



# The Devil is in the Details: Applying Surgical Site Infection Criteria Accurately

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# Objectives

1. State the incidence of Surgical Site Infections in the U.S.
2. Define terms necessary to correctly participate in the NHSN SSI module.
3. Identify NHSN criteria for the major event type SSI and specific event types.
4. Apply event criteria for SSI to case studies.



# NHSN Website

- NHSN Manual
  - Criteria
  - Key Definitions
  - Tables of Instructions
- Data and Statistics
  - NHSN published reports
- Trainings
- NHSN forms
- Lots more!!!

<http://www.cdc.gov/nhsn/index.html>

DIVISION of Healthcare Quality Promotion (DHQP) at CDC. NHSN also includes a new component for hospitals to monitor adverse reactions and incidents associated with receipt of blood and blood products. Enrollment is open to all types of healthcare facilities in the United States, including acute care hospitals, long term acute care hospitals, psychiatric hospitals, rehabilitation hospitals, outpatient dialysis centers, ambulatory surgery centers, and long term care facilities. For more information, click on the topics below.

## Biovigilance Component

NHSN Biovigilance Component

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Biovigilance

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## Topics

### About NHSN

Overview, External Peer Review, Confidentiality, How data are used...

### Patient Safety Component

Procedure, Device (Dialysis Event), Medication-associated, MDRO, & HRIIV Modules...

### Enrollment Requirements

Eligibility, Required Training, Reporting & System Requirements, Security, Begin Enrollment...

### Healthcare Personnel Safety Component

Benefits of Participation, Facility-Level Options, BBF Exposure Module...

### Resource Library

Guides, Manuals, NHSN Codes & Variables, FAQs, HIPAA...

### Biovigilance Component

Hemovigilance Module Overview, Protocol and Tables of Instructions...

### Data Collection Forms

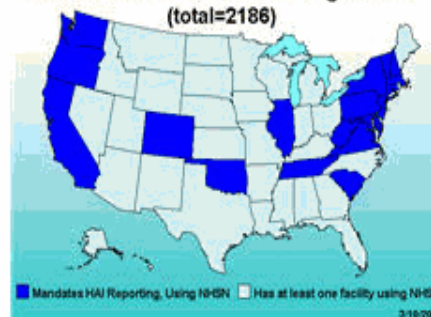
Forms for routine data collection including customizable forms to meet specific needs...

### NHSN Training

Pre-recorded webcasts: Enrollment, Data Entry, Surveillance, Analysis, PS & HPS Components...

## Data & Statistics

### States with Facilities Using NHSN (total=2186)



CDC currently supports more than 2000 hospitals that are using NHSN and 19 states require hospitals to report HAI's using NHSN.

[More Data & Statistics »](#)



**NHSN Report 2008** NHSN Report, data summary for 2006 through 2007

## Communication Updates

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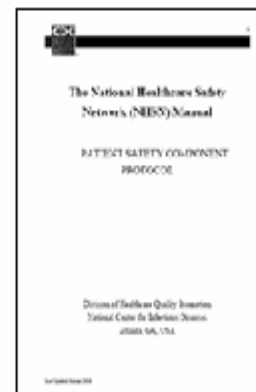
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## Patient Safety Component

### Download the NHSN Manual: Patient Safety Protocol by section:

-  [Table of Contents](#) PDF (38 KB / 2 pages)
-  [NHSN Overview](#) PDF (51 KB / 5 pages)
-  [Identifying Healthcare-associated Infections \(HAIs\) in NHSN](#) PDF (84 KB / 2 pages)
-  [Patient Safety Monthly Reporting Plan](#) PDF (26 KB / 1 pages)
-  [Central Line-Associated Bloodstream Infection \(CLABSI\) Event](#) PDF (66 KB / 7 pages)
-  [Central Line Insertion Practices \(CLIP\) Adherence](#) PDF (82 KB / 3 pages)
-  <http://www.cdc.gov/nhsn/PDFs/ICD-9-cmCODEScurrent.pdf> (pages)
-  [Catheter-Associated Urinary Tract Infection \(CAUTI\) Event](#) PDF (236 KB / 11 pages)
-  [Dialysis Event](#) PDF (53 KB / 3 pages)
-  [Surgical Site Infection \(SSI\) Event](#) PDF (180 KB / 13 pages)
-  [Post-Procedure Pneumonia \(PPP\) Event](#) PDF (36 KB / 2 pages)
-  [Antimicrobial Use and Resistance \(AUR\) Option](#) PDF (54 KB / 4 pages)
-  [Multidrug-resistant Organism \(MDRO\) and \*Clostridium difficile\*-Associated Disease \(CDAD\) Module Protocol](#) PDF (413 KB / 25 pages)
-  [High Risk Inpatient Influenza \(HRIIV\) Protocol](#) PDF (438KB / 20 pages)
-  [Tables of Instructions Updated June 2009](#), PDF (422 KB / 49 pages)
-  [CDC Location Labels and Location Descriptions](#) PDF (268 KB / 15 pages)



# CDC/NHSN surveillance definition of health care–associated infection and criteria for specific types of infections in the acute care setting

Teresa C. Horan, MPH, Mary Andrus, RN, BA, CIC, and Margaret A. Dudeck, MPH  
Atlanta, Georgia

## BACKGROUND

Since 1988, the Centers for Disease Control and Prevention (CDC) has published 2 articles in which nos-

population for which clinical sepsis is used has been restricted to patients  $\leq 1$  year old. Another example is that incisional SSI descriptions have been expanded to specify whether an SSI affects the primary or a secondary in-

Horan TC, Andrus ML, Dudeck MA. CDC/NHSN surveillance definition of healthcare-associated infection and criteria for specific types of infections in the acute care setting. *Am J Infect Control* 2008;36:309-32.

<http://www.cdc.gov/ncidod/dhqp/pdf/NNIS/NosInfDefinitions.pdf>



# Healthcare-associated Infection (HAI)

- A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) that
  - Occurs in a patient in a healthcare setting and
  - Was not present or incubating at the time of admission, unless the infection was related to a previous admission
- When the setting is a hospital, meets the criteria for a specific infection (body) site as defined by CDC
- When the setting is a hospital, may also be called a nosocomial infection



# HAI

- The following conditions are not infections:
  - Colonization (presence of microorganisms on skin, mucous membranes, in open wounds, or in excretions or secretions but are not causing adverse clinical signs or symptoms)
  - Inflammation that results from tissue response to injury or stimulation by noninfectious agents, such as chemicals

# Surgical Site Infections (SSIs)





# Epidemiology

- SSIs are the third most frequently reported HAI
- Account for 14-16% of all HAIs among hospitalized patients
- Remains a substantial cause of morbidity and mortality even with recent advances in prevention



# NHSN Operative Procedure Includes:

- Surgery completed in a single trip to the OR
- Incision closed before leaving OR
- Surgery conducted in defined operating room suite
- May be an in- or out-patient procedure
- Laparoscopic & traditional approaches included



# Definition of an Operating Room

- A patient care area that meets the American Institute of Architects (AIA) criteria for an operating room<sup>7</sup>. This may include an operating room, C-Section room, interventional radiology room, or a cardiac catheterization lab.



# NHSN Operative Procedures\*

- Each NHSN Operative Procedure category consists of a group of ICD-9-CM codes  
  
Example: CBGB (CABG with chest and donor site incisions) = ICD-9 codes 36.10 – 36.14, 36.19
- When monitoring a specific NHSN Operative Procedure category, all the ICD-9 codes within that category that are done in your facility must be followed

\*Table 11 in the *NHSN Patient Safety Component Protocol* document



# Implant

- A nonhuman-derived implantable foreign body (e.g., prosthetic heart valve, hip prosthesis) that is permanently placed in a patient during an NHSN operative procedure and is not routinely manipulated for diagnostic or therapeutic purposes
- Screws, wires, and mesh that are left in place are considered implants



# Transplant



- Human cells, tissues, organs, or cellular- or tissue-based products that are placed into a human recipient via grafting, infusion, or transfer. Examples include: heart valves, organs, ligaments, bone, blood vessels, skin, corneas, and bone marrow cells.
- Autologous or “autograft” transplants are products that originate from the patient’s own body.
- Non-autologous or “allograft” transplants are tissues or other products derived from another human body, either a donor cadaver or a live donor.



# Transplant

- REPORTING INSTRUCTIONS:
- Some products are a combination of human- and nonhuman-derived materials, such as demineralized human bone matrix with porcine gel carrier. When placed in a patient during an operative procedure, indicate “Yes” for both the Implant and Non-autologous Transplant fields.
- Some operative procedures involve placement of both autologous and non-autologous products. For these procedures, indicate “Yes” for Non-autologous Transplant field.



# Superficial Incisional SSI

A **superficial incisional SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure  
and  
involves only skin and subcutaneous tissue of the incision  
and

patient has at least one of the following:

- a. purulent drainage from the superficial incision.
- b. organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- c. at least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon, and is culture-positive or not cultured. A culture-negative finding does not meet this criterion.
- d. diagnosis of superficial incisional SSI by the surgeon or attending physician.

# Superficial Incisional SSI

NOTE: There are two specific types of superficial incisional SSIs:

1. Superficial Incisional Primary (SIP) – a superficial incisional SSI that is identified in the primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)
2. Superficial Incisional Secondary (SIS) – a superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site [leg] incision for CBGB)

## REPORTING INSTRUCTIONS:

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

# Deep Incisional SSI



A **deep incisional SSI** must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure

and

involves deep soft tissues (e.g., fascial and muscle layers) of the incision

and

patient has at least one of the following:

- a. purulent drainage from the deep incision but not from the organ/space component of the surgical site
- b. a deep incision spontaneously dehisces or is deliberately opened by a surgeon and is culture-positive or not cultured when the patient has at least one of the following signs or symptoms: fever ( $>38^{\circ}\text{C}$ ), or localized pain or tenderness. A culture-negative finding does not meet this criterion.
- c. an abscess or other evidence of infection involving the deep incision is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. diagnosis of a deep incisional SSI by a surgeon or attending physician.

# Organ/Space SSI

An organ/space SSI must meet the following criterion:

Infection occurs within 30 days after the operative procedure if no implant<sup>1</sup> is left in place or within 1 year if implant is in place and the infection appears to be related to the operative procedure

*and*

infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure

*and*

patient has at least 1 of the following:

- a. purulent drainage from a drain that is placed through a stab wound into the organ/space
- b. organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- c. an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- d. diagnosis of an organ/space SSI by a surgeon or attending physician.



# Specific Sites of Organ/Space SSI



**Table 2. Specific sites of an organ/space SSI.** Criteria for these sites can be found in the NHSN Help Messages (must be logged in to NHSN) or Chapter 17.<sup>8</sup>

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



# Case 1

- 45 year-old male patient had colon resection (COLO) performed on 6/18
- 6/22:
  - The upper aspect of the patient's abdominal wound has purulent drainage with some redness and induration
  - Wound swabs sent to lab for culture
  - Patient started on antibiotics
- 6/24:
  - Wound culture grew *Enterobacter* spp. and *E. coli*



# Case 1

**Is this an SSI?**

Yes,

**What type?**

**Superficial Incisional Primary**

- **Purulent drainage from superficial incision (positive culture and redness supportive, but unnecessary)**



# Case 3



- Patient is admitted to the hospital on 04/12 for elective surgery and active MRSA screening test is positive.
- On the same day, patient undergoes small bowel resection (SB).
- Postoperative course is unremarkable patient discharged on 4/16.
- On 4/29, patient is readmitted with a red, angry wound that is opened to the fascial level by the surgeon and is cultured.
- 4/30 culture positive for MRSA.



# Case 3



Is this infection considered healthcare-associated?

*Yes. Preoperative colonization does not prevent an infection from being healthcare associated.*



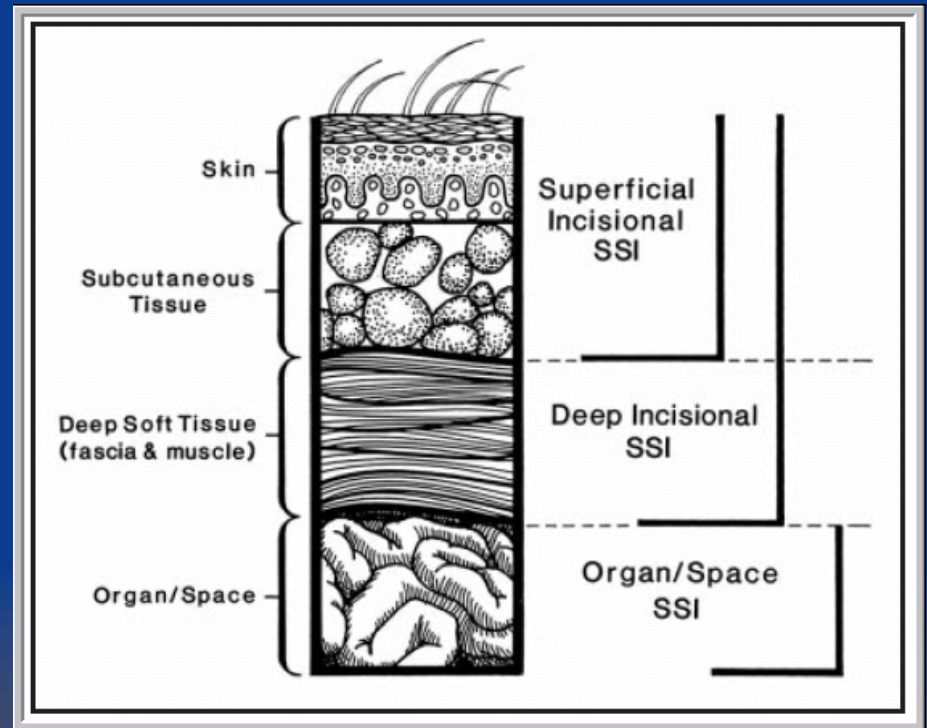
# Case 3



If so, what type?

*Superficial*

*Incisional Primary*



If so, what is the date of onset?

*4/29 or first symptom*



# Case 4



- Which of the following does not meet the criteria for superficial incisional SSI if identified within 30 days after the procedure?
  - A. Physician documents “superficial wound infection”
  - B. Purulent drainage noted from upper aspect of incision
  - C. Physician documents “cellulitis”
  - D. MRSA grows from an aseptically obtained swab of the superficial incision



# Case 4



## C. Physician documents “cellulitis”

Do not use terms such as “cellulitis” to determine whether criteria of an SSI are met. Use only those terms that are terms that are part of the criteria... redness, heat, etc.



# Case 5

- Jane Doe had a spinal fusion (FUSN) on 1/22 performed
- 2/1-Increased back pain; Temp 38°C
- 2/2 MRI reveals abscess in the spinal epidural space
- Surgeon opened wound in the OR & drained abscess; specimen to lab for culture; notes ‘infected hematoma’; antibiotics begun for epidural abscess
- Culture positive for *Pseudomonas aeruginosa*

# Case 5

- Is this an SSI?

Yes

- If so, what type?

*Organ/Space SSI*

*Specific Type:*

*SA Spinal abscess  
without meningitis*

## SA-Spinal abscess without meningitis

An abscess of the spinal epidural or subdural space, without involvement of the cerebrospinal fluid or adjacent bone structures, must meet at least 1 of the following criteria:

1. Patient has organisms cultured from abscess in the spinal epidural or subdural space.
2. Patient has an abscess in the spinal epidural or subdural space seen during a surgical operation or at autopsy or evidence of an abscess seen during a histopathologic examination.
3. Patient has at least 1 of the following signs or symptoms with no other recognized cause: fever ( $>38^{\circ}\text{C}$ ), back pain, focal tenderness, radiculitis, paraparesis, or paraplegia  
*and*  
at least 1 of the following:
  - a. organisms cultured from blood
  - b. radiographic evidence of a spinal abscess (eg, abnormal findings on myelography, ultrasound, CT scan, MRI, or other scans [gallium, technetium, etc]).*and*  
if diagnosis is made antemortem, physician institutes appropriate antimicrobial therapy.

## Reporting instruction

- Report spinal abscess *with* meningitis as MEN.




## Case 6

- 4/8 John Smith had a tunneled central line placed in the OR, due to failure of a hemodialysis fistula during an inpatient hospitalization. He was discharged and continued on outpatient hemodialysis using the line.
- 8/22 JS readmitted with redness and purulent discharge at the insertion site. Blood cultures are negative.
- Would this be an SSI?



## Case 6

- Would this be an SSI?
- Why or why not?



*No. Because the device has been manipulated for therapeutic purposes, it is not an implant and therefore an SSI must develop within 30 days of the surgery.*

### **Implant**

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



## Case 6

- If it is not an SSI, and in addition to the signs/ symptoms listed, the blood culture was positive for MSSA, would this be called a BSI attributed to your facility?



## Case 6

- No. CDC/NHSN device-associated criteria (except Dialysis Events) are for inpatients only. It cannot be called a CLABSI within NHSN because all NHSN CLABSIs are healthcare-associated, not community-associated.
- The event may be reported through the NHSN DE module if your facility is participating in that module and the patient was receiving hemodialysis in one of your facility's outpatient dialysis units.



# Case 6



- What if it hadn't been a dialysis shunt, but instead was a ventricular shunt placed? Let's say the shunt had not been manipulated/accessed and had been functioning fine.
- However, on 6/22 the patient is admitted with what appears to be redness overlying the incision and it is opened subcutaneously by the surgeon and drained of milky fluid.

# Case 6

- Is this an SSI?
- If so what type?
- If not, why not?

*No, because this infection lies within the subcutaneous layer of tissue, it must appear within 30 days to be meet criteria of a superficial SSI.*

A **superficial incisional SSI** must meet one of the following criteria:

Infection occurs **within 30 days** after the operative procedure  
and  
involves only skin and subcutaneous tissue of the incision  
and  
patient has at least one of the following:

- purulent drainage from the superficial incision.
- organisms isolated from an aseptically obtained culture of fluid or tissue from the superficial incision.
- at least one of the following signs or symptoms of infection: pain or tenderness, localized swelling, redness, or heat, and superficial incision is deliberately opened by surgeon, and is culture-positive or not cultured. A culture-negative finding does not meet this criterion.
- diagnosis of superficial incisional SSI by the surgeon or attending physician.



# Case 7

- A 66-year-old woman is admitted on Sept 10<sup>th</sup> as an inpatient, having recently noticed blood in her stools. Diagnostic investigation reveals a colon carcinoma.
- 9/11 - Operation: hemicolectomy.
- 9/13 - Temperature up to 38.7°C, abdominal pain. Abscess of the abdominal wall per U/S.



## Case 7

- 9/14 - I&D of the abdominal wall abscess. According to the operation report, the fascial layer is partially affected. Antibiotics begun.
- 9/18 - Discharge from hospital on oral antibiotics Culture – E.coli.

# Case 7

- Is this an HAI?
- If so what type?

Yes

*Organ/Space SSI*

*Specific Type:*

*IAB Criteria 2:*



2. Patient has abscess or other evidence of intraabdominal infection seen during a surgical operation or histopathologic examination.

An organ/space SSI involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure. Specific sites are assigned to organ/space SSI to further identify the location of the infection. The table below lists the specific sites that must be used to differentiate organ/space SSI. An example is appendectomy with subsequent subdiaphragmatic abscess, which would be reported as an organ/space SSI at the intraabdominal specific site (SSI-IAB). Specific sites of organ/space (Table 2) have specific criteria which must be met in order to qualify as an NHSN event. These criteria are in addition to the general criteria for and can be found [in](#) Chapter 17.<sup>8</sup>

An organ/space SSI must meet one of the following criteria:

Infection occurs within 30 days after the operative procedure if no implant is left in place or within one year if implant is in place and the infection appears to be related to the operative procedure

and

infection involves any part of the body, excluding the skin incision, fascia, or muscle layers, that is opened or manipulated during the operative procedure

and

patient has at least one of the following:

- purulent drainage from a drain that is placed through a stab wound into the organ/space
- organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space
- an abscess or other evidence of infection involving the organ/space that is found on direct examination, during reoperation, or by histopathologic or radiologic examination
- diagnosis of an organ/space SSI by a surgeon or attending physician.



# Case 9

- A 79-year-old male patient is brought from a nursing home after a fall and is admitted to hospital with a fractured neck of femur. On admission the nursing home indicates that the patient has MRSA colonization. Consequently, while the patient is still in the emergency room cultures are taken from the nose, pharynx, perineum and groin.



# Case 9

- Day 1 – HPRO completed. Antibiotic prophylaxis is administered peri-operatively.
- Day 2 - The patient is very confused. Temperature normal. Wound condition good.
- Day 3 -The results of the admission cultures of the nose and groin are positive for MRSA. The following entry is found in the patient's notes: "Patient removed the dressing several times. Recurrent confused condition. Wound edges very red and taut."



# Case 9

- Day 5 - Entry in the patient's notes: "Abscess lanced by the attending surgeon". A wound culture sent to lab. Antibiotics begun.
- Day 6- Wound culture: MRSA
- Day 9 -Improvement in wound condition. Sent to Rehab.



# Case 9



- Does this patient have an SSI?
- If so, what Type?
- If so, what is the date of the infection?

*Yes. Postoperative treatment or mistreatment of the wound does not negate the development of an SSI.*

*Superficial  
Incisional  
Primary*

*Day 3; date of first signs  
of infection*



# Case Study 10

- 7/7 Mrs. Jones has a saphenous endoscopic harvest and a internal mammary vein used for her CAB. The ICD codes as entered are 36.12 and 36.15, both CBGB and CBGC.  
If the saphenous vein was harvested endoscopically, what NHSN operative procedure code(s) should be entered into NHSN?



# Case Study 10

- When a CBGB and a CBGC are done together on a patient on the same trip to the OR, report it as a CBGB only. That way, if the donor site incisions should get infected, you can report it as SIS or DIS.



# Case 10

- If Mrs. Jones develops both a leg donor site infection and a chest incision infection, do you count both as infections or only one?
- If only one, which one?

Count both

Chest as a primary site SIP, DIP or Organ/Space

Leg as a secondary site SIS, DIS



# Case 10

*Can you report 2 donor site infections (SIS OR DIS) on the same patient?*

Yes



# Case 11



- 75 year old patient admitted for small bowel obstruction. 5/15 taken to OR and SB resection and appendectomy performed.
- What surgeries are recorded in NHSN?

*Both SB and APPY procedures are recorded*



# Case 11



- How are the durations for the individual surgeries determined?

*If more than one NMSN operative procedure is performed through the same incision, record the combined duration of all procedures, which is the time from skin incision to primary closure.*

*For bilateral operative procedures (e.g., KPRO), two separate Denominator for Procedure (CDC 57.121) are completed. To document the duration of the procedure, indicate the incision time to closure time for each procedure separately or, alternatively, take the total time for both procedures and split it evenly between the two.*



# Case 11



- What if bilateral surgeries are recorded in NHSN? (ex bilat KPROs)
- How are the durations for the individual surgeries determined?

*Both procedures are recorded*

*For bilateral operative procedures (e.g., KPRO), two separate Denominator for Procedure (CDC 57.121) are completed. To document the duration of the procedure, indicate the incision time to closure time for each procedure separately or, alternatively, take the total time for both procedures and split it evenly between the two.*



# Case 11



- 5/19 patient spikes temp to 38°C, has abdominal pain and emesis. Ultrasound shows fluid collection in abdominal cavity. Needle aspiration of fluid collection. Fluid sent for culture.
- 5/20 culture positive for *E. faecium*, many neutrophils seen.



# Case 11

- Is this an HAI?
- If so, what type?

Yes

*Intraabdominal abscess (IAB) Criteria 1*



# Case 11

- To what surgery is an SSI attributed if applicable?
- If more than one NHSN operative procedure was done through a single incision, attempt to determine the procedure that is thought to be associated with the infection. If it is not clear (as is often the case when the infection is a superficial incisional SSI), or if the infection site being reported is not an SSI, use the NHSN Principal Operative Procedure Selection Lists (Table 3) to select which operative procedure to report.

# Case 11



*Table 3. NHSN Principal Operative Procedure Selection Lists*

The following lists are derived from Table 1, NHSN Operative Procedure Categories. The operative procedures with the highest risk of surgical site infection are listed before those with a lower risk.

Priority	Code	Abdominal Operations
1	SB	Small bowel surgery
2	KTP	Kidney transplant
3	LTP	Liver transplant
4	BILI	Bile duct, liver or pancreatic surgery
5	REC	Rectal surgery
6	COLO	Colon surgery
7	GAST	Gastric surgery
8	CSEC	Cesarean section
9	SPLE	Spleen surgery
10	APPY	Appendix surgery
11	HYST	Abdominal hysterectomy
12	OVRY	Ovarian surgery
13	HER	Herniorrhaphy
14	CHOL	Gall bladder surgery
15	AAA	Abdominal aortic aneurysm repair
16	NEPH	Kidney surgery
17	XLAP	Laparotomy



# WELL DONE!!





# References

- AJIC: American Journal of Infection Control, Volume 36, Issue 5, Pages 309-332, June 2008, Authors: Teresa C. Horan; Mary Andrus; Margaret A. Dudeck.  
*[www.ajicjournal.org/article/S0196-6553\(08\)00167.../abstract](http://www.ajicjournal.org/article/S0196-6553(08)00167.../abstract)*

# Save the Date

## Fifth Decennial International Conference on Healthcare-Associated Infections

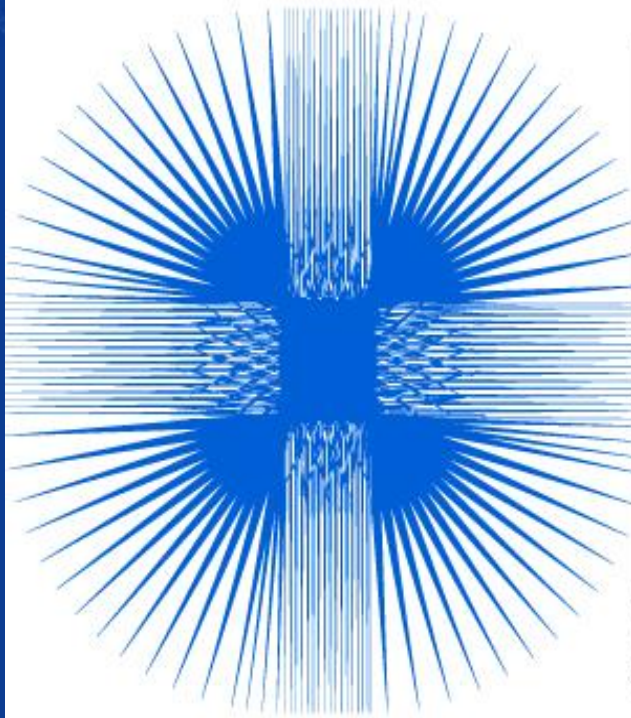
March 18-22, 2010

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