



# LTCH QRP Provider Training



*NHSN CAUTI  
Surveillance for 2015 and  
the Most Common  
Misconceptions for UTI  
Determination*

*Eileen Scalise, RN, MSN  
November 20, 2015*

# Objectives

- Review the CAUTI definitions and participants will be able to identify the major changes in 2015 for CDC/NHSN CAUTI surveillance
- Participants will be able to explain common misconceptions in UTI reporting
- Participants will be able to correctly apply the UTI definitions and protocol to frequently asked case questions through case studies

# 2015 UTI Protocol Update

**No longer included:**

- **Colony counts less than 100,000 CFU/ml**
- **Urinalysis results**
- **Non-bacteria as sole pathogens; yeast are excluded**
- **OUTI- is now replaced by USI**

# **NHSN CAUTI DEFINITIONS FOR 2015**

# Urinary Tract Infection Definitions

There are **two specific types** of UTI:

- Symptomatic UTI (**SUTI**)
- Asymptomatic Bacteremic UTI (**ABUTI**)

**Both types, if catheter associated, must be reported as part of any CMS CAUTI reporting requirements!**

# UTI Overview

Any Age

Infant  $\leq$  1 yr

Any Age

**SUTI 1**

A:  
Catheter-  
associated

B:  
Non-catheter  
associated

**SUTI 2**

Catheter-  
associated

Non-  
catheter-  
associated

**ABUTI**

Catheter-  
associated

Non-  
Catheter-  
associated

# **SUTI 1a (Catheter-associated)**

**(Note: SUTI 1a criterion was modified April 1, 2015)**

**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 on the date of event, OR

Removed the day before the date of event

# SUTI 1a Continued

## 2. Patient has at least one of the following signs or symptoms:

fever ( $>38.0^{\circ}\text{C}$ )

suprapubic tenderness\*

costovertebral angle pain or tenderness\*

urinary urgency\*

urinary frequency\*

dysuria\*

\* With no other recognized cause

NOTE: An indwelling urinary catheter that is in place would constitute “other recognized cause” for patient complaints of “urgency” or “dysuria” and therefore these cannot be used as symptoms when catheter is in place. Nor can “frequency” which is illogical for a patient with a catheter

# SUTI 1a Continued

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

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

# SUTI 1a Example #1

- Day 1: Admit to ICU
- Day 4: Foley inserted
- Day 8: Foley removed; Patient complains of pain when voiding after Foley removal
- Day 9: No Foley in place; Fever 100.9 ° F
- Day 10: Fever 100.5° F; Urine (+) 100,000 CFU/ml  
*Enterococcus sp.*

# SUTI 1a Example #1

The pain on urination documented on Day 8 after Foley removal can be used to meet the NHSN SUTI 1a criteria.



True

False

Dysuria (painful urination) can be used to meet the SUTI 1a criteria because it occurred after the Foley was removed

# SUTI 1a Example #1

This patient has an NHSN CAUTI.



True

False

## **This patient has an NHSN CAUTI**

- Positive urine culture on Day 10 sets the Infection Window Period (IWP) (Day 7- Day 13).
- Dysuria identified as first element during the IWP on Day 8 = date of event
- Date of event = day of Foley removal, and Foley present > 2 days = CAUTI

# SUTI 1a Example #2

- Day 1: Admit to ICU
- Day 4: Foley inserted
- Day 8: Foley removed; patient unable to void
- Day 9: Foley inserted, Temperature 37.8 °C
- Day 10: Patient complains of often feeling like he has to urinate, although Foley still present; Urine culture collected and (+) 100,000 CFU/ml *E. coli*
- Day 11: Antibiotics ordered for physician diagnosis UTI
- Day 12: Foley removed, patient discharged

## SUTI 1a Example #2

The patient's complaints of feeling the need to urinate frequently, documented on Day 10 while FC is in place can be used to meet the NHSN SUTI 1a criteria.

True



False

Urinary frequency cannot be used to meet the SUTI 1a criteria as it occurred while the Foley was still in place

# SUTI 1a Example #2

This patient has an NHSN CAUTI.

True



False

**This patient does not have an NHSN CAUTI**

- Positive urine culture on Day 10 sets the Infection Window Period (IWP) (Day 7- Day 13).
- The patient has no symptoms of SUTI, since fever is not high enough and frequency is not symptom when Foley present
- No matching blood culture to identify ABUTI

# SUTI 1a Example #3

- Day 1: Admit to ICU; Foley inserted
- Day 3: Foley removed; Transferred to medical ward
- Day 4: Patient complains of burning with urination
- Day 5: Urine culture collected and (+)  
>100,000 CFU/ml *E. coli* and  
>100,000 CFU/ml *C. albicans*
- Day 6: Antibiotics ordered for physician diagnosis UTI
- Day 8: Patient discharged to LTAC

## SUTI 1a Example #3

The patient's complaints of dysuria cannot be used to meet the NHSN SUTI 1a criteria, because they occurred the day after the Foley was removed.

True

✓ False

Dysuria can be used in this case to meet the SUTI 1a criteria because the Foley was removed the day before

# SUTI 1a Example #3

This patient has an NHSN CAUTI.



True

False

## **This patient has an NHSN CAUTI**

- Positive urine culture with at least 1 bacterium  $> 100,000$  CFU/ml on Day 5 sets the Infection Window Period (IWP) (Day 2- Day 8).
- Dysuria occurs for the first time in the IWP on Day 4 – date of event
- Foley had been in place  $> 2$  days and was removed the day before the date of event = CAUTI

# SUTI 1b (Non catheter-associated)

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

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\*

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

# SUTI 1b Example

- Patient age 47 admitted on 8/11 with history of *Pseudomonas aeruginosa* in wound on previous admission a month earlier and fever 101.7 F
- Urine culture on 8/13 shows 50,000 CFU/ml of *P. aeruginosa*, no fever
- On 8/15 patient spikes fever of 101.3 F and urine culture is collected which results in > 100,000 CFU/ml of *P. aeruginosa*

# SUTI 1b Example

| DAY           | SUTI Criterion   | LCBI Criterion | DAY |
|---------------|--|----------------|-----|
| 8/11<br>Admit | Hx of wound <i>Pseudomonas</i> on previous admission. Temp:101.7 |                | 1   |
| 8/12          | No fever   |                | 2   |
| 8/13          | urine culture 50,000 <i>P. aeruginosa</i> ; no fever             |                | 3   |
| 8/14          |  |                | 4   |
| 8/15          | temp 101.3, urine culture >100,000 <i>P. aeruginosa</i> .        |                | 5   |
| 8/16          |  |                | 6   |
| 8/17          |  |                | 7   |
| 8/18          |  |                | 8   |
| 8/19          |  |                | 9   |

Temp:101.7

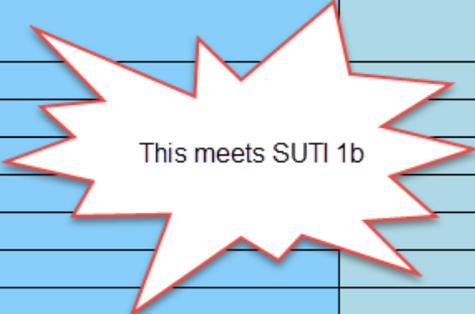


SUTI 1b criteria is met on 8/15

# SUTI 1b Example

Admit date: 8/11/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)                         | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|-------------------|-----------------------|---|---------------|--------------------------------|--------------------------------------|
| 2. - 8/12/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 3. - 8/13/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 4. - 8/14/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 5. - 8/15/2015    | ✓                     | ✓ Fever and >100,000 CFU/ml of <i>P. aeruginosa</i> | HAI           |                                |                                      |
| 6. - 8/16/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 7. - 8/17/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 8. - 8/18/2015    |                       | <input type="checkbox"/>                            |               |                                |                                      |
| 9. - 8/19/2015    |                       |   |               |                                |                                      |
| 10. - 8/20/2015   |                       |   |               |                                |                                      |
| 11. - 8/21/2015   |                       |   |               |                                |                                      |
| 12. - 8/22/2015   |                       |   |               |                                |                                      |
| 13. - 8/23/2015   |                       |   |               |                                |                                      |
| 14. - 8/24/2015   |                       |   |               |                                |                                      |
| 15. - 8/25/2015   |                       |   |               |                                |                                      |
| 16. - 8/26/2015   |                       |   |               |                                |                                      |
| 17. - 8/27/2015   |                       |   |               |                                |                                      |
| 18. - 8/28/2015   |                       |   |               |                                |                                      |



## SUTI 1b Example Rationale

- The 8/13 urine culture does not meet urine criterion so this urine sample is not used.
- The 8/15 urine culture meets criterion and sets the Infection Window Period (IWP is 8/12 – 8/18)
- The 8/11 fever on admission cannot be used because it does not fall within the IWP of the 8/15 positive urine culture.
- The 8/15 fever is in the IWP and is an acceptable element

# SUTI 2a ( $\leq$ 1-year-old)

Patient must meet 1, 2, and 3 below:

1. Patient is  $\leq$ 1 year of age (with<sup>‡</sup> or without an indwelling urinary catheter )
2. Patient has at least one of the following signs or symptoms:
  - fever ( $>38.0^{\circ}\text{C}$ )
  - hypothermia ( $<36.0^{\circ}\text{C}$ )
  - apnea\*
  - bradycardia\*
  - lethargy\*
  - vomiting\*
  - suprapubic tenderness\*
3. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacteria 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).

<sup>‡</sup> 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.

# Asymptomatic Bacteremic UTI (ABUTI)

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)
2. Patient has a urine culture with no more than two species of organisms, **at least one of which is a bacteria of  $\geq 10^5$  CFU/ml**
3. Patient has a positive blood culture **with at least one matching bacteria 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

\* 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.

# ABUTI

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

# ABUTI Example

May 15: 48-year-old male involved in motorcycle accident. Closed head injury, multiple fractures. Status post ORIF and evacuation of subdural hematoma. Foley catheter and left subclavian catheter in place on admission to LTAC for continued ventilator care. Lungs clear bilaterally.

May 21: T<sub>max</sub> 99.8°F, