CMS and NHSN: What’s New for Infection Preventionists in 2013

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Objectives

Define the current status of public reporting and the implications for NHSN

State the new/updated Key Terms for HAI, Device-Associated Infection and Transfer Rule

Identify the criteria for mucosal barrier injury laboratory-confirmed BSI (MBI-LCBI)

Define the steps to prepare for VAE Surveillance

Identify the LabID Events that will be reported by NHSN to CMS

State the three major NHSN changes to SSI Reporting
Current Status of Public Reporting

32 states have passed legislation requiring public reporting of one or more HAIs

2008 - Congress mandated that the Centers for Medicare and Medicaid Services (CMS) financially penalize hospitals if patients develop “potentially preventable” HAIs

2010 - HAI prevention incorporated into the Affordable Care Act Value Based Purchasing (VBP) program

- Pay for performance: up to 2% incentive for superior performance on standard measures vs. peers
Through the VBP program, CMS now requiring public reporting through NHSN of:

- Central line-associated bloodstream infections (CLABSI)
  - Acute care hospital ICUs - adult, pediatric, neonatal
  - Long-term acute care facilities
- Catheter-associated urinary tract infections (CAUTI)
  - Acute care hospital ICUs - adult and pediatric
  - Long-term acute care facilities
  - Inpatient rehabilitation facilities
- Surgical site infections - colon and abdominal hysterectomies
- MRSA bacteremia and *C. difficile* toxin positivity (LabID)
  - Acute care hospitals - inpatients only
- HCW Influenza Vaccination
  - Acute care hospitals
CDC’s Surveillance System for HAIs

Growth from 300 hospitals in 2005 to > 4900 hospitals in 2012 due to state and federal mandates

Data are used for internal quality improvement, required external reporting, and national surveillance

System is used by 29 states and District of Columbia for HAI reporting mandates and by CMS for pay-for- reporting programs and value based purchasing

Technical design enables manual data entry or electronic reporting via an industry-standard file format
Pressure to **simplify HAI definitions and data requirements** and move to electronic HAI detection and reporting

Revise definitions in ways that reduce complexity, maintain clinical relevance, and avoid potential case misclassification

Accelerate use of **computer-based detection algorithms and use of electronic healthcare data** for HAI surveillance purposes

Adapted from: Pollock, D NHSN: Changing Purposes October 2, 2012 CDC Training
Multidisciplinary workgroups convened for definition revisions; partnering with clinicians, epidemiologists, health departments, HICPAC surveillance working group - MAINTAIN CLINICAL RELEVANCE

Focus on changes to NHSN criteria that reduce subjectivity in interpretation and application of definitions - IMPROVE DATA RELIABILITY

Ensure the integrity of NHSN data through quality control checks in the application - IMPROVE DATA INTEGRITY
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Identifying HAIs in NHSN

HAI: An infection is considered an HAI if all elements of a CDC/NHSN site-specific infection criterion were first present together on or after the 3rd hospital day (day of hospital admission is day 1).

For an HAI, an element of the infection criterion may be present during the first 2 hospital days as long as it is also present on or after day 3. All elements used to meet the infection criterion must occur within a timeframe that does not exceed a gap of 1 calendar day between elements.
### HAI Event -

<table>
<thead>
<tr>
<th>Key Terms</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Infection is...</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAI</td>
<td>Admit from ED to ICU</td>
<td>ICU</td>
<td>ICU</td>
<td></td>
<td>Not an HAI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All elements of infection criterion first present together</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAI</td>
<td>Direct admit to ICU</td>
<td>ICU</td>
<td>ICU</td>
<td></td>
<td>HAI attributable to ICU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All elements of infection criterion first present together</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>An element of infection criterion present</td>
<td>All elements of infection criterion first present together</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**USE CALENDAR DAYS**
Device -Associated HAIs

An infection meeting the HAI definition is considered a device-associated HAI if the device was in place for >2 calendar days when all elements of a CDC/NHSN site-specific infection criterion were first present together.

HAIs occurring on the day of device discontinuation or the following calendar day are considered device-associated HAIs if the device had been in place already for >2 calendar days.
Is it a CLABSI?

