

## SURGICAL SITE INFECTION (SSI)

*(Last updated January 1, 2012)*

An NHSN operative procedure is a procedure

1) that is performed on a patient who is an NHSN patient inpatient or an NHSN outpatient; and 2) takes place during an operation (defined as a single trip to the operating room [OR] where a surgeon makes at least one incision through the skin or mucous membrane, including laparoscopic approach, and closes the incision before the patient leaves the OR; and 3) that is included in Table 1 (see pages 9-2 through 9-6 of NHSN Patient Safety Manual – Procedure Associated Events component).

**\* NOTE:** *If the skin incision edges do not meet because of wires or devices or other objects extruding through the incision, the incision is not considered primarily closed and therefore not considered an operation. Further, any subsequent infection is not considered a procedure-associated infection (i.e., not an SSI or PPP).*

NHSN Inpatient: A patient whose date of admission to the healthcare facility and the date of discharge are different calendar days.

NHSN Outpatient: A patient whose date of admission to the healthcare facility and date of discharge are the same calendar day.

Operating Room (OR): A patient care area that meets the American Institute of Architects (AIA) criteria for an operating room when it was constructed or renovated. This may include an operating room, C-Section room, interventional radiology room, or a cardiac catheterization lab.

Implant: A nonhuman-derived object, material, or tissue that is permanently placed in a patient during an operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes. Examples include: porcine or synthetic heart valves, mechanical heart, metal rods, mesh, sternal wires, screws, cements, and other devices.

For surveillance purposes, this object is considered an implant until it or the area/structures contiguous with the implant are manipulated for diagnostic or therapeutic purposes. If infection develops after such manipulation, do not attribute it to the operation in which the implant was inserted; instead attribute it to the latter procedure. If that latter procedure is an NHSN operative procedure, subsequent infection can be considered SSI if it meets the criteria. If the latter procedure is not an NHSN operative procedure, subsequent infection cannot be considered an SSI but may meet criteria for other HAI and be reported as such.

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**REPORTING INSTRUCTIONS:** *(Last updated January 1, 2012)*

- Some products are a combination of human- and nonhuman-derived materials, such as demineralized human bone matrix with porcine gel carrier. When placed in a patient during an operative procedure, indicate “Yes” for both the Implant field.
- Primary vs. secondary attribution: Because a fever is a non-specific sign of infection, it is possible that an individual may run a fever due to more than one infection at a time. It would be impossible to determine which infection (if not both) was the cause of the fever. Therefore, if all other criteria besides fever are met, both infections would be reported if surveillance for both of these events were being performed.
- Primary vs. secondary attribution: Because a fever is a non-specific sign of infection, it is possible that an individual may run a fever due to more than one infection at a time. It would be impossible to determine which infection (if not both) was the cause of the fever. Therefore, if all

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other criteria besides fever are met, both infections would be reported if surveillance for both of these events were being performed. (Source: NHSN September 2011 Newsletter, URL: [www.cdc.gov/nhsn/PDFs/Newsletters/newsletter-Sept-2011.pdf](http://www.cdc.gov/nhsn/PDFs/Newsletters/newsletter-Sept-2011.pdf))

**NOTE:** Although CDC provided interpretive guidance related to primary vs. secondary attribution in the September NHSN Newsletter, TDH has asked that IPs apply this interpretive guidance starting January 2011 to ensure a full calendar year of comparable data.

**SUP INC – Superficial Incisional Surgical Site Infection**  
(Last updated June, 2008)

**DEFINITION:** A superficial incisional SSI must meet the following criteria:

**□ Criterion 1:**

- Infection occurs within 30 days after the operative procedure

**AND**

- Involves only skin and subcutaneous tissue of the incision

**AND**

- Patient has at least **ONE** **△** of the following:

- △** purulent drainage from the superficial incision

- △** organisms isolated from an aseptically obtained culture of **ONE** **□** of the following:

- fluid from the superficial incision

- tissue from the superficial incision

- △** must meet **THREE** **□** occurrences:

- at least **ONE** **○** of the following signs or symptoms of infection:

- pain or tenderness

- localized swelling

- redness

- heat

**AND**

- superficial incision is deliberately opened by surgeon

**AND**

☐ choose **ONE** ☐ of the following:

- ☐ is culture positive
- ☐ not cultured

**NOTE:** A culture-negative finding does not meet this criterion

☐ diagnosis of superficial incisional SSI by the surgeon or attending physician

**NOTE:** There are 2 specific types of superficial incisional SSI:

☐ Choose **ONE** ☐ of the following:

