# Surgical Site Infection (SSI) Event

**Introduction:** In 2010, an estimated 16 million operative procedures were performed in acute care hospitals in the United States [1]. A recent prevalence study found that SSIs were the most common healthcare-associated infection, accounting for 31% of all HAIs among hospitalized patients [2]. NHSN data for 2006-2008 (16,147 SSIs following 849,659 operative procedures) showed an overall SSI rate of 1.9% [3].

While advances have been made in infection control practices, including improved operating room ventilation, sterilization methods, barriers, surgical technique, and availability of antimicrobial prophylaxis, SSIs remain a substantial cause of morbidity, prolonged hospitalization, and death. SSI is associated with a mortality rate of 3%,and 75% of SSI-associated deaths are directly attributable to the SSI [4].

Surveillance of SSI with feedback of appropriate data to surgeons has been shown to be an important component of strategies to reduce SSI risk [5-8]. A successful surveillance program includes the use of epidemiologically-sound infection definitions and effective surveillance methods, stratification of SSI rates according to risk factors associated with SSI development, and data feedback [6, 7]. A new CDC and Healthcare Infection Control Practices Advisory Committee guideline for the prevention of surgical site infection is scheduled for publication, and will replace the previous *Guideline for Prevention of Surgical Site Infection, 1999* [8].

**Settings:** Surveillance of surgical patients will occur in any inpatient and/or outpatient setting where the selected NHSN operative procedure(s) are performed.

**Requirements:** Perform surveillance for SSI following at least one NHSN operative procedure category (Table 1) as indicated in the *Patient Safety Monthly Reporting Plan* (CDC 57.106). Collect SSI (numerator) and operative procedure category (denominator) data on all procedures included in the selected procedure categories for at least one month to meet NHSN requirements, or as otherwise specified by state or federal reporting requirements. A procedure must meet the NHSN definition of an operative procedure in order to be included in the surveillance. For the procedures that you follow you will report superficial, deep, and organ space SSIs.

SSI monitoring requires active, patient-based, prospective surveillance. Post-discharge and ante-discharge surveillance methods should be used to detect SSIs following inpatient and outpatient operative procedures. These methods include 1) direct examination of patients' wounds during follow-up visits to either surgery clinics or physicians' offices, 2) review of medical records or surgery clinic patient records, 3) surgeon surveys by mail or telephone, and 4) patient surveys by mail or telephone (though patients may have a difficult time assessing their infections). Any combination of these methods is acceptable for use; however, CDC criteria for SSI must be used. To minimize Infection Preventionists' (IPs) workload of collecting denominator data, operating room data may be downloaded (see file specifications at: http://www.cdc.gov/nhsn/PDFs/ImportingProcedureData_current.pdf).

An SSI will be associated with a particular NHSN operative procedure and the facility in which that procedure was performed. Refer to the NHSN application's Help system for instruction on linking an SSI to an operative procedure.

The *International Classification of Diseases, 9th Revision Clinical Modifications* (ICD-9-CM) codes, which are defined by the ICD-9 Coordination and Maintenance Committee of the National Center for Health Statistics and the Centers for Medicare and Medicaid Services (CMS), are developed as a tool for classification of morbidity data. The wide use enables the grouping of surgery types for the purpose of determining SSI rates. . Table 1 lists NHSN operative procedure category groupings by ICD-9-CM codes. Because ambulatory surgery centers and hospital outpatient surgery departments may not use ICD-9-CM procedure codes, Table 1 provides Current Procedural Terminology (CPT) code mapping for certain NHSN operative procedure categories to assist users in determining the correct NHSN code to report for outpatient surgery cases. However, when available, ICD-9-CM codes take precedence over CPTcodes when determining the appropriate NHSN operative procedure category for inpatient surgery cases. Table 1 also includes a general description of the types of operations contained in the NHSN operative procedure categories. NHSN will provide updates as needed regarding the planned transition from ICD-9-CM to ICD-10 procedure terminology by late 2015.

**Definition of an NHSN operative procedure:**

An NHSN operative procedure is a procedure

- that is included in Table 1
  *and*
- takes place during an operation where at least one incision (including laporoscopic approach) is made through the skin or mucous membrane, or reoperation via an incision that was left open during a prior operative procedure
  *and*
- takes place in an operating room [OR], defined as a patient care area that met the Facilities Guidelines Institute's (FGI) or American Institute of Architects' (AIA) criteria for an operating room when it was constructed or renovated [9]. This may include an operating room, C-section room, interventional radiology room, or a cardiac catheterization lab.

Exclusions: Otherwise eligible procedures that are assigned an ASA score of 6 are not eligible for NHSN SSI surveillance

**NOTE:** Incisional closure is NOT a part of the NHSN operative procedure definition; all otherwise eligible procedures are included, regardless of closure type. Therefore both primarily closed procedures and those that are not closed primarily should be entered into the denominator data for procedures in the facility's monthly reporting plan. Any SSIs attributable to either primarily closed or non primarily closed procedures should be reported.

**Table 1.** ***NHSN Operative Procedure Category Mappings to ICD-9-CM Codes and CPT Codes*** **(**NHSN will provide updates as needed concerning the transition from ICD-9-CM to ICD-10 procedure coding)

When available, ICD-9-CM codes take precedence over CPT codes when determining the appropriate NHSN operative procedure category for inpatient surgery cases.

| Legacy Code | Operative Procedure | Description | ICD-9-CM Codes / CPT Codes |
|---|---|---|---|
| AAA | Abdominal aortic aneurysm repair | Resection of abdominal aorta with anastomosis or replacement | 38.34, 38.44, 38.64 |
| AMP | Limb amputation | Total or partial amputation or disarticulation of the upper or lower limbs, including digits | 84.00-84.19, 84.91 |
| APPY | Appendix surgery | Operation of appendix | 47.01, 47.09, 47.2, 47.91, 47.92, 47.99 |
| AVSD | Shunt for dialysis | Arteriovenostomy for renal dialysis | 39.27, 39.42 |
| BILI | Bile duct, liver or pancreatic surgery | Excision of bile ducts or operative procedures on the biliary tract, liver or pancreas (does not include operations only on gallbladder) | 50.0, 50.12, 50.14, 50.21-50.23, 50.25, 50.26, 50.29, 50.3, 50.4, 50.61, 50.69, 51.31-51.37, 51.39, 51.41-51.43, 51.49, 51.51, 51.59, 51.61-51.63, 51.69, 51.71, 51.72, 51.79, 51.81-51.83, 51.89, 51.91-51.95, 51.99, 52.09, 52.12, 52.22, 52.3**,** 52.4, 52.51-52.53, 52.59-52.6, 52.7, 52.92, 52.95, 52.96, 52.99 |
| BRST | Breast surgery | Excision of lesion or tissue of breast including radical, modified, or quadrant resection, lumpectomy, incisional biopsy, or mammoplasty | 85.12, 85.20-85.23, 85.31-85.36, 85.41-85.48, 85.50, 85.53-85.55, 85.6, 85.70-85.76, 85.79, 85.93-85.96<br>19101, 19112, 19120, 19125, 19126, 19300, 19301, 19302, 19303, 19304, 19305, 19306, 19307, 19316, 19318, 19324, 19325, 19328, 19330, 19340, 19342, 19350, 19355, 19357, 19361, 19364, 19366, 19367, 19368, 19369, 19370, 19371, 19380 |

| Legacy Code | Operative Procedure | Description | ICD-9-CM Codes / CPT Codes |
|---|---|---|---|
| CARD | Cardiac surgery | Procedures on the heart; includes valves or septum; does not include coronary artery bypass graft, surgery on vessels, heart transplantation, or pacemaker implantation | 35.00-35.04, 35.06, 35.08, 35.10-35.14, 35.20-35.28, 35.31-35.35, 35.39, 35.42, 35.50, 35.51, 35.53, 35.54, 35.60-35.63, 35.70-35.73, 35.81-35.84, 35.91-35.95, 35.98-35.99, 37.10-37.12, 37.31-37.33, 37.35-37.37, 37.41, 37.49, 37.60 |
| CEA | Carotid endarterectomy | Endarterectomy on vessels of head and neck (includes carotid artery and jugular vein) | 38.12 |
| CBGB | Coronary artery bypass graft with **both** chest and donor site incisions | Chest procedure to perform direct revascularization of the heart; includes obtaining suitable vein from donor site for grafting | 36.10-36.14, 36.19 |
| CBGC | Coronary artery bypass graft with chest incision only | Chest procedure to perform direct vascularization of the heart using, for example the internal mammary (thoracic) artery | 36.15-36.17, 36.2 |
| CHOL | Gallbladder surgery | Cholecystectomy and cholecystotomy | 51.03, 51.04, 51.13, 51.21-51.24<br>47480, 47562, 47563, 47564, 47600, 47605, 47610, 47612, 47620 |
| COLO | Colon surgery | Incision, resection, or anastomosis of the large intestine; includes large-to-small and small-to-large bowel anastomosis; does not include rectal operations | 17.31-17.36, 17.39, 45.03, 45.26, 45.41, 45.49, 45.52, 45.71-45.76, 45.79, 45.81-45.83, 45.92-45.95, 46.03, 46.04, 46.10, 46.11, 46.13, 46.14, 46.43, 46.52, 46.75, 46.76, 46.94<br>44140, 44141, 44143, 44144, 44145, 44146, 44147, 44150, 44151, 44160, 44204, 44205, 44206, 44207, 44208, 44210 |
| CRAN | Craniotomy | Excision repair, or exploration of the brain or meninges; does not include taps or punctures | 01.12, 01.14, 01.20-01.25, 01.28, 01.29, 01.31, 01.32, 01.39, 01.41, 01.42, 01.51-01.53, 01.59, 02.11-02.14, 02.91-02.93, 07.51-07.54, 07.59, 07.61-07.65, 07.68, 07.69, 07.71, 07.72, 07.79, 38.01, 38.11, 38.31, 38.41, 38.51, 38.61, 38.81, 39.28 |

| Legacy Code | Operative Procedure | Description | ICD-9-CM Codes / CPT Codes |
|---|---|---|---|
| CSEC | Cesarean section | Obstetrical delivery by Cesarean section | 74.0, 74.1, 74.2, 74.4, 74.91, 74.99 |
| FUSN | Spinal fusion | Immobilization of spinal column | 81.00-81.08 |
| FX | Open reduction of fracture | Open reduction of fracture or dislocation of long bones with or without internal or external fixation; does not include placement of joint prosthesis | 79.21, 79.22, 79.25, 79.26, 79.31, 79.32, 79.35, 79.36, 79.51, 79.52, 79.55, 79.56<br>23615, 23616, 23630, 23670, 23680, 24515, 24516, 24538, 24545, 24546, 24575, 24579, 24586, 24587, 24635, 24665, 24666, 24685, 25337, 25515, 25525, 25526, 25545, 25574, 25575, 25607, 25608, 25609, 25652, 27236, 27244, 27245, 27248, 27254, 27269, 27283, 27506, 27507, 27511, 27513, 27514, 27535, 27536, 27540, 27758, 27759, 27766, 27769, 27784, 27792, 27814, 27822, 27826, 27827, 27828 |
| GAST | Gastric surgery | Incision or excision of stomach; includes subtotal or total gastrectomy; does not include vagotomy and fundoplication | 43.0, 43.42, 43.49, 43.5, 43.6, 43.7, 43.81, 43.82, 43.89, 43.91, 43.99, 44.15, 44.21, 44.29, 44.31, 44.38-44.42, 44.49, 44.5, 44.61-44.65, 44.68-44.69, 44.95-44.98 |
| HER | Herniorrhaphy | Repair of inguinal, femoral, umbilical, or anterior abdominal wall hernia; does not include repair of diaphragmatic or hiatal hernia or hernias at other body sites | 17.11-17.13, 17.21-17.24, 53.00-53.05, 53.10-53.17, 53.21, 53.29, 53.31, 53.39, 53.41-53.43, 53.49, 53.51, 53.59, 53.61-53.63, 53.69<br>49491, 49492, 49495, 49496, 49500, 49501, 49505, 49507, 49520, 49521, 49525, 49550, 49553, 49555, 49557, 49560, 49561, 49565, 49566, 49568, 49570, 49572, 49580, 49582, 49585, 49587, 49590, 49650, 49651, 49652, 49653, 49654, 49655, 49656, 49657, 49659, 55540 |
| HPRO | Hip prosthesis | Arthroplasty of hip | 00.70-00.73, 00.85-00.87, 81.51-81.53<br>27125, 27130, 27132, 27134, 27137, 27138, 27236, 27299 |

| Legacy Code | Operative Procedure | Description | ICD-9-CM Codes / CPT Codes |
|---|---|---|---|
| HTP | Heart transplant | Transplantation of heart | 37.51-37.55 |
| HYST | Abdominal hysterectomy | Abdominal hysterectomy; includes that by laparoscope | 68.31, 68.39, 68.41, 68.49, 68.61, 68.69<br>58150, 58152, 58180, 58200, 58210, 58541, 58542, 58543, 58544, 58548, 58570, 58571, 58572, 58573, 58951, 58953, 58954, 58956 |
| KPRO | Knee prosthesis | Arthroplasty of knee | 00.80-00.84, 81.54, 81.55<br>27438, 27440, 27441, 27442, 27443, 27445, 27446, 27447, 27486, 27487 |
| KTP | Kidney transplant | Transplantation of kidney | 55.61, 55.69 |
| LAM | Laminectomy | Exploration or decompression of spinal cord through excision or incision into vertebral structures | 03.01, 03.02, 03.09, 80.50, 80.51, 80.53, 80.54, 80.59, 84.60-84.69, 84.80-84.85 |
| LTP | Liver transplant | Transplantation of liver | 50.51, 50.59 |
| NECK | Neck surgery | Major excision or incision of the larynx and radical neck dissection; does not include thyroid and parathyroid operations | 30.1, 30.21, 30.22, 30.29, 30.3, 30.4, 31.45, 40.40-40.42 |
| NEPH | Kidney surgery | Resection or manipulation of the kidney with or without removal of related structures | 55.01, 55.02, 55.11, 55.12, 55.24, 55.31, 55.32, 55.34, 55.35, 55.39, 55.4, 55.51, 55.52, 55.54, 55.91 |
| OVRY | Ovarian surgery | Operations on ovary and related structures | 65.01, 65.09, 65.12, 65.13, 65.21-65.25, 65.29, 65.31, 65.39, 65.41, 65.49, 65.51-65.54, 65.61-65.64, 65.71-65.76, 65.79, 65.81, 65.89, 65.92-65.95, 65.99 |
| PACE | Pacemaker surgery | Insertion, manipulation or replacement of pacemaker | 00.50-00.54, 17.51, 17.52, 37.70-37.77, 37.79-37.83, 37.85-37.87, 37.89, 37.94-37.99 |
| PRST | Prostate surgery | Suprapubic, retropubic, radical, or perineal excision of the prostate; does not include transurethral | 60.12, 60.3, 60.4, 60.5, 60.61, 60.69 |

