Outpatient Procedure Component Surgical Site Infection (OPC-SSI) Surveillance

Table of Contents

Introduction

With advances in surgical technology, patients are offered an incredible opportunity for restored health and function. The opposing force to technology advancements is increased risks of adverse and unintended outcomes such as surgical site infection (SSI). The CDC healthcare-associated infection (HAI) prevalence survey found that there were an estimated 110,800 surgical site infections (SSIs) associated with inpatient surgeries in 2015[1]. As these data demonstrate, the frequency of SSI is primarily based on the analysis of operative procedures performed in inpatient settings such as acute care hospitals. These data represent only a fraction of the operative procedures performed on an annual basis and does not reflect the continued trend of surgical services transitioning to the outpatient ambulatory surgery setting.

In 2021, 254 Medicare-certified ambulatory surgery centers (ASCs) were opened, bringing the total number of ASCs in 2021 to 607 [2]. Therefore, it may be safe to assume that the continued growth in outpatient ASCs equate to an increase in the volume of surgical procedures performed in the outpatient ambulatory surgery arena. Procedures performed in ambulatory surgery centers may be considered lower risk and thereby have a lower SSI rate than inpatient surgery settings, the continued growth in these facilities is a signal for the need to monitor procedures performed in the outpatient setting for adverse events such as SSIs. The OPC-SSI module will provide data for analyses to determine how operative procedures performed in ASCs contribute to the burden of SSIs. Data from this module can help identify factors associated with infections as well as targets for prevention strategies.

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.[3,4] Surveillance of SSI with feedback of appropriate data to surgeons has been shown to be an important strategy to reduce SSI risk.[3,4,5, 6]

Advances have been made in infection control practices, including improved operating room ventilation, sterilization methods, barriers, surgical technique, and availability of antimicrobial prophylaxis, yet SSIs remain a substantial cause of morbidity, prolonged hospitalization, and death in the inpatient setting. Continued efforts are needed to identify preventable causes and develop strategies for SSI prevention in all settings including ambulatory surgery centers.

The Outpatient Procedure Component (OPC) is designed for use by ASCs. Surveillance for operative procedure(s) may focus on high risk and/or high-volume procedures. In addition, ASCs should use sound risk assessment practices as well as considerations for mandated reporting requirements to determine which operative procedure(s) to monitor. ASCs may voluntarily enroll in OPC-SSI but federal, state or organizational mandates supersedes voluntary enrollment and individual ASCs must verify and comply with mandated SSI reporting requirements.

OPC-SSI Reporting Requirements

OPC SSI reporting is based on the NHSN operative procedure categories. The NHSN operative procedure categories are listings of operative procedures grouped and categorized around a specific operative description. The OPC operative procedure categories can be found in Table 1. The Current Procedural Terminology (CPT) codes and code descriptions can be found at https://www.cdc.gov/nhsn/xls/opc/opc-cpt-pcm-nhsn.xlsx**. The CPT codes are required for reporting.**

Setting(s)
An Ambulatory Surgical Center (ASC) means any distinct entity that operates exclusively for the purpose of providing surgical services to patients not requiring hospitalization and in which the expected duration of services would not exceed 24 hours following an admission. An ASC must be certified by the Center for Medicare & Medicaid Services, licensed by a state agency or both.

These ASCs will use this protocol for SSI surveillance of surgical patients receiving an eligible NHSN outpatient procedure (Table 1).

Reporting Plan
A facility may choose to perform surgical site surveillance "in-plan" or "off-plan" for any of the NHSN operative procedure categories:

- In-plan surveillance – Facility has indicated in their NHSN *OPC Monthly Reporting Plan* (CDC 57.401) that the OPC-SSI protocol will be used, in its entirety for SSI surveillance. Only in-plan data are included in NHSN annual reports or other NHSN publications.
- Off-plan surveillance – Facility has **not** indicated in their NHSN *OPC Monthly Reporting Plan* (CDC 57.401) that the OPC-SSI protocol will be used, in its entirety for SSI surveillance. Off-plan data are **not** included in NHSN annual reports or other NHSN publications.

Targeted Surveillance using OPC-SSI

a) For each calendar month in which surveillance is conducted, indicate in the *OPC Monthly Reporting Plan* the NHSN operative procedure category selected from Table 1 that is under surveillance for SSI.
b) A facility may choose to monitor any of the NHSN operative procedure categories that are found in Table 1.
c) Perform surveillance for SSI following at least one NHSN operative procedure category (CPT Mapping) as indicated in the *OPC Monthly Reporting Plan* (CDC 57.401) and otherwise specified by mandates and other reporting requirements.
d) Collect SSI event (numerator) and operative procedure (denominator) **data on all procedures** included in the selected procedure category.
e) A procedure must meet the NHSN definition of an operative procedure in order to be included in the surveillance. All procedures included in the NHSN monthly surveillance plan are followed for the prescribed length of time based on the procedure category, for all SSI types: superficial incisional, deep incisional, and organ/space. The type of SSI reported must reflect the deepest tissue level (superficial, deep and organ/space) where SSI criteria are met based on the procedure category.

NOTES:

- *An SSI event is attributed to the facility in which the NHSN operative procedure was performed.*
- *Facilities that have identified potential SSI events that are attributable to procedures performed at a different facility should provide details of the potential events to the facility where the procedure was performed.*

Table 1. NHSN OPC Operative Procedure Categories

Procedure Category	Operative Procedure	Procedure Description
AMP	Limb amputation	Total or partial amputation or disarticulation of the upper or lower limbs, including digits
APPY	Appendix surgery	Operation of appendix
AVSD	AV shunt for dialysis	Arteriovenostomy for renal dialysis
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 on gall bladder only)
BRST	Breast surgery	Excision of lesion or tissue of breast including radical, modified, or quadrant resection, lumpectomy, incisional biopsy, or mammoplasty
CEA	Carotid endarterectomy	Endarterectomy on vessels of head and neck (includes carotid artery and jugular vein)
CHOL	Gallbladder surgery	Cholecystectomy and cholecystotomy
COLO	Colon surgery	Incision, resection, or anastomosis of the large intestine; includes large-to-small and small-to-large bowel anastomosis; see REC for rectal operations
FUSN	Spinal fusion	Immobilization of spinal column
FX	Open reduction of fracture	Open reduction of fracture or dislocation of long bones without internal or external fixation; does not include placement of joint prosthesis
GAST	Gastric surgery	Incision or excision of stomach; includes subtotal or total gastrectomy; does not include vagotomy and fundoplication
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
HPRO	Hip prosthesis	Arthroplasty of hip

HYST	Abdominal hysterectomy	Abdominal hysterectomy; includes that by laparoscope
KPRO	Knee prosthesis	Arthroplasty of knee
LAM	Laminectomy	Exploration or decompression of spinal cord through excision or incision into vertebral structures
NECK	Neck surgery	Major excision or incision of the larynx and radical neck dissection; does not include thyroid and parathyroid operations
NEPH	Kidney surgery	Resection or manipulation of the kidney with or without removal of related structures
OVRY	Ovarian surgery	Operations on ovary and related structures
PACE	Pacemaker surgery	Insertion, manipulation or replacement of pacemaker
PRST	Prostate surgery	Suprapubic, retropubic, radical, or perineal excision of the prostate; does not include transurethral resection of the prostate
PVBY	Peripheral vascular bypass surgery	Bypass operations on peripheral arteries and veins
REC	Rectal surgery	Operations on rectum
SB	Small bowel surgery	Incision or resection of the small intestine; does not include small-to-large bowel anastomosis
SPLE	Spleen surgery	Resection or manipulation of spleen
THOR	Thoracic surgery	Noncardiac, nonvascular thoracic surgery; includes pneumonectomy and hiatal hernia repair or diaphragmatic hernia repair (except through abdominal approach)
THYR	Thyroid and/or parathyroid surgery	Resection or manipulation of thyroid and/or parathyroid
VHYS	Vaginal hysterectomy	Vaginal hysterectomy; excludes the use of laparoscope
VSHN	Ventricular shunt	Ventricular shunt operations, including revision and removal of shunt
XLAP	Exploratory laparotomy	Abdominal operations not involving the gastrointestinal tract or biliary system; includes diaphragmatic hernia repair through abdominal approach

NHSN Operative Procedure Category Mappings to CPT Codes

Operative procedure codes are used in various health care settings as a uniform way to communicate essential information. This wide use of operative procedure codes allows NHSN to standardize the SSI surveillance reporting process. **Current Procedural Terminology (CPT) codes are the operative procedure codes used in OPC and are required for use within the application**.

NHSN has mapped Current Procedural Terminology (CPT) codes to the NHSN OPC operative procedure categories to assist users in determining the correct operative procedures to report for SSI surveillance. The CPT mapping to OPC operative procedure categories can be found in the "Operative Procedure Code Documents" section of the OPC SSI webpage. The procedure code mapping document includes a general definition for each OPC operative procedure category as well as a procedure description for each individual CPT code.

Custom Procedures, Custom Events and Custom Fields

Custom procedures, custom events and custom fields are created by individual facilities. These custom data are optional and allow facility-defined data entry for the facility's own surveillance purposes.

- Custom procedures are non-NHSN operative procedures and cannot be included in the Monthly Reporting Plan and are therefore considered off-plan surveillance.
- Custom events are non-NHSN defined events based on criteria developed by the facility.
- Custom fields are non-NHSN defined variables. These fields may be added to NHSN-defined procedures.

Custom fields, custom procedures and custom events must be created in the application before data can be entered. These data may provide value to the facility if they are entered in a consistent manner. For example, if a facility chooses to create a custom field for admission or discharge diagnosis of infected patients, standardized responses should be entered in a consistent and uniform manner in order to provide meaningful data for the facility.

Data entered in custom fields or in association with custom procedures and events are not included in any of the NHSN reports and there are no available NHSN comparative data. Any related analyses must be performed by the facility.

Instructions for creating custom fields, procedures and events may be found in the "Supporting Materials" section of the OPC SSI webpage.

Key Terms for OPC-SSI

Physician - for NHSN surveillance purposes, the term physician includes the surgeon(s), infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).

Date of event (DOE) - the date when the first element used to meet the OPC-SSI infection criterion occurs for the first time during the SSI surveillance period. The DOE must fall within the SSI surveillance period to meet SSI criteria. The type of SSI (superficial incisional, deep incisional, or organ/space) reported should reflect the deepest tissue layer involved in the infection during the surveillance period. Synonym: infection date.

> Note: SSI guidelines do not offer a strict timeframe for elements of criteria to occur but in NHSN's experience, all elements required to meet an SSI criterion usually occur within a 7-10 day timeframe with typically no more than 2-3 days between elements. To ensure that all elements associate to the SSI, the elements must occur in a relatively tight timeframe. For example, an element that occurs on day 2 of the surveillance period with another element that occurs three weeks later should not be used to cite an SSI. Each case differs based on the individual elements occurring and the type of SSI but the DOE for an SSI must occur within the appropriate 30- or 90-day SSI surveillance period.

NHSN Operative Procedure - is a procedure that

- is included in the NHSN CPT operative procedure category code mapping
  And
- takes place during an operation where at least one incision (including laparoscopic approach) is made through the skin or mucous membrane, or entry is through an existing incision (such as an incision from a prior operative procedure)
  And
- takes place in an operating room (OR), defined as a patient care area that met criteria for an operating room when it was constructed or renovated outlined by the Facilities Guidelines Institute's (FGI)[7], American Institute of Architects' (AIA) or requirements of the State in which it operates. This may include an interventional radiology room or a cardiac catheterization lab.

Surveillance Period - the timeframe following an NHSN operative procedure for monitoring and identifying an SSI event. The surveillance period is determined by the NHSN operative procedure category (for example, laminectomy (LAM) has a 30-day SSI surveillance period and breast surgery (BRST) has a 90-day SSI surveillance period, see Table 2). If a patient returns to the OR and the same surgical site is entered this ends the surveillance period for the prior NHSN operative procedure and begins a new SSI surveillance period if an NHSN operative procedure is performed.

Table 2. Surveillance Periods for SSIs Following Selected NHSN Operative Procedure Categories. Day 1 = the date of the procedure.

30-day Surveillance			
Category	**Operative Procedure**	**Category**	**Operative Procedure**
AMP	Limb amputation	NECK	Neck surgery
APPY	Appendix surgery	NEPH	Kidney surgery
AVSD	Shunt for dialysis	OVRY	Ovarian surgery
BILI	Bile duct, liver or pancreatic surgery	PRST	Prostate surgery
CEA	Carotid endarterectomy	REC	Rectal surgery
CHOL	Gallbladder surgery	SB	Small bowel surgery
COLO	Colon surgery	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HYST	Abdominal hysterectomy	THYR	Thyroid and/or parathyroid surgery
LAM	Laminectomy	VHYS	Vaginal hysterectomy
-	-	XLAP	Exploratory Laparotomy
90-day Surveillance			
Category	**Operative Procedure**		
BRST	Breast surgery		
FUSN	Spinal fusion		
FX	Open reduction of fracture		
HER	Herniorrhaphy		
HPRO	Hip prosthesis		
KPRO	Knee prosthesis		
PACE	Pacemaker surgery		
PVBY	Peripheral vascular bypass surgery		
VSHN	Ventricular shunt		

NOTES:

- *Superficial incisional SSIs are monitored for a 30-day period for all procedure types.*
- *Secondary incisional SSIs are monitored for a 30-day period regardless of the surveillance period for the primary site.*

Table 3. Denominator for Procedure Required Details

These are required elements for reporting each operative procedure performed within the selected operative procedure category. The elements have been identified as risk factors for SSIs. See the *Instructions for Completion of Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* for further details.

ASA physical status	Assessment by the anesthesiologist (or designee) of the patient's preoperative physical condition using the American Society of Anesthesiologists' (ASA) Physical Status Classification System[8]. Patients are assigned an ASA score of 1-6 at the time of surgery. Patients with an ASA score of 1-5 are eligible for NHSN OPC-SSI surveillance. *NOTES:* • *Do NOT report procedures that do not have an ASA score assigned by an anesthesiologist (or designee).* • *Do NOT report procedures with an ASA score of 6 (a declared brain-dead patient whose organs are being removed for donor purposes) to NHSN.*
Diabetes	The NHSN SSI surveillance definition of diabetes indicates that 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 anti-diabetic agents. • A diagnosis of diabetes who are noncompliant with their diabetes medications. • Gestational diabetes. ICD-10-CM diagnosis codes (that reflect a diagnosis of diabetes) documented during the admission when the procedure is performed maybe used to determine diabetes. Acceptable codes are found in the "Operative Procedure Code Documents" section of the OPC SSI webpage. Some patients may receive diabetic medications for indications other than diabetes. For purposes of NHSN reporting, the Diabetes field = NO, if there is no diagnosis of diabetes. •
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)[9]: • Procedure/Surgery Start Time (PST): Time when the procedure is begun (*for example,* 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.

<table>
<tr><td>General anesthesia</td><td>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. This does not include conscious sedation.</td></tr>
<tr><td>Height</td><td>The patient’s most recent height documented in the medical record in feet (ft.) and inches (in.) or meters (m).</td></tr>
<tr><td>Scope</td><td>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).
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.

<table><tr><td>HYST</td><td>58570</td><td>Laparoscopy, surgical, with total hysterectomy, for uterus 250 g or less</td></tr></table>
NOTE:
If a procedure is coded as open and scope, then the procedure should be reported to NHSN as Scope = NO. The open designation is considered a higher risk procedure.

Also see Instructions for Completion of Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404) and reporting instructions for Numerator Data and Denominator Data within this chapter.</td></tr>
<tr><td>Weight</td><td>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.</td></tr>
<tr><td>Wound class</td><td>An assessment of the degree of contamination of a surgical wound at the time of the surgical procedure. Wound class is assigned by a person involved in the surgical procedure (for example, surgeon, circulating nurse, etc.) based on the wound class schema as stated in the facility’s policies and procedures for clinical practice. The four wound classes available within the NHSN application are Clean (C), Clean-Contaminated (CC), Contaminated (CO), and Dirty/Infected (D).

NOTE:
The following NHSN surgical procedure categories APPY, BILI, CHOL, COLO, REC, SB and VHYS cannot be recorded as clean (C) wound class within the application. If a clean (C) wound class was assigned to a procedure in one of these procedure categories, the procedure cannot be included in the denominator for procedure data. The Infection Preventionist should not modify the wound class.</td></tr>
</table>

NOTE:

Incisional closure method is NOT a part of the NHSN OPC-SSI Surveillance definition; therefore, all eligible procedures should be included in SSI surveillance regardless of closure method. Both primarily closed procedures and those that are not closed primarily should be included in the denominator data for procedures in the facility’s NHSN Monthly Reporting Plan. Any SSI attributable to either primarily closed or non-primarily closed procedures should be reported.

Surgical Site Infection (SSI) Criteria

Table 4A. General OPC-SSI Criteria

Apply to all operative procedure categories except Breast Surgery (BRST). Use Breast Surgery (BRST) - Surgical Site Infection Criteria for SSIs attributable to BRST.

OPC General – Superficial Incisional SSI Must meet the following criteria:
Date of event for infection 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. organisms 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 or re-accessed 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. **Comments:** The two specific types of superficial incisional SSIs are: 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 (for example, the knee incision for KPRO procedure). 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 (for example, abdominal incision site for VSHN). **Note:** Refer to Event Reporting Instruction #5 for NHSN operative procedure categories with secondary incision sites available for SSI attribution.

Reporting Instructions for OPC General - Superficial Incisional SSI

The following do not qualify as criteria for meeting the NHSN definition of superficial SSI:

- Diagnosis/treatment of cellulitis does not meet superficial incisional SSI criterion 'd'.
- A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration). Determination of a 'stitch abscess' is not based on a physician diagnosis of 'stitch abscess'.
- A localized stab wound, or pin site infection is not an SSI.

NOTE:

- For an NHSN operative procedure, a laparoscopic trocar site is considered a surgical incision and not a stab wound. If a surgeon uses a laparoscopic trocar site to place a drain at the end of a procedure this is considered a surgical incision.

- For the purpose of NHSN surveillance, the term "incision" refers to the incision made for the primary surgical procedure and the term "stab wound" refers to an incision made at another site, generally to accommodate a drain.

OPC General - Deep Incisional SSI

Must meet the following criteria:

The date of event for infection 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 spontaneously dehisces, or is deliberately opened*, re-accessed 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 from the deep soft tissues 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 or histopathologic exam, or imaging test.

*Excludes any known multi-part/multi-phase procedures that occur over more than one operative episode [during the same admission] that is documented in the medical record by a surgeon prior to first phase of the procedure.

Comments: The two specific types of deep incisional SSIs are:

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 (for example, the hip incision for a HPRO procedure).

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 (for example, abdominal incision site for VSHN).

   Note: Refer to Event Reporting Instruction #5 for NHSN operative procedure categories with secondary incision sites available for SSI attribution.

OPC General - Organ/Space SSI

Must meet the following criteria:

Date of event for infection 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

infection involves the organ/space tissues (deeper than the fascia/muscle).

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, and CT guided drainage).
b. organisms are identified from an aseptically-obtained 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
   - histopathologic exam
   - imaging test consistent with infection.

NOTE:

Meeting additional infection criteria found in the Patient Safety Component Chapter 17, CDC/NHSN Surveillance Definitions for Specific Types of Infections is ***NOT*** *a part of the OPC General - Organ/Space SSIs reporting criteria.*

Table 4B. Breast Surgery (BRST) Surgical Site Infection Criteria

The Breast Surgery (BRST) Surgical Site Infection instructions apply to surgical site infections (SSIs) during the 30-day (superficial SSI) and 90-day (deep and organ/space SSI) postoperative periods following BRST-Breast Surgery performed in Ambulatory Surgery Centers. *Use General OPC-SSI criteria for all operative procedures except breast operative procedures (BRST).*

OPC BRST - Superficial incisional SSI
Must meet the following criteria**:**

Date of event for infection occurs within 30 days following a BRST operative procedure; where day 1 = the procedure date

AND

involves either the skin, subcutaneous tissue (for example, fatty tissue) or breast parenchyma (for example, milk ducts and glands that produce milk) at the incision

AND

patient has at least one of the following:

a. purulent drainage from the superficial incision.
b. organisms 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 or re-accessed 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; redness (erythema); or heat. A culture or non-culture based test that has a negative finding does not meet this criterion.
d. diagnosis of a superficial incisional SSI by a physician or physician designee.

Comments for OPC BRST – Superficial Incisional SSI

The two specific types of superficial incisional SSIs are:

1. Superficial incisional primary (SIP) – a superficial incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (for example, the breast incision for BRST procedure).

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 (for example, transverse rectus abdominis myocutaneous [TRAM] flap incision site for BRST).

Reporting Instructions for OPC BRST - Superficial Incisional SSI

The following do not qualify as criteria for meeting the NHSN definition of superficial SSI:

- Diagnosis/treatment of cellulitis (redness/warmth/swelling), by itself, does not meet superficial incisional SSI criterion ‘d’.

- A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration).
    - Please note, a stitch abscess is defined as above. Determination of a 'stitch abscess' is not based on a physician diagnosis of 'stitch abscess'.
- A localized stab wound, or pin site infection is not an SSI.

OPC BRST - Deep incisional SSI

Must meet the following criteria:

Date of event for infection occurs within 90 days following a BRST operative procedure; where day 1 = the procedure date

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*, re-accessed, or aspirated by a surgeon, physician or physician designee.

And

organism is 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 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 or histopathologic exam.

****Excludes any known multi-part/multi-phase procedures that occur over more than one operative episode [during the same admission] that is documented in the medical record by a surgeon prior to first phase of the procedure.***

Comments for OPC BRST – Deep Incisional SSI

The two specific types of deep incisional SSIs are:

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 (for example, the breast incision for BRST procedure).

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 (for example, transverse rectus abdominis myocutaneous [TRAM] flap incision site for BRST).

OPC BRST - Organ/Space SSI Must meet the following criteria:
Date of event for infection occurs within 90 days following a BRST operative procedure; where day 1 = the procedure date **AND** infection involves any part of the breast deeper than the fascial/muscle layers (subpectoral), 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, and CT guided drainage). b. organisms identified from affected breast tissue or fluid obtained by invasive procedure 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. breast abscess or other evidence of infection detected on gross anatomic or histopathologic exam or imaging test consistent with breast infection.
NOTE: • *Meeting additional infection criteria found in the Patient Safety Component Chapter 17, CDC/NHSN Surveillance Definitions for Specific Types of Infections is NOT a part of the OPC BRST - Organ/Space SSIs reporting criteria.*

Table 4C. Table 4C. Knee prosthesis (KPRO) Surgical Site Infection Criteria

The Knee prosthesis (KPRO) Surgical Site Infection instructions apply to surgical site infections (SSIs) during the 30-day (superficial SSI) and 90-day (deep and organ/space SSI) surveillance periods following knee prosthesis performed in Ambulatory Surgery Centers (ASC). *Use the General OPC-SSI criteria for all operative procedures except breast surgery (BRST) and knee prothesis (KPRO).*

OPC KPRO - Superficial incisional SSI Must meet the following criteria**:**
Date of event for infection occurs within 30 days after a KPRO; where day 1 = the procedure date **AND** involves the skin or subcutaneous tissue (for example, fatty tissue) of the incision **AND** patient has at least one of the following: a. purulent drainage from the superficial incision. b. organisms 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. superficial incision that is deliberately opened or re-accessed 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; redness (erythema); or heat. A culture or non-culture based test that has a negative finding does not meet this criterion. d. diagnosis of a superficial incisional SSI by a physician or physician designee.
OPC KPRO - Deep incisional SSI Must meet the following criteria:
Date of event for infection occurs within 90 days after a KPRO; where day 1 = the procedure date **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*, re-accessed or aspirated by a surgeon, physician or physician designee 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 nonculture 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 that is detected on gross anatomical or histopathologic exam.

*__*Excludes any known multi-part/multi-phase procedures that occur over more than one operative episode [during the same admission] that is documented in the medical record by a surgeon prior to first phase of the procedure.*__

OPC KPRO - Organ/Space SSI

Must meet the following criteria:

Date of event for infection occurs within 90 days following a KPRO; where day 1 = the procedure date **AND**
involves the organ/space tissues (deeper than the fascia/muscle)
AND
patient has at least one of the following:

a. Two positive periprosthetic (joint) 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).
b. Patient has organisms identified from bone 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).
c. A sinus tract* communicating with the joint identified on gross anatomic exam, abscess, or other gross anatomic evidence of infection at the level of the joint.
d. Patient has evidence of osteomyelitis* on gross anatomic or histopathologic exam.
e. Having three of the following minor criteria:
    i. elevated serum C-reactive protein (CRP; >100 mg/L (1 dL = 10 L) >10 mg/dL -check what standard reporting units for CRP) and erythrocyte sedimentation rate (ESR; >30 mm/hr.)
    ii. elevated synovial fluid white blood cell (WBC; >10,000 cells/µL) count OR "++" (or greater) change on leukocyte esterase test strip of synovial fluid.
    iii. elevated synovial fluid polymorphonuclear neutrophil percentage (PMN% >90%) positive histological analysis of periprosthetic tissue (>5 neutrophils (PMNs) per high power field).
    iv. organism(s) identified from a single positive joint 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.
*Osteomyelitis must be seen and documented during an invasive procedure.

NOTE:

- Organism(s) identified from hip or knee hardware can be used to meet criterion 2.
- A matching organism is defined as:
  - If genus and species are identified in both specimens, they must be the same.
  - If the organism is less definitively identified in one specimen than the other, the lesser identified organism must be identified to at least the genus level and at that level the organisms must be the same.

Examples for Determining Matching Organisms

Identification #1	Identification #2	Matching Organisms Yes or No
Enterococcus faecalis	*Entercoccus*	Yes
Entercoccus faecium	*Entercoccus faecalis*	No
Coagulase-negative *Staphylococcus*	*Staphylococcus aureus*	No
Staphylococcus epidermidis	Coagulase-negative *Staphylococcus*	Yes
Staphylococcus species	Coagulase-positive *Staphylococcus*	No
Streptococcus species	*Streptococcus* Viridans Group	No
Yeast	*Candida* species	Yes
Methicillin Resistant *Staphylococcus aureus*	*Staphylococcus aureus*	Yes

- The NHSN definition of OPC KPRO - Organ/Space SSI is closely adapted from the NHSN Patient Safety Manual definitions for general organ/space, BONE-Osteomyelitis and PJI – Periprosthetic Joint Infection.
- The standard laboratory cutoff values in criteria 'f' are provided by NHSN for 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.
  Meeting additional infection criteria found in the Patient Safety Component Chapter 17, CDC/NHSN Surveillance Definitions for Specific Types of Infections is NOT a part of the OPC KPRO - Organ/Space SSIs reporting criteria.

OPC-SSI Event (Numerator) Reporting

Numerator Data

a) All patients having any of the procedures included in the selected NHSN operative procedure category(s) are monitored for SSI. The *Outpatient Procedure Component (OPC) Surgical Site Infection (SSI) Event Form (CDC 57.405)* is completed for each SSI.

b) If no SSI events are identified during the surveillance month, check the "Report No Events" field in the Missing OPC Events tab of the Incomplete/Missing List.

c) The *Instructions for the Completion of Outpatient Procedure Component Surgical Site Infection (OPC-SSI) Event Form (CDC 57.405)* form include brief instructions for collection and entry of each

data element on the form. The OPC-SSI data collection form includes patient demographic information and information about the operative procedure, including the date and type of procedure. As well as information about the SSI including the date of SSI, specific criteria met for identifying the SSI and when/how the SSI was detected.

d) See the OPC tables of instructions for detailed information regarding the completion of the *OPC Monthly Reporting Plan Form* (CDC 57.401), *Outpatient Procedure Component (OPC) Denominator for Procedure Form* (CDC 57.404), and SSI information for the *Outpatient Procedure Component (OPC) Surgical Site Infection (SSI) Event Form (CDC 57.405)*.

Table 5. SSI Event Reporting Instructions

SSI Event reporting instructions are guidelines for reporting SSI events. The instructions ensure consistent application of the general and breast surgery reporting criteria.

Topic	Reporting Instruction
1. **Excluded organisms:**	Well-known community associated (organisms belonging to the following genera: *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis* and/or organisms associated with latent infections (for example, herpes, shingles, syphilis, or tuberculosis) are excluded from meeting SSI criteria.
2. Attributing SSI to an NHSN procedure **when there is evidence of infection** at the time of the primary surgery:	SSI surveillance **does not** take into account infections that are present at the operative site at the time of the operative procedure. When there is evidence of an infection at the operative site at the time of the operative procedure and if during the SSI surveillance period the patient meets NHSN OPC-SSI criteria, an SSI should be attributed to the operative procedure. A procedure with a high wound class is included in denominator reporting and is eligible for SSI surveillance; in many cases, wound class is included as a risk factor for SSI in the NHSN risk modeling.
3. **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. The date of event (DOE) assigned is the date of the first element used to meet the SSI criteria at the deepest tissue level that is met. • Report infection 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, regardless of superficial tissue involvement. • If an SSI starts as a deep incisional SSI on day 10 of the SSI surveillance period and a week later, (day 17 of the SSI surveillance period) meets criteria for an organ space SSI.

Topic	Reporting Instruction
4. Attributing SSI to NHSN procedures that involve **multiple primary incision sites**:	When multiple primary incision sites of the same NHSN operative procedure become infected, report as a single SSI, and assign the type of SSI (superficial incisional, deep incisional, or organ/space) that represents the deepest tissue level where SSI criteria are met at any of the infected involved primary incision sites during the surveillance period. For example: • If one laparoscopic incision meets criteria for a superficial incisional SSI and another laparoscopic incision meets criteria for a deep incisional SSI, report one deep incisional SSI. • 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 procedure, report one organ/space SSI. • If an operative procedure is limited to a single breast and involves multiple incisions in that breast that become infected, report a single SSI. • 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 as one SSI (SIP).
5. Attributing SSI to NHSN procedures that have **secondary incision sites**:	Certain procedures can involve a secondary operative incision (specifically BRST, FUSN, PVBY, REC and VSHN). The surveillance period for all secondary operative incisions 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 (a single) operative procedure. For example: • A tissue harvest site in a BRST procedure with a transverse rectus abdominis myocutaneous (TRAM) flap is considered the secondary operative incision. One BRST procedure is reported, and if the secondary incision becomes infected, report as either SIS or DIS as appropriate.
6. SSI **detected at another facility**:	An SSI event is reported by the facility where the NHSN operative procedure was performed. When a potential SSI is detected at a facility other than the one where the procedure was performed, enough detail is provided to the reporting facility in the event an SSI should be reported to NHSN. When reporting the SSI, the ASC should indicate how the SSI was identified / detected in the "SSI

Topic	Reporting Instruction
	Event Detected" section of the OPC-SSI form. **An SSI event is attributed to the facility in which the NHSN operative procedure was performed.** For example: • A patient had a fusion (FUSN) of the left sacroiliac joint preformed at an ASC. 35 days post-operative the patient was seen in the emergency department of a community hospital with signs and symptoms of infection at the surgical site. The community hospital contacted the ASC to report the patient's signs and symptoms of infection at the left sacroiliac joint. Upon meeting OPC-SSI criteria the ASC should select, "Report from another facility (inpatient, health department, emergency department, etc." in the "SSI Event Detected" section of the OPC-SSI event form. • An ASC has a formal post-discharge surveillance process which includes post-operative phone calls to the patient as well as surveys mailed to the surgeons. A surgeon returns a survey and notes a patient having had a breast surgery (BRST) was seen in his office with a superficial infection and was treated with an oral antibiotic. The ASC should select "Post-discharge surgeon survey" in the "SSI Event Detected" section of the OPC-SSI event form.
7. SSI attribution after **multiple types 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, use the NHSN Principal Operative Procedure Category Selection Lists (Table 6) 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 6. The final decision for SSI attribution lies with the local facility based on the full details of the case.
8. SSI following **invasive manipulation/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 space is performed for diagnostic or therapeutic purposes (for

Topic	Reporting Instruction
	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. Note: • Tissue levels not manipulated/accessed are still eligible for SSI-for instance, if the deep tissue is accessed infection (SSI) may still cited at the organ/space level. • 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. • Accessing a breast expander after a breast surgery is considered an invasive procedure and any subsequent infection is <u>not</u> deemed an SSI attributable to the breast surgery. For example: • A debridement of superficial tissue following a COLO procedure, where the muscle/fascia and organ/space are not entered. A subsequent organ/space SSI may be attributed as an SSI to the index COLO procedure, following the debridement of the superficial tissue.
9. SSI following **specific 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 intsructionconcerning various postoperative circumstances are necessary to reduce subjectivity and data collection burden associated with the previously exempted scenarios.

Table 6. NHSN Principal Operative Procedure Category Selection List

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

Priority	Procedure Category	Abdominal Operations
1	COLO	Colon surgery
2	BILI	Bile duct, liver or pancreatic surgery
3	SB	Small bowel surgery
4	REC	Rectal surgery
5	GAST	Gastric surgery
6	HYST	Abdominal hysterectomy
7	XLAP	Laparotomy
8	APPY	Appendix surgery
9	HER	Herniorrhaphy
10	NEPH	Kidney surgery
11	VHYS	Vaginal Hysterectomy
12	SPLE	Spleen surgery
13	CHOL	Gall bladder surgery
14	OVRY	Ovarian surgery
Priority	**Procedure Category**	**Neurosurgical (Brain/Spine) Operations**
1	VSHN	Ventricular shunt
2	FUSN	Spinal fusion
3	LAM	Laminectomy
Priority	**Procedure Category**	**Neck Operations**
1	NECK	Neck surgery
2	THYR	Thyroid and or parathyroid surgery

OPC-Denominator for Procedure Reporting

Denominator Data

a) For each patient having at least one of the procedures included in the NHSN Operative Procedure category(s) for which SSI surveillance is being performed during the month, complete the *Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)*. The data are collected individually for each operative procedure category performed during the month specified on the *OPC Monthly Reporting Plan*. The *Instructions for Completion of Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* include brief instructions for collection and entry of each data element on the form.

b) Conduct post-discharge surveillance according to a formal active surveillance process. See Appendix A for the Post-discharge Surveillance Toolkit.

c) The surveillance period for a superficial SSI is 30 days after the procedure for all procedure categories. The surveillance period for deep and organ/space SSI is either 30 or 90 days, depending on the procedure category, as instructed in Table 2, *Surveillance Periods for SSIs Following Selected NHSN Operative Procedure Categories*.

d) Complete the *Outpatient Procedure Component (OPC) Surgical Site Infection (SSI) Event Form (CDC 57.405)* for each patient meeting the NHSN criteria for SSI, as defined in Surgical Site Infection Criteria, Table 4A for all procedures except breast & Table 4B for breast surgery procedures.

Table 7. Denominator for Procedure Reporting Instructions

Denominator for procedure reporting instructions are guidelines for reporting data of each individual procedure that is to be counted (included) in the denominator of the selected procedure category. The instructions assist with maintaining data quality.

Topic	Reporting Instruction
1. 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, an Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404) is reported for each procedure performed in the NHSN operative procedure category being monitored in the Monthly Reporting Plan. For example: If a patient has an open reduction of fracture (FX) and knee arthroplasty (KPRO) performed during the same trip to the operating room and both procedure categories are being monitored and are included in the Monthly Reporting Plan, complete an Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)for each procedure.
2. **Duration** of the operative procedures when procedures from more than one NHSN operative procedure category is performed through the **same incision** on the same trip to the OR:	If more than one NHSN operative procedure category is performed through the same incision during the same trip to the OR, 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 COLO and CHOL procedures are done through the same incision, the time from start time to finish time is reported for both operative procedures.
3. **Duration** of operative procedures if patient has two different NHSN operative procedures performed via **separate incisions** on the same trip to the OR:	Try to determine the correct duration for each separate procedure (if this is documented), otherwise, take the time for both procedures and split it evenly between the two. For example, if an AMP and SPLE are performed during the same trip to the OR.

Topic	Reporting Instruction
4. Same NHSN operative procedure category via the **same incision /laparoscopic incision**, but different CPT codes during same trip to the OR:	If procedures of different CPT codes from the same NHSN operative procedure category are performed through the **same incision/laparoscopic sites**, record only one procedure for that category. For example: If a facility is performing surveillance for laminectomy procedures (LAM) and a patient undergoes a laminectomy of two *contiguous vertebrae* via one incision during the same trip to the operating room two CPT codes are assigned to the procedure, complete one LAM *Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* - because both procedures are in the LAM operative procedure category.
5. Same NHSN operative procedure category via **separate incisions** during same trip to the OR:	For operative procedures that can be performed via **separate incisions** during same trip to OR (specifically the following, AMP, BRST, CEA, FUSN, FX, HER, HPRO, KPRO, LAM, NEPH, OVRY, PVBY), separate *Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* 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. ***NOTES:*** • *A COLO procedure with a colostomy formation is considered one COLO procedure with multiple primary incision sites.* • *Laparoscopic hernia repairs are considered one procedure, regardless of the number of hernias that are repaired in that 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 (non-laparoscopic) hernia repairs are reported as one procedure for each hernia repaired via a separate incision, (specifically, if two incisions are made to repair two defects), then two procedures will be reported. It is anticipated that separate incision times will be recorded for these procedures. If not, take the total time for both procedures and split it evenly between the two.*

Topic	Reporting Instruction
6. Patient expires in the OR:	If a patient expires in the operating room, do not complete an *Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)*. This operative procedure is excluded from the denominator.
7. HYST or VHYS:	For the purpose of NHSN OPC-SSI reporting, **hysterectomy procedures that involve an incision made into the abdomen, including trocar insertion, are included in the abdominal hysterectomy (HYST) category.** The correct CPT hysterectomy procedure codes should be assigned by a medical record coder using current coding guidelines and conventions.

Post-discharge Surveillance

When using the OPC-SSI criteria for surveillance, the method for identifying an SSI event is a required element for reporting. NHSN require facilities to use a post-discharge surveillance process which is active and patient-based for identifying and detecting of SSIs events. An active surveillance process ensures that SSI events are associated with the correct NHSN operative procedure and are accurately attributed to the facility in which the procedure was performed. Post-discharge surveillance should include the full surveillance period for the given operative procedure category as listed in Table 2. See Appendix A for the NHSN OPC Post-discharge Surveillance Toolkit.

Active post-discharge surveillance

Active surveillance is a process in which the facility has a formal and routine process of identifying, investigating and detecting infections during the defined surveillance period. Active post-discharge surveillance may include but is not limited to:

- post-discharge letters or phone calls to patients
- inter-facility notification of patient encounters or admission
- review of medical or surgical clinic patient records including electronic medical records
- post-discharge surgeon survey with listing of operative procedures performed

Any combination of these methods (or others identified by the facility) is acceptable for use to identify all SSIs; however, NHSN OPC-SSI criteria must be met in order to cite the SSI event. To minimize the workload of denominator data entry, upload of these data into the NHSN application is available using a comma-separated values (.csv) file. Instruction for .csv upload can be found at https://www.cdc.gov/nhsn/pdfs/opc/importing-opc-procedure-data-508.pdf.

Passive post-discharge surveillance

Passive surveillance is a process that may include incidental or unsolicited post-discharge notifications of infections by surgeons, patients, family members or another facility. While passive surveillance may be an inherent part of post-discharge surveillance at best it provides inconsistent case identification and should not be relied upon as the sole process for SSI detection.

If the facility already has an active standardized SSI surveillance process in place that successfully identifies patients with SSIs post-discharge and is obtaining information from surgeons about potential SSIs, the facility may continue to use that process as long as the requirements of the OPC-SSI criteria are met.

Surveillance Reminders:

- *An SSI event is attributed to the facility in which the NHSN operative procedure was performed.*
- *Facilities that have identified potential SSI events that are attributable to procedures performed at a different facility should provide details of the potential events to the facility where the procedure was performed.*

Data Analyses

Procedure (denominator) and SSI event (numerator) data that has been entered in to NHSN can be analyzed and visualized in a variety of reports.

Types of SSI Analyses Reports

Descriptive Analysis Reports

Descriptive analysis options for numerator and denominator data such as line listings, frequency tables, and bar and pie charts are available in the NHSN application. These analysis options are also available to analyze pathogens data reported for each SSI. NHSN quick reference guides and other references can be found in the "Analysis Resources" section at https://www.cdc.gov/nhsn/ambulatory-surgery/ssi/index.html.

SSI Standardized Infection Ratio (SIR) Reports

The Standardized Infection Ratio (SIR) is calculated by dividing the number of observed infections by the number of predicted infections.

$$\boldsymbol{SIR = \frac{Observed\ (O) HAIs}{Predicted\ (P) HAIs}}$$

The SIR will be calculated only if the number of predicted HAIs ("numPred" in the NHSN application) is ≥ 1 to help enforce a minimum precision criterion.

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[6]. Adult and pediatric procedures/SSIs are modeled separately; pediatric models will be available in the future. SSIs are included in the numerator of an SIR based on the date the procedure is preformed and not the date the event is identified. This is because the procedure carries the risk for the infection/SSI.

Inclusion and Exclusion Criteria

The OPC SSI SIR is calculated for facilities enrolled in NHSN as an Ambulatory Surgery Center (ASC). There is one SIR model available for outpatient adult procedures (and associated SSIs). Below is a summary of the OPC SSI SIR Model.

OPC SSI SIR Model	Inclusion Criteria	Patient Population
All SSI SIR Model	• Include **only** ambulatory surgery center procedures • Include Superficial, Deep & Organ/Space SSIs • Superficial & Deep Incisional SSIs are limited only to primary incisional SSIs • Include SSIs identified on active and passive surveillance	Procedures in adult patients

In addition to the above inclusion criteria, there is also a list of exclusion criteria that applies to the OPC All SSI SIR model. The list of exclusion criteria applies to both procedures and the associated SSI events. Often the reason for excluding procedures and SSI events from the SIR calculation is due to potential data quality issues. It is important that facilities review their data for quality assurance and to determine the reason for exclusion from the SIR calculation.

More detailed information can be found in the NHSN Guide to the SIR: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf.

NHSN Group Analysis

https://www.cdc.gov/nhsn/PS-Analysis-resources/reference-guides.htmlNHSN Group Users can perform the same analysis as facility level users in NHSN. Two helpful NHSN User Group reports are the Line Listing - Membership Rights report and the Line Listing - Participation Alerts reports.

- The Line Listing - Membership Rights Report describes the rights conferred by each facility in the group. This report is helpful when determining the level and access to data in NHSN for a group.
- The Line Listing - Participation Alerts Report describes the unresolved NHSN alerts by alert type and facility.. It is important to generate datasets in NHSN after alerts are resolved.

Resources for NHSN Group Users

This NHSN website contains guides that describe how to create a group, set up a confer rights template, and how to analyze group reports along with other group related topics: https://www.cdc.gov/nhsn/group-users/index.html.

The Group User's Guide to the "Line Listing- Participation Alerts" Report Option is important in helping Groups educate facilities about reporting data. .The participation alerts line listing report is a tool that Groups can use to identify unresolved alerts for facilities that they have confer rights for in their group as well as help facilities identify potential data quality issues. The resource guide can be found here: https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/group-alerts.pdf. It is important to generate datasets in NHSN after alerts are resolved to ensure all changes to data are captured in the analytic reports.

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Appendix A: Post-discharge Surveillance Toolkit

This toolkit was developed by NHSN to assist facilities in implementing an effective post-discharge surgical site infection surveillance process.

Contents:
The toolkit contains samples of a: Sample Letter, Post-discharge SSI Worksheet and Procedure Line List by Surgeon, along with instructions and helpful suggestions**.**

NOTE: *If the facility already has an active standardized SSI surveillance process in place that is successfully identifying patients with infections post-discharge and is obtaining information from surgeons about potential SSIs, the facility may continue to use that process as long as the requirements of this Post-Discharge Surveillance Toolkit are met.*

Instructions:
Based on the NHSN OPC-SSI Protocol, operative procedures must be followed for either a 30- or 90-day surveillance period after the operative episode in order to identify a potential SSI (Table 2).

1. **Sample Letter** – introduces the receiving surgeon and office staff to your facility's post-discharge SSI surveillance program. It provides instructions and contact information if questions arise.

2. **Procedure Line List by Surgeon** - a line list that is generated at the end of every month (or 90-day period for select procedures). The line list will provide surgeons with a detailed list of each procedure they performed at the facility during the previous 30 (or 90) days.

3. **SSI Worksheet** – is used to allow surgeons or their designee to document whether any of their patients developed a suspected superficial, deep, or organ/space surgical site infection. This is a generic worksheet that can be used for any surgical procedure monitored by the facility.

The Procedure Line List and the Post-discharge SSI Worksheet can be sent to surgeons' offices at the end of every surveillance period (30 or 90 days). Using the Procedure Line List as a guide, surgeons will complete one Worksheet for each patient who developed an SSI. All completed Worksheets should be sent back to the appropriate ASC staff to confirm that the documented SSI(s) correctly meets NHSN criteria. If the SSI(s) is confirmed, the infections must be entered into NHSN.

Instructions for the office staff on how to complete the Post-discharge SSI Worksheets can be customized based on your facility's preferences.

IMPORTANT POINTS:

- Your facility must include either a Surgeon Code or Surgeon Name for each procedure entered in NHSN in order to generate the Procedure Line List by surgeon.
- The Procedure Line List and the SSI Worksheets should not be mailed until at least 30 or 90 days after the last surgical procedure so that the correct time period following the surgery has lapsed.

SAMPLE: LETTER

[Insert Name Ambulatory Surgery Center] *[Insert Date]*
Post-discharge Surgical Site Infection Surveillance

Dear Office Staff,

Our records show that [Surgeon's Name] performed surgical procedures at our facility during the [Insert Months & Year or surveillance period].

We are requesting your assistance with our post-discharge surgical site infection surveillance. Please review your records for each patient included on the line list.

- If a patient did not develop any surgical site infection check the "No Evidence of SSI" box.
- If a patient developed any signs or symptoms of infection, please complete the enclosed "Post-discharge Surgical Site Infection Worksheet."

NOTE: *Please make enough copies of the blank Post-discharge Surgical Site Infection Worksheet so that one worksheet can be completed for each patient with an SSI.*

- Return this line list and any completed worksheets by [Insert Due Date]

The completed SSI worksheets and line list can be sent back via fax or mail. If you have any questions, please feel free to call.

Thank you for your assistance in ensuring our compliance with post-discharge SSI surveillance.

[Insert Name]
[Facility Name]
[Facility Address]
FAX: 000-000-0000
Phone: 000-000-0000

SAMPLE: LINELIST for [Surgeon's Name]
[Insert Name Ambulatory Surgery Center] *[Insert Date]*
Post-discharge Surgical Site Infection Surveillance

National Healthcare Safety Network
Line Listing of All Procedures

orgID	patID	dob	gender	procID	procDate	procCode	surgeonCode
57258	12345	02/09/2005	F	52766368	05/02/2022	BRST	002
57258	TEST12288	08/11/1970	O	53479986	01/29/2022	BRST	001
57258	20011	11/24/1963	F	53472551	05/03/2022	HER	001
57258	20510	01/05/1963	F	53479985	06/02/2022	HER	003
57258	20791	04/25/1978	F	53479982	02/26/2022	HYST	003
57258	TEST12185	09/05/1979	M	53479984	05/14/2022	KPRO	003
57258	12345	02/09/2005	F	52282038	05/03/2022	KPRO	001
57258	TEST11555	12/20/1968	M	53479983	06/10/2022	LAM	001

To generate a line list from the NHSN application, see analysis resources found at https://www.cdc.gov/nhsn/ambulatory-surgery/ssi/index.html.

SAMPLE: Post-discharge Worksheet for Suspected SSI

[Insert Name Ambulatory Surgery Center] *[Insert Date]*

Post-discharge Surgical Site Infection Surveillance

Patient Demographics:	
Patient Name (Last, First):	
Primary CPT Code of Procedure:	Date of Procedure:
Date SSI Identified:	
Was the SSI identified on admission to a hospital? Y N If Yes, name of facility: _____	

Select the infection type and associated criteria (if known) from the options below:

☐ **A. Superficial Incisional SSI:** Involves only the skin and subcutaneous tissue of the incision

Criteria met (check all that apply):

☐ Purulent drainage from the superficial incision

☐ Organisms identified from an aseptically obtained specimen from the superficial incision or subcutaneous tissue[1]

☐ Superficial incision that is deliberately opened by a surgeon, physician[2] or physician designee and culture or non-culture based[1] microbiologic testing is not performed.

***If checked, please answer the following (check all that apply):**

- ○ Pain or tenderness
- ○ Localized swelling
- ○ Redness (erythema)
- ○ Heat

☐ Diagnosis of a superficial incisional SSI by a physician[2] or physician designee.

☐ **B. Deep Incisional SSI:** Involves deep soft tissues (for example, fascia and muscle layers)

Criteria met (check all that apply):

☐ Purulent drainage from the deep incision

☐ Deep incision spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, physician[2] or physician designee and organism is identified from specimen[1] or microbiologic testing not performed.

***If checked, please answer the following (check all that apply):**

- ○ Fever (>38°C)
- ○ Localized pain or tenderness

☐ Abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test

☐ **C. Organ/Space:** Involves any part of the body, (excluding skin incision, fascia, and muscle layers), that is opened or manipulated during the operative procedure

Criteria met (check all that apply):

☐ Purulent drainage from a drain that is placed into the organ/space

☐ Organisms isolated from an aseptically-obtained specimen of fluid or tissue in the organ/space[1]

☐ Abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test evidence consistent with infection

[1]Culture or non-culture based microbiologic testing method.

[2]Should be interpreted to mean surgeon(s), infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).

Additional comments:

Signature: **Date:**