Surveillance Strategies for Success Part 3: 2016 Annual Training Updates

April 8, 2016

Partners for Better Healthcare

APIC VIRGINIA

VDH VIRGINIA DEPARTMENT OF HEALTH

VHQC

Today's Speakers

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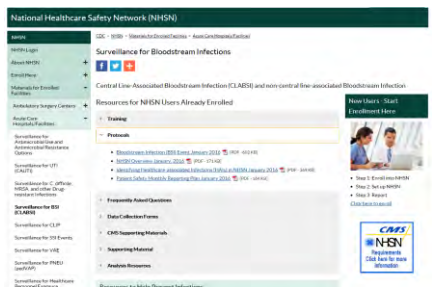
VHQC

Objectives

Goals today: Updates from 2016 Annual NHSN Training

a. CLABSI
b. CAUTI
c. Other

CLABSI Surveillance



http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html

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CLABSI Surveillance

2016 CLABSI definition/protocol changes:

a. Exclusion for *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis. Salmonella* spp. (*Salmonella* spp. Can be used for a secondary BSI, not primary)
b. Exclusion for documentation of patient suspected or observed accessing lines
c. Changed definition of VASC – If LCBI + (pus and cx of pus) at vascular site -arterial or venous site report LCBI – Report central line "No"
d. Added non-culture based microbiologic testing methods; PCR

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CLABSI – Key Terms

a. BSI Date of Event (DOE): date when the FIRST element used to meet the LCBI criterion occurs for the first time within the IWP
b. Infection Window Period (IWP) 7-days includes the DOE, 3 days before and 3 days after.
c. Repeat Infection Time (RIT): 14-day timeframe during which no new infections of the same type are reported. The DOE is day 1.

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CLABSI – Key Terms

Primary bloodstream infections (BSI): Laboratory-confirmed bloodstream infections (LCBI) that are **not** secondary to an infection at another body site

a. Primary BSI can be used to create a BSI Repeat Infection Time (RIT)

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Key Terms - LCBSI

Date	Device	LOC		RIT
Feb 5 D/C				
6				
7				
8				
9				
10 Re-admit	CLine	ED ICU	Blood Cultures no growth, fever, pain, nausea, hypotension	
11	CLine	ICU		
12	CLine	ICU		
13	CLine	ICU	Blood Culture + *E.coli*	
14	CLine	ICU		
15	CLine	ICU		
16	CLine	ICU		
17	CLine	ICU		
18	CLine	ICU		
19	CLine	ICU		
20	CLine	ICU		
21	CLine	ICU		
22	CLine	ICU		
23	CLine	ICU		
24	CLine	ICU		
25	CLine	ICU		
26	CLine	ICU		

Determining BSI

Date of Event? 2/13

Infection Window?
2/10-2/16
Event type? HAI- CLABSI

RIT? 2/13 - 2/26

REMEMBER!!
There is NO Secondary BSI Attribution Period for LCBI !

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CLABSI – Key Terms

Secondary BSI according to NHSN must meet these requirements:

a. The patient must meet one of the NHSN site-specific infection definitions (UTI, PNEU, SSI)
b. AND: The Blood specimen contains at least one matching organism used to meet the site specific infection
c. OR: The positive blood specimen is an element used to meet the site-specific infection criterion, and is collected during the site specific infection's infection window period

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Secondary BSI

Table 5: Site-specific criteria that require positive blood specimens

Organisms identified from blood as an element			Organisms identified from blood with imaging test evidence of infection		
Site	Element	Page	Site	Element	Page
BURN	1	17-23	BONE	3a	17-5
IAB	2b	17-19	DISC	3a	17-5
JNT	3c	17- 6	GIT	2c	17-18
MEN	2c & 3c	17-8	IAB	3b	17-19
OREP	3a	17-22	SA	3a	17-9
PNU2	Lab finding	6-6	USI	3b & 4b	17-26
PNU3	Lab finding	6-8	ENDO	4a, 4b, 5a & 5b (specific organisms) 6e & 7e plus other criteria as listed	17-10
UMB	1b	17-25			

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Secondary BSI

Matching Organisms:

a. Genus and species same
   a. Blood and IAB, Urine, etc. both *Enterobacter cloacae*

b. Genus same if one less definitive
   a. Blood *Enterobacter cloacae*, second culture *Enterobacter* species

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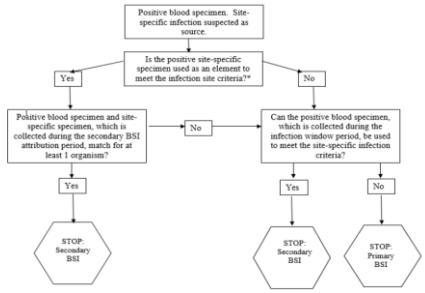
Secondary BSI



http://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

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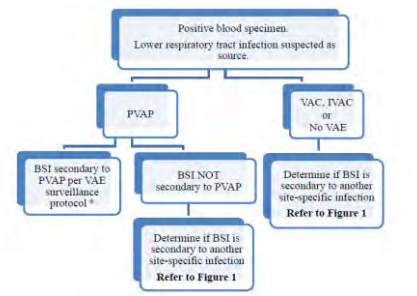
Secondary BSI – VAE Guidance



http://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

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Secondary BSI Attribution Period

a. The period in which a positive blood culture must be collected to be considered as a secondary bloodstream infection to a primary site infection.
b. This period includes the Infection Window Period (IWP) combined with the Repeat Infection Timeframe (RIT).
c. This period is 14 – 17 days in length depending on when the date of event falls within the IWP.
d. There is NO Secondary Attribution Period for LCBSI

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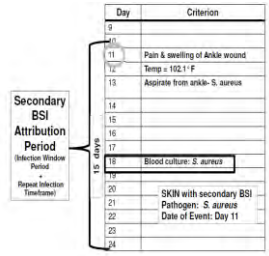
Secondary BSI Attribution Period

Example:

a. Patient meets SKIN infection criterion 2a for an ankle wound using a culture with S. aureus, pain and swelling. Blood culture collected 5 days later grows S. aureus. This is a SKIN infection with a secondary BSI and the reported organism is S. aureus