| Legacy Code | Operative Procedure | Description | ICD-9-CM Codes / CPT Codes |
|---|---|---|---|
| | | resection of the prostate | |
| PVBY | Peripheral vascular bypass surgery | Bypass operations on peripheral arteries | 39.29 |
| REC | Rectal surgery | Operations on rectum | 48.25, 48.35, 48.40, 48.42, 48.43, 48.49-48.52, 48.59, 48.61-48.65, 48.69, 48.74 |
| RFUSN | Refusion of spine | Refusion of spine | 81.30-81.39 |
| SB | Small bowel surgery | Incision or resection of the small intestine; does not include small-to-large bowel anastomosis | 45.01, 45.02, 45.15, 45.31-45.34, 45.51, 45.61-45.63, 45.91, 46.01, 46.02, 46.20-46.24, 46.31, 46.39, 46.41, 46.51, 46.71-46.74, 46.93 |
| SPLE | Spleen surgery | Resection or manipulation of spleen | 41.2, 41.33, 41.41-41.43, 41.5, 41.93, 41.95, 41.99 |
| THOR | Thoracic surgery | Noncardiac, nonvascular thoracic surgery; includes pneumonectomy and hiatal hernia repair or diaphragmatic hernia repair (except through abdominal approach) | 32.09, 32.1, 32.20-32.23, 32.25, 32.26, 32.29, 32.30, 32.39, 32.41, 32.49, 32.50, 32.59, 32.6, 32.9, 33.0, 33.1, 33.20, 33.25, 33.28, 33.31-33.34, 33.39, 33.41-33.43, 33.48, 33.49, 33.98, 33.99, 34.01-34.03, 34.06, 34.1, 34.20, 34.26, 34.3, 34.4, 34.51, 34.52, 34.59, 34.6, 34.81-34.84, 34.89, 34.93, 34.99, 53.80-53.84 |
| THYR | Thyroid and/or parathyroid surgery | Resection or manipulation of thyroid and/or parathyroid | 06.02, 06.09, 06.12, 06.2, 06.31, 06.39, 06.4, 06.50-06.52, 06.6, 06.7, 06.81, 06.89, 06.91-06.95, 06.98, 06.99 |
| VHYS | Vaginal hysterectomy | Vaginal hysterectomy; includes that by laparoscope | 68.51, 68.59, 68.71, 68.79 |
| VSHN | Ventricular shunt | Ventricular shunt operations, including revision and removal of shunt | 02.21, 02.22, 02.31-02.35, 02.39, 02.42, 02.43, 54.95† |
| XLAP | Exploratory laparotomy | Procedures involving a incision through abdominal wall to gain access into the abdominal cavity; diagnostic procedure on abdominal region | 53.71, 53.72, 53.75, 54.0, 54.11, 54.12, 54.19, 54.3, 54.4, 54.51, 54.59, 54.61, 54.63, 54.64, 54.71-54.75, 54.92, 54.93 |

[†]Include only if this procedure involves ventricular shunt (i.e., is not a Ladd procedure to repair malrotation of intestines).

For a complete list of all ICD-9-CM codes mapped to their assignment as an NHSN operative procedure category, a surgical procedure other than an NHSN operative procedure (OTH), or a non-operative procedure (NO), see ICD-9-CM Procedure Code Mapping to NHSN Operative Procedure Categories at http://www.cdc.gov/nhsn/XLS/ICD-9-cmCODEScurrent.xlsx.

**Denominator for Procedure Definitions:**

ASA physical status: Assessment by the anesthesiologist of the patient's preoperative physical condition using the American Society of Anesthesiologists' (ASA) Classification of Physical Status [10, 11]. Patient is assigned one of the following:

1. A normally healthy patient
2. A patient with mild systemic disease
3. A patient with severe systemic disease
4. A patient with severe systemic disease that is a constant threat to life
5. A moribund patient who is not expected to survive without the operation.

   NOTE: Do NOT report procedures with an ASA physical status of 6 (a declared brain-dead patient whose organs are being removed for donor purposes) to NHSN.

Date of event: For an SSI the date of event is the date when the last element used to meet the SSI infection criterion occurred. Synonym: infection date.

Diabetes: The NHSN, SSI surveillance definition of diabetes indicates that the patient has a discharge ICD-9 principal or secondary code in the 250.XX to 250.XX code.

Duration of operative procedure: The interval in hours and minutes between the Procedure/Surgery Start Time, and the Procedure/Surgery Finish Time, as defined by the Association of Anesthesia Clinical Directors (AACD) [12]:

- Procedure/Surgery Start Time (PST): Time when the procedure is begun (*e.g.*, incision for a surgical procedure).
- Procedure/Surgery Finish (PF): Time when all instrument and sponge counts are completed and verified as correct, all postoperative radiologic studies to be done in the OR are completed, all dressings and drains are secured, and the physicians/surgeons have completed all procedure-related activities on the patient.

Emergency operative procedure: A nonelective, unscheduled operative procedure. Emergency operative procedures are those that do not allow for the standard immediate preoperative preparation normally done within the facility for a scheduled operation (e.g., stable vital signs, adequate antiseptic skin preparation, colon decontamination in advance of colon surgery, etc.).

General anesthesia: The administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain free, amnesic, unconscious, and often paralyzed with relaxed muscles.

Height: The patient's most recent height documented in the medical record in feet (ft) and inches (in), or meters (m).

NHSN Inpatient: A patient whose operative procedure occurs in an acute care OR setting regardless of the duration of the admission.

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

Non-primary Closure is defined as closure that is other than primary and includes surgeries in which the superficial layers are left completely open during the original surgery and therefore cannot be classified as having primary closure. For surgeries with non-primary closure, the deep tissue layers may be closed by some means (with the superficial layers left open), or the deep and superficial layers may both be left completely open. An example of a surgery with non-primary closure would be a laparotomy in which the incision was closed to the level of the deep tissue layers, sometimes called "fascial layers" or "deep fascia," but the superficial layers are left open. Another example would be an "open abdomen" case in which the abdomen is left completely open after the surgery. If the deep fascial levels of an incision are left open but the skin is closed, this is considered a non-primary closure since the incision was not closed at all tissue levels. Wounds that are "closed secondarily" at some later date, or described as "healing by secondary intention" should also be classified as having non-primary closure. Wounds with non-primary closure may or may not be described as "packed" with gauze or other material, and may or may not be covered with plastic, "wound vacs," or other synthetic devices or materials.

***** Primary Closure is defined as closure of all tissue levels during the original surgery, regardless of the presence of wires, wicks, drains, or other devices or objects extruding through the incision. This category includes surgeries where the skin is closed by some means, including incisions that are described as being "loosely closed" at the skin level. Thus, if any portion of the incision is closed at the skin level, by any manner, a designation of primary closure should be assigned to the surgery.

Scope: An instrument used to visualize the interior of a body cavity or organ. 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 (i.e., open approach). Robotic assistance is considered equivalent to use of a scope for NHSN SSI surveillance. See also Instructions for Completion of *Denominator forProcedure* Form and both Numerator Data and Denominator Data reporting instructions in this chapter.

Trauma: Blunt or penetrating injury.

Weight: The patient's most recent weight documented in the medical record in pounds (lbs) or kilograms (kg) prior to or otherwise closest to the procedure.

Wound class: An assessment of the degree of contamination of a surgical wound at the time of the operation. Wound class should be assigned by a person involved in the surgical procedure, e.g., surgeon, circulating nurse, etc. The wound class system used in NHSN is an adaptation of the American College of Surgeons wound classification schema[8].

Wounds are divided into four classes:

*Clean*: An uninfected operative wound in which no inflammation is encountered and the respiratory, alimentary, genital, or uninfected urinary tracts are not entered. In addition, clean wounds are primarily closed and, if necessary, drained with closed drainage. Operative incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria. **NOTE:** The clean wound classification level will not be available for denominator data entry for the following NHSN operative procedure categories: APPY, BILI, CHOL, COLO, REC, SB, and VHYS

*Clean-Contaminated*: Operative wounds in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.

*Contaminated*: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, nonpurulent inflammation is encountered including necrotic tissue without evidence of purulent drainage (e.g., dry gangrene) are included in this category.

*Dirty or Infected*: Includes old traumatic wounds with retained devitalized tissue and those that involve existing clinical infection or perforated viscera. This definition suggests that the organisms causing postoperative infection were present in the operative field before the operation.