- ☐ **Superficial Incisional Primary (SIP)**: a superficial incisional SSI that is identified in the primary incision in a patient who has had an operation with 1 or more incisions (e.g., C-sections incision or chest incision for coronary artery bypass graft with a donor site [CBCB])
- ☐ **Superficial Incisional Secondary (SIS)**: a superficial incisional SSI that is identified in the secondary incision in a patient who has had an operation with more than 1 incision (e.g., donor site [leg] incision for CBCB)

#### **REPORTING INSTRUCTIONS:** (Last updated April, 2010)

- Do not report a stitch abscess (minimal inflammation and discharge confined to the points of suture penetration) as an infection.
- Do not report a localized stab wound infection as SSI, instead report as skin (SKIN), or soft tissue (ST), infection, depending on its depth.
- “Cellulitis” by itself, does not meet the criteria for Superficial Incisional SSI.
- If the incisional site infection involves or extends into the fascial and muscle layers, report as a deep incisional SSI.
- Classify infection that involves both superficial and deep incision sites as deep incisional SSI.
- An infected circumcision site in newborns is classified as a CIRC. Circumcision is not an NHSN operative procedure. CIRC is not reportable under this module.
- An infected burn wound is classified as a BURN and is not reportable under this module.

#### **DEEP INC– Deep incisional surgical site infection** (Last updated June, 2008)

**DEFINITION:** A deep incisional SSI must meet the following criteria:

##### ☐ **Criterion 1:**

☐ Choose **ONE** ☐ of the following:

- ☐ infection occurs within 30 days after the operative procedure if no implant is left in place
- ☐ within one year if implant is in place

**AND**

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- The infection appears to be related to the operative procedure  
**AND**
  - Involves deep soft tissues (e.g. fascial and muscle layers) of the incision  
**AND**
  - Patient has at least **ONE** **△** of the following:
    - △** purulent drainage from the deep incision but not from the organ/space component of the surgical site
    - △** must meet **ALL** **□** of the following:
      - choose **ONE** **○** of the following:
        - a deep incision spontaneously dehisces
        - a deep incision is deliberately opened by a surgeon  
**AND**
      - choose **ONE** **○** of the following:
        - is culture-positive
        - not cultured when the patient has at least **ONE** **△** of the following signs or symptoms:
          - △** fever (>38°C)
          - △** localized pain or tenderness
- NOTE:** A culture-negative finding does not meet this criterion
- △** choose **ONE** **□** of the following:
  - an abscess is found involving the deep incision is found **ONE** **○** of the following:
    - during direct examination
    - during re-operation
    - by histopathologic examination
    - by radiologic examination
  - other evidence of infection involving the deep incision is found **ONE** **○** of the following:
    - during direct examination

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- during re-operation
- by histopathologic examination
- by radiologic examination

△ diagnosis of a deep incisional SSI by a surgeon or attending physician

**NOTE:** There are 2 specific types of deep incisional SSI:

○ Choose **ONE** △ of the following:

△ **Deep incisional primary (DIP):** a deep incisional SSI that is identified in the primary incision in a patient who has had an operation with one or more incisions (e.g., C-sections incision or chest incision for CBCB).

△ **Deep incisional secondary (DIS):** a deep incisional SSI that is identified in the secondary incision in a patient who has had an operation with more than one incision (e.g., donor site [leg] incision for CBCB)

**REPORTING INSTRUCTIONS:** (Last updated June, 2008):

- Classify infection that involves *both* superficial and deep incision sites as deep incisional SSI.

**ORGAN/SPACE – Organ/Space Surgical Site Infection**  
(Last updated April, 2010)

**DEFINITION:** An organ/space SSI involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure. Specific sites are assigned to organ/space SSI to further identify the location of the infection. The table below lists the specific sites that must be used to differentiate organ/space SSI. An example is appendectomy with subsequent sub-diaphragmatic abscess, which would be reported as an organ/space SSI at the intraabdominal specific site (SSI-IAB). Specific sites of organ/space (see first table below) have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for organ/space SSI.

An organ/space SSI must meet the following criteria:

□ **Criterion 1:**

○ Choose **ONE** △ of the following:

△ Infection occurs within 30 days after the operative procedure if no implant is left in place

△ within one year if implant is in place

**AND**

○ The infection appears to be related to the operative procedure

**AND**

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- Infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure
- AND**
- Patient has at least **ONE** **△** of the following:
  - △** purulent drainage from a drain that is placed through a stab wound into the organ/space
  - △** organisms isolated from an aseptically obtained culture of **ONE** **□** of the following:
    - fluid in the organ/space
    - tissue in the organ/space
  - △** choose **ONE** **□** of the following:
    - an abscess from **ONE** **○** of the following:
      - during direct examination
      - during re-operation
      - by histopathologic examination
      - by radiologic examination
    - other evidence of infection involving the organ/space is found from **ONE** **○** of the following:
      - during direct examination
      - during re-operation
      - by histopathologic examination
      - by radiologic examination
  - △** diagnosis of an organ/space SSI by a surgeon or attending physician

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**REPORTING INSTRUCTIONS:** *(Last updated April, 2010)*

- 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.
- Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.
- If meningitis (MEN) and a brain abscess (IC) are present together after operation, report as SSI-IC.
- Report CSF shunt infection as SSI-MEN if it occurs  $\leq 1$  year of placement; if later or after manipulation/access, it is considered CNS-MEN and is not reportable under this manual.
- Report spinal abscess with meningitis as SSI-MEN following spinal surgery
- Episiotomy is not considered an operative procedure in NHSN.

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### **Specific sites of an organ/space SSI.** *(Last updated January 1, 2012)*

Criteria for these sites can be found in the NHSN Help System (must be logged in to NHSN), chapter 17 of NHSN Patient Safety Manual SSI Component, or corresponding checklist.

Code	Specific site
BONE	Osteomyelitis
BRST	Breast abscess or mastitis
CARD	Myocarditis or pericarditis
DISC	Disc space
EAR	Ear, mastoid
EMET	Endometritis
ENDO	Endocarditis
EYE	Eye, other than conjunctivitis
GIT	GI tract
HEP	Hepatitis
IAB	Intraabdominal, not specified else-where
IC	Intracranial, brain abscess or dura

Code	Specific site
JNT	Joint or bursa
LUNG	Other infections of the respiratory tract
MED	Mediastinitis
MEN	Meningitis or ventriculitis
ORAL	Oral cavity (mouth, tongue, or gums)
OREP	Other infections of the male or female reproductive tract
OUTI	Other infections of the urinary tract
SA	Spinal abscess without meningitis
SINU	Sinusitis
UR	Upper respiratory tract
VASC	Arterial or venous infection
VCUF	Vaginal cuff

- If a patient has several NHSN operative procedures prior to an infection, report the operative procedure code of the operation that was performed most closely in time prior to the infection date, unless there is evidence that the infection is associated with a different operation.
- If more than one NHSN operative procedure was done through a single incision, attempt to determine the procedure that is thought to be associated with the infection. If it is not clear (as is often the case when the infection is a superficial incisional SSI), or if the infection site being reported is not an SSI, use the NHSN Principal Operative Procedure Selection List (below) to select which operative procedure to report.



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### NHSN Principal Operative Procedure Selection List: *(Last updated April, 2010)*

The following lists are derived from Table 1, the NHSN Operative Procedure Categories. The operative procedures with highest risk of surgical site infection are listed before those with a lower risk.		
Priority	Code	Abdominal Operations
1	SB	Small bowel surgery
2	KTP	Kidney transplant
3	LTP	Liver transplant
4	BILI	Bile duct, liver or pancreatic surgery
5	REC	Rectal surgery
6	COLO	Colon surgery
7	GAST	Gastric surgery
8	CSEC	Cesarean section
9	SPLE	Spleen surgery
10	APPY	Appendix surgery
11	HYST	Abdominal hysterectomy
12	VHYST	Vaginal hysterectomy
13	OVRY	Ovarian surgery
14	HER	Herniorrhaphy
15	CHOL	Gall bladder surgery
16	AAA	Abdominal aortic aneurysm repair
17	NEPH	Kidney surgery
18	XLAP	Laparotomy
Priority	Code	Thoracic Operations
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	Code	Neurosurgical (Spine) Operations
1	RFUSN	Refusion of spine
2	FUSN	Spinal fusion
3	LAM	Laminectomy
Priority	Code	Neurosurgical (Brain) Operations
1	VSHN	Ventricular shunt
2	CRAN	Craniotomy
Priority	Code	Neck Operations
1	NECK	Neck surgery
2	THYR	Thyroid and or parathyroid surgery