2012 Criteria

- Primary BSI in a patient that had a central line (CL) within the 48 hour period before the BSI and the BSI is not related to an infection at another site
- No minimum amount of time for device to be in place prior to meeting the infection criteria

2013 Change

- Primary BSI in a patient that had a CL in place for >2 calendar days when the criteria for LCBI were met and BSI not related to infection at another site
- If the LCBI occurs on the day the CL is discontinued or the following calendar day, the CL must have already been in place > 2 calendar days to be considered a CLABSI
## Device-Associated HAIs

<table>
<thead>
<tr>
<th>Key Terms</th>
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<th>Day 3</th>
<th>Day 4</th>
<th>Infection is…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device Associated</td>
<td>Device inserted</td>
<td>Device in place</td>
<td>Device in place All elements of infection criterion first present together</td>
<td>Device associated</td>
<td></td>
</tr>
<tr>
<td>Device Associated</td>
<td>Device inserted</td>
<td>Device in place All elements of infection criterion first present together</td>
<td></td>
<td>Not device associated</td>
<td></td>
</tr>
<tr>
<td>Device Associated</td>
<td>Device inserted</td>
<td>Device in place part of day only</td>
<td>All elements of infection criterion first present together</td>
<td>Not device associated</td>
<td></td>
</tr>
<tr>
<td>Device Associated</td>
<td>Device inserted</td>
<td>Device in place An element of infection criterion present</td>
<td>Device in place All elements of infection criterion first present together</td>
<td>Device associated</td>
<td></td>
</tr>
<tr>
<td>Device Associated</td>
<td>Device that has been in place for 4 days is removed</td>
<td>Device in place No device in place</td>
<td>All elements of infection criterion first present together</td>
<td>Not device associated</td>
<td></td>
</tr>
<tr>
<td>Device Associated</td>
<td>Device that has been in place for 4 days is removed</td>
<td>All elements of infection criterion first present together</td>
<td></td>
<td>Device associated</td>
<td></td>
</tr>
</tbody>
</table>
### Transfer Rule

<table>
<thead>
<tr>
<th>Key Terms</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Infection is...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer Rule</td>
<td>ICU ➔ 3W</td>
<td>3W All elements of infection criterion first present together</td>
<td>3W</td>
<td>Attributable to ICU</td>
<td></td>
</tr>
<tr>
<td>Transfer Rule</td>
<td>ICU ➔ 3W</td>
<td>3W</td>
<td>3W All elements of infection criterion first present together</td>
<td>Attributable to 3W</td>
<td></td>
</tr>
<tr>
<td>Transfer Rule</td>
<td>3W ➔ Home</td>
<td>Home</td>
<td>Home</td>
<td>Attributable to 3W</td>
<td></td>
</tr>
</tbody>
</table>

If the elements of an HAI are present within 2 calendar days *vs.* 48 hours of transfer from one inpatient location to another - on the day of transfer or the next day - attribute the HAI to the transferring location.
Device-associated rule

- Day of placement of a CL is day 1
- If the CL is in place upon admission, day of first access is considered day 1

LCBI Criterion 2 & 3: common commensal is cultured from two or more blood cultures that were collected within 2 days of each other e.g. Mon. and Tues. not Mon. and Wed.

Mucosal Barrier Injury Laboratory-Confirmed Bloodstream Infection (MBI-LCBI)
Developed by HICPAC Working Group

- Need for specific BSI definition for oncology patients
- Patients with mucosal barrier injury (e.g. GVHD, severe neutropenia) at high-risk for translocation of intestinal organisms
- These BSIs are not impacted by CLABSI prevention measures

Criterion based on

- Growth of specific intestinal organisms e.g. *Bacteriodes*, *Prevotella*, *Enterococcus*, viridans group *Streptococcus*
- Patient criteria: allogeneic hematopoietic stem cell transplant recipient with GVHD or severe diarrhea or neutropenic (ANC <500)
Temperature determination

- Utilize the temperature used for clinical decision making; e.g. if facility policy is to add $0.5^\circ C$ to axillary temperatures, use that temperature to meet definition clinical criteria

Date of event for HAIs (except VAE): date when the last element used to meet the NHSN infection criterion occurred (previously date of first symptom or date of specimen collection, whichever came first).

For VAE, the date of onset is the date of worsening oxygenation
The Problem:

- No valid, reliable definition for VAP
- Use of the current criteria - CXR, clinical signs and symptoms and microbiologic evidence - include subjective elements and lack sensitivity and specificity

Eligibility for VAE surveillance

- >18 years of age
- Inpatients of acute care, long term acute care and rehabilitation facilities
- Patients receiving conventional mechanical ventilation: excludes patients on ECMO or high frequency ventilation
VAE and PNEU/VAP

VAE available in Jan 2013

Current VAP protocol remains available for pediatric and neonatal patients ONLY

Current PNEU definitions are still available for off-plan surveillance of VAP in adults or non-ventilated PNEU in adults or children
Ventilator-Associated Event

**VAE Definition Algorithm Summary**

- **Respiratory status component**
  - Patient on mechanical ventilation > 2 days
  - Baseline period of stability or improvement, followed by sustained period of worsening oxygenation
  - **Ventilator-Associated Condition (VAC)**

- **Infection / inflammation component**
  - General evidence of infection/inflammation
  - **Infection-Related Ventilator-Associated Complication (IVAC)**

- **Additional evidence**
  - Positive results of microbiological testing
  - **Possible or Probable VAP**

No CXR needed!
Ventilator-Associated Event

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Ventilator-Associated Event

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**Temperature or WBC and New antimicrobial agent**
Ventilator-Associated Event

**VAE Definition Algorithm Summary**

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  - General evidence of infection/inflammation
  - Infection-Related Ventilator-Associated Condition (IVAC)

- **Additional evidence**
  - Positive results of microbiological testing
  - Possible or Probable VAP

- Purulent secretions and/or other positive laboratory evidence
Preparing for VAE Surveillance

Read the surveillance protocol


Identify surveillance partners in the units where VAE surveillance will occur

- Critical Care staff
- Respiratory Therapy

Assess how the microbiology lab reports quantitative culture results

Develop a plan for organizing the data elements needed to identify VAEs

From Magill, Shelley  NHSN Training Course Atlanta : October 2012
VAE Calculator

Welcome to the Ventilator-Associated Event Calculator. It is strongly encouraged that you read and study the VAE protocol found [here](http://www.cdc.gov/nhsn/VAE-calculator/vae_cdcdev_V63.html).

The calculator runs locally on your machine so no data are reported anywhere. Feel free to enter or change as much data as you like. [more...](http://www.cdc.gov/nhsn/VAE-calculator/vae_cdcdev_V63.html)

To get started, enter a date below that corresponds to the first day the patient was placed on mechanical ventilation during the mechanical ventilation episode of interest. You may type in a date or use the popup calendar when it appears. You may only enter dates within the past year. If the patient has been on mechanical ventilation for more than one year during the current mechanical ventilation episode, choose a "start date" that is more recent, but is at least 7 days before the period of interest.

Date: 

[Close Window]
Now enter PEEP or FiO₂ values and when done, click the "Calculate VAC" button. **You do not need to enter data for every day.** Concentrate on the dates where you believe a Ventilator-Associated Event may be likely. If your values meet the Ventilator-Associated Condition (VAC) definition, the event day will be identified and the VAE Window will be defined.

<table>
<thead>
<tr>
<th>MV Day</th>
<th>Date</th>
<th>Min. PEEP (cmH₂O)</th>
<th>Min. FiO₂ (%),21-100</th>
<th>VAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/21/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/22/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1/23/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1/24/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1/25/2013</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Clostridium difficile (CD)**

Why have we arrived at mandatory reporting

- _CD_ is responsible for a spectrum of _C. difficile_ associated infections (CDI): uncomplicated diarrhea, pseudomembranous colitis and toxic megacolon. May lead to sepsis and death

- Cases of CDI have increased; linked to 14,000 deaths annually

- Antibiotic use and exposure to heathcare facilities are significant risk factors

- Use of contact precautions with attention to hand hygiene and meticulous environmental cleaning can reduce transmission
LabID Event - *C. difficile*

**Purpose**

- Proxy measure calculations of *C. difficile* infections, exposure burdens, and healthcare acquisitions through monitoring and reporting of positive clinical assay data (unformed stool only)

**LabID Event**

- Toxin-positive *C. difficile* stool assay for a patient in a location with no prior toxin-positive *C. difficile* stool assay reported within 14 days for the same patient / same location.

- A patient in the same inpatient location in a given month could have an additional *C. difficile* LabID Event if a positive toxin assay is collected with a 14 day interval between specimens.

- If the patient has a change of location with a positive toxin assay collected, IT IS A NEW LabID event regardless of the time interval between the specimens.
LabID Event - *C. difficile*

Numerator data: LabID Events are reported by specific inpatient location where the specimen was collected.

Denominator data: Total patient days and Total admissions (minus all NICU, SCN, and Well baby locations) are reported for the entire inpatient facility.

Incident CDI Assay: Any CDI LabID Event from a specimen obtained > 8 weeks after the most recent CDI LabID Event for that patient.

Recurrent CDI Assay: Any CDI LabID Event from a specimen obtained > 2 weeks and < 8 weeks after the most recent CDI LabID Event for that patient.
MRSA Bacteremia

*MRSA* is a multi-drug resistant organism (MDRO)

- MDROs are microorganisms resistant to one or more therapeutic classes of antimicrobial agents
- Monitoring of MDROs allows for local trending and the analysis of the impact of targeted prevention efforts

Why monitor only bacteremia?

- Metric minimally influenced by variation in practices of clinical testing
- Blood samples for culture are routinely drawn in response to fever.
- Positive blood culture results are simple to identify, are highly likely to represent infection, and are a well-validated metric
LabID Event - MRSA Bacteremia

LabID Event:

- MRSA (S. aureus resistant to oxacillin, methicillin, or cefoxitin) positive blood culture for a patient in a location with no prior MRSA positive blood culture reported within 14 days for the same patient / same location.

- A patient residing in the same inpatient location for a given month could have an additional MRSA bacteremia LabID Event if a positive culture is collected with a 14 day interval between specimens.

- If the patient has a change of location with a positive culture collected, IT IS A NEW LabID event regardless of the time interval between the specimens.

Numerator data: LabID Events are reported by specific inpatient location where the specimen was collected.

Denominator data: Total patient days and Total admissions are reported for the entire inpatient facility. [FACWIDEIN]
What LabID Events Will NHSN Report to CMS?

MRSA Blood and *C. difficile* Healthcare Facility-Onset (HO) LabID Events

- **MRSA Blood**: all non-duplicate, LabID event specimens collected >3 days after admission to the facility
- **CDI**: All non-duplicate, non-recurrent LabID event specimens collected >3 days after admission to the facility
3/1 Patient presents to the ED with complaints of diarrhea and lower abdominal pain for the past 3 days. Past history of recent antibiotic therapy for UTI. A stool specimen is collected while the patient is in the ED and toxin assay is positive for *C. difficile*.

3/1 Patient admitted to 2S Medical Unit for hydration and further evaluation.

For FacWideIN LabID reporting - Can this result be entered as a LabID Event and if so, what location would be entered?

1. No. ED is an outpatient location
2. Yes. Location would be ED since specimen was collected there
3. Yes. Location would be 2S, the admitting location
4. Yes. Location would be FacWideIN
#3 - YES, 2S

If a specimen collected in the ED is positive for CDI AND the patient is admitted to an inpatient location in the facility on the **same** date, then that specimen can be reported as the first specimen for the patient in that admitting inpatient location.
Overview of Proposed SSI Surveillance Changes

- HICPAC surveillance working group (surgery, perioperative nursing, infectious diseases, infection prevention, epidemiology, state health department)

- Reviewing all aspects of SSI surveillance definitions and methods to reduce subjectivity, enhance clinical credibility, reduce data collection burden, and make amenable to electronic data capture

From Fagan, Ryan. APIC NHSN Members Meeting, San Antonio 2012
SSI Surveillance Changes for 2013

- Modify the definition of an NHSN operative procedure to allow primarily closed incisions to include those with wires, drains, wicks, or other devices or objects extruding through the incision.
- Remove the requirement to indicate whether an implant was placed during an NHSN operative procedure
  - Delete implant definition
  - Remove implant phrase from deep incisional and organ/space SSI definitions
  - Replace 1 year follow-up period with 90-day period for certain procedures (next slide)
SSI Surveillance Changes for 2013

- Limit reporting of all SSI types for all NHSN operative procedures to 30 days after the date of the procedure except the following for which deep incisional and organ/space SSI should be reported up to 90 days after the date of the procedure:
  - BRST, CARD, CBGB, CBGC, CRAN, FUSN, FX, HER, HPRO, KPRO, PACE, PVBY, RFUSN, VSHN
  - Example: COLO procedure with internal staples performed on 1/15/2013; SSI-IAB criteria met on 2/25/2013. This would NOT be reported as an SSI (onset >30 days post-op).
  - Example: Total primary hip arthroplasty (HPRO) performed on 1/2/2013; SSI-JNT criteria met on 4/10/2013. This would NOT be reported as an SSI (onset >90 days post-op).
9/10 Patient admitted and underwent a hemi-colectomy. Wound Class =2. Does well post-operatively and is discharged home on 9/15

10/11 Seen in the ED. Temp 38.7°C, abdominal pain. Ultrasound shows abscess along the abdominal wall

10/14 I&D of the abdominal wall abscess and specimen sent for culture. Antibiotics initiated. Abscess culture positive for *E. coli*

Would this patient be reported as an SSI?

1. Yes
2. No
Would this patient be reported as an SSI?

1. Yes

2. No - the infection occurred > 30 days after the operative procedure
Upcoming NHSN Changes for January 1, 2013 to be Implemented into NHSN on **February 16, 2013**

Users are expected to follow all updated definitions, rules and criteria as of January 1, 2013

All changes, revisions and updates are included in the NHSN protocols dated January 2013 and are available on the NHSN website

**Reminder:** CMS Reporting Requirements for MRSA Blood and *C. difficile Lab*ID Events Began On January 1, 2013

Enter *all* inpatient locations into NHSN: refer to location mapping instructions
THANK YOU FOR ATTENDING