Outpatient Procedure Surgical Site Infection (OPC-SSI) Surveillance

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 157,500 surgical site infections associated with inpatient surgeries in 2011 [(7)]. As these data demonstrate, the frequency of SSI are 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 settings.

In 2015, there were nearly 5,500 Medicare-certified ambulatory surgery centers (ASCs), which represents over 16,000 operating rooms (ORs)[8]. This volume represents an average of 3.0 ORs per facility and an approximate 2-percent increase between 2014 and 2015[8]. Therefore-it may be safe to assume that the continued growth in outpatient ORs equates to an increase in the volume of surgical procedures performed in the outpatient ambulatory surgery arena. Although ambulatory surgery centers have been shown to 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[2,3.] Surveillance of SSI with feedback of appropriate data to surgeons has been shown to be an important component of strategies to reduce SSI risk[2,3,4,9].

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. Continued efforts are needed to identity preventable causes and develop strategies for SSI prevention.

SSI surveillance for outpatient operative procedures using the Outpatient Procedure Component (OPC) **replaces** the use of the Patient Safety Component SSI event chapter in ambulatory surgery centers (ASCs). Surveillance for operative procedure(s) may focus on high risk and/or high volume procedures. In addition, facilities 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. Federal, State or organizational mandates supersedes voluntary enrollment and individual ASCs must verify its SSI reporting requirements.

OPC-SSI Reporting Requirements

NHSN operative procedure categories are listings of operative procedures grouped and categorized around a specific description for the operative procedure category. The operative procedure categories that are included in OPC-SSI surveillance can be found in Table 1. The Current Procedural Terminology (CPT) operative procedure codes are listed with the accompanying operative procedure code descriptions at https://www.cdc.gov/nhsn/xls/cpt-pcm-nhsn.xlsx .

A facility may report “in-plan” or “off-plan”.

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

publications. A facility may choose to perform surgical site surveillance "off-plan" for any of the NHSN operative procedure categories.

Setting(s)

Any ASC as defined in the Code of Federal Regulations 42 CFR § 416.2 is eligible to join NHSN and use this protocol for surveillance of surgical patients receiving an eligible NHSN outpatient procedure (Table 1).

Targeted Surveillance for OPC-SSI

a) For each calendar month under surveillance, indicate in the *OPC Monthly Reporting Plan* the NHSN operative procedure categories in Table 1 that are under surveillance for SSI.
b) A facility may choose to monitor any or all 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. This is considered "in-plan" reporting.
d) Collect SSI (numerator) and operative procedure category (denominator) **data on all procedures** included in the selected procedure categories.
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 superficial, deep, and organ/space SSI events and the type of SSI reported must reflect the deepest tissue level where SSI criteria is met during the surveillance period.

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 with our 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

Procedure Category	Operative Procedure	Procedure Description
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; includes that by 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 way to communicate uniform information. This wide use of operative procedure codes allow NHSN to standardize the SSI surveillance 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 NHSN operative procedure categories to assist users in determining the correct operative procedures to report for SSI surveillance. The CPT mapping to NHSN operative procedure categories can be found in the "Supporting Materials" section of the OPC SSI Events webpage. The CPT mapping document includes a general definition for each NHSN operative procedure category as well as a description for each individual operative procedure code.

Key Terms for OPC-SSI

Attending Physician - should 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).

Date of event (DOE) - For an OPC-SSI, the date of event is 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 date of event 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:***
> *All symptoms required to meet an SSI criteria usually occur within a 7-10 day timeframe with no more than 2-3 days between SSI criteria elements. The SSI criteria elements must be relational to each other, meaning you should ensure the elements all associate to the SSI and this can only happen if criteria elements occur in a relatively tight timeframe. Each case differs based on the individual criteria elements occurring and the type of SSI.*

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 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 criteria for an operating room when it was constructed or renovated outlined by the Facilities

Guidelines Institute's (FGI)[6], 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 - is the timeframe following an NHSN operative procedure for monitoring and identifying post-operative infections, see Table 2. The surveillance period is determined by the NHSN operative procedure category (for example, BRST-Breast surgery has a 90 day surveillance period and HYST-abdominal hysterectomy surgeries have a 30 day surveillance period).

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

Table 3. Denominator for Procedure Details
These are required elements for reporting denominator operative procedures. The elements have been identified as risk factors. See the *Instructions for Completion of Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* for further details.

Element	Description
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[1]. 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 that do not have an ASA score assigned by an anesthesiologist.*
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. ***NOTE:*** *The NHSN definition excludes patients with no diagnosis of diabetes. The definition also excludes patients who receive insulin for perioperative control of hyperglycemia but have 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)[5]:

Element	Description
	• 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.
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. This does not include conscious sedation.
Height	The patient's most recent height documented in the medical record in feet (ft.) and inches (in.) or meters (m).
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 (specifically, open approach). Robotic assistance is considered equivalent to use of a scope for NHSN SSI surveillance. 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.
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 (for example, surgeon, circulating nurse, etc.). The wound class system used in NHSN is an adaptation of the American College of Surgeons wound classification schema. Wounds are divided into four classes: 1. 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

Element	Description
	incisional wounds that follow nonpenetrating (blunt) trauma should be included in this category if they meet the criteria. *NOTE:* *Based on feedback from external experts in the field of surgery, NHSN surgical procedure categories APPY*- Appendix surgery, *BILI* - Bile duct, liver or pancreatic surgery, *CHOL* - Gallbladder surgery, *COLO* - Colon surgery, *REC* - Rectal surgery, *SB* - Small bowel surgery *and VHYS* - Vaginal hysterectomy *should never be recorded as clean. The rationale for this is due to the anatomy of the body and the usual approach required to reach the operative site. For these operative procedures clean wound class is not an option on the drop down menu within the application.* 2. 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. 3. Contaminated: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (for example, 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 (for example, dry gangrene) are included in this category. 4. 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.

NOTE:
Incisional closure method is NOT a part of the NHSN OPC-SSI Surveillance definition; 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 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 after any 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. superficial incision that is deliberately opened by a surgeon, attending physician or other 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 the surgeon or attending physician or other 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).

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 (redness/warmth/swelling), by itself, does not meet criterion "d" for superficial incisional SSI. Conversely, an incision that is draining or that has organisms identified by culture or non-culture based testing is not considered a cellulitis.
- A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration).
- A localized stab wound or pin site infection is not an SSI.

NOTE:

A laparoscopic trocar site for an NHSN operative procedure is not considered a stab wound.

OPC General - Deep Incisional SSI

Must meet the following criteria:

The date of event for infection occurs within 30 or 90 days after 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 or aspirated by a surgeon, attending physician or other 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 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, or imaging test.

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).

OPC General - Organ/Space SSI
Must meet the following criteria:

Date of event for infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2
AND
infection involves any part of the body deeper than the fascial/muscle layers, that is opened or manipulated during the operative procedure
AND
patient has at least ***one*** of the following:

a. purulent drainage from a drain that is 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 that is detected on gross anatomical or histopathologic exam, or imaging test consistent with infection.

NOTE:
Meeting additional infection criteria found in Chapter 17, *CDC/NHSN Surveillance Definitions for Specific Types of Infections* is **NOT** required when reporting OPC General - Organ/Space SSIs.

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 surgery (BRST).*

OPC BRST - Superficial incisional SSI

Must meet the following criteria**:**

Date of event for infection occurs within 30 days after a BRST; 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. superficial incision that is deliberately opened by a surgeon, attending physician or other 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 the surgeon or attending physician or other 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).

OPC BRST - Deep incisional SSI
Must meet the following criteria:

Date of event for infection occurs within 90 days after a BRST; 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 spontaneously dehisces, or is deliberately opened or aspirated by a surgeon, attending physician or other 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 that is detected on gross anatomical or histopathologic exam.

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 a BRST; where day 1 = the procedure date

AND

infection involves any part of the body 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 that is 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 on gross anatomic or histopathologic exam or imaging test consistent with breast infection.

NOTES:

- *Breast surgeries may involve a secondary operative incision. Specifically, procedures that include flaps. The flap site is the secondary operative incision. Secondary sites have a 30 day surveillance period. If the secondary site meets criteria for an SSI, it is reported as either a superficial incisional SSI at the secondary site or deep incisional infection at the incisional site.*
- *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.*
- *Meeting additional infection criteria found in Chapter 17, CDC/NHSN Surveillance Definitions for Specific Types of Infections is NOT required when reporting OPC BRST - Organ/Space SSIs.*

OPC-SSI Numerator (SSI Event) 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: Numerator Reporting Instructions

Numerator 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 an 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

Topic	Reporting Instruction
	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 should be the date that the patient met criteria for the deepest level of infection. For example: • Report infection that involves the organ/space as an organ/space SSI, whether or not it also involves the superficial or deep incision levels. • Report infection that involves the superficial and deep incisional levels as a deep incisional SSI. • If an SSI started as a deep incisional SSI on day 10 of the SSI surveillance period and then a week later, (day 17 of the SSI surveillance period) meets criteria for an organ space SSI the date of event would be the date of the organ space SSI.
4. 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 where SSI criteria is 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 meets criteria for a deep incisional SSI, only 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 laparoscopic procedure, only 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, only report a single SSI. • In a colostomy formation or reversal (take down) procedure, the stoma and other abdominal incision

Topic	Reporting Instruction
	sites are considered primary incisions. If both the stoma and another abdominal incision site develop superficial incisional SSI, report only as one SSI (SIP).
5. Attributing SSI to NHSN procedures that have **secondary incision sites**:	Certain procedures can involve a secondary operative incision (for example, 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 (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**:	It is required that if an SSI is detected at a facility other than the ASC where the procedure was originally preformed, details of the SSI event should be provided to the ASC so the SSI can be accurately reported to NHSN. When reporting the SSI, the ASC should indicate how the SSI was identified / detected in the "SSI 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

Topic	Reporting Instruction
	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:	If more than one NHSN operative procedure category was performed through a single incision/laparoscopic sites 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 6) 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.
8. SSI following **invasive manipulation/accession** of the operative site:	An SSI will **NOT** be attributed if **ALL** criteria are met (all three must be present): • during the post-operative period the surgical site is without evidence of infection and, • an invasive manipulation/accession of the site is performed for diagnostic or therapeutic purposes (for example, needle aspiration, accession of ventricular shunts, accession of breast expanders) and, • an infection subsequently develops in a tissue level which was entered during the manipulation/accession. Tissue levels that are BELOW the deepest level of manipulation/accession will be eligible for SSI. For example, in a superficial debridement following a COLO procedure, where the muscle/fascia and organ/space are not entered, a subsequent organ/space SSI following the debridement may be an SSI attributable to the index COLO procedure.

Topic	Reporting Instruction
	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.
9. SSI following **specific post-operative infection scenarios**:	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. SSI should also be reported regardless of the presence of certain skin conditions (for example, dermatitis, blister, impetigo) that occur near an incision, and regardless of the possible occurrence of a "seeding" event from an unrelated procedure (for example, dental work). These instruction concerning various postoperative circumstances is necessary to reduce subjectivity and data collection burden associated with the previously exempted scenarios.

Table 6. NHSN Principal Operative Procedure Category Selection Lists
(The categories with the highest risk of SSI are listed before those with lower risks).

Priority	Code	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	**Code**	**Neurosurgical (Brain/Spine) Operations**
1	VSHN	Ventricular shunt
2	FUSN	Spinal fusion
3	LAM	Laminectomy
Priority	**Code**	**Neck Operations**
1	NECK	Neck surgery
2	THYR	Thyroid and or parathyroid surgery

OPC-SSI 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 *OPC Denominator for Procedure Form*. 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 OPC Denominator for Procedure Form* 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 *OPC SSI Event* form for each patient meeting the NHSN criteria for SSI, as defined in Surgical Site Infection Criteria, Tables 4A (general procedures) & 4B (BRST procedures).

Table 7: Denominator 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. Wound class:	A high 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.
2. 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 *OPC Denominator for Procedure Form* is reported for each procedure performed in the NHSN operative procedure category being monitored. 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 *OPC Denominator for Procedure Form* for each procedure.
3. **Duration** of the procedure 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 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 COLO and CHOL procedures are done through the same incision, the time from start time to finish time is reported for both operative procedures.

4. 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.
5. 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, a facility is performing surveillance for Laminectomy procedures (LAM). A patient undergoes a lumbar fusion of a couple *contiguous vertebrae* via one incision during the same trip to the operating room. Complete one LAM *Outpatient Procedure Component (OPC) Denominator for Procedure Form (CDC 57.404)* because both procedures are in the LAM operative procedure category.
6. **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 operating room (specifically the following, AMP, BRST, CEA, FUSN, FX, HER, HPRO, HYST, KPRO, LAM, NEPH, OVRY, PVBY), separate *Outpatient Procedure Component (OPC) Denominator for Procedure Forms (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 entered as one COLO procedure.* • *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.
7. 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.
8. HYST or VHYS:	When assigning the correct CPT hysterectomy procedure codes, a medical record coder must determine what structures were detached and how they were detached based on the medical record documentation.

Data Analyses

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. Standardized Infection Ratios (SIRs), SSI rates and run charts will be available at a later date.

Post-discharge Surveillance

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

Active post-discharge surveillance

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
- post-discharge surgeon survey with listing of operative procedures performed

Any combination of these strategies is acceptable for use with the goal being to identify all SSIs based on NHSN OPC-SSI criteria. See Appendix A for the NHSN Post-discharge

Surveillance Toolkit. To minimize the workload of the Infection Preventionist (IPs) of collecting denominator data, download of surgical data into NHSN will be made available.

Passive post-discharge surveillance

A process which may include incidental or unsolicited post-discharge notifications of infections by surgeons, patients, family members or another facility.

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 OPC-SSI Protocol are met.

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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 operation 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** - is 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

Patient Last Name	Patient First Name	Date of Birth	Gender	Procedure ID	Procedure Date	Procedure Category	Surgeon Code	No Evidence of SSI
Smith	Roger	10/20/1944	F	27467	06/30/2018	COLO	0103	
Greene	Rachel	07/27/1949	F	27486	06/16/2018	COLO	0103	
Blakeman	Mark	12/01/1927	M	27497	06/30/2018	COLO	0103	
Fields	Rebecca	01/15/1960	F	27525	06/31/2018	COLO	0103	
Hunter	Sean	09/23/1933	M	27531	06/24/2018	COLO	0103	
Smith	Mary	07/16/1970	F	35014	06/09/2018	HYST	0103	
Jones	SeQuisha	06/29/1972	F	35015	06/02/2018	HYST	0103	
Archin	Latoya	09/03/1967	F	35016	06/07/2018	HYST	0103	

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, attending physician[2] or other 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 the surgeon or attending[1] physician or other 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, attending physician[2] or other 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]May be interpreted as surgeon(s), infectious disease, other physician on the case, emergency physician or physician's designee (nurse practitioner or physician's assistant).
Additional comments:
Signature: **Date:**