN. The procedure finish time is 3:50 PM. Within 6 hours, at 9:30 PM, the patient returns to the OR for a mediastinal exploration of a post-operative bleed.

On 9/9, while in the hospital, the patient’s leg incision is noted to be extremely tender with sanguineous drainage and the surgical Physician Assistant (PA) documents a superficial infection of the leg incision.

On 9/12 the patient spikes a fever of 38.5°C and complains of chest pain. A CT scan is performed indicating a moderate pericardial effusion. The patient returns to the OR on 9/13 and a pericardial window is performed. The surgeon documents no concerns regarding the leg incision.

Scenario 4: Knowledge Check 4d - Rationale

Organ/Space SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure

AND

patient has at least ***one*** of the following:

a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage)

b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])

c. an abscess or other evidence of infection involving the organ/space detected on:

- gross anatomical exam or
- histopathologic exam or
- imaging test evidence definitive or equivocal for infection

AND

meets at least ***one*** criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections (Chapter 17).

CVS-CARDIOVASCULAR SYSTEM INFECTION

CARD-Myocarditis or pericarditis

Myocarditis or pericarditis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from pericardial tissue or fluid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least ***two*** of the following signs or symptoms: fever (>38.0°C), chest pain*, paradoxical pulse*, or increased heart size*

   And at least *one* of the following:

   a. abnormal EKG consistent with myocarditis or pericarditis.
   b. evidence of myocarditis or pericarditis on histologic exam of heart tissue.
   c. 4-fold rise in paired sera from IgG antibody titer.
   d. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.
3. Patient ≤1 year of age has at least ***two*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°C), apnea*, bradycardia*, paradoxical pulse*, or increased heart size*

   And at least *one* of the following:

   a. abnormal EKG consistent with myocarditis or pericarditis.
   b. histologic examination of heart tissue shows evidence of myocarditis or pericarditis.
   c. 4-fold rise in paired sera from IgG antibody titer.
   d. pericardial effusion identified by echocardiogram, CT scan, MRI, or angiography.

* *With no other recognized cause*

Scenario 4: Knowledge Check 4e

Is there an SSI event linked to the CBGB secondary incision site?

A. Yes, Superficial Incisional SSI event
B. Yes, Deep Incisional SSI event
C. No SSI event of the CBGB secondary incision site

Scenario 4: Knowledge Check 4e – Answer and Rationale

Correct answer:

A. Yes, Superficial Incisional SSI event

- Superficial incisional SSI criterion ‘d’ met
  - The physician designee diagnosed a superficial incisional SSI

On 9/5 a patient undergoes a CABG (Coronary artery bypass graft) x2 with endoscopic harvest of the left greater saphenous vein. Based on the procedure details and procedure codes assigned there is a chest incision (performed via open approach) and a secondary (leg) incision (performed via a scope). A CBGB (Coronary bypass with chest & donor incisions) is reported to NHSN. The procedure finish time is 3:50 PM. Within 6 hours, at 9:30 PM, the patient returns to the OR for a mediastinal exploration of a post-operative bleed.

On 9/9, while in the hospital, the patient’s leg incision is noted to be extremely tender with sanguineous drainage and the surgical Physician Assistant (PA) documents a superficial infection of the leg incision.

On 9/12 the patient spikes a fever of 38.5°C and complains of chest pain. A CT scan is performed indicating a moderate pericardial effusion. The patient returns to the OR on 9/13 and a pericardial window is performed. The surgeon documents no concerns regarding the leg incision.

Scenario 4: Knowledge Check 4e - Rationale

Surgical Site Infection (SSI)

Superficial incisional SSI

Must meet the following criteria:

Date of event occurs within 30 days following the NHSN operative procedure (where day 1 = the procedure date)

AND

involves only skin and subcutaneous tissue of the incision

AND

patient has at least ***one*** of the following:

a. purulent drainage from the superficial incision.

b. organism(s) identified from an aseptically-obtained specimen from the superficial incision or subcutaneous tissue by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])

c. a superficial incision that is deliberately opened by a surgeon, physician* or physician designee and culture or non-culture based testing of the superficial incision or subcutaneous tissue is not performed

AND

patient has at least one of the following signs or symptoms: localized pain or tenderness; localized swelling; erythema; or heat

d. diagnosis of a superficial incisional SSI by a physician* or physician designee

* The term physician for the purpose of application of the NHSN SSI criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).

Scenario 5

- On 8/4, a 48-year-old patient is admitted for a HYST procedure. At the time of surgery the patient is noted with a pelvic hematoma within the surgical narrative. On 8/6, the patient is discharged in stable condition.

- On 8/18, the patient presents with new onset of abdominal pain and nausea. It is noted the patient had a dermatitis near their incision site. The physician documents concerns for a pelvic infection and starts the patient on IV antibiotics and fluids. On 8/20, the patient is deemed stable and discharged.

Scenario 5: Knowledge Check 5a

Should this case be reviewed for meeting SSI criteria?

A. Yes

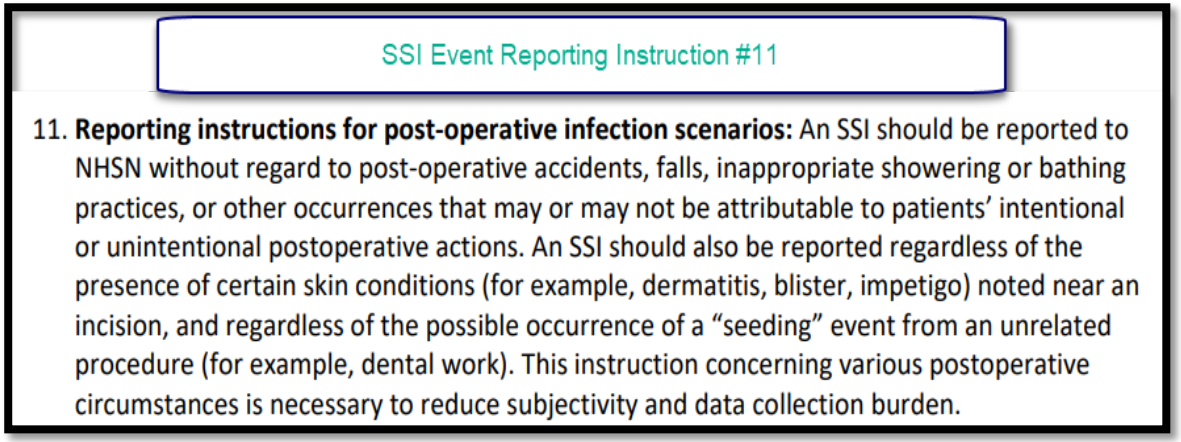
B. No – The patient has noted dermatitis near their incision site following surgery, this excludes reporting an SSI event

Scenario 5: Knowledge Check 5a – Answer and Rationale

Correct answer:

A. Yes

- The fact that the patient has noted dermatitis near their incision site doesn't exclude the case from monitoring for an SSI event.


SSI Event Reporting Instruction #11

11. **Reporting instructions for post-operative infection scenarios:** An SSI should be reported to NHSN without regard to post-operative accidents, falls, inappropriate showering or bathing practices, or other occurrences that may or may not be attributable to patients' intentional or unintentional postoperative actions. An SSI should also be reported regardless of the presence of certain skin conditions (for example, dermatitis, blister, impetigo) noted near an incision, and regardless of the possible occurrence of a "seeding" event from an unrelated procedure (for example, dental work). This instruction concerning various postoperative circumstances is necessary to reduce subjectivity and data collection burden.

Scenario 5: Knowledge Check 5b

Based on the information provided, what type of SSI should be reported?

A. Superficial Incisional SSI
B. Deep Incisional SSI
C. Organ/space SSI – OREP (Deep pelvic tissue infection or other infection of the male or female reproductive tract)
D. Organ/Space SSI – VCUF (Vaginal cuff infection)
E. Organ/Space SSI – IAB (Intraabdominal infection)

Scenario 5: Knowledge Check 5b – Answer and Rationale

Correct answer:

C. Organ/space SSI – OREP (Deep pelvic tissue infection or other infection of the male or female reproductive tract)

- General organ/space SSI criterion ‘c’ met
- OREP (Deep pelvic tissue infection or other infection of the male or female reproductive tract) ‘3b’ met

On 8/4 a 48-year-old patient is admitted for a HYST procedure. At the time of surgery the patient is noted with a pelvic hematoma within the surgical narrative. On 8/6 the patient is discharge in stable condition.