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CLABSI – Key Terms

Central Line: Intravascular Catheter that terminates at or close to heard in a great vessel

a. Do not use insertion site or device to identify
b. Call a Central line despite migration
c. Must be used for fluids (infused, pushed withdrawn)
d. Do not include Extracorporeal membrane oxygenation (ECMO), Femoral arterial catheters, Intra-aortic balloon pump (IABP) devices

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CLABSI

CLABSI: A laboratory-confirmed bloodstream infection (LCBI) where central line (CL) or umbilical catheter (UC) was in place for >2 calendar days on the date of event, with day of device placement being Day 1

http://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

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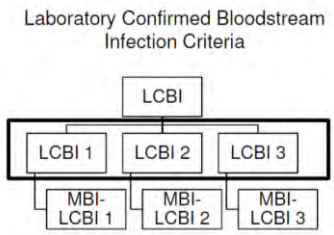
CLABSI Reporting



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CLABSI Reporting

LCBI 1 – Criterion

Patient has a recognized pathogen cultured from one or more blood cultures **And** organism cultured from blood is not related to an infection at another site.

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CLABSI Reporting

LCBI 2 – Criterion

Patient has at least one of the following signs or symptoms: fever (>38.0^{0}C), chills or hypotension

And Organisms cultured from blood are not related to an infection at another site

And the same common commensal (*Corynebacterium* spp., *Bacillus* spp., Propionibacterium spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions (same or consecutive days) within the 7 day Infection Window Period

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CLABSI Reporting

LCBI 3 – Criterion

Patient < 1 yr of age has at least one of the following signs or symptoms: fever (>38.0^{0}C), hypothermia (<36^{0}C), apnea, or bradycardia

And Organisms cultured from blood are not related to an infection at another site

And the same common commensal (*Corynebacterium* spp., *Bacillus* spp., Propionibacterium spp., coagulase-negative staphylococci [including *S. epidermidis*], viridans group streptococci, *Aerococcus* spp., *Micrococcus* spp.) is cultured from two or more blood cultures drawn on separate occasions (same or consecutive days) within the 7 day Infection Window Period

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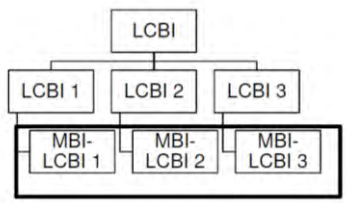
CLABSI Reporting

Laboratory Confirmed Bloodstream Infection Criteria



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CLABSI Reporting

Mucosal Barrier Injury -Laboratory Confirmed Bloodstream Infection (MBI -LCBI)

a. Purpose is to identify BSIs believed to be the result of the patient's weakened immune state and accompanying alteration of the gut and categorize them as primary in nature and not an infection at another site. The gut is simply the source of colonizing organism.
b. Eligible patient populations are allogeneic hematopoietic stem cell transplant recipients, patients with severe neutropenia.

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CLABSI Reporting

MBI-LCBI Must meet criteria for LCBI 1,2,3

a. And is allogeneic hematopoietic stem cell transplant recipient with either Grade III or IV gastrointestinal graft versus host disease or ≥1 liter diarrhea in a 24-hour period (or ≥20 mL/kg in a 24-hour period for patients <18 years of age) with onset on or within 7 day IWP
b. Is neutropenic, defined as at least two separate days with values of absolute neutrophil count (ANC) or total white blood cell count (WBC) <500 cells/mm3 within a 7-day IWP

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CLABSI Reporting

a. **MBI-LCBI 1**: LCBI 1 with at least one blood specimen with identified intestinal organisms
b. **MBI-LCBI 2:** LCBI 2 with at least one blood specimen with only viridans group streptococci and no other organisms. (Patient any age)
c. **MBI-LCBI 3 :** LCBI 3 – same as MBI-LCBI 2 with Patient ≤ 1 year

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CLABSI Reporting

Intestinal Organisms

a. *Bacteroides* spp., *Candida* spp., *Clostridium* spp., *Enterococcus* spp., *Fusobacterium* spp., *Peptostreptococcus* spp., *Prevotella* spp., *Veillonella* spp., or Enterobacteriaceae*
    a. Partial List of Eligible Enterobacteriaceae *Citrobacter Providencia Enterobacter Serratia Escherichia Shigella Klebsiella Yersina Proteus*

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CLABSI Surveillance Tools

a. Count CL days and patients in the unit at the same time each day
b. Collecting central line day data
   a. Restart count if line is out for 1 calendar day

	March 31 (Hospital day 3)	April 1	April 2	April 3	April 4	April 5	April 6
Patient A	Central Line **Day 3**	Central Line **Day 4**	Central Line removed **(CL Day 5)**	Central Line replaced **(CL Day 6)**	Central Line **Day 7**	Central Line removed **Day 8**	No Central Line
Patient B	Central Line **Day 3**	Central Line **Day 4**	Central Line removed **(CL Day 5)**	No Central Line	Central Line Replaced **(CL Day 1)**	Central Line **Day 2**	Central Line **Day 3**

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CLABSI Surveillance

a. Location of Attribution (Device Associated)
   a. Patient location on the date the first element for LCBSI criteria occurred
b. Transfer Rule
   a. Use when date of event is the day of transfer/discharge or next day

	3/22	3/23	3/24
Locations in which patient was housed	Unit A	Unit A Unit B Unit C	Unit C Unit D This is also the date of event for a CLABSI. CLABSI is attributed to Unit A since Unit A was the first location in which the patient was housed the day before the date of event.

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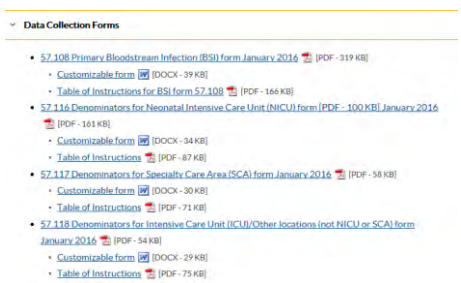
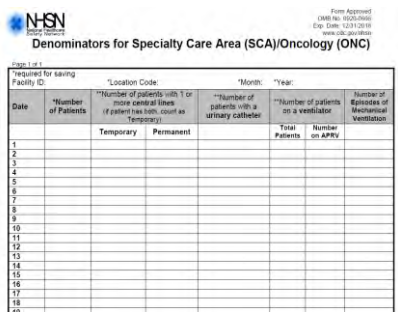
CLABSI Surveillance Tools



30 http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html

CLABSI Surveillance Tools



NHSN

Form Approved
OMB No. 0920-0666
Exp. Date: 12/31/2018
www.cdc.gov/nhsn

Denominators for Specialty Care Area (SCA)/Oncology (ONC)

Page 1 of 1

Required for saving Facility ID: *Location Code: *Month: *Year:

Date	*Number of Patients	**Number of patients with 1 or more central lines (if patient has both, count as Temporary)		**Number of patients with a urinary catheter	**Number of patients on a ventilator		Number of Episodes of Mechanical Ventilation
		Temporary	Permanent		Total Patients	Number on APRV	
1							
2							
3							
4							
5							
6							
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18							

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CLABSI Surveillance Tools

Supporting Material

- Worksheet for Determining Date of Event, Infection Window Period, Repeat Infection Timeframe, and Secondary BSI Attribution Period [XLSX - 19 KB]
- Example Worksheet for Determining Date of Event, Infection Window Period, Repeat Infection Timeframe, and Secondary BSI Attribution Period [XLSX - 21 KB]
- NHSN Patient Safety Component Alerts [PDF - 1 MB]
- Unusual Susceptibility Profiles Alert January 2015 [PDF - 370 KB]
- NHSN Validation Guidance and Toolkit: Validation for 2012 Central Line-Associated Bloodstream Infection (CLABSI) in ICUs (Chapters 1–3) [PDF - 808 KB]
  - Appendix 1 Facility Self-validation Tool for CLABSI Surveillance [PDF - 96 KB]

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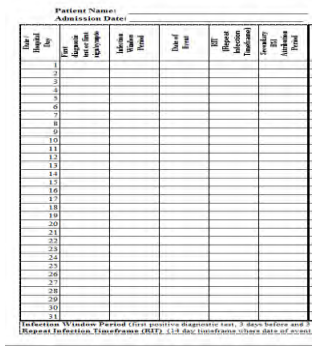
CLABSI Surveillance Tools



Patient Name:
Admission Date:

Date Hospital Day	First Organism Identified (if applicable)	Infection Window Period	Date of Event	BSI (Present Infection Timeframe)	Secondary BSI Attribution Period
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
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27					
28					
29					
30					
31					

Infection Window Period (first positive diagnostic test, 3 days before and 2
Repeat Infection Timeframe (RIT): 15-day timeframe where date of event

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Polling Question

How often do you use the NHSN Worksheet Tool for CLABSI surveillance to identify HAI CLABSI?

a. ALWAYS
b. SOMETIME
c. NEVER
d. Was unaware of the tools

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CLABSI Reporting

Accurate Denominator Data: Requirements by Location

a. **ICU (not NICU) / Non-Special Care Areas (SCA):**
   a. Central line days
   b. Patient days
b. **SCA / ONC Locations:**
   a. Permanent central line days
   b. Temporary central line days Patient days
c. **NICU:** By birthweight category
   a. Central line / umbilical catheter days
   b. Patient days

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CLABSI Reporting

Accurate Denominator Collection

a. **In all locations:** Patients with ≥ 2 CLs get counted as 1 CL day
b. **In SCA/ONC:** Patients with both permanent and temporary CLs count 1 temporary CL day due to higher risk with a temporary CL
c. **NOTE:** Patient with a tunneled or implanted central line, begin counting on first day the line was placed or accessed and continue until line removed or patient discharged. (No "de-accessing")

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CLABSI Reporting

Once Weekly Denominator Collection

a. Reduce data collection burden
b. Patient days collected daily
c. CL days collected 1 day/week (every Monday)
d. Requirements for weekly collection
    a. ≥ 75 CL days/month
    b. Validation – Electronic against manual method for 3 concurrent months; difference within +/- 5%

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CLABSI Case Study

Date	Temp	Diagnostic Findings
6/10	102° F	N73 YO Male Admitted to Medical ICU with Nausea ,vomiting, abdominal pain, and fever. G tube placed, NPO, IV fluids and supportive care. Blood cultures x 2
6/13	Afebrile	Poor peripheral access, TPN, Central line placed (L subclavian), CXR verified position. Blood culture results from 6/10 negative.
6/15	Afebrile	CHF (CXR shows fluid), Lasix administered to correct
6/16	Afebrile	Increased abdominal pain & vomiting, Levaquin & Flagyl started
6/30	**102° F**	Dc'd TPN, PO fluids tolerated, transferred to 5 West Medical
7/1	**103° F**	Nausea, vomiting, Blood culture X 2 collected, CL catheter removed
7/2	Afebrile	Nausea
7/3	**102° F**	**7/1 One blood culture – Coagulase-negative Staph, One blood culture from 7/1 S. epidermidis** DC'd Levaquin & Flagyl and began Vancomycin X 10 days
7/6	Afebrile	Inserted Rt. Subclavian CL to continue therapy
7/16	Afebrile	Discharged

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CLABSI Analysis

a. Standardized Infection Ratio:
    a. **SIR = Observed # of HAIs/Predicted # of HAIs**
b. For CLABSI the predicted number of infections for each location :
    a. **# device days *(NHSN pooled mean/1000)**
c. Pooled mean = 2006-2008 baseline data (published in 2009)
d. Cumulative Attributable Difference (CAD)
    a. **CAD = Observed – (Predicted x SIR goal)**

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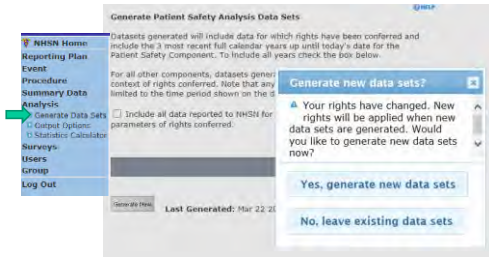
CLABSI Analysis

Remember to generate new data sets!



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General Quality Assurance

What changes can potentially impact my rates and SIRs?

a. Entry or deletion of events
b. Changes to number of patient days, device days, admissions
c. Removal or addition to monthly reporting plans
d. Change in admission date, previous discharge date on LabID events
e. Changes to relevant factors in the annual survey (e.g., medical school affiliation, facility bedsize)
f. Resolution of 'Report No Events' alerts

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General Quality Assurance

Places to look for data quality issues

a. Monthly Reporting Plans
   a. Are all my 'active' locations applicable to my NHSN surveillance listed?
   b. Have I selected all my appropriate procedures?
   c. Have I selected the appropriate lab specimens to collect for LabID data (FacWideIn, ED, 24-hour obs)?

b. Annual Survey
   a. Did I update the number of beds from the previous survey year?
   b. Has our medical school affiliation changed?

c. Using NHSN Analysis
   a. Did I generate new datasets?
   b. Did I enter new events after I ran my analysis?

Follow this order: Fix alerts > generate datasets > analysis

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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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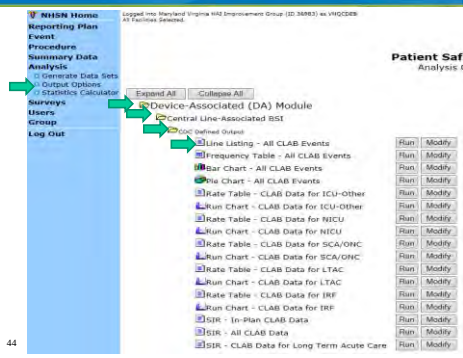
CLABSI Analysis



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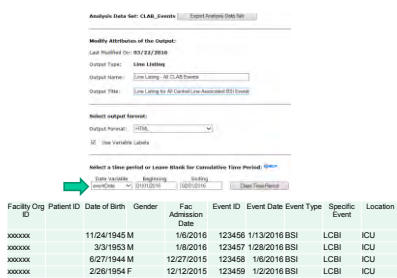
CLABSI Analysis

Modify the line list to validate HAIs monthly



Facility Org ID	Patient ID	Date of Birth	Gender	Fac Admission Date	Event ID	Event Date	Event Type	Specific Event	Location
xxxxxx		11/24/1945	M	1/6/2016	123456	1/13/2016	BSI	LCBI	ICU
xxxxxx		3/3/1953	M	1/8/2016	123457	1/28/2016	BSI	LCBI	ICU
xxxxxx		6/27/1944	M	12/27/2015	123458	1/6/2016	BSI	LCBI	ICU
xxxxxx		2/26/1954	F	12/12/2015	123459	1/2/2016	BSI	LCBI	ICU

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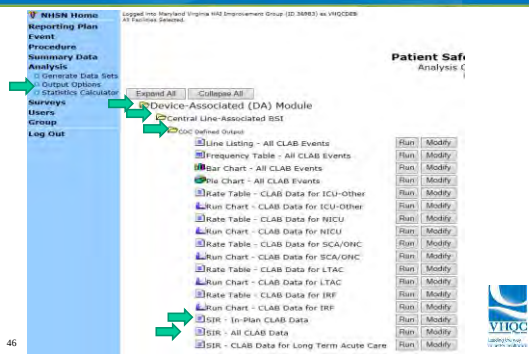
CLABSI Analysis



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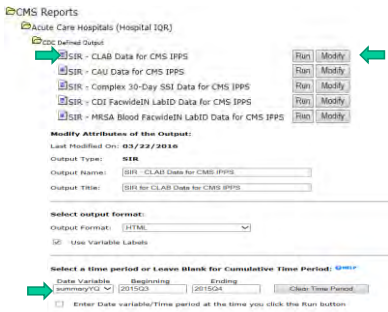
CLABSI Analysis



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CLABSI Analysis

SIR –CLABSI for CMS IPPS

orgID	summaryYQ	infCount	numExp	numCLDays	SIR	SIR_pval	SIR95CI
xxxx	2015Q3	2	2.101	1351	0.952	1	0.160, 3.144
xxxx	2015Q4	1	2.168	1424	0.461	0.477	0.023, 2.275

Location Type	Summary Yr/Qtr	Events	Number Expected	Central Line Days	SIR	SIR p-value	95% Confidence interval
ICU-OTHER	2015Q3	93	130.74	79631	0.711	0.0005	0.577, 0.867
ICU-OTHER	2015Q4	102	130.81	78322	0.78	0.0105	0.639, 0.943
Med-OTHER	2015Q3	8	12.515	5274	0.639	0.1934	0.297, 1.214
MED-OTHER	2015Q4	5	12.688	5218	0.394	0.0178	0.144, 0.873

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CLABSI Resources

a. CLABSI protocols, forms, etc:
   http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html
   http://www.cdc.gov/nhsn/newsletters.html
b. Operational guidance for CMS reporting:
   http://www.cdc.gov/nhsn/cms/index.html
   http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html
c. NHSN training:
   http://www.cdc.gov/nhsn/training/
   http://www.cdc.gov/nhsn/newsletters.html

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CAUTI

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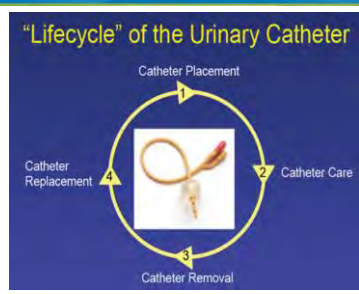
CAUTI



http://www.cdc.gov/HAI/ca_uti/cauti_faqs.html
Meddings J, Saint S. Clin Infect Dis 2011;52:1291 available at: (http://www.catheterout.org)

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Are you feeling it yet?

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CAUTI Surveillance

Objective surveillance definitions

- 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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2016 Highlights Changes & Updates

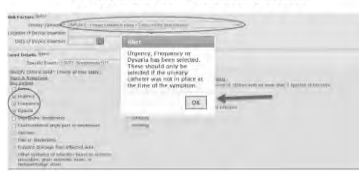
UTI Protocol Update

- urinary urgency
- urinary frequency
- dysuria

Cannot be used as symptoms **when a catheter is in place.**

Retention?

Risk Factor Defect Fixed



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2016 Highlights Changes & Updates

UTI PROTOCOL UPDATE:

Candida species or yeast not otherwise specified, mold, dimorphic fungi or parasites are excluded as organisms in the UTI definition (page 7-8).

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2016 Highlights Changes & Updates

2016 Exclusions

- Specified genera of pathogens from all HAI criteria-
  - ***Blastomyces, Histoplasma, Coccidiodes, Paracoccidiodes, Cryptococcus, Pneumocystis***
- Use of specimens from documented brain dead patients awaiting organ harvest

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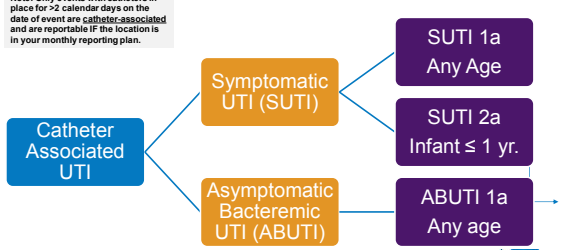
Mandatory CMS UTI - Reporting

Note: Only events with catheters in place for >2 calendar days on the date of event are catheter-associated and are reportable IF the location is in your monthly reporting plan.



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SUTI 1a (Catheter-associated) Criterion

Patient must meet 1, 2, and 3 of the following:

1. Patient had an indwelling urinary catheter that had been in place for > 2 days on the date of event (day of device placement = Day 1) AND was either:
   - Still present for any portion of the calendar day on the date of event, OR
   - Removed the day before the date of event

#1

2. Patient has at least one of the following signs or symptoms:
   - fever (>38.0°C)
   - suprapubic tenderness*
   - costovertebral angle pain or tenderness*
   - urinary urgency*
   - urinary frequency*
   - dysuria^

*With no other recognized cause
^These symptoms cannot be used when catheter is in place

#2

3. Patient has a urine culture with no more than two species of organisms, at least one of which is a bacterium of $\geq 10^5$ CFU/ml.

All elements of the UTI criterion must occur during the Infection Window Period.

* With no other recognized cause

#3

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SUTI 1b (Non-Catheter-associated) Criterion

Patient must meet 1, 2, and 3 below:

1. One of the following is true:
   - Patient has/had an indwelling urinary catheter but it has/had not been in place >2 calendar days,

   OR
   - Patient did not have a urinary catheter in place on the date of event nor the day before the date of event

#1

2. Patient has at least one of the following signs or symptoms:
   - fever (>38°C) in a patient that is ≤ 65 years of age
   - suprapubic tenderness*
   - costovertebral angle pain or tenderness*
   - urinary frequency*
   - urinary urgency*
   - dysuria^

*With no other recognized cause
^These symptoms cannot be used when catheter is in place

#2

Off plan reporting: If you ID UA early it may prevent attribution to a CAUTI

3. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacterium of $\geq 10^5$ CFU/ml.** All elements of the SUTI criterion must occur during the Infection Window Period

#3

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SUTI 2 (≤ 1-year-old) Criterion

Patient must meet 1, 2, and 3 below:

1. **Patient is ≤ year of age (with or without an indwelling urinary catheter)**

If patient had an indwelling urinary catheter in place for >2 calendar days, and catheter was in place on the date of event or the previous day, the CAUTI criterion is met. If no such indwelling urinary catheter was in place, UTI (non-catheter associated) criterion is met.

#1

2. Patient has at least one of the following signs or symptoms:
   - fever (>38.0°C)
   - hypothermia (<36.0°C)
   - apnea*
   - bradycardia*
   - lethargy*
   - vomiting*
   - suprapubic tenderness*

#2

3. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacterium of $\geq 10^5$ CFU/ml.** All elements of the SUTI criterion must occur during the Infection Window Period (See definition Chapter 2 Identifying HAIs in NHSN).

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#3

Asymptomatic Bacteremic UTI (ABUTI) Criterion

Patient must meet 1, 2, and 3 below:

1. Patient with* or without an indwelling urinary catheter has no signs or symptoms of SUTI 1 or 2 according to age (**Note**: Patients > 65 years of age with a non-catheter-associated ABUTI may have a fever and still meet the ABUTI criterion)

* Patient had an indwelling urinary catheter in place for >2 calendar days, with day of device placement being Day 1, and catheter was in place on the date of event or the day before.

#1

2. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacterium of ≥10^5 CFU/ml**

#2

3. Patient has a positive blood culture **with at least one matching bacterium to the urine culture**, or meets LCBI criterion 2 (without fever) and matching common commensal(s) in the urine. All elements of the ABUTI criterion must occur during the Infection Window Period

#3

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Reporting Key Concepts

Urine Culture Clarification

- Urine cultures with > 2 organisms are routinely regarded as contaminated cultures and not used for NHSN CAUTI surveillance. (Example: *E. coli*, *S. aureus* and *C. albicans* = 3 organisms)
- Urine culture including "mixed flora" or equivalent cannot be used
- Organisms of same genus but different species = 2 organisms. Example: *Pseudomonas aeruginosa* and *Pseudomonas stutzeri*
- The same organism with different antimicrobial susceptibilities = 1 organism. Example: MRSA and MSSA
- Urine culture with yeast can be included as long as there is at least one bacterium with ≥10^5 CFU/ml and no more than 2 organisms

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Reporting Key Concepts

UTI Repeat Infection Timeframe Key Concept

- 14 –day timeframe
- No new UTIs are reported
- Date of event = Day 1
- Additional eligible pathogens from urine cultures are added to the event
- Non-catheter associated SUTI or ABUTI or POA set a UTI RIT and Secondary BSI attribution
- **Do not change catheter association during the RIT**

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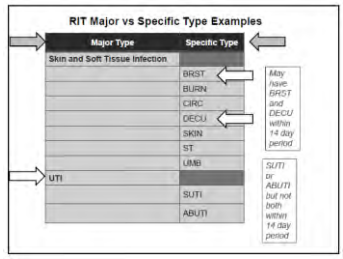
RIT Major vs Specific Type Example



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Reporting Key Concepts

Discontinuation and Reinsertion

If a Foley catheter is discontinued, and a full calendar day passes before a Foley is reinserted, then the day count for determining catheter-associated UTI begins anew. Otherwise, the day count continues from the previous catheter.

	March 31 (Hospital day 3)	April 1	April 2	April 3	April 4	April 5	April 6
Example A	Foley Day 3	Foley Day 4	Foley removed (Foley Day 5)	Foley replaced (Foley Day 6)	Foley Day 7	Foley Day 8	Foley Day 9
Example B	Foley Day 3	Foley Day 4	Foley removed (Foley Day 5)	No Foley	Foley replaced (Foley Day 5)	Foley Day 2	Foley Day 3

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Reporting Key Concepts

Location of Attribution Key Concept

The location where the patient was assigned on the date of the UTI event (the date that the first element used to meet the UTI infection criterion occurred for the first time in the infection window period).

Exception to Location of Attribution

Transfer Rule: If the date of event for the UTI is the day of transfer/discharge or the next day, the UTI is attributed to the transferring/discharging location or facility.

Receiving facilities should share information about such HAIs with the transferring location or facility to enable reporting.

Transfer Rule – Examples

Key Terms	Admit Day: Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	
Transfer Rule	ICU	ICU	ICU→ SW	SW Date of event for an HAI	SW			HAI is attributable to the ICU
Transfer Rule	ICU	ICU	ICU→ SW	SW	SW Date of event for an HAI			HAI is attributable to SW
Transfer Rule	SW	SW	SW	SW→ Discharged Home	Admit to ED meeting infection criterion			Attributable to SW
Multi-transfer Rule	ICU	ICU	ICU→ SW→ CCU	CCU Date of event for an HAI	CCU			HAI is attributable to the ICU

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Reporting Common Misconceptions

FALSE

- Fever can be attributed to another cause
- Positive culture on admission = Present on Admission (POA)
- UTI signs or symptoms on admission automatically = POA

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Reporting Fever

Misconception #1: Fever Can Be Attributed to Another Cause

Patient has Fever > 100.4°F, positive urine culture and pneumonia, so fever is present due to pneumonia

Note: *Fever and hypothermia are non-specific symptoms of infection and cannot be excluded from UTI determination because they are clinically deemed due to another recognized cause.*

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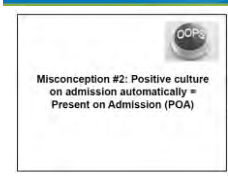
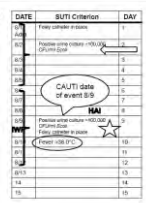
Reporting Culture results



Misconception #2: Positive culture on admission automatically = Present on Admission (POA)

Misconception #2 Positive urine culture on admission: Example



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Reporting Signs & Symptoms

Misconception #3

- UTI signs or symptoms on admission automatically = POA
- UTI s/s must be accompanied by a positive urine culture within the infection window period
- Date of event must occur within the POA time period

Misconception #3 UTI Sign/Symptom: Example

DATE	SUTI Criterion	Hospital Day
8/1 ADMIT	Admit with Foley catheter in place c/o suprapubic tenderness	1
8/2	IWP is not set without urine culture	2
8/3		3
8/4		4
8/5		5
8/6		6
8/7	CAUTI date of event 8/10	7
8/8	HAI	8
8/9		9
8/10	c/o suprapubic tenderness	10
8/11 IWP	positive urine culture > 100,000 CFU/ml *E. coli*	11
8/12		12
8/13		13
8/14		14

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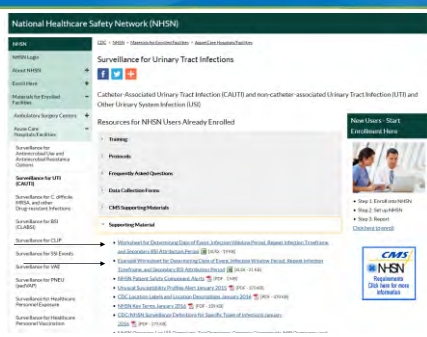
CAUTI Surveillance Tools



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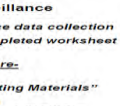
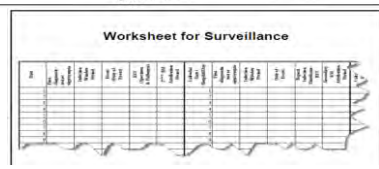
Surveillance

Worksheet for Surveillance

- *To promote consistent surveillance data collection*
- *Worksheet, and example of a completed worksheet with explanation*
- *http://www.cdc.gov/nhsn/acute-care-hospital/clabsi/index.html*
- *First 2 documents under "Supporting Materials"*
- *Note: 2 tabs at the bottom of each*
- *Highly recommend use*

Potentially: CAUTI and CLABSI calculators





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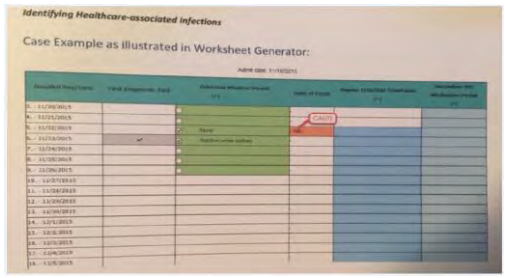
CAUTI Surveillance Tool

Repeat infection work sheet.



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CAUTI Investigation -Example

Investigating a Positive Urine Culture as Possible CAUTI

1.	Determine the date of the diagnostic test that is an element of the site-specific infection criterion.
2.	Then from that determine the infection window period (IWP) (3 days before the diagnostic test, the day of the test and 3 days after for a total of 7 days).
3.	Then determine if all of the elements of the criterion are met during the infection window period. If they are, there is an infection event. If they are not, there is no event.
4.	Next determine the date of event (DOE), i.e., the date that the first element used to meet the infection criterion occurs for the first time within the infection window period.
5.	Is the date of event in the POA time period? If yes, the infection is POA, if not, it is an HAI. (POA time period is defined as the day of admission to an inpatient location, the 2 days before admission, and the calendar day after admission)
6.	Next (if appropriate) determine if the HAI is device-associated, i.e. CAUTI. If the date of event occurred on or after day 3 of device use, and the device was in place on that day or the day before, the HAI is device-associated.
7.	Using the Transfer Rule if applicable, determine the location to which the HAI should be attributed. If the date of event is on the date of transfer/discharge,or the next day, the infection is attributed to the transferring/discharging location.

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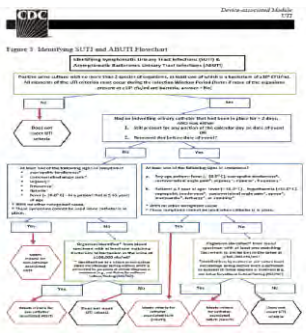
CAUTI Surveillance Tools SUTI- ABUTI



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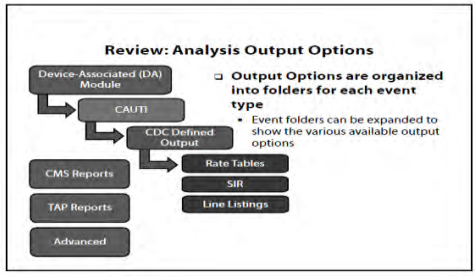
CAUTI Analysis



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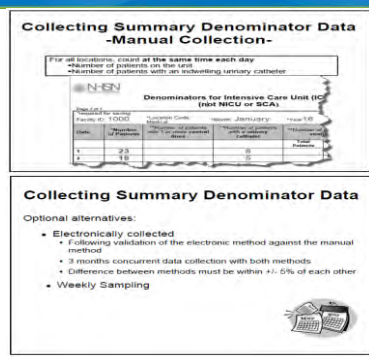
Entering CAUTI Summary Data



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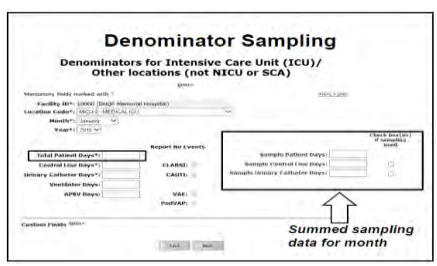
Denominator Sampling



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CAUTI SIR

General CAUTI SIR Interpretation

Location	Summary YR/Qtr	Events	Number Expected	Urinary Catheter Days	SIR	SIR p-value	95% Confidence Interval
ICU	2015Q3	10	7.167	3283	1.395	0.2976	0.709, 2.487

- During the 3rd quarter of 2015, we identified 10 CAUTIs in 3,283 urinary catheter days in all ICUs and wards.
- Based on the national baseline data, 7.167 CAUTIs were predicted.
- The SIR of 1.395 indicates that we identified nearly 40% more CAUTIs than what was predicted.
- Based on statistical evidence, we can conclude that our CAUTI SIR for Q3 is not different than 1. (i.e., the number of observed CAUTIs is not significantly higher than the number predicted.)

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CAUTI Case Study

Case 1

Date	UTI criterion	Hospital Day
Feb 1	FC > 2 days, fever >38.0°C, urine culture collected and positive for 10^5 CFU/ml of *Klebsiella pneumoniae* and *Citrobacter freundii*	4
Feb 3	Urine culture collected and positive for 10^5 CFU/ml *Klebsiella oxytoca*	6

This patient has a CAUTI with date of event Feb. 1

A. True
B. False

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CAUTI Case Study

Case 2

- Day 1: 58-year-old patient is admitted to Rehabilitation hospital from ACH with an indwelling urinary catheter in place on January 26.
- Day 2: Patient spikes temp of 38.6°C. Indwelling catheter remains in place.
- Day 3: Urine specimen is collected.
- Day 4: Culture results 100,000 CFU/ml *Pseudomonas aeruginosa*. Antibiotics started.
- Day 5: Patient asymptomatic and afebrile.

Is this an HAI? If so, what type?

A. Yes, healthcare-associated UTI but not a CAUTI because catheter had not been in for > 2 calendar days
B. No, it is a UTI that is POA
C. Yes, CAUTI, SUTI criterion 1a attributed to Rehab hospital

Does this meet the Transfer rule?

A. Yes
B. No

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CAUTI Supplemental Slides

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CAUTI TAP Analysis

- VHQC - MVHIN Webinar: Surveillance Strategies for Success: Using TAP Strategy 3/11/2016
- Progress to NHSN analysis tools see slides
- MVHIN will continue to utilize and support TAP Strategy.

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CAUTI Resources

Worksheet Generator:

http://www.cdc.gov/nhsn/xls/general-rules-worksheet.xlsx

UTI Protocol:

http://www.cdc.gov/nhsn/pdfs/pscManual/7pscCAUTIcurrent.pdf

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SIR/TAP

SIR goal Setting using TAP Reports

- SIR goal (called the CAD Multiplier in NHSN)

Default NHSN goals are based on HHS 5- year HAI Reduction targets

- CAUTI SIRgoal: 0.75
  - **Recommended custom goal *0.55***
- CDI SIRgoal: 0.70
- CLABSI SIRgoal: 0.50

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TAP Analysis

Integrating Analysis into Targeted Prevention

- **Cumulative Attributable Difference (CAD) is a measure that shows <u>difference</u> between the number of observed infections and 'predicted infections multiplied by a SIR goal' in a defined period**

CAD = Observed no. of HAIs – (Predicted no. of HAIs x SIR goal[1])

- **CAD Interpretation:**
  - Values range from $-\alpha$ to $+\alpha$
  - Positive CAD = additional burden of infections than what would be predicted with regard to a SIR goal ("excess" infections)
  - Negative CAD = fewer infections than what would be predicted

[1] SIR goal represents 'HAI reduction goal

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CAD

CAD and the HAI Reduction Goal

CAD = Observed – (Predicted x SIR goal)

SIR goal represents 'HAI reduction goal'

- e.g. HHS 25% reduction goal for CAUTI → SIR=0.75

Hospital A: observed=30, predicted=10, SIR=3.0 in 2014

HHS Reduction Goal (Reduction in Expected	SIR goal	CAD	CAD
0%	1.0	30 – (10 x 1.0) or 30 – 10	20*
25% HHS national goal	0.75	30 – (10 x 0.75)	22.5*
50%	0.50	30 – (10 x 0.50)	25*

* number of infections in 2014 that must be prevented to reach a HAI reduction goal.

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CAD Calculation

Innovation to Target Prevention Efforts

- Using a measure to help target prevention efforts to reach HAI reduction goals

Cumulative Attributable Difference (CAD) = Excess infections

$CAD = OBSERVED - (EXPECTED * SIR_{target})$

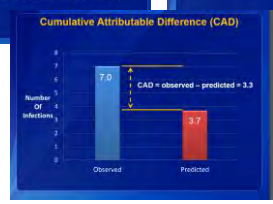
* Target SIR may be based on a group, state, or national (HHS) target

Cumulative Attributable Difference (CAD)

- CAD is a measure that shows difference between the number of observed and predicted infections

CAD = Observed # of HAIs – Predicted # of HAIs

- CAD Interpretation:
  - Positive CAD = more infections than what would be predicted ("excess" infections)
  - Negative CAD = fewer infections than what would be predicted



TAP Analysis

TAP Report

- Allows the user to a choose an SIR goal
- Customize SIR goal to fit your facility's Prevention goal

FACILITY		LOCATION								
Facility Name	Facility CAD	Location Rank	Location	Events	Urinary Catheter Days	DUR %	CAD	SIR	SIR Test	No. Pathogens (EC,YS, PA, KS, PM, ES)
Nola Medical	24.32	1	ICU	10	3283	33	8.05	1.40	-	10 (7, 3, 0, 0, 0)
		2	Ward	8	1576	39	5.08	1.37	-	8(1, 0, 1, 0, 1)
		3	REHAB	5	971	41	4.03	2.58	-	5(0, 0, 0, 0, 0)
		4	SURG	2	430	74	1.59	-	-	2(0, 0, 0, 0, 0)
		5	ONC	2	420	76	1.52	-	-	2(0, 0, 0, 0, 0)
		6	PICU	1	30	30	0.99	-	-	1(0, 0, 1, 0, 0)

The Facility CAD indicates how many infections this hospital would have had to prevent to reach its goal.

TAP Analysis

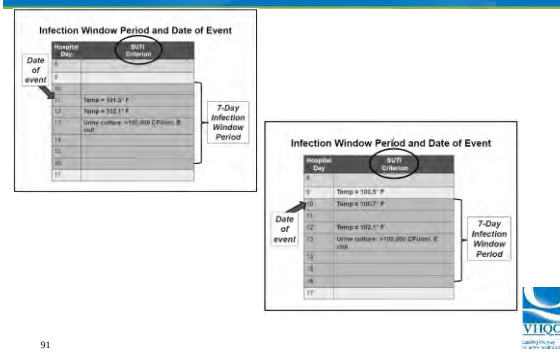
Interpreting TAP Report Results

FACILITY		LOCATION								
Facility Name	Facility CAD	Location Rank	Location	Events	Urinary Catheter Days	DUR %	CAD	SIR	SIR Test	No. Pathogens (EC,YS, PA, KS, PM, ES)
Nola Medical	24.32	1	ICU	10	3283	33	8.05	1.40	-	10 (7, 3, 0, 0, 0)
		2	M Ward	8	1576	39	5.08	1.37	-	8(1, 0, 1, 0, 1)
		3	REHAB	5	971	41	4.03	2.58	-	5(0, 0, 0, 0, 0)
		4	SURG	2	430	74	1.59	-	-	2(0, 0, 0, 0, 0)
		5	ONC	2	420	76	1.52	-	-	2(0, 0, 0, 0, 0)
		6	PICU	1	30	30	0.99	-	-	1(0, 0, 1, 0, 0)

- This hospital may opt to prioritize CAUTI prevention efforts within the top 3 ranked locations

The CAD for each location indicates how many infections that particular unit would have had to prevent to reach its goal.

Infection Window Period



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HAI RIT

Repeat Infection Timeframe (RIT)

- Removes subjectivity of clinical determination that previous infection had resolved.
- Uses date of event to determine a 14-day timeframe during which no new infections of the same type are reported
- The date of event is Day 1 of the 14-day Repeat Infection Timeframe
- If date of event for subsequent potential infection is within 14 days
  - Do not report new event
  - Additional pathogens identified are added to the original event

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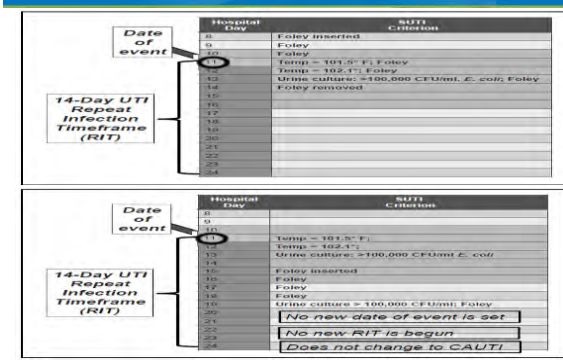
HAI Repeat Infection Timeframe



RIT Major vs Specific Type Checklist

Repeat Infection Timeframe (RIT)

- **The RIT will apply at the level of specific type of infection with the exception of Bloodstream Infection (BSI), Urinary Tract Infection (UTI) and Pneumonia (PNEU) where the RIT will apply at the major type of infection**
  - Patient will have no more than one BRST (specific type of major type SST)

    As opposed to:
  - Patient will have no more than one BSI (e.g., LCBI1, LCBI2, MBI-LCBI1etc.)
  - Patient will have no more than one UTI (e.g., SUTI, ABUTI)
  - Patient will have no more than one PNEU (e.g., PNU1, PNU2, PNU3)

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Device Associated Analysis Resources

- Analysis Output Quick Reference Guides: http://www.cdc.gov/nhsn/ps-analysis-resources/reference-guides.html
- HAI Progress Reports:
- http://www.cdc.gov/hai/surveillance/progress-report/previous-reports.html
- TAP Report Quick Reference Guide: http://www.cdc.gov/nhsn/PDFs/TAP/TAPReports_Facilities.pdf
- Help with any analysis outputs: email nhsn@cdc.gov

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Additional Resources

Identifying HAIs in NHSN:

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

AJIC NHSN case studies series:

a. Publish case studies quarterly
b. Courses have a "test your knowledg"e function with a Survey Monkey quiz
c. 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:

a. http://www.cdc.gov/nhsn/pdfs/cms/ach-monthly-checklist-cms-iqr.pdf

NHSN Data Dictionary:

a. (NHSN Codes and Variables > NHSN Data Dictionary) 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. VHQC11SOW/4/5/2016/2428

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