Catheter-Associated Urinary Tract Infection Surveillance

Last updated 2019
Objectives

• Review CAUTI surveillance definitions
• Discuss importance of accurate data collection
• Demonstrate how to report CAUTI data in NHSN
• Discuss NHSN data analysis and feedback to staff
Clinical vs Surveillance Definitions

Clinical criteria used by physicians for patient care and management may differ from surveillance criteria

- Clinical
  - Patient centered
  - Used for therapeutic decisions
- Surveillance
  - Population based
  - Applied exactly the same way each time
CAUTI Surveillance Definitions

UTI may or may not be associated with use of a urinary catheter (CAUTI vs. UTI)

- For CAUTI:
  - Catheter must be in place >2 days (Day 1 = day of insertion)
  - Catheter still present or Catheter removed day of or day prior to when UTI criteria met

NHSN Patient Safety Module: Chapter 7
CAUTI Surveillance Definitions- 2

• NHSN infection window period
  • Seven days during which all site-specific infection criteria must be met

• Criteria for CAUTI include specific clinical symptoms and positive urine culture, and sometimes positive blood culture

• Includes the day the **first** positive diagnostic test (urine culture or blood culture for CAUTI) was obtained, 3 calendar days before and 3 calendar days after
CAUTI Infection Window Period
Acute Care Hospitals

• For CAUTI, the first diagnostic test will be either a positive urine or blood culture

<table>
<thead>
<tr>
<th>Infection Window Period:</th>
<th>3 days before first positive diagnostic test</th>
<th>FIRST POSITIVE DIAGNOSTIC TEST</th>
<th>3 days after first positive diagnostic test</th>
</tr>
</thead>
</table>
CAUTI Infection Criteria - Acute Care Hospitals

Diagnostic Test for Possible CAUTI
- Positive urine or blood culture

Localized Sign or Symptom Examples for Possible CAUTI
- Suprapubic tenderness
- Costovertebral angle pain
- Urgency
- Frequency
- Dysuria
- Fever

NHSN Patient Safety Module: Chapter 7
CAUTI Cannot Re-Occur in the Same Patient Within a 14-Day Period

No new CAUTI can be reported within a 14-day repeat infection timeframe (RIT)

- The date of the CAUTI event is considered day 1
- A new CAUTI is not reported until 14 days have elapsed
- If a new pathogen is identified in the urine within the 14-day period it should be added to the CAUTI already reported
- Refer to the NHSN CAUTI protocol for more details

NHSN Patient Safety Module: Chapter 7
CAUTI Location Attribution

- Attribute CAUTI to the inpatient location where the patient was assigned on the date of infection event.
- If all elements of CAUTI are present on the date of transfer or discharge, or the next day, the CAUTI is attributed to the transferring/discharging location.
Symptomatic CAUTI Surveillance Definition

Symptomatic CAUTI requires the patient to have both clinical and microbiologic findings within a 7-day window period

- Refer to written definitions frequently when performing UTI surveillance
- Urine culture must grow no more than two species of organisms, at least one of which is bacteria of $> 10^5$ CFU/ml

NHSN Patient Safety Module: Chapter 7
Asymptomatic CAUTI with Bacteremia Surveillance Definition

Asymptomatic UTI with Bacteremia (ABUTI) requires the following three criteria within a 7-day window period:

1. Urine culture with no more than two species of organisms, at least one of which is a bacteria of $>10^5$ CFU/ml
2. Positive blood culture with at least one matching bacteria to the urine or 2 positive blood cultures with common commensal bacteria and a matching common commensal in the urine
3. No clinical signs or symptoms of CAUTI

NHSN Patient Safety Module: Chapter 7
Report Monthly CAUTI Summary Data to NHSN

- Enter monthly denominator data for each patient location
  - Patient days
  - Urinary catheter days
Report CAUTI Event to NHSN

- Add CAUTI Events as they occur
- Collect criteria meeting definition to enter into NHSN
- NHSN has a worksheet available for data collection
NHSN CAUTI Analysis Reports

- Generate data set prior to creating a report
- Choose report according to need
  - SIR report - Your incidence compared to expected incidence
  - TAP report – Number of events that must be reduced to reach targeted goal - which locations are priority
### NHSN CAUTI SIR Reports

#### Facility SIR

<table>
<thead>
<tr>
<th>loccgc</th>
<th>summaryYH</th>
<th>infCount</th>
<th>numPred</th>
<th>numucathdays</th>
<th>SIR</th>
<th>SIR_pval</th>
<th>sir95ci</th>
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</thead>
<tbody>
<tr>
<td>IN:ACUTE:CC:CT</td>
<td>2017H1</td>
<td>5</td>
<td>9.689</td>
<td>9541</td>
<td>0.516</td>
<td>0.1155</td>
<td>0.189, 1.144</td>
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</table>

#### SIR by Location

<table>
<thead>
<tr>
<th>loccgc</th>
<th>summaryYH</th>
<th>infCount</th>
<th>numPred</th>
<th>numucathdays</th>
<th>SIR</th>
<th>SIR_pval</th>
<th>sir95ci</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN:ACUTE:CC:CT</td>
<td>2017H1</td>
<td>0</td>
<td>0.980</td>
<td>959</td>
<td>0.337</td>
<td>0.2557</td>
<td>0.017, 1.663</td>
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<tr>
<td>IN:ACUTE:CC:MS</td>
<td>2017H1</td>
<td>1</td>
<td>2.966</td>
<td>2904</td>
<td>0.000</td>
<td>0.2492</td>
<td>2.156</td>
</tr>
<tr>
<td>IN:ACUTE:STEP</td>
<td>2017H1</td>
<td>0</td>
<td>0.918</td>
<td>802</td>
<td>0.000</td>
<td>0.2485</td>
<td>2.152</td>
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</table>

#### SUR by Location

<table>
<thead>
<tr>
<th>loccgc</th>
<th>summaryYH</th>
<th>numucathdays</th>
<th>numPredDDays</th>
<th>SUR</th>
<th>SUR_pval</th>
<th>SUR95CI</th>
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</thead>
<tbody>
<tr>
<td>IN:ACUTE:CC:CT</td>
<td>2017H1</td>
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<td>0.0016</td>
<td>0.848, 0.963</td>
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HEALTHCARE-ASSOCIATED INFECTIONS PROGRAM
### CAUTI TAP Report

<table>
<thead>
<tr>
<th>Facility CAD</th>
<th>Location Rank</th>
<th>Location</th>
<th>CDC Location</th>
<th>Events</th>
<th>Central Line Days</th>
<th>DUR %</th>
<th>CAD</th>
<th>SIR</th>
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</thead>
<tbody>
<tr>
<td>1.96</td>
<td>1</td>
<td>6E ONC</td>
<td>IN:ACUTE:WARD:ONC_HONC</td>
<td>3</td>
<td>1883</td>
<td>62</td>
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<tr>
<td>2</td>
<td>2</td>
<td>CCU</td>
<td>IN:ACUTE:CC:CT</td>
<td>2</td>
<td>1082</td>
<td>64</td>
<td>1.46</td>
<td>1.84</td>
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<tr>
<td>3</td>
<td>3</td>
<td>5 MED</td>
<td>IN:ACUTE:WARD:M</td>
<td>2</td>
<td>3199</td>
<td>26</td>
<td>0.61</td>
<td>0.72</td>
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<tr>
<td>4</td>
<td>4</td>
<td>ICU</td>
<td>IN:ACUTE:CC:MS</td>
<td>1</td>
<td>2207</td>
<td>42</td>
<td>-0.11</td>
<td>0.45</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>ICCU</td>
<td>IN:ACUTE:STEP</td>
<td>0</td>
<td>700</td>
<td>24</td>
<td>-0.32</td>
<td>0.00</td>
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<tr>
<td>6</td>
<td>6</td>
<td>CMU NEW</td>
<td>IN:ACUTE:WARD:TEL</td>
<td>0</td>
<td>1178</td>
<td>16</td>
<td>-0.51</td>
<td>0.00</td>
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<tr>
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<td>7</td>
<td>6S 6W</td>
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<td>24</td>
<td>-0.54</td>
<td>0.00</td>
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<tr>
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<td>8</td>
<td>4 M/S</td>
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<td>1434</td>
<td>15</td>
<td>-0.62</td>
<td>0.00</td>
</tr>
</tbody>
</table>

- Prioritize locations with highest cumulative attributable difference (CAD) – the number of infections we would have needed to prevent to reach goal.
Track Progress Over Time

- Feedback results to your staff and leadership
- Changes in CAUTI incidence should be visible over time
- In the example, we can see ICU needed additional interventions
CAUTI Surveillance Summary

• Consistent use of standard surveillance methods and CAUTI definitions are essential for accurate case finding

• Capturing complete and accurate data is necessary for precise CAUTI SIR calculation

• Perform surveillance and feedback CAUTI SIR with adherence monitoring results to all units and leadership
References and Resources

- IHI Program to Prevent CAUTI http://www.ihi.org/topics/CAUTI/Pages/default.aspx
Questions?

For more information, please contact any HAI Liaison IP Team member

Or email HAIProgram@cdph.ca.gov