On 8/18 the patient presents with new onset of abdominal pain and nausea. It is noted the patient had a dermatitis near their incision site. A CT of the abdomen/pelvis is performed with a 5 x 8 cm fluid collection noted within the pelvis which is documented as ‘likely an abscess’. The patient is started on antibiotics and given IV fluids. On 8/20 the patient is deemed stable and discharged.

Scenario 5: Knowledge Check 5b - Rationale

Organ/Space SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure

AND

patient has at least ***one*** of the following:

a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage)

b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])

c. an abscess or other evidence of infection involving the organ/space detected on:

- gross anatomical exam or
- histopathologic exam or
- imaging test evidence definitive or equivocal for infection

AND

meets at least ***one*** criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections (Chapter 17).

OREP- Deep pelvic tissue infection or other infection of the male or female reproductive tract (for example, epididymis, testes, prostate, vagina, ovaries, uterus) including chorioamnionitis, but excluding vaginitis, endometritis or vaginal cuff infections

Other infections of the male or female reproductive tract must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from tissue or fluid from affected site (excludes urine and vaginal swabs) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has an abscess or other evidence of infection of affected site on gross anatomic or histopathologic exam.
3. Patient has **suspected infection of** one of the listed OREP sites and ***two*** of the following localized signs or symptoms: fever (>38.0°C), nausea*, vomiting*, pain or tenderness*, or dysuria*

   And at least *one* of the following:

   a. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

   b. physician or physician designee initiates antimicrobial therapy within ***two*** days of onset or worsening of symptoms.

** With no other recognized cause*

SSI Events FAQ #16

Event Detail – Gross Anatomical Exam

Q16. What is acceptable evidence of infection found on gross anatomic exam?

Gross anatomic evidence of infection is evidence of infection elicited or visualized on physical examination or observed during an invasive procedure. This includes findings elicited on physical examination of a patient during admission or subsequent assessments of the patient and may include findings noted during a medical/invasive procedure, dependent upon the location of the infection as well as the NHSN infection criterion.

Examples:

- An intraabdominal abscess will require an invasive procedure to actually visualize the abscess.
- Visualization of pus or purulent drainage (includes from a drain).
- SSI only: Abdominal pain or tenderness **post Cesarean section (CSEC) or hysterectomy (HYST or VHYS)** is sufficient gross anatomic evidence of infection without an invasive procedure to meet Organ/Space SSI criterion 'c' **when a Chapter 17 [PDF – 621 KB] Reproductive Tract Infection criteria is met**. Allowing the documentation of abdominal pain or tenderness as gross anatomic evidence of infection to meet general Organ/Space SSI criterion 'c' enables the user to report an SSI-OREP, SSI-EMET or SSI-VCUF event. Abdominal pain or tenderness cannot be applied as 'other evidence of infection on gross anatomic exam' to meet Deep Incisional SSI criterion 'c' or to meet any Chapter 17 [PDF – 621 KB] site-specific criterion (for example, OREP '2').

NOTE: Imaging test evidence of infection cannot be applied to meet gross anatomic evidence of infection. Imaging test evidence has distinct findings in the NHSN definitions (for example, IAB '3b').

Scenario 5: Knowledge Check 5c

If an SSI is reported, what do you indicate for the PATOS question found on the SSI event form?

A. PATOS = Yes
B. PATOS = No
C. No SSI therefore you don’t review for PATOS

Scenario 5: Knowledge Check 5c – Answer and Rationale

Correct answer:

B. PATOS = No

- The surgical narrative does not contain documentation of visualized infection within the organ/space tissue level during the 8/4 HYST procedure. A pelvic hematoma is not evidence of infection.
- For the subsequent Organ/Space SSI OREP event, PATOS = No.

On 8/4 a 48-year-old patient is admitted for a HYST procedure. At the time of surgery the patient is noted with a pelvic hematoma within the surgical narrative. On 8/6 the patient is discharge in stable condition.

On 8/18 the patient presents with new onset of abdominal pain and nausea. It is noted the patient had a dermatitis near their incision site. A CT of the abdomen/pelvis is performed with a 5 x 8 cm fluid collection noted within the pelvis which is documented as 'likely an abscess'. The patient is started on antibiotics and given IV fluids. On 8/20 the patient is deemed stable and discharged.