**Table 2.** ***Surgical Site Infection Criteria***

| Criterion | Surgical Site Infection (SSI) |
|---|---|
| | **Superficial incisional SSI**<br>Must meet the following criteria: |
| | Infection occurs within 30 days after any NHSN operative procedure (where day 1 = the procedure date), including those coded as 'OTH'*****<br>a*nd*<br>involves only skin and subcutaneous tissue of the incision<br>*and*<br>patient has at least one of the following:<br>a. purulent drainage from the superficial incision.<br>b. organisms isolated from an aseptically-obtained culture of fluid or tissue from the superficial incision or subcutaneous tissue.<br>c. superficial incision that is deliberately opened by a surgeon, attending physician** or other designee and is culture positive or not cultured<br>*and*<br>patient has at least one of the following signs or symptoms: pain or tenderness; localized swelling; redness; or heat. A culture negative finding does not meet this criterion.<br>d. diagnosis of a superficial incisional SSI by the surgeon or attending physician** or other designee.<br><br>*****http://www.cdc.gov/nhsn/XLS/ICD-9-cmCODEScurrent.xlsx<br>** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency physician or physician's designee (nurse practitioner or physician's assistant). |
| **Comments** | There are two specific types of superficial incisional SSIs:<br>1. Superficial Incisional Primary (SIP) – a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)<br>2. Superficial Incisional Secondary (SIS) – a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB) |
| **REPORTING INSTRUCTIONS for Superficial SSI** | **The following do not qualify as criteria for meeting the NHSN definition of superficial SSI:**<br>• A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration)<br>• A localized stab wound or pin site infection. While it would be considered either a skin (SKIN) or soft tissue (ST) infection, depending on its depth, it is not reportable under this module. |

| | |
|---|---|
| | • Diagnosis of "cellulitis", by itself, does not meet criterion d for superficial incisional SSI. If the MD treats a cellulits this should still not be attributed to the operative procedure.<br>• Circumcision is not an NHSN operative procedure. An infected circumcision site in newborns is classified as CIRC and is not reportable under this module.<br>• An infected burn wound is classified as BURN and is not reportable under this module. |
| | **Deep incisional SSI**<br>Must meet the following criteria: |
| | Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 3<br>*and*<br>involves deep soft tissues of the incision (e.g., fascial and muscle layers)<br>*and*<br>patient has at least one of the following:<br>a. purulent drainage from the deep incision.<br>b. a deep incision that spontaneously dehisces, is deliberately opened. or percutaneous aspiration by a surgeon, attending physician** or other designee and is culture-positive or not cultured<br>*and*<br>patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness. A culture-negative finding does not meet this criterion.<br>c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test.<br><br>** The term attending physician for the purposes of application of the NHSN SSI criteria may be interpreted to mean the surgeon(s), infectious disease, other physician on the case, emergency physician or physician's designee (nurse practitioner or physician's assistant). |
| **Comments** | There are two specific types of deep incisional SSIs:<br>1. Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)<br>2. Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB) |

| | |
|---|---|
| | **Organ/Space SSI**<br>Must meet the following criteria: |
| | Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 3<br>*and*<br>infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure<br>*and*<br>patient has at least one of the following:<br>a. purulent drainage from a drain that is placed into the organ/space (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)<br>b. organisms isolated from an aseptically-obtained culture of fluid or tissue in the organ/space<br>c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test<br>*and*<br>meets at least one criterion for a specific organ/space infection site listed in Table 4. |
| **Comments** | Because 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, the criterion for infection at these body sites must be met in addition to the organ/space SSI criteria. For example, an appendectomy with subsequent subdiaphragmatic abscess would be reported as an organ/space SSI at the intraabdominal specific site (SSI-IAB) when both organ/space SSI and IAB criteria are met. Table 4 list the specific sites that must be used to differentiate organ/space SSI. These criteria are in the Surveillance Definitions for Specific Types of Infections chapter. |
| **REPORTING INSTRUCTIONS** | • If a patient has an infection at the site of the operative procedure, subsequent continuation of this infection type during the remainder of the surveillance period is considered an SSI ( see PATOS definition in denominator reporting instructions), Report mediastinitis following cardiac surgery that is accompanied by osteomyelitis as SSI-MED rather than SSI-BONE.<br>• If meningitis (MEN) and a brain abscess (IC) are present together after operation, report as SSI-IC. Similarly, if meningitis and spinal abscess (SA) are present together after an operation, report as SSI-SA.<br>• Report CSF shunt infection as SSI-MEN if it occurs within 90 days of placement; if later or after manipulation/access, it is considered CNS-MEN and is not reportable under this module. |

**Table 3.** ***Surveillance Period for Deep Incisional or Organ/Space SSI Following Selected NHSN Operative Procedure Categories. Day 1 = the date of the procedure.***

| 30-day Surveillance | | | |
|---|---|---|---|
| **Code** | **Operative Procedure** | **Code** | **Operative Procedure** |
| AAA | Abdominal aortic aneurysm repair | LAM | Laminectomy |
| AMP | Limb amputation | LTP | Liver transplant |
| APPY | Appendix surgery | NECK | Neck surgery |
| AVSD | Shunt for dialysis | NEPH | Kidney surgery |
| BILI | Bile duct, liver or pancreatic surgery | OVRY | Ovarian surgery |
| CEA | Carotid endarterectomy | PRST | Prostate surgery |
| CHOL | Gallbladder surgery | REC | Rectal surgery |
| COLO | Colon surgery | SB | Small bowel surgery |
| CSEC | Cesarean section | SPLE | Spleen surgery |
| GAST | Gastric surgery | THOR | Thoracic surgery |
| HTP | Heart transplant | THYR | Thyroid and/or parathyroid surgery |
| HYST | Abdominal hysterectomy | VHYS | Vaginal hysterectomy |
| KTP | Kidney transplant | XLAP | Exploratory Laparotomy |
| | | OTH | Other operative procedures not included in the NHSN categories |

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

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

**Table 4. *Specific Sites of an Organ/Space SSI*.** Criteria for these sites can be found in the NHSN Help system (must be logged in to NHSN) or the Surveillance Definitions for Specific Types of Infections chapter.

| Code | Site | Code | Site |
|---|---|---|---|
| BONE | Osteomyelitis | LUNG | Other infections of the respiratory tract |
| BRST | Breast abscess or mastitis | MED | Mediastinitis |
| CARD | Myocarditis or pericarditis | MEN | Meningitis or ventriculitis |
| DISC | Disc space | ORAL | Oral cavity (mouth, tongue, or gums) |
| EAR | Ear, mastoid | OREP | Other infections of the male or female reproductive tract |
| EMET | Endometritis | OUTI | Other infections of the urinary tract |
| ENDO | Endocarditis | PJI | Periprosthetic Joint Infection |
| EYE | Eye, other than conjunctivitis | SA | Spinal abscess without meningitis |
| GIT | GI tract | SINU | Sinusitis |
| HEP | Hepatitis | UR | Upper respiratory tract |
| IAB | Intraabdominal, not specified | VASC | Arterial or venous infection |
| IC | Intracranial, brain abscess or dura | VCUF | Vaginal cuff |
| JNT | Joint or bursa | | |

**Numerator Data:** All patients having any of the procedures included in the selected NHSN operative procedure category(s) are monitored for signs of SSI. The *Surgical Site Infection (SSI)* form is completed for each such patient found to have an SSI. If no SSI events are identified during the surveillance month, check the "Report No Events" field in the Missing PA Events tab of the Incomplete/Missing List.

The Instructions for Completion of the Surgical Site Infection form include brief instructions for collection and entry of each data element on the form. The SSI form includes patient demographic information and information about the operative procedure, including the date and type of procedure. Information about the SSI includes the date of SSI, specific criteria met for identifying the SSI, when/how the SSI was detected, whether the patient developed a secondary bloodstream infection, whether the patient died, and the organisms isolated from cultures and the organisms' antimicrobial susceptibilities.

