



# **NHSN Annual Training: Surgical Site Infection 2023**

# Housekeeping

- **This call is being recorded.**
- **Please use chat box for questions.**
- **Questions will be answered at the end or on the subsequent webinar.**

# Question: Bilateral Flank Pain

- Can “bilateral flank pain” be used to meet CAUTI or SUTI definitions?
- Yes, left, right, or bilateral flank or right/left lower back are examples of symptoms that can be used as **costovertebral angle pain** or tenderness. Generalized “low back pain” is not to be interpreted as costovertebral angle pain or tenderness.

# Outline

- Reporting requirements
- 2023 updates
- Surveillance Definitions
- SSI Event How-to
  - Numerator data
  - Denominator data
  - Data Entry

# Current CMS/State Reporting Requirements via NHSN

- **Acute Care Hospitals**

Required by  
State of TN



- **CBGB**
- **CBGC**

Required by State of  
TN and CMS



- **HYST**
- **COLO**

**Note:** Reporting specifications – only inpatient procedures

**Note:** Facilities that performed a total of 9 or fewer **COLO** and **HYST** procedures in the previous calendar year can file a SSI reporting exception form with CMS in Quality Net. These facilities are also exempt from TDH SSI reporting for the same year.

# In-plan vs off-plan?

- Only in-plan data are submitted to The Centers for Medicare and Medicaid Services (CMS) in accordance with CMS's Quality Reporting Programs and included in NHSN annual reports or other NHSN publications.
- “Off-plan” surveillance is surveillance performed because a facility is tracking a particular event for non-NHSN use. A facility makes no commitment to follow the NHSN protocol for “off-plan” events and such data are not included in CMS Quality Reporting Programs, NHSN annual reports or other NHSN publications.

# Procedure Descriptions

- **CBGB: Coronary artery bypass graft with BOTH chest and donor site incisions - Chest procedure to perform direct revascularization of the heart; includes obtaining suitable vein from donor site for grafting**
- **CBGC: Coronary artery bypass graft with chest incision only - Chest procedures to perform direct vascularization of the internal mammary (thoracic) artery**
- **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**
- **HYST: Abdominal hysterectomy - Abdominal hysterectomy; includes laparoscopic and robotic approach**



# 2023 Protocol Updates



# SSI Surveillance Protocol for 2023


- **NHSN Procedure-associated Module**
  - **Chapter 9 Surgical Site Infection (SSI) Event**
  - <https://www.cdc.gov/nhsn/psc/ssi/index.html>

## Surgical Site Infection (SSI) Events

[Print](#)

Updated December 20, 2022

## Protocols

[Chapter 9: Surgical Site Infection \(SSI\) Event – January 2023](#)  [PDF – 1 MB]

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[2023 Summary of Updates](#)  [PDF – 199 KB]

## Supporting Chapters

[Chapter 1: NHSN Overview – January 2023](#)  [PDF – 350 KB]

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# Chapter 9: SSI

- **Additions:**

- Appendix B added to provide clarity and support for Denominator Reporting Instruction #6

- **Clarification**

- SSI event detail ‘Surveillance Period for SSI’ regarding return visits to the OR and non-NHSN operative procedures
- Deep Incisional SSI criterion ‘b’ restructured for improved flow of information
- General Organ/Space SSI criterion ‘c’ has been updated to clarify imaging that is definitive or equivocal for infection is sufficient to meet this criterion

# Chapter 9: Addition SSI Appendix B

Operative Procedure Category	Maximum # Of Procedures Per Day	Explanation
<b>AMP - Limb amputation</b>	4	<p>Corresponds to the four (4) extremities (left arm, left leg, right arm, right leg).</p> <p>In instances where multiple AMP procedures are performed on the same extremity only one AMP procedure should be reported for that extremity.</p>
<b>BRST - Breast surgery</b>	2	Corresponds to the left breast and right breast.
<b>CEA - Carotid endarterectomy</b>	2	Corresponds to the left artery and right artery.
<b>FUSN - Spinal fusion</b>	4	<p>Corresponds to the four (4) anatomical spinal levels (cervical, thoracic, lumbar, sacral).</p> <p>When more than one anatomical spinal level is fused, report the NHSN spinal level and approach <b>in which the most vertebrae were fused</b>.</p> <p>The number of FUSN procedures reported depends on various factors:</p> <ul style="list-style-type: none"> <li>• When a spinal fusion procedure is performed on one spinal level/contiguous spinal levels, this is considered <b>one FUSN</b> procedure for reporting purposes although multiple joints may be fused and multiple procedures codes are assigned.</li> <li>• When an anterior and posterior incision are made to access one spinal level/contiguous spinal levels (such as C3-C5 spinal fusion with anterior and posterior approach) <b>one FUSN</b> procedure is reported. Indicate <b>'Anterior and Posterior' approach</b> on the denominator for procedure form.</li> </ul>

# Chapter 9: SSI Appendix B

Operative Procedure Category	Maximum # Of Procedures Per Day	Explanation
		<ul style="list-style-type: none"> <li>When distinct levels/sections of the spine are fused using different incisions on non-contiguous spinal levels (such as an incision made in the cervical spine and an incision made in the lumbar spine) enter as separate denominators (<b>two FUSN</b> denominator for procedure forms should be completed).</li> </ul>
<b>FX - Open reduction of fracture</b>	4	<p>Corresponds to the four (4) extremities (right arm, right leg, left arm, left leg).</p> <p>In instances where multiple FX procedures are performed on the same extremity only one FX procedure should be reported for that extremity.</p>
<b>HER - Herniorrhaphy</b>	5	<p>Corresponds to five (5) hernias.</p> <p>Laparoscopic hernia repairs are considered one HER procedure, regardless of the number of hernias 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.</p> <p>Open (specifically, non-laparoscopic) hernia repairs are reported as one HER procedure for each hernia repaired via a separate incision. For example:</p> <ul style="list-style-type: none"> <li>If one incision is made to repair two defects, then report one HER procedure.</li> <li>If two incisions are made to repair two defects, then report two HER procedures. 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.</li> </ul>

# Chapter 9: SSI Appendix B

<b>HPRO - Hip prosthesis</b>	2	Corresponds to the left hip and right hip.
<b>KPRO - Knee prosthesis</b>	2	Corresponds to the left knee and right knee.
<b>LAM - Laminectomy</b>	2	Corresponds to two (2) LAM procedures.
<b>NEPH - Kidney surgery</b>	2	Corresponds to the left kidney and right kidney.
<b>OVRV - Ovarian surgery</b>	2	Corresponds to the left ovary and right ovary.
<b>PVBY - Peripheral vascular bypass surgery</b>	4	Corresponds to four (4) PVBY procedures.

# Clarification: Surveillance Period for SSI

- **Surveillance Period:** The monitoring timeframe following an NHSN operative procedure (determined by the procedure category)
- Each trip to the OR for an NHSN operative procedure sets an SSI surveillance period for the surgical site
- Non-NHSN operative procedures do not set an SSI surveillance period

# Clarification: Surveillance Period for SSI

- If a patient returns to the OR for an NHSN operative procedure and the same surgical site is entered, the surveillance period for the prior NHSN operative procedure ends and a new SSI surveillance period begins
- If a non-NHSN operative procedure is performed **within** the surveillance procedure for an NHSN procedure **and all three tissue levels are entered**, the SSI surveillance period **ends for the NHSN operative procedure**.
  - If **all three tissues levels are not entered**, the SSI surveillance period for the NHSN procedure **continues**, but only for the tissue levels **not entered** during the non-NHSN procedure

# Clarification: Deep Incisional SSI criterion 'b'

	<p><b>Deep incisional SSI</b> Must meet the following criteria:</p>
	<p>Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in <a href="#">Table 2</a> <b>AND</b> involves deep soft tissues of the incision (for example, fascial and muscle layers) <b>AND</b> patient has at least <b><u>one</u></b> of the following:</p> <ul style="list-style-type: none"><li>a. purulent drainage from the deep incision.</li><li>b. a deep incision that is deliberately opened or aspirated by a surgeon, physician* or physician designee or spontaneously dehisces <b>AND</b> organism(s) identified from the deep soft tissues of the incision by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST]) or culture or non-culture based microbiologic testing method is not performed. A culture or non-culture based test from the deep soft tissues of the incision that has a negative finding does not meet this criterion. <b>AND</b> patient has at least <b><u>one</u></b> of the following signs or symptoms: fever (&gt;38°C); localized pain or tenderness.</li><li>c. an abscess or other evidence of infection involving the deep incision detected on gross anatomical exam histopathologic exam, or imaging test.</li></ul>



# Clarification: General Organ/Space SSI Criterion 'c'

	<b>Organ/Space SSI</b> Must meet the following criteria:
	<p>Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in <a href="#">Table 2</a></p> <p><b>AND</b></p> <p>involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure</p> <p><b>AND</b></p> <p>patient has at least <b><u>one</u></b> of the following:</p> <ul style="list-style-type: none"><li>a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage).</li><li>b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST]).</li><li>c. an abscess or other evidence of infection involving the organ/space detected on gross anatomical exam or histopathologic exam, or imaging test evidence definitive or equivocal for infection.</li></ul> <p><b>AND</b></p> <p>meets at least <b><u>one</u></b> criterion for a specific organ/space infection site listed in <a href="#">Table 3</a>. These criteria are found in the Surveillance Definitions for Specific Types of Infections (<a href="#">Chapter 17</a>)</p>

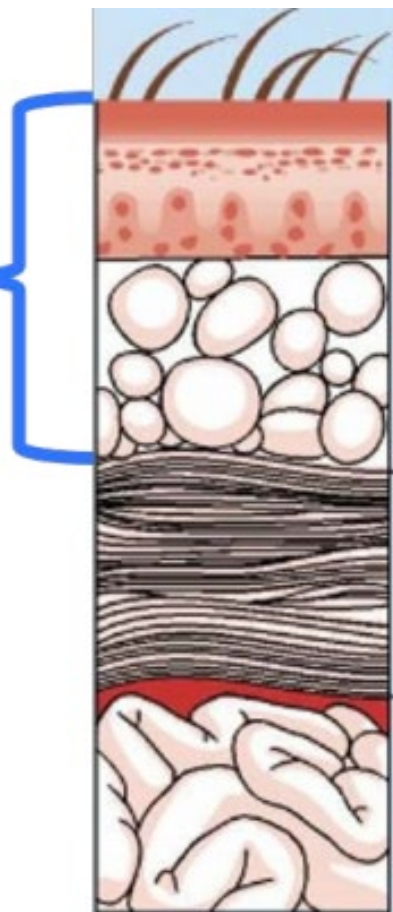


# SSI Event Review

# SSI Review

- **Three types of surgical site infections (SSIs):**
  - **Superficial Incisional SSI (Primary or Secondary)**
  - **Deep Incisional SSI (Primary or Secondary)**
  - **Organ/Space SSI**

# Superficial incisional SSI



- **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 (e.g., not Active Surveillance Culture/Testing (ASC/AST)).
  - c. superficial incision that is deliberately opened by a surgeon, physician\* or other physician designee and culture or non-culture based testing of the superficial incision or subcutaneous tissue is not performed.**AND**
- d. 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's designee

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

# SSI Review – Deep incisional SSI

- 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(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, or imaging test

# SSI Review – Organ/Space SSI

- **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**
  - 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**
  - c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test definitive or equivocal for infection.****AND**
- **meets at least one criterion for a specific organ/space infection site listed in Table 3.**

Table 3. Specific Sites of an Organ/Space SSI

Category	Specific Site	Category	Specific Site
BONE	Osteomyelitis	MED	Mediastinitis
BRST	Breast abscess or mastitis	MEN	Meningitis or ventriculitis
CARD	Myocarditis or pericarditis	ORAL	Oral cavity infection (mouth, tongue, or gums)
DISC	Disc space infection	OREP	Deep pelvic tissue infection or other infection of the male or female reproductive tract
EAR	Ear, mastoid infection	PJI	Periprosthetic joint infection
EMET	Endometritis	SA	Spinal abscess/infection
ENDO	Endocarditis	SINU	Sinusitis
GIT	Gastrointestinal (GI) tract infection	UR	Upper respiratory tract, pharyngitis, laryngitis, epiglottitis
IAB	Intraabdominal infection, not specified elsewhere	USI	Urinary System Infection
IC	Intracranial infection	VASC	Arterial or venous infection
JNT	Joint or bursa infection	VCUF	Vaginal cuff infection
LUNG	Other infection of the lower respiratory tract		

# SSI Review

- **APPENDIX A. SSI specific event types attributed to each NHSN procedure category**

Procedure Code	Specific Event Code
COLO – Colon Surgery	DIP - Deep Incisional Primary
	GIT - Gastrointestinal tract
	IAB - Intraabdominal, not specified elsewhere
	OREP - Other infection of the reproductive tract
	SIP - Superficial Incisional Primary
	USI - Urinary System Infection
HYST – Abdominal hysterectomy	DIP - Deep Incisional Primary
	IAB - Intraabdominal, not specified elsewhere
	OREP - Other infection of the male or female reproductive tract
	SIP - Superficial Incisional Primary
	VCUF - Vaginal cuff infection



# SSI Review

- **APPENDIX A. SSI specific event types attributed to each NHSN procedure category**

<b>Procedure Code</b>	<b>Specific Event Code</b>
<b>CBGB – Coronary Bypass with Chest and Donor Incisions</b>	<b>BONE - Osteomyelitis</b>
	<b>CARD - Myocarditis or pericarditis</b>
	<b>DIP - Deep Incisional Primary</b>
	<b>DIS - Deep Incisional Secondary</b>
	<b>ENDO - Endocarditis</b>
	<b>IAB - Intraabdominal, not specified elsewhere</b>
	<b>LUNG - Other infections of lower respiratory tract</b>
	<b>MED - Mediastinitis</b>
	<b>SIP - Superficial Incisional Primary</b>
	<b>SIS – Superficial Incisional Secondary</b>
	<b>VASC – Arterial or venous infection</b>

# SSI Review

- **APPENDIX A. SSI specific event types attributed to each NHSN procedure category**

<b>Procedure Codez</b>	<b>Specific Event Code</b>
<b>CBGC – Coronary Bypass with Chest Incision</b>	<b>BONE - Osteomyelitis</b>
	<b>CARD - Myocarditis or pericarditis</b>
	<b>DIP - Deep Incisional Primary</b>
	<b>ENDO - Endocarditis</b>
	<b>IAB - Intraabdominal, not specified elsewhere</b>
	<b>LUNG - Other infections of lower respiratory tract</b>
	<b>MED - Mediastinitis</b>
	<b>SIP - Superficial Incisional Primary</b>
	<b>VASC – Arterial or venous infection</b>

# Surveillance Definitions for Specific Types of Infections (Chapter 17) example: REPR - OREP

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

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

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

**And at least one of the following:**

- a. organism(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
- b. physician initiates antimicrobial therapy within **two** days of onset or worsening of symptoms.

\* *With no other recognized cause*

# Surveillance Definitions for Specific Types of Infections (Chapter 17) Clarification: ENDO

## Clarification:

Following notes added to the ENDO criteria to clarify that one condition for each element below may be used to cite an ENDO 5, 6 or 7.

- Note added to ENDO 5: “(Note: Meaning one element from i, ii, iii, or iv and only one condition within each element can be used.)”
- Note added to ENDO 6 and 7: “(Note: Meaning one element from a, b, c, d, or e and only one condition within each element can be used.)”

# Surveillance Definitions for Specific Types of Infections (Chapter 17) Clarification: ENDO 5

- At least three of the following (Note: Meaning one element from i, ii, iii, or iv and only one condition within each element can be used.)
  - i. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic, heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use. §
  - ii. fever ( $>38.0^{\circ}\text{C}$ )
  - iii. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic infarct or abscess, digital ischemic/gangrene from embolic source), septic pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented.
  - iv. immunologic phenomena: glomerulonephritis (documented in chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor.
    - And at least one of the following:
      - a. typical infectious endocarditis organism(s) (specifically, Viridans group streptococci, *Streptococcus bovis*, *Haemophilus* spp., *Actinobacillus actinomycetemcomitans*, *Cardiobacterium hominis*, *Eikenella corrodens*, *Kingella* spp., *Staphylococcus aureus*, *Enterococcus* spp.) identified from  $\geq 2$  matching blood collections drawn on separate occasions with no more than 1 calendar day between specimens by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
      - b. *Coxiella burnetii* identified by anti-phase I IgG antibody titer  $>1:800$  or identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).

# Surveillance Definitions for Specific Types of Infections (Chapter 17) Clarification: ENDO 6

- At least one of the following\*‡:
  - i. vegetation on cardiac valve or supporting structures seen on echocardiogram
  - ii. intracardiac abscess seen on echocardiogram
  - iii. new partial dehiscence of prosthetic valve seen on echocardiogram
- And at least three of the following (Note: Meaning one element from a, b, c, d, or e and only one condition within each element can be used.):
  - a. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use. §
  - b. fever ( $>38.0^{\circ}\text{C}$ )
  - c. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic, infarct or abscess, digital ischemic/gangrene from embolic source), septic pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented.
  - d. immunologic phenomena: glomerulonephritis (documented in chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor.
  - e. identification of organism(s) from the blood by at least one of the following methods:
    - recognized pathogen(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
    - same common commensal organism(s) identified from  $\geq 2$  blood collections drawn on separate occasions on the same or consecutive days 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).

# Surveillance Definitions for Specific Types of Infections (Chapter 17) Clarification: ENDO 7

- All of the following (Note: Meaning one element from a, b, c, d, or e and only one condition within each element can be used.):
  - a. prior endocarditis, prosthetic valve, uncorrected congenital heart disease, history of rheumatic heart disease, hypertrophic obstructive cardiomyopathy, or known IV drug use. §
  - b. fever ( $>38.0^{\circ}\text{C}$ )
  - c. vascular phenomena: major arterial emboli (specifically, embolic stroke, renal infarct, splenic, infarct or abscess, digital ischemic/gangrene from embolic source), septic pulmonary infarcts, mycotic aneurysm (documented by imaging, seen in surgery, or described in gross pathological specimen), intracranial hemorrhage, conjunctival hemorrhages, or Janeway's lesions documented.
  - d. immunologic phenomena: glomerulonephritis (documented in chart, or white cell or red blood cell casts on urinalysis), Osler's nodes, Roth's spots, or positive rheumatoid factor.
  - e. identification of organism(s) from the blood by at least one of the following methods:
    - recognized pathogen(s) identified from blood by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
    - same common commensal organism(s) identified from  $\geq 2$  blood collections drawn on separate occasions on the same or consecutive days 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).



# SSI How-To



# SSI How-to

- The **DOE** is the date when the first element used to meet the SSI infection criterion occurs for the first time during the surveillance period
- POA, IWP, and RIT definitions do not apply to the SSI protocol
- SSI elements should all occur in a relatively tight timeframe
- Surveillance periods differ by NHSN operative procedure

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

30-day Surveillance			
Category	Operative Procedure	Category	Operative Procedure
AAA	Abdominal aortic aneurysm repair	LAM	Laminectomy
AMP	Limb amputation	LTP	Liver transplant
APPY	Appendix surgery	NECK	Neck surgery
AVSD	Shunt for dialysis	NEPH	Kidney surgery
BILI	Bile duct, liver or pancreatic surgery	OVRY	Ovarian surgery
CEA	Carotid endarterectomy	PRST	Prostate surgery
CHOL	Gallbladder surgery	REC	Rectal surgery
COLO	Colon surgery	SB	Small bowel surgery
CSEC	Cesarean section	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HTP	Heart transplant	THYR	Thyroid and/or parathyroid surgery
HYST	Abdominal hysterectomy	VHYS	Vaginal hysterectomy
KTP	Kidney transplant	XLAP	Exploratory laparotomy
90-day Surveillance			
Category	Operative Procedure		
BRST	Breast surgery		
CARD	Cardiac surgery		
CBGB	Coronary artery bypass graft with both chest and donor site incisions		
CBGC	Coronary artery bypass graft with chest incision only		
CRAN	Craniotomy		
FUSN	Spinal fusion		
FX	Open reduction of fracture		
HER	Herniorrhaphy		
HPRO	Hip prosthesis		
KPRO	Knee prosthesis		
PACE	Pacemaker surgery		
PVBY	Peripheral vascular bypass surgery		
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.

# SSI How-to

- Attributing SSI to a NHSN procedure when several procedures are performed on different dates:
  - If a patient has several NHSN operative procedures performed on different dates, attribute the SSI to the **most recently performed NHSN operative procedure**.
- If multiple tissue levels are involved in the infection
  - The type of SSI (superficial incisional, deep incisional, or organ/space) and the DOE reported must reflect the **deepest tissue level** where SSI criteria are met during the surveillance period

# SSI How-to

- Attributing SSI to NMSN procedures with multiple primary incision sites
  - Report as a **single SSI** and assign the type of SSI that represent the **deepest tissue** level where SSI criteria are met
- Attributing SSI to NMSN procedures that have secondary incision sites (**CGBG!**)
  - Secondary incision site surveillance period: 30 days
  - Can report two SSIs and link to same procedure
    - Superficial/Deep Incisional Primary (S/DIP)
    - Superficial/Deep Incisional Secondary (S/DIS)

# SSI How-to

- Secondary BSI attribution
  - Organism identified from blood matches organism identified from site-specific specimen used to meet SSI criterion **and** blood specimen collected during secondary BSI attribution period *or*
    - 17 days total: 3 days prior and 13 days after DOE
  - An organism identified in the blood is an element used to meet the NHSN Organ/Space SSI site-specific criterion and collected during timeframe for SSI elements
- Organisms **excluded** from meeting SSI criteria
  - Blastomyces
  - Histoplasma
  - Coccidioides
  - Paracoccidioides
  - Cryptococcus
  - Pneumocystis
  - Latent infection pathogens (herpes, shingles, syphilis, tuberculosis)

# SSI How-to: PATOS

- Remember, POA does not apply to SSI definition
- PATOS (Present at Time of Surgery) field YES
  - Depth of SSI corresponds with the depth of infection noted during procedure
  - Evidence of infection noted intraoperatively and documented in operative notes
    - Pre/post op diagnosis, indication for surgery are NOT eligible for PATOS YES
    - YES phrases: abscess, infection, purulence/pus, phlegmon, feculent peritonitis, ruptured/perforated appendix
    - NO phrases: colon perforation, contamination, necrosis, gangrene, fecal spillage, nicked bowel, murky fluid, documentation of inflammation
  - May NOT use
    - Path report
    - Culture/non-culture test results from surgical specimen
    - Wound class
    - Trauma resulting in contaminated case

# SSI How-to

- Detected = RO
  - If the SSI is detected at a facility other than the one where the NHSN Operative Procedure was performed
  - The facility where the procedure was performed is the reporting facility
- SSI attribution after multiple categories of NHSN procedures are performed during a single trip to the OR
  - Associate the SSI to the correct procedure
  - If unclear, associate to higher risk procedure (Table 4)

Priority	Category	Abdominal Operative Procedures
1	LTP	Liver transplant
2	COLO	Colon surgery
3	BILI	Bile duct, liver or pancreatic surgery
4	SB	Small bowel surgery
5	REC	Rectal surgery

# SSI How-to

- SSI is **not attributed** to a procedure following invasive manipulation when these three criteria are met:
  - No evidence of infection during post-op period **and**
  - Invasive manipulation performed for diagnostic or therapeutic purpose **and**
    - “Invasive manipulation” does not include closed reductions, wound packing, or routine catheter flushing
  - Infection subsequently develops in a tissue level that was accessed during the manipulation
  - Tissue levels not manipulated can still be eligible for SSI
- Ignore patient compliance or accident when reporting SSIs



# SSI How-to: Denominator

- Complete a denominator form for each NHSN Operative Procedure performed, even if performed during same trip to OR
- If multiple procedures are performed during same trip to OR through the same incision, combine the duration of all the procedures.
- If multiple procedures are performed during same trip to OR through *different* incisions, determine each procedure start/finish or split total procedure time by the number of procedures

# Denominator Example 1a

- Patient A undergoes a CARD and CGBC procedure through the same chest incision. The PST for the CGBC is noted as 8:30 AM. No PF is listed for the CGBC. The CARD procedure is noted to start at 1:00 PM, and the PF is listed as 3:00 PM. CBGC are required reporting, and CARD is on your facility's monthly reporting plan. **What denominator and duration reporting would this require?**

# Denominator Example 1a

- Patient A undergoes a CARD and CGBC procedure through the same chest incision. The PST for the CGBC is noted as 8:30 AM. No PF is listed for the CGBC. The CARD procedure is noted to start at 1:00 PM, and the PF is listed as 3:00 PM. CBGC are required reporting, and CARD is on your facility's monthly reporting plan. **What denominator and duration reporting would this require?**
- Denominator for Procedure Form (2)
  - One for CARD Procedure
  - One for CBGC Procedure

# Denominator Example 1a

- Patient A undergoes a CARD and CGBC procedure through the same chest incision. The PST for the CGBC is noted as 8:30 AM. No PF is listed for the CGBC. The CARD procedure is noted to start at 1:00 PM, and the PF is listed as 3:00 PM. CBGC are required reporting, and CARD is on your facility's monthly reporting plan. **What denominator and duration reporting would this require?**
- Denominator for Procedure Form (2)
  - One for CARD Procedure – 6 hours 30 minutes
  - One for CBGC Procedure – 6 hours 30 minutes

# Denominator Example 1b

- Patient B, who has tandem spinal stenosis, undergoes a lumbar laminectomy (LAM) as well as a cervical spinal fusion at a different incision (FUSN) during the same trip to the OR. The PST is listed as 11:20 AM and the PF is listed as 2:40 PM. There are no notes for when one procedure ends and the other starts. **What denominator reporting would this require?**

# Denominator Example 1b

- Patient B, who has tandem spinal stenosis, undergoes a lumbar laminectomy (LAM) as well as a cervical spinal fusion at a different incision (FUSN) during the same trip to the OR. The PST is listed as 11:20 AM and the PF is listed as 2:40 PM. There are no notes for when one procedure ends and the other starts. **What denominator reporting would this require?**
- Denominator Procedure Form (2)
  - One for LAM
  - One for FUSN

# Denominator Example 1b

- Patient B, who has tandem spinal stenosis, undergoes a lumbar laminectomy (LAM) as well as a cervical spinal fusion at a different incision (FUSN) during the same trip to the OR. The PST is listed as 11:20 AM and the PF is listed as 2:40 PM. There are no notes for when one procedure ends and the other starts. **What denominator reporting would this require?**
- Denominator Procedure Form (2)
  - One for LAM – 1 hour 40 minutes
  - One for FUSN – 1 hour 40 minutes


# SSI How-to: Denominator


- If same NHSN Operative Procedure but *different* ICD-10-PCS or CPT codes, complete one Denominator for Procedure form. Check the **Operative Procedure Code Documents**, which have been updated.


## Operative Procedure Code Documents

### 2023 Operative Procedure Code Documents

The documents listed below should be used for procedures performed January 1, 2023 through December 2023.

[List of NHSN 2023 ICD-10 Procedure Code Updates – January 2023](#)  [XLS – 19 KB]

[ICD-10-PCS Procedure Code Mapping to NHSN Operative Procedure Codes – January 2023](#)  [XLS – 787 KB]

[Current Procedural Terminology \(CPT\) Procedure Code Mapping to NHSN Operative Procedure Codes – January 2023](#)  [XLS – 346 KB]



# SSI How-to: Denominator

- If same NHSN Operative Procedure category performed via separate incisions, complete separate Denominator for Procedure Forms
  - 2023 Clarification: Appendix B lists the procedures for which two NHSN Operative Procedures may be performed in the same day
    - AMP, BRST, CEA, FUSN, FX, HER, HPRO, KPRO, LAM, NEPH, OVRY, PVBY
  - Enter separate procedure times if documented, otherwise divide total time by number of procedures

# SSI How-to: Denominator

- For more than one procedure through same incision/surgical space within 24 hours, combine both durations and complete Denominator for Procedure form for original procedure.

# Denominator Example 2

- Patient C required a COLO procedure the morning of January 26 for an obstruction. Resection and anastomosis was required. PST was reported as 6:15 AM and PF was 7:45 AM. By that evening, there is evidence that the anastomosis had failed and the patient is returned to surgery for revision. PST is reported as 5:50 PM and PF at 9:20 PM.  
**What denominator reporting is required?**
- One Denominator Procedure form
  - COLO – 5 hours

# SSI How-to: Denominator

- HYST or VHYS determined by ICD-10 5<sup>th</sup> character, which indicates the approach for the procedure
  - Assigned by facility's medical coder to the procedure

Procedure	ICD-10 5 <sup>th</sup> Character	Approach
HYST	0	Open
	4	Percutaneous endoscopic
	F	Via natural or artificial opening with percutaneous endoscopic assistance
VHYS	7	Via natural or artificial opening
	8	Via natural or artificial opening with endoscopic

# SSI SIR Inclusion Criteria

Included in model: Under 2015 Baseline	All SSI Model-Adult	Complex A/R SSI Model- Adult	All SSI Model- Pediatric	Complex A/R SSI Model- Pediatric	Complex 30-Day
All NHSN procedure categories	✓	✓	✓	✓	COLO HYST
Procedures in patients <18 years			✓	✓	
Procedures in patients >=18 years	✓	✓			✓
Inpatient procedures <u>only</u>	✓	✓	✓	✓	✓
<b>Outpatient procedures</b>	<b>EXCLUDED FROM ALL PATIENT SAFETY SSI SIR MODELS</b>				
Superficial incisional primary (SIP) SSIs	✓		✓		
Deep incisional primary (DIP) SSIs	✓	✓	✓	✓	✓
Organ/space (O/S) SSIs	✓	✓	✓	✓	✓
DIP and O/S SSIs identified > 30 days after procedure (per protocol)	✓	✓	✓	✓	
SSIs detected on current admission (A)	✓	✓	✓	✓	✓
SSIs detected on follow-up admission to the same facility (RF)	✓	✓	✓	✓	✓
SSI detected on follow-up admission to different facility (RO)	✓		✓		✓
SSIs detected through post- discharge surveillance efforts (P)	✓		✓		✓

Universal Exclusion Criteria Variables	Definition of Variables
exclMissingVarInd	Procedure excluded for missing risk factors used in risk adjustment of applicable procedure category for SSI models
exclMissingVarList	List of missing risk factors used in risk adjustment of applicable procedure category for SSI models
exclDurThresholdInd	Procedure excluded due to procedure duration being less than 5 minutes or exceeding the IQR5 value. Please see the list of procedure duration cutoff points in the SSI section of the SIR Guide: <a href="https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf">https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/nhsn-sir-guide.pdf</a>
exclAgeGT109Ind	Procedure excluded if the patient's age at time of procedure is 109 years or older
exclOutpatientInd	<p>Procedure excluded because it was reported as an outpatient procedure; NOTE: all outpatient procedures are excluded from the inpatient SSI SIRs calculated using the 2015 baseline.</p> <p>There are separate SIR reports for procedures performed in Hospital Outpatient Procedure Departments (HOPD).</p>
exclPedIndcmpx30d	Procedures performed in pediatric patients are excluded from the Complex 30-day model
exclGenderOth	Procedure excluded because patient's gender was not reported as male or female (specifically, gender = Other)
exclInvalidJointRepHemi	Procedure is excluded if procedure code is KPRO or HPRO and (procedure type is a hemi joint replacement reported as a total revision or a total joint replacement reported as a partial revision) and procedure date is January 1, 2015-December 31, 2015.
exclBMIThresholdInd	<p>Procedure excluded if the adult patient's BMI is less than 12 or greater than 60.</p> <p>In pediatric patients &gt; 18 years if BMI is less than 10.49 or greater than 65.79**</p>

# Exclusion of Procedures

The screenshot displays the NHSN Analysis Reports interface. On the left is a navigation menu with the following items: NHSN Home, Alerts, Reporting Plan, Patient, Event, Procedure, Summary Data, Import/Export, Surveys, Analysis, Users, Facility, Group, Tools, and Logout. The main content area is titled 'Analysis Reports' and features a search bar and two buttons: 'Expand All' and 'Collapse All'. A tree view shows the following structure:

- Device-Associated (DA) Module
- Procedure-Associated (PA) Module (highlighted in yellow)
- All Procedure-Associated Events
- SSI (highlighted in yellow)
  - Line Listing - All SSI Events (highlighted in blue, with a red arrow pointing to it)
  - Run Report
  - Modify Report
  - Export Data Set
- SIR - Pediatric Complex AR SSI Data by Procedure
- SIR - Adult Complex AR SSI Data by Surgeon
- SIR - Pediatric Complex AR SSI Data by Surgeon
- SIR - Adult All SSI Data by Procedure
- SIR - Pediatric All SSI Data by Procedure
- SIR - Adult All SSI Data by Surgeon
- SIR - Pediatric All SSI Data by Surgeon
- Line Listing - Procedures Excluded from SIR
- Post-Procedure PNEU

# Excluded events

The screenshot displays the NHSN Analysis Reports interface. On the left is a vertical navigation menu with the following items: NHSN Home, Alerts, Reporting Plan, Patient, Event, Procedure, Summary Data, Import/Export, Surveys, Analysis, Users, Facility, Group, Tools, and Logout. The main content area is titled 'Analysis Reports' and features a search bar and two buttons: 'Expand All' and 'Collapse All'. Below these is a tree view of report categories. The 'Procedure-Associated (PA) Module' is expanded, showing 'All Procedure-Associated Events' and 'SSI'. The 'SSI' category is further expanded, revealing a list of reports including 'Line Listing - All SSI Events', 'Run Report', 'Modify Report', 'Export Data Set', and several 'SIR' reports. A red arrow points to the 'Line Listing - Procedures Excluded from SIR' report at the bottom of the list.



# Report an SSI Event

- NHSN Home
- Alerts
- Dashboard ▶
- Reporting Plan ▶
- Patient ▶
- Event ▶**
  - Add**
  - Find
  - Incomplete
- Procedure ▶
- Summary Data ▶
- COVID-19 ▶
- Import/Export
- Surveys ▶
- Analysis ▶
- Users ▶



## Add Event

Mandatory fields marked with \*

Fields required for record completion marked with \*\*

Fields required when in Plan marked with >

Facility ID *	TDH Central (ID 15813) ▼	Event #:				
Patient ID *	0025	Find	Reassign	Find Events for Patient	Social Security #:	
Secondary ID:		Medicare #:				
Last Name:		First Name:				
Middle Name:		Date of Birth *:	05/15/1975	27		
Gender *	F - Female ▼					
Ethnicity:						
Race:	<input type="checkbox"/> American Indian/Alaska Native	<input type="checkbox"/> Asian				
	<input type="checkbox"/> Black or African American	<input type="checkbox"/> Native Hawaiian/Other Pacific Islander				
	<input type="checkbox"/> White					

# Report an SSI event

## Event Information

Event Type \*: SSI - Surgical Site Infection


Date of Event \*: 01/03/2023

NHSN Procedure Code \*: COLO - Colon surgery

Select button for system used

ICD-10 PCS  Outpatient Procedure \*: N - No

CPT Code

Procedure Date \*: 12/15/2022  Event Linked

MDRO Infection Surveillance \*: No, this infection's pathogen/location are not in-plan for Infection Surveillance in the MDRO/CDI Module

Location:

Date Admitted to Facility \*: 12/14/2022

# Report an SSI event

## Event Details

Specific Event \*: IAB - Intraabdominal, not specified elsewhere

Infection present at the time of surgery \*: N - No

Specify Criteria Used \* (check all that apply)

### Signs & Symptoms (check all that apply)

#### Any patient

- Purulent drainage from affected area
- Pain or tenderness
- Swelling or inflammation
- Erythema or redness
- Heat
- Fever
- Incision deliberately opened/drained
- Wound spontaneously dehisces
- Abscess

#### <=1 year old

- Fever
- Hypothermia
- Apnea
- Bradycardia
- Lethargy
- Vomiting
- Suprapubic tenderness

### Laboratory

- Organism(s) identified
- Culture or non-culture based testing not performed
- Organism(s) identified from blood specimen
- Organism(s) identified from  $\geq 2$  periprosthetic specimens
- Other positive laboratory tests
- Imaging test evidence of infection

### Clinical Diagnosis

- Physician diagnosis of this event

# Report an SSI event

Detected \*: A - Admission

Secondary Bloodstream  
Infection \*: N - No

COVID-19 \*: N - No

Died \*\*: N - No

Discharge Date: 01/18/2023

Pathogens Identified \*: Y - Yes If Yes, specify below ->

## Pathogens

Pathogen 1: *Pseudomonas aeruginosa* - PA 12 drugs required

* <u>AMK</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>AZI</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFEP</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFTAVI</u> <input type="radio"/> S <input type="radio"/> R <input checked="" type="radio"/> N	* <u>CEFTAZ</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>CEFTOTAZ</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input checked="" type="radio"/> N
* <u>CIPRO</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	<u>LEVO</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>COL</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input checked="" type="radio"/> N	<u>PB</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input checked="" type="radio"/> N		
* <u>DORI</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input checked="" type="radio"/> N	<u>IMI</u> <input type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input checked="" type="radio"/> N	<u>MERO</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>GENT</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>PIPTAZ</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N	* <u>TOBRA</u> <input checked="" type="radio"/> S <input type="radio"/> R <input type="radio"/> I <input type="radio"/> N

# Questions?

## Contact Information

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