Scenario 5- continued

- On 9/28, the patient is re-admitted to the hospital with significant abdominal pain and a CT of their abdomen/pelvis is performed that indicates a colon perforation. The patient goes to the OR immediately for a COLO procedure. Feculent peritonitis is noted throughout abdomen within procedure narrative. Procedure start time is 1 PM and procedure finish time is 3 PM.

- On 9/29, the patient returns to the OR for another COLO where purulence is documented within the intraabdominal space within procedure narrative. The patient has abdominal pain. Procedure start time is 7 AM and finish time is 9:30 AM.

- On 9/30, the patient returns to the OR for an XLAP procedure. The patient has abdominal pain. An exploration of all tissue levels occurs with washout. Procedure start time is 4 AM and finish time is 5:15 AM.

Scenario 5: Knowledge Check 5d

COLO and XLAP are included in this facility MRP. What procedures get reported to NHSN?

A. 9/28 COLO only
B. 9/28 COLO, 9/29 COLO, 9/30 XLAP
C. 9/28 COLO and 9/30 XLAP
D. No procedures get reported, this is a POA infection from the HYST procedure

Scenario 5: Knowledge Check 5d – Answer and Rationale

Correct answer:

C. 9/28 COLO and 9/30 XLAP

- Denominator for Procedure Reporting Instruction #7 applied
  - 9/29 COLO start time within 24 hours of 9/28 COLO finish time. **Only 9/28 COLO is reported.**
  - 9/30 XLAP is reported and not combined with any prior procedures.

On 9/28 the patient is re-admitted to the hospital with significant abdominal pain and a CT of their abdomen/pelvis is performed that indicates a colon perforation. The patient goes to the OR immediately for a COLO procedure. Feculent peritonitis is noted throughout abdomen within procedure narrative. Procedure start time is 1 PM and procedure finish time is 3 PM. **Report 9/28 COLO.**

On 9/29 the patient returns to the OR for another COLO where purulence is documented within the intraabdominal space within procedure narrative. The patient has abdominal pain. Procedure start time is 7 AM and finish time is 9:30 AM. **Do not report 9/29 COLO [combine 9/29 COLO procedure details with 9/28 COLO procedure details].**

On 9/30 the patient returns to the OR for an XLAP procedure. The patient has abdominal pain. An exploration of all tissue levels occurs with washout. Procedure start time is 4 AM and finish time is 5:15 AM. **Report 9/30 XLAP. Do not combine with any prior procedures.**

Scenario 5: Knowledge Check 5d - Rationale

Denominator for Procedure Reporting Instruction #7

7. **More than one operative procedure through same incision/surgical space within 24 hours:** When a patient has more than one operative procedure via the same incision or into the same surgical space and the second procedure start time is within 24 hours of the first procedure finish time, report one *Denominator for Procedure* form for the original procedure, combining the durations for both procedures based on the procedure start times and finish times for both procedures. For example, a patient has a CBGB lasting 4 hours and returns to the OR six hours later for another operative procedure via the same incision (for example, CARD). The second operation has duration of 1.5 hours. Record the operative procedure as one CBGB and the duration of operation as 5 hour 30 minutes. If the wound class has changed, report the higher wound class. If the ASA class has changed, report the higher ASA class. Do not report the CARD procedure in your denominator data. The surveillance period for SSI begins at the completion of the second procedure (the CARD procedure).

Notes:

- If the first procedure is **not** an NHSN operative procedure, this guidance does not apply.
- When the patient returns to the OR within 24 hours of the end of the first procedure assign the surgical wound closure technique that applies when the patient leaves the OR from the first operative procedure.

Scenario 5: Knowledge Check 5d – Rationale- cont.

SSI Event Reporting Instruction #2

2. **Attributing SSI to an NHSN operative procedure when there is evidence of infection at the time of the primary surgery:** The present on admission (POA) definition does not apply to the SSI protocol. If evidence of infection is present at the time of the procedure and the patient meets SSI criteria within the SSI surveillance period following the procedure, an SSI is attributed to the procedure (for guidance on PATOS determination, see SSI Event Reporting Instruction #3).

Scenario 5: Knowledge Check 5e

Based on this scenario, how many SSIs are there to report?

A. 1
B. 2
C. 3
D. No SSI events to report

On 9/28 the patient is re-admitted to the hospital with significant abdominal pain and a CT of their abdomen/pelvis is performed that indicates a colon perforation. The patient goes to the OR immediately for a COLO procedure. Feculent peritonitis is noted throughout abdomen within procedure narraive. Procedure start time is 1 PM and procedure finish time is 3 PM. **Report 9/28 COLO.**

On 9/29 the patient returns to the OR for another COLO where purulence is documented within the intraabdominal space within procedure narrative. The patient has abdominal pain. Procedure start time is 7 AM and finish time is 9:30 AM. **Do not report 9/29 COLO (combine 9/29 COLO procedure details with 9/28 COLO procedure details).**

On 9/30 the patient returns to the OR for an XLAP procedure. The patient has abdominal pain. An exploration of all tissue levels occurs with washout. Procedure start time is 4 AM and finish time is 5:15 AM. **Report 9/30 XLAP. Do not combine with any prior procedures.**

Scenario 5: Knowledge Check 5e – Answer and Rationale

Correct answer:

A. 1

- One SSI event cited linked to the 9/28 COLO
- 9/28 COLO and 9/29 COLO procedure details are combined and only the 9/28 COLO is reported
- SSI event identified on 9/30 is cited linked to the 9/28 COLO

Scenario 5: Knowledge Check 5f

What type of SSI event is reported linked to the 9/28 COLO procedure?

A. Superficial Incisional SSI
B. Deep Incisional SSI
C. Organ/Space SSI

Scenario 5: Knowledge Check 5f – Answer and Rationale

Correct answer:

B. Deep Incisional SSI

- Deep Incisional SSI ‘b’ met:
  - Deep incision deliberately opened
  - Abdominal pain
  - No cultures performed of deep soft tissues

On 9/28 the patient is re-admitted to the hospital with significant abdominal pain and a CT of their abdomen/pelvis is performed that indicates a colon perforation. The patient goes to the OR immediately for a COLO procedure. Feculent peritonitis is noted throughout abdomen within procedure narrative. Procedure start time is 1 PM and procedure finish time is 3 PM. **Report 9/28 COLO.**

On 9/29 the patient returns to the OR for another COLO where purulence is documented within the intraabdominal space within procedure narrative. The patient has abdominal pain. Procedure start time is 7 AM and finish time is 9:30 AM. **Do not report 9/29 COLO (combine 9/29 COLO procedure details with 9/28 COLO procedure details).**

On 9/30 the patient returns to the OR for an XLAP procedure. The patient has abdominal pain. An exploration of all tissue levels occurs with washout. Procedure start time is 4 AM and finish time is 5:15 AM. **Report 9/30 XLAP. Do not combine with any prior procedures.**

Scenario 5: Knowledge Check 5f

- Deep Incisional SSI event cited linked to 9/28 COLO

Deep incisional SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves deep soft tissues of the incision (for example, fascial and muscle layers)

AND

patient has at least ***one*** of the following:

a. purulent drainage from the deep incision

b. a deep incision that is deliberately opened or aspirated by a surgeon, physician* or physician designee or spontaneously dehisces

AND

organism(s) identified from the deep soft tissues of the incision by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST]) or culture or non-culture based microbiologic testing method is not performed. A culture or non-culture based test from the deep soft tissues of the incision that has a negative finding does not meet this criterion.

AND

patient has at least ***one*** of the following signs or symptoms: fever (>38°C); localized pain or tenderness

c. an abscess or other evidence of infection involving the deep incision detected on gross anatomical exam, histopathologic exam, or imaging test

* The term physician for the purpose of application of the NHSN SSI criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).

Scenario 5: Knowledge Check 5g

What do you indicate for the Infection Present at Time of Surgery (PATOS) question found on the SSI event form?

A. PATOS = Yes
B. PATOS = No
C. No SSI therefore you don’t review for PATOS

Scenario 5: Knowledge Check 5g – Answer and Rationale

Correct answer:

B. PATOS = No

Organ/space infection

On 9/28 the patient is re-admitted to the hospital with significant abdominal pain and a CT of their abdomen/pelvis is performed that indicates a colon perforation. The patient goes to the OR immediately for a COLO procedure. Feculent peritonitis is noted throughout abdomen within procedure narrative. Procedure start time is 1 PM and procedure finish time is 3 PM. **Report 9/28 COLO.**

On 9/29 the patient returns to the OR for another COLO where purulence is documented within the intraabdominal space within procedure narrative. The patient has abdominal pain. Procedure start time is 7 AM and finish time is 9:30 AM. **Do not report 9/29 COLO (combine 9/29 COLO procedure details with 9/28 COLO procedure details).**

Deep Incisional SSI

On 9/30 the patient returns to the OR for an XLAP procedure. The patient has abdominal pain. An exploration of all tissue levels occurs with washout. Procedure start time is 4 AM and finish time is 5:15 AM. **Report 9/30 XLAP. Do not combine with any prior procedures.**

Infection present at time of surgery (PATOS)

SSI Event Reporting Instruction #3

3. **Infection present at time of surgery (PATOS):** PATOS is a YES/NO field found on the SSI event form. PATOS denotes there was evidence of infection visualized (seen) during the surgical procedure to which a subsequent SSI is attributed. The evidence of infection must be noted intraoperatively and documented within the narrative portion of the operative note or report of surgery to be eligible for PATOS (pre/post op diagnoses, 'indication for surgery', and other headings routinely included in an operative note are not eligible with answering PATOS).

Key points for consideration:

a) Only select PATOS = YES when it applies to the depth of the SSI that is being attributed to the procedure. Examples:

- When a patient has documentation of an intraabdominal infection at time of surgery and then later returns with an organ/space SSI, PATOS = YES.
- When a patient has documentation of an intraabdominal infection at time of surgery and then later returns with a superficial or deep incisional SSI, PATOS = NO.

Resources- cont.

- NHSN Surgical Site Infection (SSI) Events
  - https://www.cdc.gov/nhsn/psc/ssi/index.html
- Patient Safety Component Manual Chapter 9: Surgical Site Infection Event (SSI) Protocol
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf
- Patient Safety Component Manual Chapter 17: CDC/NHSN Surveillance Definitions for Specific Types of Infections
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosinfdef_current.pdf
- FAQs:
  - Surgical Site Infections (SSI) Events
    - https://www.cdc.gov/nhsn/faqs/faq-ssi.html
  - Surgical Site Procedure Codes
    - https://www.cdc.gov/nhsn/faqs/faq-ssi-proc-codes.html

NHSN SSI Case Review SSI Events FAQ Q1

NHSN SSI Case Review

Q1. When sending an inquiry to NHSN, what should the NHSN user provide when requesting assistance with an SSI case review?

Please note it is very important to provide NHSN your thoughts regarding the case you are requesting for review. Please provide specifics as to the criteria you have considered and which elements of the criteria you have determined the patient does or does not meet. If you are unable to make a determination, please let us know specifically why you are unable to decide and clearly outline your question(s). Our hope is that the case review process will be educational for you for making future determinations.

Please provide the following information when sending NHSN a question for SSI case review:

- OR procedure(s) and date(s) of all OR procedures, including reoperations:
- Whether the operative procedures are coded as NHSN operative procedures (if so, provide the NHSN operative procedure code(s) and category(s)).
- If a return to OR via same incision/surgical space, was the start time of the return to OR procedure within 24 hours of finish time of the prior operative procedure?
- Other procedures that access the surgical site during the SSI surveillance period and dates of these procedures (for example, CT-guided drainage, tap to knee). Please include findings from these procedures.
- Patient signs and symptoms and dates of signs and symptoms.
- Tissue level(s) that may be involved in the infection – superficial incisional, deep incisional and/or organ/space and dates of involvement.
- Imaging tests performed and results of these tests – please include dates of these tests.
- Other diagnostic testing performed – please include dates of these tests.
- Culture or non-culture based microbiologic tests performed and the results – please include collection dates.
  - Include tissue level (If you are unsure NHSN recommends consulting with the surgeon/physician to make that determination).
  - Please provide any other evidence of infection – please include dates.

https://www.cdc.gov/nhsn/faqs/faq-ssi.html#NHSN-SSI-Case-Review

For any questions or concerns, contact the NHSN Helpdesk using

NHSN-ServiceNow to submit questions to the NHSN Help Desk. The new portal can be accessed at **https://servicedesk.cdc.gov/nhsncsp**. Users will be authenticated using CDC's Secure Access Management Services (SAMS) the same way you access NHSN. If you do not have a SAMS login, or are unable to access ServiceNow, you can still email the NHSN Help Desk at nhsn@cdc.gov.

For more information please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone, 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov