Surveillance Strategies for Success Part 4: 2016 Annual Training Updates

April 22, 2016

Partners for Better Healthcare

APIC VIRGINIA

VDH VIRGINIA DEPARTMENT OF HEALTH

VHQC

Today's Speakers

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VHQC

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Polling Question

Is your facility conducting Ventilator-Associated Event (VAE) surveillance?

a. Yes, using NHSN to track events
b. Yes, using a different surveillance system
c. We have conducted surveillance for VAE in the past
d. We have plans to conduct VAE surveillance in the future
e. No

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Objectives

Goals Today

Updates from 2016 Annual NHSN Training

- SSI
- LabID

Surgical Site Infections (SSIs)

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SSI: Why They Matter

- SSI and pneumonia are two most common HAIs (1)
- Estimated 157,500 HAI SSI infections in United States per year (1)
- Estimated 8,205 deaths associated with SSI each year. (2)
- Estimated 11% of all deaths in intensive care units are associated with SSI. (2)

a. *Magill, S.S., et al., "Multistate point-prevalence survey of health care-associated infections". New England Journal of Medicine, 370(13): (2014): 1198-208.*
b. *Klevens RM, Edwards JR et.al. Estimating healthcare-associated infections and deaths in U.S. Hospitals, 2002. Public Health Reports 2007; 122:160-166.*

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SSI: Why They Matter (cont.)

- SSI account for $3.2 billion in attributable cost per year in acute care hospitals. (3)
- Estimated additional 11 days of hospitalization for each SSI per patient. (3)
- SSI are the most frequent cause (20%) of unplanned readmissions after surgery. (4)

a. *Zimlichman E, Henderson D, et.al.. Health care-associated infections: a meta-analysis of costs and financial impact on the US health care system. JAMA Intern Med. 2013 Dec 9-23;173(22):2039-46.*
b. *Merkow RP, Ju MH, Chung JW, Hall BL, Cohen ME, Williams MV, Tsai TC, Ko CY, Bilimoria KY. Underlying reasons associated with hospital readmission following surgery in the United States JAMA. 2015 Feb*
c. *3;313(5):483-95.*

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SSI Surveillance

SSI -Active Surveillance Methods

- Determine which surgical patients you will monitor
- Review admission, readmission, ED, and OR logs
- Review patient charts for signs and symptoms of SSI, risk factors
- Review lab, X-ray, other diagnostic test reports
- Review nurses and physician notes
- Visit the ICU and wards – talk to primary care staff

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SSI Surveillance

Post-discharge SSI Surveillance Methods

- Surgeon and/or patient surveys by mail, phone, or secure fax line
- Review of postoperative clinic records
- Line list of all readmission with diagnosis
- Line list of ED admissions with diagnosis
- ICD-10-CM Discharge/Procedure codes*

Criteria must be met regardless of where the SSI is detected!

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SSI Surveillance

Monthly Reporting Plan

- Plans are the roadmap to your data
- Only data included in Plans will be used by CDC in aggregate data analysis (i.e., only “in-Plan” data)
- Plans drive much of the business logic of the NHSN application
- Must have one for every month of the year
- Must fully follow the definitions. Report superficial, deep and organs space SSIs.

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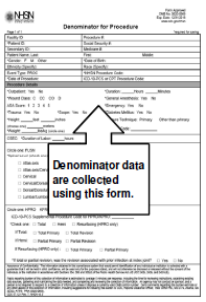
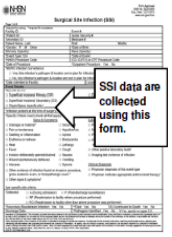
SSI Surveillance



SSI Surveillance Forms



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SSI Reporting

Identifying HAIs

(Chapter 2 NHSN Manual)

Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance

To standardize the classification of an infection as present on admission (POA) or a healthcare-associated infection (HAI), the following objective surveillance definitions and guidance will be used for NHSN surveillance:

- ~~7 Day Infection Window Period~~
- Date of Event
- ~~POA~~
- ~~HAI~~
- ~~14 Day Repeat Infection Timeframe (RIT)~~
- Secondary Bloodstream Infection Attribution Period
- Pathogen Assignment Guidance

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SSI Reporting

Secondary BSI attribution period, as defined in this chapter, does not apply to SSI, VAE, LabID, or primary BSI events.

- SSI Surveillance utilizes a 30 or 90 day surveillance period.
- Since the Infection Window Period and RIT do not apply, the secondary BSI attribution period, by name, can not apply. However, a 17 day period that includes the date of SSI event, 3 days prior and 13 days after, is still used to attribute a BSI as a secondary to an SSI.

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SSI Reporting

Secondary BSI (cont.)

- These 13 days can fall outside the surveillance period based on Date of Event.

  Example: DOE occurs on day 29 of a 30 day surveillance period the secondary BSI window will extend beyond the 30 day surveillance window.

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SSI Reporting

Date of Event

Date of event (DOE): For an SSI the date of event is the date when the first element used to meet the SSI infection criterion occurs for the first time during the surveillance period.

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SSI Reporting

DOE for SSIs that progress to a deeper level during surveillance period.

SSIs are always reported at the deepest level that they occur within the surveillance period. If during the surveillance period a patient's initial SSI meets criteria for a deeper level, then the date of event should be the date for the deepest level.

For example: Day 1 – COLO procedure

Day 6 – DOE for meeting a superficial incisional SSI

Day 25 – DOE for the meeting an organ space IAB SSI

Only report one SSI with the DOE for the organ space IAB.

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SSI Reporting

Pathogen Assignment

- The Pathogen Assignment Guidance found in Chapter 2 "Identifying HAIs" is based on Repeat Infection Timeframes (RIT) which is not used with SSIs
- SSI are procedure based and have long surveillance periods (30 to 90 days)
- SSIs can progress to a deeper level during a surveillance period and a new pathogen can be found.
- Excluded organisms: Organisms belonging to the following genera cannot be used to meet any NHSN definition: Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis. These organisms are typically causes of community-associated infections and are rarely known to cause healthcare-associated infections, and therefore are excluded.

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SSI Reporting

Denominator Reporting Instruction

Both Primary and "other than primary" closures for procedures are entered into your denominator data for all procedures you follow in your monthly reporting plan.

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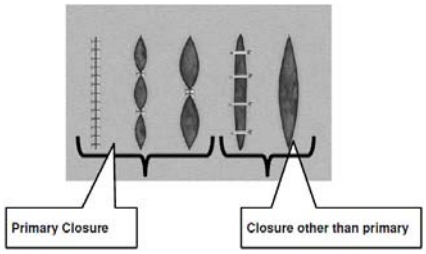
SSI Reporting

Wound Closure Examples



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SSI Reporting

PATOS

Infection Present at Time of Surgery

Infection Present at time of surgery (PATOS) denotes that there is evidence of an infection present at the time of the start of or during the index surgical procedure (in other words, it is present pre-operatively).

- This field is a required field and is found on the SSI event form, not on the procedural denominator for the form.
- The evidence of infection or abscess must be noted/documented intraoperative in an intraoperative note (immediate postoperative note).

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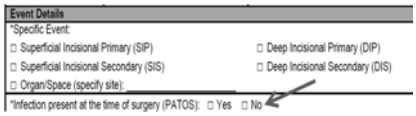
SSI Reporting

PATOS (continued)

- Only select PATOS=YES if it applies to the depth of the SSI that is being attributed to the procedure (e.g. If a patient had evidence of an intraabdominal infection at the time of surgery and then later returns with an organ space SSI the PATOS field world be selected YES. If the patient returned with a superficial or deep incisional SSI the PATOS field would be selected as NO.)
- The patient does not have to meet the NHSN definitions of an SSI at the time of the primary procedure but there must be notation that there is evidence of infection or abscess present at the time of surgery.



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SSI Example

Case Study

- Patient was admitted with an acute abdomen to OR for XLAP with findings of an abscess due to ruptured appendix and an APPY is performed.
- Patient returns 2 weeks later and meets criteria for an organ space IAB SSI.

- Does this patient meet the criteria for PATOS?
  Yes or No?
- This SSI is related to an infection that was PATOS therefore it does not have to be reported to NHSN.
  True or False?

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SSI Reporting

Denominator Reporting

If procedures in more than one NHSN operative procedure category are done *though the same incision* during the same trip to the OR, create a record for each procedure that you are monitoring in the Monthly Reporting Plan and use the total time for the duration for each record

Example: Patient has a coronary artery bypass graft with chest incision only (CBGC) and also a mitral value replacement (CARD). The total time was 5 hours. A Denominator for Procedure form is completed for both surgeries with 5 hours being reported for each.

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SSI Reporting

Wound Class

- The procedures that can never be entered as clean are APPY, BILI, CHOL, COLO, REC, SB and VHYS. In the choice box clean is not on the drop down menu.
- Therefore a CSEC, HYST, or OVRY can be a clean wound class based on the particular events and findings of an individual case.
- Wound class should be set by someone who is part of the surgical team based on findings of each specific case.

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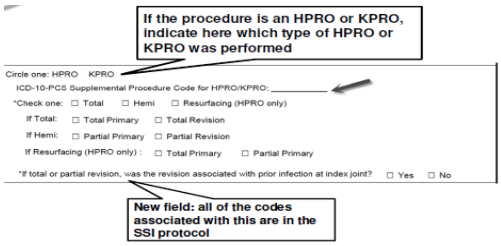
SSI Reporting

Additional Fields for Hip Arthroplasty and Knee Arthroplasty (HPRO & KPRO)



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SSI Reporting

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)

Superficial incisional secondary (SIS)

- A superficial incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB)

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SSI Reporting

Superficial Incisional SSI

- 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)

  (continued)

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SSI Reporting

Superficial Incisional SSI (cont.)

c. superficial incision that is deliberately opened by a surgeon, attending physician** or other designee and culture or non-culture based testing is not performed.

AND

patient has at least one of the following signs or symptoms: pain or tenderness; localized swelling; 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.

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SSI Reporting

SIP reporting

- Diagnosis/treatment of cellulitis (redness/warmth/swelling), by itself, does not meet criterion “d” for superficial incisional SSI. An incision that is draining or culture (+) is not considered a cellulitis.
- A stitch abscess alone (minimal inflammation and discharge confined to the points of suture penetration) is not considered an SSI.
- A localized stab wound or pin site infection. While it would be considered either a skin (SKIN) or soft tissue (ST) infection, depending on its depth, it is not reportable under this module.
- **Note:** a laparoscopic trocar site for an NHSN operative procedure is not considered a stab wound.

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SSI Reporting

If more than one operation is done through a single incision…

First, attempt to determine the procedure that is thought to be associated with the infection.

Example: If the patient had a CBGC and CARD done at the same time and develops an infected valve, then the SSI will be linked to the CARD.

If it's not clear (as in the case of a superficial incisional SSI), use the NHSN Principal Operative Procedure Selection Lists to select which operative procedure to report.

Categories with the highest risk of SSI are listed before those with lower risks

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SSI Reporting

Deep incisional primary (DIP)	**Deep incisional secondary (DIS)**
Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (e.g., C-section incision or chest incision for CBGB)	Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (e.g., donor site incision for CBGB)

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SSI Reporting

Deep Incisional SSI

Must meet the following criteria:

Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves deep soft tissues of the incision (e.g., 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 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) or culture or non-culture based microbiologic testing method is not performed

33 (cont.)

SSI Reporting

Deep Incisional (cont.)

AND

patient has at least one of the following signs or symptoms: fever (>38°C); localized pain or tenderness. A culture or non-culture based test that has a negative finding does not meet this criterion.

c. an abscess or other evidence of infection involving the deep incision that is detected on gross anatomical or histopathologic exam, or imaging test.

Definition of Gross Anatomical Exam: Physical examination with or without invasive procedure. For example, evidence of infection found on gross anatomical exam may refer to: findings elicited or visualized on physical examination or observed during an invasive procedure.

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SSI Reporting

Organ/Space SSI

Must meet the following criteria: Infection occurs within 30 or 90 days after the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 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 (e.g., closed suction drainage system, open drain, T-tube drain, 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 (e.g., not Active Surveillance Culture/Testing (ASC/AST).

(Cont on next page)

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SSI Reporting

Organ/Space SSI (cont.)

c. an abscess or other evidence of infection involving the organ/space that is detected on gross anatomical or histopathologic exam, or imaging test
AND
meets at least one criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections chapter 17.

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SSI Reporting

Organ Space SSI

2 different criteria must be met for Organ/Space SSI

- SSI organ/space criteria AND
- Those of the specific site of the organ/space operated on

Event Details: Specify Criteria Used	Required. Check each of the elements of the definition that were used to identify the specific type of SSI. Specific organ/space event types have their own unique criteria which must be met. They are found in the Surveillance Definitions chapter.

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SSI Reporting

Organ/Space SSI

*Specify Criteria Used (check all that apply):

Signs & Symptoms

- ☒ Drainage or material†
- ☐ Pain or tenderness
- ☐ Swelling or inflammation
- ☐ Erythema or redness
- ☐ Heat
- ☐ Fever
- ☐ Incision deliberately opened/drained
- ☐ Wound spontaneously dehisces
- ☒ Abscess
- ☒ Other evidence of infection found on invasive procedure, gross anatomic exam, or histopathologic exam†
- ☐ Other signs & symptoms†
- ☐ Sinus tract
- ☐ Hypothermia
- ☐ Apnea
- ☐ Bradycardia
- ☐ Lethargy
- ☐ Cough
- ☐ Nausea
- ☐ Vomiting
- ☐ Dysuria

Laboratory

- ☒ Positive culture
- ☐ Not cultured
- ☐ Positive blood culture(s)
- ☐ Positive culture from ≥ 2 separate tissue or fluid samples from affected joint
- ☐ Other positive laboratory tests†
- ☒ Imaging test evidence of infection

Clinical Diagnosis

- ☐ Physician diagnosis of this event type
- ☐ Physician institutes appropriate antimicrobial therapy†

†per specific site criteria

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SSI Reporting

Specific sites of infection must be used to differentiate organ/space SSI and their criteria must also be met. Use HAI definitions (Chapter 17).

Table 3. Specific Sites of an Organ/Space SSI.

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	PJI	Prosthetic Joint Infection
ENDO	Endocarditis	SA	Spinal abscess without meningitis
EYE	Eye, other than conjunctivitis	SINU	Sinusitis
GIT	GI tract	UR	Upper respiratory tract
HEP	Hepatitis	URI	Urinary System Infection
IAB	Intraabdominal, not specified	VASC	Arterial or venous infection
IC	Intracranial, brain abscess or dura	VCUF	Vaginal cuff
INT	Joint or bursa		

(Criteria for these sites can be found in the Surveillance Definitions for Specific Types of Infections chapter).

Note: Appendix 1 contains a list of all NHSN operative procedure groups and the site specific SSIs that are available as events for each group.

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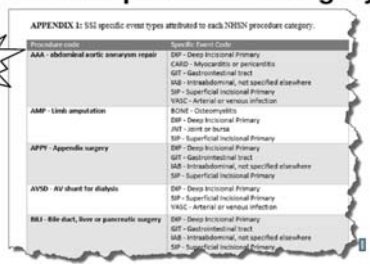
SSI Reporting

SSI specific event types attributed to each NHSN procedure category

NEW



APPENDIX 1: SSI specific event types attributed to each NHSN procedure category.

Procedure code	Specific Event Code
AAA - abdominal aortic aneurysm repair	DIP - Deep Incisional Primary CARD - Myocarditis or pericarditis GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary VASC - Arterial or venous infection
AMP - Limb amputation	BONE - Osteomyelitis DIP - Deep Incisional Primary JNT - Joint or bursa SIP - Superficial Incisional Primary
APPY - Appendix surgery	DIP - Deep Incisional Primary GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary
AVSD - AV shunt for dialysis	DIP - Deep Incisional Primary SIP - Superficial Incisional Primary VASC - Arterial or venous infection
BILI - Bile duct, liver or pancreatic surgery	DIP - Deep Incisional Primary GIT - Gastrointestinal tract IAB - Intraabdominal, not specified elsewhere SIP - Superficial Incisional Primary

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SSI Reporting

UPDATED

GI- IAB- Intraabdominal

IAB-Intraabdominal infection, not specified elsewhere including gallbladder, bile ducts, liver (excluding viral hepatitis), spleen, pancreas, peritoneum, subphrenic or subdiaphragmatic space, or other intraabdominal tissue or area not specified elsewhere

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SSI Reporting

GI- IAB- Updated – NEW 2b (surgical and non-surgical IAB infections)

2. Patient has:

a. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam

b. abscess or other evidence of intraabdominal infection on gross anatomic or histopathologic exam and 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 (e.g., not Active Surveillance Culture/Testing (ASC/AST). The organism(s) identified in the blood must contain at least one of the following organisms: *Bacteroides* spp., *Candida* spp., *Clostridium* spp., *Enterococcus* spp., *Fusobacterium* spp., Peptostreptococcus spp., Prevotella spp., *Veillonella* spp., or Enterobacteriaceae

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SSI Reporting

GI- IAB- Updated
(surgical and non-surgical IAB infections)

3. Patient has at least two of the following signs or symptoms: fever (>38.0 °C), nausea*, vomiting*, abdominal pain*, or jaundice*

And at least one of the following:

a. organisms seen on Gram stain or identified from drainage or tissue obtained during invasive procedure or from an aseptically-placed drain (e.g., closed suction drainage system, open drain, T-tube drain, CT guided drainage)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).

b. organisms identified from blood 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) and imaging test evidence suggestive of infection (e.g., ultrasound, CT scan, MRI, radiolabel scans [gallium, technetium, etc.] or on abdominal x-ray), which if equivocal is supported by clinical correlation (i.e., physician documentation of antimicrobial treatment for intraabdominal infection). The organism(s) identified in the blood must contain at least one of the following organisms: Bacteroides spp., Candida spp., Clostridium spp., Enterococcus spp., Fusobacterium spp., Peptostreptococcus spp., Prevotella spp., Veillonella spp., or Enterobacteriaceae*

* With no other recognized cause

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SSI Reporting

Case Study

1/22: Patient had abdominal hysterectomy (HYST)

2/1: Pelvic pain: Temp 38.4 C

2/2 CT reveals and an abscess/fluid collection in the deep pelvic area

2/3 Surgeon opened wound in the OR and drained dark purulent appearing fluid; specimen to lab for culture; notes “infected hematoma”; antibiotics begun; incision closed primarily.

2/5 Culture returns positive for Pseudomonas aeruginosa

What should be reported?

- SSI—IAB
- SSI OREP
- SSI-VCUF

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SSI Reporting

Why isn’t this an SSI-IAB?

IAB Intraabdominal , not specified elsewhere including gallbladder, bile ducts, liver (excluding viral hepatitis), spleen, pancreas, peritoneum, subphrenic or subdiaphragmatic space, or other intraabdominal tissue or area not specified elsewhere.

Site Definitions Chapter; Chapter 17

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SSI Reporting

PJI – Periprosthetic Joint Infection (following HPRO and KPRO only)

1. Two positive periprosthetic specimens (tissue or fluid) with at least one matching organism, identified by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).
2. A sinus tract communicating with the joint.
3. Having three of the following minor criteria:

a. elevated serum C-reactive protein (CRP; >100 mg/L) and erythrocyte sedimentation rate (ESR; >30 mm/hr.)

b. elevated synovial fluid white blood cell (WBC; >10,000 cells/µL) count OR ++ (or greater) change on leukocyte esterase test strip of synovial fluid

c. elevated synovial fluid polymorphonuclear neutrophil percentage (PMN% >90%)

d. positive histological analysis of periprosthetic tissue (>5 neutrophils (PMNs) per high power field)

e. organisms identified from a single positive periprosthetic (tissue or fluid) by culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis and treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).

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SSI Analysis :SIR

SIR (Standardized Infection Ratio)

- Summary measure used to track HAIs at a national, state, or local level over time.
- Adjusts for patients of varying risk within each facility
- Calculated by dividing the number of observed infections by the number of expected infections.

Universal Exclusion Criteria for SSI SIR calculation:

- Missing one or more risk factors
- Procedure duration <5 minutes or 5 times above the 75th percentile
- Wound class was not reported
- Closure Technique 'other than primary' (Colon only)

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SSI Analysis

Expected HAIs: calculated based on risk factors

a. COLO – age, anesthesia, ASA, duration, endoscope, medical school affiliation, hospital bed size, wound class

b. HYST – age, anesthesia, ASA, duration, endoscope, hospital bed size

CMS 30 day SSI model:

- Includes only in-plan COLO and HYST procedures in adult patients (i.e.>18 years of age)
- Includes only deep incision primary and organ/space SSIs with an event date within 30 days of the procedure (excluded SIP)
- Uses only age and ASA to determine risk

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LabID Reporting:

***Clostridium difficile* infection (CDI)**

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LabID Event Reporting

- ~~7-day Infection Window Period~~
- Date of Event – *different for LabID (DOC)*
  - ~~POA~~
  - ~~HAI~~
- ~~14-day Repeat Infection Timeframe (RIT)~~
- ~~Secondary Bloodstream Infection Attribution Period~~
- ~~Transfer Rule~~

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LabID Event Reporting

- **Proxy** infection measures of healthcare acquisition, exposure burden, and infection burden
- Categorization based on Date of Admission (DOA) + Date of Collection (DOC)
  - DOA = hospital day 1
- Attributable to the **location** where the specimen was collected

****Transfer Rule does NOT apply**
to LabID event reporting**

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LabID Event Reporting: Locations

CMS Reporting Program	HAI Event	Reporting Specifications	Reporting Start Date
Hospital Inpatient Quality Reporting (IQR)	MRSA Bacteremia LabID Event	FacWideIN	January 2013
	C. difficile LabID Event	FacWideIN	January 2013

- FacWideIn LabID event reporting:
  Enter each LabID event from all inpatient locations **AND** separately for outpatient emergency department(s), and 24-hour observation location(s).

- Chapter 12: MRSA page 8, CDI page 16
- http://www.cdc.gov/nhsn/pdfs/cms/cms-reporting-requirements.pdf

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LabID Event Reporting: Locations

Report LabID events from any other affiliated outpatient location (*excluding ED and 24-hour observation locations*) for the inpatient admitting location ***if*** collected on the same calendar day as the inpatient admission

- In this circumstance, the admitting inpatient location should be the assigned location
- Ensures accurate categorization of LabID events (e.g., community-onset cases)

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LabID Event Reporting: Locations

Report LabID events from all inpatient locations in the facility, including those locations with a different CMS Certification Number (CCN) – such as inpatient rehab (IRF) or psych locations (IPF)

- Ensures accurate categorizations of LabID events (e.g., incident, recurrent, healthcare facility-onset)
- Events submitted from different CCN locations are removed during FacWideIn analysis for the acute care hospital and not shared with CMS for IQR

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LabID Surveillance: 14-day rule

- **Incident CDI event**: Specimen obtained > 8 weeks after the most recent CDI LabID Event (or with no previous CDI LabID event documented) for that patient
  - cdiAssay = Incident (NHSN will report to CMS)
- **Recurrent CDI event**: Specimen obtained > 2 weeks (**> 14 days**) and ≤ 8 weeks (≤ 56 days) after the most recent CDI LabID event for that patient
  - Not being reported in SIR
- **Duplicate CDI event**: Specimen obtained **≤ 14 days** after the most recent CDI LabID event for that patient and location (across calendar months and readmissions to same facility)
  - cdiAssay = Recurrent (NHSN will label as recurrent)

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LabID Surveillance: Tools

MDRO & CDI LabID Event Calculator

- **Only enter non-duplicate events. Do not enter into NHSN a positive specimen with DOC ≤ 14 days from previous specimen same patient/location (even if NHSN will let you save it)**
- Your facility should maintain a line list of positive CDI results to keep track of duplicate test results!

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http://www.cdc.gov/nhsn/labid-calculator/

LabID Denominator Data

- **"MDRO/CDI Patient Days"** = Total # of ***days*** patients are housed in an inpatient facility, regardless of infection status
- **"MDRO/CDI Admission "** = Total # of ***patients*** who are admitted to any inpatient location in your facility
- For hospitals: **Select CDI test type quarterly**
  - Select correct test type (most sensitive test used)
  - 7 primary test types + 'other'
  - If 'other' is selected, your facility's data will not be risk-adjusted to the most appropriate level

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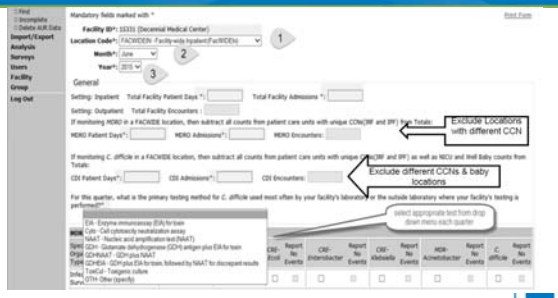
LabID Denominator Data



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Output Option: CDI Test Type

- New analysis data output option to alert when the CDI test method has been downgraded
- Does not necessarily indicate a problem
- Advanced > Data Quality > CDC Defined Output > Line Listing – CDI Test Method History

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CDI Test Type and SIR calculation

How does CDI test type affect the SIR calculation?

location	summary YQ	months	CDIF_ facIncHO Count	numExp CDI	Num pat days	SIR	SIR_ pval	CDI Test Type
FACWIDEIN	2015Q1	3	2	5.993	9550	0.334	0.0797	NAAT
FACWIDEIN	2015Q2	3	2	4.495	9550	0.445	0.0725	EIA

- **Fewer events are predicted to occur when a less-sensitive test is used**

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LabID Categorization

NHSN application categorizes CDI LabID events as:

- **Community-onset (CO)**: Specimen collected in an outpatient location or in an inpatient location ≤ 3 days after admission to the facility (i.e., hospital days 1 (admission), 2 or 3)
- **Community-onset healthcare facility-associated (CO-HCFA)**: CO LabID event collected from a patient who was discharged from the facility ≤ 4 weeks prior to the date current stool specimen was collected
- **Healthcare facility-onset (HO)**: Specimen collected > 3 days after admission to the facility (i.e., on or after hospital day 4)
  - ➢ Reported to CMS

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LabID Categorization + Analysis

LabID Indicator Variables *aka your new best friend!*

- **Indicate** (in Line List or Frequency Table) **which LabID events are counted in the numerator of the SIR** (for reporting)
  - o The sum of the values for an indicator variable should equal the numerator count in rates and SIRs (provided that all required denominator data have been entered)
- Indicator variables are organism-specific (run the CDI variable as part of your CDI line list)
  - o CDI: FWCDIF_facIncHOCount
  - o MRSA bacteremia: FWMRSA_bldIncCount
- Indicator variable will display as 1 or 0 for each event
  - o 1: event is counted in SIR
  - o 0: event is NOT counted in SIR

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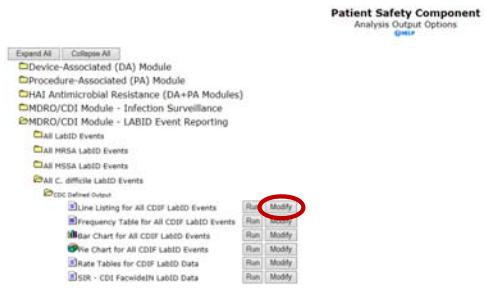
LabID Indicator Variable – CDI

- ➢ Click 'modify' next to the 'Line Listing for All CDIF LabID Events'



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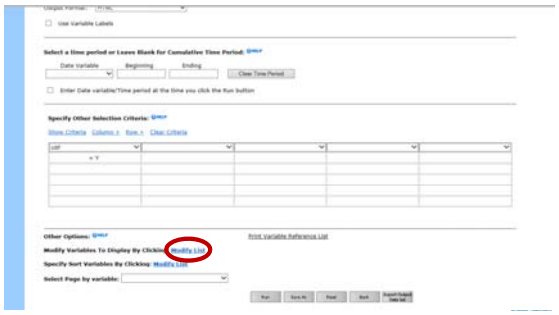
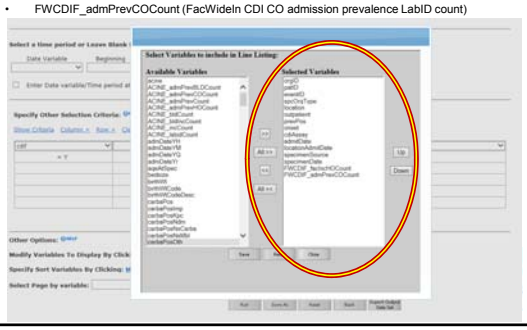
LabID Indicator Variable – CDI

- Click 'Modify List'



LabID Indicator Variable – CDI

- The following variables are added by default, including the indicator variables:
  - **FWCDIF_facIncHOCount** (FacWideIn CDI facility **incident** HO LabID event count)
  - FWCDIF_admPrevCOCount (FacWideIn CDI CO admission prevalence LabID count)



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LabID Indicator Variable – CDI

Event ID	Specific Organism	Location	Outpatient?	Onset	CDI Assay	Fac Admission Date	Location Admission Date	Date Specimen Collected	Facility-Wide CDIF Facility Incident HO LabID Event Count	Facility-Wide CDIF CO Admission Prevalence LabID Count
40022	CDIF	3E	N	CO	Incident	01/04/2013	01/04/2013	01/05/2013	0	1
40023	CDIF	9W	N	HO	Recurrent	01/04/2013	01/05/2013	01/20/2013	0	0

- Event 40022 would be included in the numerator count for the FacWideIn CO admission prevalence rate
- Event 40023 would **NOT** be included in the FacWideIn incident HO rate or SIR

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LabID Categorization

To review, starting in 2015:

- CDI: Only inpatient, hospital-onset (HO) CDI incident LabID events are counted in the SIR (events from CMS-IRF/CMS-IPF excluded)
  - cdiAssay = Incident
- MRSA bacteremia: Only inpatient, hospital-onset (HO) MRSA LabID events from blood specimens are included in the SIR (events from CMS-IRF/CMS-IPF) excluded)

➢ If a patient has a positive CDI LabID event within 14 days of a previous CDI LabID event (regardless of location), the second event is not counted in the SIR
  - The same is true for MRSA bacteremia

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LabID Analysis

- For both CDI and MRSA bacteremia SIRs, the number predicted is calculated at the facility **quarter-level** using negative binomial regression
- **Why quarterly?** When analyzing baseline data at CDC, high variability in prevalence rate (a risk factor) was identified from month-to-month. To alleviate this variability, CDC used quarterly prevalence rates – **thus allowing only quarterly-level SIRs or greater**

➢ **TAP reports should be run on a quarterly basis or greater**

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LabID Analysis

What other pieces of information can complement the CDI LabID SIR?

- Prevalence rates
  - Month, quarter, half-year, year, etc.
- Identification of LabID event trends by patient care area
- Comparison to previous time periods within your hospital

➢ After implementation of targeted prevention efforts

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LabID Resources

- **Troubleshooting LabID SIR**

http://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/mrsacdi_tips.pdf

- **Output options to check data submitted to CMS:**
  - SIR – FacWideIn CDI LabID Data for CMS IPPS
    http://www.cdc.gov/nhsn/pdfs/cms/cms-ipps-cdi-sir.pdf
  - SIR – MRSA Blood FacWideIn LabID Data for CMS IPPS
    http://www.cdc.gov/nhsn/pdfs/cms/cms-ipps-mrsa-sir.pdf
- **NHSN Chapter 12**: MDRO/CDI Module

http://www.cdc.gov/nhsn/PDFs/pscManual/12pscMDRO_CDADcurrent.pdf

- LabID Event risk adjustment

http://www.cdc.gov/nhsn/PDFs/mrsa-cdi/RiskAdjustment-MRSA-CDI.pdf

- 2 presentations at NHSN Atlanta training:
  - Zuleika Aponte-Torres, LabID Analysis
  - Denise Leaptrot, MRSA Bacteremia and CDI LabID Event Reporting

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Additional Tools

NSHN Statistics Calculator

- Compare: 2 SIRs, 2 proportions, 2 incidence density rates
- Calculator: Analysis > Statistics Calculator

Instructions:
http://www.cdc.gov/nhsn/PS-Analysis-resources/PDF/StatsCalc.pdf

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Additional Resources

- **Identifying HAIs in NHSN:**

http://www.cdc.gov/nhsn/pdfs/pscmanual/2psc_identifyinghais_nhsncurrent.pdf

- **AJIC NHSN case studies series:**
  - Publish case studies quarterly
  - Courses have a "test your knowledg"e function with a Survey Monkey quiz
  - CLABSI, CAUTI, VAE, SSI, MDRO/CDI
- **VDH HAI newsletter**:
  http://www.vdh.virginia.gov/Epidemiology/Surveillance/HAI/communication.htm
- **NHSN Monthly Checklist for Reporting to CMS Hospital IQR:**
  http://www.cdc.gov/nhsn/pdfs/cms/ach-monthly-checklist-cms-iqr.pdf
- **NHSN Data Dictionary:**

(NHSN Codes and Variables > NHSN Data Dictionary - Patient Safety Component)
http://www.cdc.gov/nhsn/ps-analysis-resources/

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NHSN Reminders

May 15, 2016 is the deadline for all

Quarter 4 data (October 1 – December 31) to be entered into NHSN for the CMS Hospital Inpatient Quality Reporting Program

and

Influenza Healthcare Personnel Vaccination data

(October 1, 2015 – March 31, 2016)

a. **Inpatient rehab**: 2015Q4 for CAUTI and LabID events (MRSA and *C. difficile*), HCP influenza vaccination
b. **Long-term acute care**: 2015Q4 for CLABSI, CAUTI and LabID events (MRSA and *C. difficile*), HCP influenza vaccination

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Questions?

This material was prepared by VHQC, the Medicare Quality Innovation Network Quality Improvement Organization for Maryland and Virginia, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. VHQC/11SOW/4/20/2016/2433

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VHQC Online Community

Join the VHQC online community by visiting
www.vhqc-qinqio.ning.com

SSI Reporting: Supplemental Slides

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SSI Resources

NHSN Website – SSI section
www.cdc.gov/nhsn/

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SSI Resources

Trainings - for SSI Surveillance

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SSI Resources

Protocols - for SSI Surveillance

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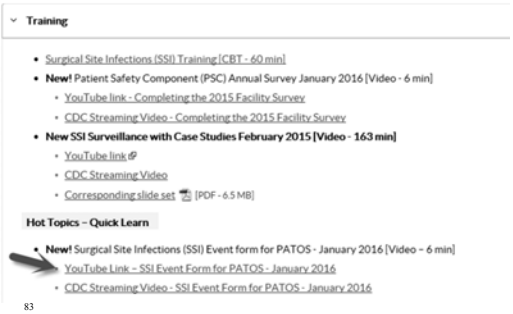
SSI Resources

PATOS – Quick Learn



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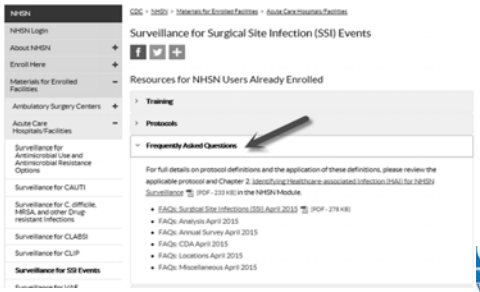
SSI Resources

FAQs - for SSI Surveillance



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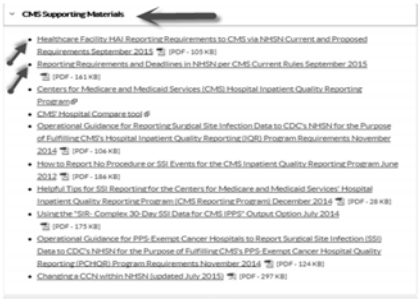
SSI Resources

Forms and Table of Instructions

SSI Resources

CMS Supporting Materials

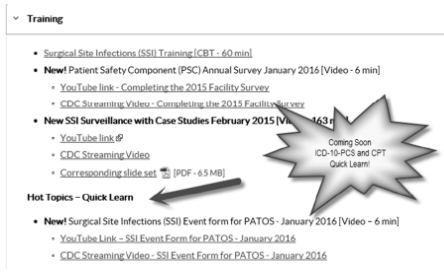


SSI Resources

SSI - Supporting Materials

SSI Resources

ICD-10-PCS and CPT Quick Learn



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LabID Reporting:

Supplemental Slides

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LabID Surveillance: Definitions

Definitions – LabID events:

- MRSA: *S. aureus* testing oxacillin, cefoxitin, or methicillin resistant; or positive from molecular testing for mecA and PBP2a
- *C. difficile*: A positive result for a laboratory test for *C. difficile* toxin A and/or B (e.g., EIA test), OR a toxin-producing *C. difficile* organism detected in the stool specimen by culture or other laboratory means (e.g., nucleic acid amplification testing by PCR)
  - Note that CDI testing should only be performed on unformed stool (stool should conform to the shape of the container)

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LabID Surveillance: MRSA

NHSN application categorizes MRSA LabID events as:

- **Community-onset (CO):** LabID event specimen collected in an outpatient location or in an inpatient location ≤ 3 days after admission to the facility (i.e., hospital days 1 (admission), 2 or 3)
- **Healthcare facility-onset (HO):** LabID event specimen collected > 3 days after admission to the facility (i.e., on or after hospital day 4)

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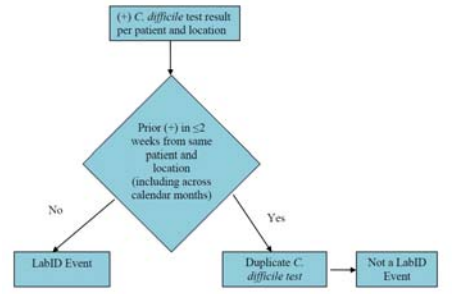
LabID Surveillance: 14-day rule



92 http://www.cdc.gov/nhsn/PDFs/pscManual/12pscMDRO_CDADcurrent.pdf

LabID Surveillance: 14-day rule

Assume the same patient, and all specimens collected are shown

Specimen Date of Collection, Location	Duplicate (14-day rule) – per location?	Enter as CDI LabID event?
1/3/2016, ICU	No	Yes (first positive for location) = incident
1/9/2016, ICU	Yes	No (within 2 weeks of positive test 1/3/2016) = duplicate
1/20/2016, ICU	Yes	No (within 2 weeks of positive test 1/9/2016) = duplicate
2/1/2016, ICU	Yes	No (within 2 weeks of positive test 1/20/2016) = duplicate
2/23/2016, ICU	No	Yes = recurrent
2/25/2016, M/S ward	No	Yes (first positive for location)

Note that NHSN would allow you to save the 1/20/2016 event (because the most recent record in NHSN would be for 1/3/2016); however the 14-day rule applies to the most recent specimen (on 1/9/2016).

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LabID Analysis - Troubleshooting

Scenarios for which your LabID SIRs may not be calculated:

- The number of predicted infection is < 1
  - If all other reporting requirements are met, these data are still considered 'complete' and will be sent to CMS
- **CDI test type not indicated in denominator data entry (end of quarter)**
  - All 3 months of quarter must be complete
  - **SIRs can only be calculated on a quarterly basis (or greater) for LabID events**
- Outlier prevalence: Community-onset (CO) prevalence rate above pre-determined threshold:
  - CDI: 1.78
  - MRSA bacteremia: 0.88
  - If all other reporting requirements are met, these data are still considered 'complete' and will be sent to CMS

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Rebaseline Question

- The NHSN baselines are being re-done using 2015 data.
  - Current baseline: 2010-2011
- Will ED/Obs CO prevalence rates be included as risk factors for the MRSA Blood and CDI LabID SIRs?
  - These prevalence rates will be assessed
  - However - it is too early in the analytic process to determine certainty of the use of these rates as significant risk factors.

Outpatient CO Prevalence Rate (per location):

$$\frac{\#\ CO\ LabID\ events}{\#\ Encounters}$$

FACWIDEIN CO Prevalence Rate:

$$\frac{\#\ CO\ LabID\ events, inpatient\ units}{\#\ Admissions}$$