**SSI EVENT REPORTING INSTRUCTIONS:**

1. Attributing SSI to an NHSN procedure that was infected at the time of the primary surgery: POA does not apply to SSI and this is stated in the HAI protocol.If the procedure that was performed met criteria for an NSHN operative procedure and is in the facilitys denominator data and then later in the surveillance period the patient developed an infection that meets the NHSN SSI criteria it would be attributed to the procedure. A high wound class does not discount a patient later meeting criteria for an SSI.If a patient has **an infection at the time of surgery,**

subsequent continuation of this infection type during the remainder of the surveillance period is considered an SSI, if SSI criteria are met.

2. Infection present at time of surgery (PATOS) denotes that an infection is present at the time of the start of or during the index surgical procedure (in other words, it is present preoperatively). PATOS does not apply if there is a period of wellness between the time of this preoperative condition and surgery. The infection must be noted/documented preoperatively or found intraoperatively. Only select PATOS if it applies to the depth of SSI that is being attributed to the procedures (e.g., if a Superficial Incisional SSI is assigned as a postoperative occurrence -- only Superficial Incisional SSI PATOS can be selected if the patient meets criteria for Superficial Incisional PATOS [Cannot assign Deep Incisional or Organ/Space PATOS unless the corresponding postoperative occurrence is assigned])
3. **Multiple tissue levels are involved in the infection:** The type of SSI (superficial incisional, deep incisional, or organ/space) reported should reflect the deepest tissue layer involved in the infection:
    a) Report infection that involves the organ/space as an organ/space SSI, whether or not it also involves the superficial or deep incision sites.
    b) Report infection that involves the superficial and deep incisional sites as a deep incisional SSI.
4. Reporting of SSI after a non-primary closure: If a patient develops an SSI after a non-primary closure it should be reported as attributable to that procedure if it meets criteria for an SSI within the surveillance period.

5. **Attributing SSI to a NHSN procedure when several are performed on different dates:** If a patient has several NHSN operative procedures performed on different dates 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 was associated with a different operation. Note: for multiple NHSN operative procedures performed within a 24 hour period, see Denominator Reporting Instruction 7.

6. **Attributing SSI to NHSN procedures that involve multiple primary incision sites:** If multiple primary incision sites of the same NHSN operative procedure become infected, only report as a single SSI, and assign the type of SSI (superficial incisional, deep incisional, or organ/space) that represents the deepest tissue level involved at any of the infected sites. For example:
    a) If one laparoscopic incision meets criteria for a superficial incisional SSI and another meets criteria for a deep incisional SSI, only report one deep incisional SSI.
    b) If one or more laparoscopic incision sites meet criteria for superficial incisional SSI but the patient also has an organ/space SSI related to the laparoscopic procedure, only report one organ/space SSI.
    c) If an operative procedure is limited to a single breast and involves multiple incisions in that breast that become infected, only report a single SSI.
    d) In a colostomy formation or reversal (take down) procedure, the stoma and other abdominal incision sites are considered primary incisions. If both the stoma and another abdominal incision site develop superficial incisional SSI, report only as one SSI (SIP).

7. **Attributing SSI to NHSN procedures that have secondary incision sites**: Certain procedures can involve secondary incisions, when applicable, including BRST, CBGB, CEA, FUSN, REC, PVBY, RFUSN. The superficial incisionaland deep incisional SSI surveillance periods for any secondary incision site are 30 days, regardless of the required deep incisional or organ/space SSI surveillance period for the primary incision site(s) (Table 3). Procedures meeting this designation are reported as only one operative procedure. For example:
    a) A saphenous vein harvest incision site in a CBGB procedure is considered the secondary incision. One CBGB procedure is reported, the saphenous vein harvest site is monitored for 30 days after surgery for SSI, and the chest incision is monitored for 90 days.
    b) A tissue harvest site (e.g., 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 gets infected, report as either SIS or DIS as appropriate.

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

9. **SSI Attribution after Surgical Multiple types of NHSN procedures are performed during a single trip to the OR:** If more than one NHSN operative procedure category was performed through a single incision during a single trip to the operating room, attribute the SSI to 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 an incisional SSI, use the NHSN Principal Operative Procedure Category Selection Lists (Table 5) to select the operative procedure to which the SSI should be attributed. For example, if a patient develops 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.

10. **SSI following invasive manipulation/accession of the operative site:** If during the post-operative period the surgical site has an invasive manipulation/accession for diagnostic or therapeutic purposes (e.g., needle aspiration), and following this manipulation/accession an SSI develops, the infection is not attributed to the operation. This reporting instruction does NOT apply to closed manipulation (e.g., 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.

11. **Reporting instructions for specific post-operative infection scenarios:** As of 2014, an SSI that otherwise meets the NHSN definitions 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. Also, SSI should also be reported regardless of the presence of certain skin conditions (e.g., dermatitis, blister, impetigo) that occur near an incision, and regardless of the possible

occurrence of a "seeding" event from an unrelated procedure (e.g., dental work). This revised instruction concerning various postoperative circumstances is necessary to reduce subjectivity and data collection burden associated with the previously exempted scenarios.

**Table 5.** ***NHSN Principal Operative Procedure Category Selection Lists***
The following lists are derived from the operative procedures listed in Table 1. The categories with the highest risk of SSI are listed before those with lower risks.

| **Priority** | **Code** | **Abdominal Operations** |
|---|---|---|
| 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** | **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 (Brain/Spine) Operations** |
| 1 | VSHN | Ventricular shunt |
| 2 | RFUSN | Refusion of spine |
| 3 | CRAN | Craniotomy |
| 4 | FUSN | Spinal fusion |
| 5 | LAM | Laminectomy |
| **Priority** | **Code** | **Neck Operations** |
| 1 | NECK | Neck surgery |
| 2 | THYR | Thyroid and or parathyroid surgery |

**Denominator Data:** For all patients having any of the procedures included in the NHSN Operative Procedure category(s) selected for surveillance during the month, complete the *Denominator for Procedure* form. The data are collected individually for each operative procedure performed during the month specified on the *Patient Safety Monthly Reporting Plan*. The Instructions for Completion of the Denominator for Procedure Form include brief instructions for collection and entry of each data element on the form.

**DENOMINATOR REPORTING INSTRUCTIONS:**

1. **Closure type**:Incisional closure is NOT a part of the NHSN operative procedure definition; all otherwise eligible procedures are included in the denominator reporting, regardless of closure type. The closure technique is entered for each denominator for procedure. If a procedure has multiple incision sites and any of the incisions are closed primarily then the procedure is entered as having been closed primarly.

2. **Wound class**: A wound class is not an exclusion for denominator reporting. If the procedure meets the definition of an NHSN operative procedure it should be reported in the denominator data regardless of wound class. NHSN will use the wound class for risk adjustment, as appropriate.

3. **Different operative procedure categories performed during same trip to the OR:** If procedures in more than one NHSN operative procedure category are performed during the same trip to the operating room through the same or different incisions, a *Denominator for Procedure* form is reported for each NHSN operative procedure category being monitored. For example, if a CARD and CBGC are done through the same incision, a *Denominator for Procedure* form is reported for each. In another example, if following a motor vehicle accident, a patient has an open reduction of fracture (FX) and splenectomy (SPLE) performed during the same trip to the operating room and both procedure categories are being monitored, complete a *Denominator for Procedure* form for each.

   EXCEPTION: If a patient has both a CBGC and CBGB during the same trip to the operating room, report only as a CBGB. Only report as a CBGC when there is a chest incision only. CBGB and CBGC are never reported for the same patient for the same trip to the operating room. The time from chest incision to chest primary closure is reported as the duration of the procedure.

4. **Duration of the procedure when more than one category of NHSN operative procedure is done through the same incision:** If more than one NHSN operative procedure category is performed through the same incision during the same trip to the operating room, record the combined duration of all procedures, which is the time from procedure/surgery start time to procedure/surgery finish time. For example, if a CBGC and a CARD are performed on a patient during the same trip to the operating room, the time from start time to finish time is reported for both operative procedures.

5. **Same operative procedure category but different ICD-9-CM codes during same trip to the OR:** If procedures of different ICD-9-CM codes from the same NHSN operative procedure category are performed through the same incision, record only one procedure for that category. For example, a facility is performing surveillance for CARD procedures. A patient undergoes a replacement of both the mitral and tricuspid valves (35.23 and 35.27, both CARD) during the same trip to the operating room. Complete one CARD *Denominator for Procedure* form because ICD-9-CM codes 35.23 and 35.27 fall in the same operative procedure category [CARD] (see Table 1).

**NOTE:** When the patient returns to the OR within 24 hours of the end of the first procedure assign the surgical wound closure that applies when the patient leaves the OR from the first operative procedure.

6. **For HPRO and KPRO procedures:** If total or partial revision is is performed note on the denominator for procedure form if the revision was associated with prior infection at index joint.

7. **Bilateral procedures:** For operative procedures that can be performed bilaterally during same trip to operating room (i.e.,, KPRO, HPRO, BRST), two 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 both procedures and split it evenly between the two.
8.

9. **More than one operative procedure through same incision within 24 hours:** If a patient goes to the operating room more than once during the same admission and another procedure of the same or different NHSN procedure category is performed through the same incision and the start time of the second procedure is within 24 hours of the finish time of the original operative incision, report only 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. He returns to the OR six hours later to correct a bleeding vessel (OTH). The second operation has a 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 an 'OTH' record. Report the incisional closure method of the first procedure.

10. Procedure with multiple incisions: If one of the incisions is primarily closed than report the incisional closure method for the procedure as a primary closure.

11. **Patient expires in the OR:** If a patient expires in the operating room, do not complete a *Denominator for Procedure* form. This operative procedure is excluded from the denominator.

12. **Laparoscopic hysterectomy – HYST or VHYS:** When assigning the correct ICD-9-CM hysterectomy procedure code, a trained coder must determine what structures were detached and how they were detached based on the medical record documentation. The code assignment is based on the surgical technique or approach used for the detachment of those structures, not on the location of where the structures were physically removed from the patient's body. Therefore, a total laparoscopic HYST procedure will have detachment of the entire uterus and cervix from the surrounding supporting structures via the laparoscopic technique. A laparoscopically-assisted VHYS involves detachment of the uterus and upper supporting structures via laparoscope but the lower supporting structures and cervix are detached via vaginal incision.

13. **Incidental appendectomy:** Any appendectomy (APPY) should be reported regardless of whether it is incidental.

14. **XLAP:** Any exploratory laparotomy (XLAP) should be reported regardless of whether it results in a procedure from another category being performed.

**Data Analyses:** The Standardized Infection Ratio (SIR) is calculated by dividing the number of observed infections by the number of predicted infections. The number of predicted infections is calculated using SSI probabilities estimated from multivariate logistic regression models constructed from NHSN data during a baseline time period, which represents a standard population's SSI experience [3].

There are three SSI SIR models available from NHSN, each briefly described in the table below.

| | |
|---|---|
| All SSI SIR Model | • Includes Superficial, Deep & Organ/Space SSIs<br>• Superficial & Deep incisional SSIs limited to primary incisional SSIs only<br>• Includes SSIs identified on admission, readmission & via post-discharge surveillance |
| Complex A/R SSI Model | • Includes only Deep incisional primary SSIs & Organ/Space SSIs<br>• Includes only SSIs identified on Admission/Readmission to facility where procedure was performed<br>• Includes only inpatient procedures<br>• Used for the National SIR Report, published annually |

| | |
|---|---|
| Complex 30-day SSI model (used for CMS IPPS) | • Includes only in-plan, inpatient COLO and HYST procedures in adult patients (i.e., ≥ 18 years of age)<br>• Includes only deep incisional primary SSIs and organ/space SSIs with an event date within 30 days of the procedure<br>• Uses only age and ASA to determine risk<br>• Used only for CMS IPPS reporting and for public reporting on Hospital Compare |

**NOTE:** The SIR will be calculated only if the number of expected HAIs (numExp) is ≥ 1 to help enforce a minimum precision criterion .

**NOTE:** In the NHSN application, "predicted" is referred to as "expected".

**NOTE**: All of the SSI SIRs that utilize the 2006-2008 SSI baseline data will include only those procedures that were reported with a primary closure method.[3]

$$\text{SIR} = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$

While the SSI SIR can be calculated for single procedure categories and for specific surgeons, the measure also allows you to summarize your data across multiple procedure categories while adjusting for differences in the estimated probability of infection among the patients included across the procedure categories. For example, you will be able to obtain one SSI SIR adjusting for all procedures reported. Alternatively, you can obtain one SSI SIR for all colon surgeries (COLO) only within your facility.

**NOTE:** SSIs will be included in the numerator of an SIR based on the date of procedure, not the date of event.

SSI rates per 100 operative procedures are calculated by dividing the number of SSIs by the number of specific operative procedures and multiplying the results by 100. SSIs will be included in the numerator of a rate based on the date of procedure, not the date of event. Using the advanced analysis feature of the NHSN application, SSI rate calculations can be performed separately for the different types of operative procedures and stratified by the basic risk index.

Descriptive analysis options of numerator and denominator data are available in the NHSN application, such as line listings, frequency tables, and bar and pie charts. SIRs and SSI rates and run charts are also available. Guides on using NHSN analysis features are available from: http://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.html.

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# Instructions for Completion of Surgical Site Infection (SSI) Form (CDC 57.120)

| Data Field | Instructions for Data Collection |
|---|---|
| Facility ID | The NHSN-assigned facility ID will be auto-entered by the computer. |
| Event # | Event ID number will be auto-entered by the computer. |
| Patient ID | Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters. |
| Social Security # | Optional. Enter the 9-digit numeric patient Social Security Number. |
| Secondary ID | Optional. Enter the alphanumeric ID number assigned by the facility. |
| Medicare # | Required. Enter the patient's Medicare number. |
| Patient Name | Optional. Enter the last, first, and middle name of the patient. |
| Gender | Required. Check Female, Male, or Other to indicate the gender of the patient. |
| Date of Birth | Required. Record the date of the patient birth using this format: MM/DD/YYYY. |
| Ethnicity | Optional. Specify if the patient is either Hispanic or Latino, or Not Hispanic or Not Latino. |
| Race | Optional. Specify one or more of the choices below to identify the patient's race:<br>American Indian/Alaska Native<br>Asian<br>Black or African American<br>Native Hawaiian/Other Pacific Islander<br>White |
| Event Type | Required. Enter SSI. |
| Date of Event | For an HAI (excludes VAE), the date of event is the date when the last element used to meet the CDC/NHSN site-specific infection criterion occurred.<br>Synonyms: infection date, date of infection.<br>Date of event must be within 30 days or 90 days of the date of procedure, depending on the operative procedure category (see Table 3 of the SSI chapter). |
| NHSN Procedure Code | Required. Enter the appropriate NHSN procedure code. For detailed instructions on how to report NHSN operative procedures, see the SSI chapter.<br>**NOTE:** An SSI cannot be "linked" to an operative procedure unless that procedure has already been added to NHSN. If the procedure was previously added, and the "Link to Procedure" button is clicked, the fields pertaining to the operation will be auto-entered by the computer. |
| ICD-9-CM Procedure Code | Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. The only allowed ICD-9-CM codes are shown in Table 1 of the SSI chapter. |
| Date of Procedure | Required. Enter date using this format: MM/DD/YYYY. |

| Data Field | Instructions for Data Collection |
|---|---|
| Outpatient Procedure | Required. Check Y if this operative procedure was performed on an NHSN outpatient, defined as a patient whose date of admission to the healthcare facility and date of discharge are the same calendar day; otherwise check N. |
| MDRO Infection Surveillance | Required. Enter "Yes", if the pathogen is being followed for Infection Surveillance in the MDRO/CDI Module in that location as part of your Monthly Reporting Plan: MRSA, MSSA (MRSA/MSSA), VRE, CephR-*Klebsiella*, CRE-*E. coli*, CRE-*Klebsiella*, MDR-*Acinetobacter* or *C. difficile*. If the pathogen for this infection happens to be an MDRO but your facility is not following the Infection Surveillance in the MDRO/CDI Module in your Monthly Reporting Plan, answer "No" to this question.<br>**NOTE:** For an SSI, the location of attribution is the post-op location, so if-<br>1. The event occurs in a different calendar month from the surgical procedure AND<br>2. Your facility is performing Infection Surveillance for the organism causing the SSI in the post-op location for the month reported in the Date of Event, then answer "Yes" to this question. |
| Date Admitted to Facility | Required. Enter date patient admitted to facility using this format: MM/DD/YYYY. If a patient is readmitted with a previously unreported SSI associated with an operative procedure performed during a previous admission, enter the date of admission of the facility stay in which the operative procedure was performed. An NHSN Inpatient is defined as a patient whose date of admission to the healthcare facility and the date of discharge are different calendar days. When determining a patient's admission dates to both the facility and specific inpatient location, the NHSN user must take into account all such days, including any days spent in an inpatient location as an "observation" patient before being officially admitted as an inpatient to the facility, as these days contribute to exposure risk. Therefore, all such days are included in the counts of admissions and patient days for the facility and specific location, and facility and admission dates must be moved back to the first day spent in the inpatient location. |
| Location | Conditionally required if MDRO Infection Surveillance field is Yes. Enter the patient care area where the patient was assigned in the postoperative period. Inpatient or outpatient locations are allowed, but Operating Room locations are not allowed. |
| Event Details: Specific event | Required. Check the appropriate level of SSI from the list<br>___Superficial incisional primary (SIP)<br>___Superficial incisional secondary (SIS)<br>___Deep incisional primary (DIP)<br>___Deep incisional secondary (DIS)<br>___ Organ/space: __ (Indicate specific site code from Table 2 of the SSI chapter.) |
| Event Details: Specify Criteria Used | Required. Check each of the elements of the definition that were used to identify the specific type of SSI. Specific organ/space event types have their own unique criteria which must be met. They are found in the Surveillance Definitions chapter. |
| Infection present at | Required. Check Y if an infection is present at the time of the start of or during |

| Data Field | Instructions for Data Collection |
|---|---|
| the time of surgery (PATOS) | the index surgical procedure (in other words, it is present preoperatively). PATOS does not apply if there is a period of wellness between the time of this preoperative condition and surgery. The infection must be noted/documented preoperatively or found intraoperatively; otherwise check N. |
| Event Details: Detected | Required.<br>Check A if SSI was identified before the patient was discharged from the facility following the operation.<br>Check P if SSI was identified only as part of post-discharge surveillance. Include as P those SSI identified in the Emergency Department but not readmitted to the facility. Alternatively, if patient was identified by post-discharge surveillance but was also readmitted to the facility, check either RF or RO as appropriate.<br>Check RF if SSI was identified due to patient readmission to the facility where the operation was performed.<br>Check RO if SSI was identified due to readmission to facility other than where the operation was performed. |
| Event Details: Secondary bloodstream infection | Required. Check Y if there is a culture-confirmed bloodstream infection (BSI) and a related healthcare-associated infection at the surgical site, otherwise check N. For detailed instructions on identifying whether the blood culture represents a secondary BSI, refer to the Secondary BSI Guide (Appendix 1 of the Surveillance Definitions chapter). |
| Event Details: Died | Required. Check Y if patient died during the hospitalization, otherwise check N. |
| Event Details: SSI Contributed to Death | Conditionally required. If patient died, check Y if the SSI contributed to death, otherwise check N. |
| Event Details: Discharge Date | Optional. Enter date patient discharged from facility using this format: MM/DD/YYYY. If a patient is readmitted with a previously unreported SSI associated with an operative procedure performed in a previous admission, enter the date of discharge of the facility stay in which the operative procedure was performed. |
| Event Details: Pathogens Identified | Required. Enter Y if a pathogen was identified, N if otherwise. If Y, specify organism name on reverse. |
| Pathogen # for specified Gram-positive Organisms, Gram-negative Organisms, Fungal Organisms, or Other Organisms | Up to three pathogens may be reported. If multiple pathogens are identified, enter the pathogen judged to be the most important cause of infection as #1, the next most as #2, and the least as #3 (usually this order will be indicated on the laboratory report). If the species is not given on the lab report or is not found on the NHSN organism list, then select the "spp" choice for the genus (e.g., *Bacillus natto* is not on the list so would be reported as *Bacillus* spp.). |
| Antimicrobial agent and susceptibility results | Conditionally required if Pathogen Identified = Y.<br>• For those organisms shown on the back of an event form, susceptibility results are required only for the agents listed.<br>• For organisms that are not listed on the back of an event form, the entry of susceptibility results is optional. |

| Data Field | Instructions for Data Collection |
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| | Circle the pathogen's susceptibility result using the codes on the event forms. Additional antimicrobial agents and susceptibility results may be reported for up to a total of 20 agents. |
| Custom Fields | Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MM/DD/YYYY), numeric, or alphanumeric.<br>**NOTE:** Each Custom Field must be set up in the Facility/Custom Options section of the application before the field can be selected for use. |
| Comments | Optional. Enter any information on the event. |

# Instructions for Completion of Denominator for Procedure Form (CDC 57.121)

This form is used for reporting data on each patient having one of the NHSN operative procedures selected for monitoring.

| Data Field | Instructions for Data Collection |
|---|---|
| Facility ID | The NHSN-assigned facility ID will be auto-entered by the computer. |
| Procedure # | The NHSN-assigned Procedure # will be auto-entered by the computer. |
| Patient ID | Required. Enter the alphanumeric patient ID number. This is the patient identifier assigned by the hospital and may consist of any combination of numbers and/or letters. |
| Social Security # | Optional. Enter the 9-digit numeric patient Social Security Number. |
| Secondary ID # | Optional. Enter the alphanumeric ID number assigned by the facility. |
| Medicare # | Optional. Enter the patient's Medicare number. |
| Patient name | Optional. Enter the last, first, and middle name of the patient. |
| Gender | Required. Check Female, Male, or Other to indicate the gender of the patient. |
| Date of birth | Required. Record the date of the patient birth using this format: MM/DD/YYYY. |
| Ethnicity<br>Hispanic or Latino<br><br>Not Hispanic or Not Latino | Optional.<br>If patient is Hispanic or Latino, check this box.<br><br>If patient is not Hispanic or not Latino, check this box. |
| Race | Optional.<br>Check all the boxes that apply to identify the patient's race. |
| Event type | Required. Enter the code for procedure (PROC). |
| NHSN Procedure code | Required. Enter the appropriate NHSN procedure code. |
| Date of procedure | Required. Record the date when the NHSN procedure was begun using this format: MM/DD/YYYY. |

| Data Field | Instructions for Data Collection |
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| ICD-9-CM procedure code | Optional. The ICD-9-CM code may be entered here instead of (or in addition to) the NHSN Procedure Code. If the ICD-9-CM code is entered, the NHSN code will be auto-entered by the computer. If the NHSN code is entered first, you will have the option to select the appropriate ICD-9-CM code. In either case, it is optional to select the ICD-9-CM code. The only allowed ICD-9-CM codes are listed in Table 1 of the SSI chapter. |
| Procedure Details:<br>Outpatient: | Required. Check Y if this operative procedure was performed on an NHSN outpatient, otherwise check N. |
| Duration: | Required. The interval in hours and minutes between the Procedure/Surgery Start Time, and the Procedure/Surgery Finish Time, as defined by the Association of Anesthesia Clinical Directors (AACD):<br>• Procedure/Surgery Start Time (PST): Time when the procedure is begun (e.g., incision for a surgical procedure).<br>• Procedure/Surgery Finish (PF): Time when all instrument and sponge counts are completed and verified as correct, all postoperative radiologic studies to be done in the OR are completed, all dressings and drains are secured, and the physicians/surgeons have completed all procedure-related activities on the patient. |
| Wound class: | Required. Check the appropriate wound class from the list. If the wound class is unknown or not listed work with your OR liaison to obtain a wound class for the procedure. If this is not possible, assign a wound class based on the operative procedure and OR notes. |
| General anesthesia: | Required. Check Y if general anesthesia was used for the operative procedure, otherwise check N. General anesthesia is defined as the administration of drugs or gases that enter the general circulation and affect the central nervous system to render the patient pain free, amnesic, unconscious, and often paralyzed with relaxed muscles. |

| Data Field | Instructions for Data Collection |
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| ASA score: | Conditionally Required. Required for Inpatient procedures only. Check numeric ASA classification at the time of the operative procedure. NOTE: Do NOT report procedures with an ASA physical status of 6 (a declared brain-dead patient whose organs are being removed for donor purposes) to NHSN. |
| Emergency: | Required. Check Y if this operative procedure was a non-elective, unscheduled operative procedure, otherwise check N. Emergency operative procedures are those that do not allow for the standard immediate preoperative preparation normally done within the facility for a scheduled operation (e.g., stable vital signs, adequate antiseptic skin preparation, colon decontamination in advance of colon surgery, etc.). |
| Trauma: | Required. Check Y if operative procedure was performed because of blunt or penetrating traumatic injury to the patient, otherwise check N. |
| Scope: | Required. Check Y if the entire NHSN operative procedure was performed using a laparoscope/robotic assist, otherwise check N<br>NOTES:<br>• For CBGB, if the donor vessel was harvested using a scope, check Y.<br>• Check Y if scope was used for HYST or VHYS, even if uterus was removed from the vagina. |
| Diabetes Mellitus | Required. Indicate Y if the patient has a diagnosis of diabetes requiring management with insulin or a non-insulin anti-diabetic agent. This includes patients with "insulin resistance" who are on management with an anti-diabetic agent. This also includes patients with a diagnosis of diabetes requiring management with an anti-diabetic agent, but who are noted to be non-compliant with their prescribed medications.<br>Indicate N if the patient has no known diagnosis of diabetes, or a diagnosis of diabetes that is controlled by diet alone. Also indicate N if the patient receives insulin for perioperative control of hyperglycemia but has no diagnosis of diabetes. See December 2013 NHSN newsletter for interim reporting guidance. |

| Data Field | Instructions for Data Collection |
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| Height | Required. Height: The patient's most recent height documented in the medical record in feet and inches or meters (m) prior to or otherwise closest to the operative procedure. |
| Weight | Required. Weight: The patient's most recent weight documented in the medical record in pounds (lbs) or kilograms (kg) prior to or otherwise closest to the procedure. |
| Closure Technique | Required. Select Primary or Other than Primary<br>***** Primary Closure is defined as closure of all tissue levels during the original surgery, regardless of the presence of wires, wicks, drains, or other devices or objects extruding through the incision. This category includes surgeries where the skin is closed by some means, including incisions that are described as being "loosely closed" at the skin level. Thus, if any portion of the incision is closed at the skin level, by any manner, a designation of primary closure should be assigned to the surgery.<br><br>Other than Primary includes surgeries in which the superficial layers are left completely open during the original surgery and therefore cannot be classified as having primary closure. For surgeries with non-primary closure, the deep tissue layers may be closed by some means (with the superficial layers left open), or the deep and superficial layers may both be left completely open. An example of a surgery with non-primary closure would be a laparotomy in which the incision was closed to the level of the deep tissue layers, sometimes called "fascial layers" or "deep fascia," but the superficial layers are left open. Another example would be an "open abdomen" case in which the abdomen is left completely open after the surgery. If the deep fascial levels of an incision are left open but the skin is closed, this is considered a non-primary closure since the incision was not closed at all tissue levels. Wounds that are "closed secondarily" at some later date, or described as "healing by secondary intention" should also be classified as having non-primary closure. Wounds with non-primary closure may |

| Data Field | Instructions for Data Collection |
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| | or may not be described as "packed" with gauze or other material, and may or may not be covered with plastic, "wound vacs," or other synthetic devices or materials. |
| Surgeon code: | Optional. Enter code of the surgeon who performed the principal operative procedure. |
| CSEC: Duration of labor | Conditionally required. If operative procedure is CSEC, enter number of hours the patient labored in the hospital from beginning of active labor to delivery of the infant, expressed in hours. The documentation of active labor can be supplied in the chart by a member of the healthcare team or physician. Active labor may be defined by the individual facility's policies and procedures, but should reflect the onset of regular contractions or induction that leads to delivery during this admission.<br><br>If a patient is admitted for a scheduled CSEC and has not yet gone into labor, the duration of labor would be 0. Hours should be rounded in the following manner: ≤30 minutes round down; >30 minutes round up. |
| Circle one: FUSN RFUSN | Conditionally required. If operative procedure is FUSN or RFUSN, circle the procedure that was done. |

| Data Field | Instructions for Data Collection |
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| FUSN/RFUSN: Spinal level | Conditionally required. If operative procedure is FUSN or RFUSN, check appropriate spinal level of procedure from list.<br>• Atlas-Axis – C1 and/or C2 only<br>• Atlas-Axis/Cervical – C1-C7 (any combination excluding C1 and/or C2 only)<br>• Cervical – C3-C7 (any combination)<br>• Cervical/Dorsal/Dorsolumbar – Extends from any cervical through any lumbar levels<br>• Dorsal/Dorsolumbar – T1 – L5 (any combination of thoracic and lumbar)<br>• Lumbar/Lumbosacral – L1-S5 (any combination of lumbar and sacral)<br><br>If more than one level is fused, report category in which the most vertebra were fused. |
| FUSN/RFUSN: Approach/Technique | Conditionally required. If operative procedure is FUSN or RFUSN, check appropriate surgical approach or technique from list. |
| HPRO: | Conditionally required. If operative procedure is HPRO, select TOT (Total), HEMI (Hemi), or RES (Resurfacing) from the list.<br><br>If Total HPRO, select TOTPRIM (Total Primary), TOTREV (Total Revision), or PARTREV (Partial Revision)<br><br>If Hemi HPRO, select PARTPRIM (Partial Primary), TOTREV (Total Revision) or PARTREV (Partial Revision)<br><br>If Resurfacing HPRO, select TOTPRIM (Total Primary), TOTREV (Total Revision), PARTPRIM (Partial Primary) or PARTREV (Partial Revision)<br><br>NOTE: When hardware is inserted for the first time, use the “primary” designation; otherwise, indicate that the procedure was a revision. |

| Data Field | Instructions for Data Collection |
|---|---|
| KPRO: | Conditionally required. If operative procedure is KPRO, select TOT – Primary (Total) or HEMI - Hemi from list.<br><br>If Total KPRO, select TOTPRIM (Total Primary), TOTREV (Total Revision), or PARTREV (Partial Revision)<br><br>If Hemi KPRO, select PARTPRIM (Partial Primary), TOTREV (Total Revision) or PARTREV (Partial Revision)<br><br>NOTE: When hardware is inserted for the first time, use the "primary" designation; otherwise, indicate that the procedure was a revision. |
| If total or partial revision, was the revision associated with prior infection at index joint? | Conditionally required If operative procedure is an HPRO or a KPRO. Check Y if operative procedure was performed on a joint with a prior history of infection, otherwise check N. |
| Custom Fields | Optional. Up to 50 fields may be customized for local or group use in any combination of the following formats: date (MMDDYYY), numeric, or alphanumeric.<br><br>NOTE: Each Custom Field must be set up in the Facility/Custom Options section of NHSN before the field can be selected for use. Data in these fields may be analyzed. |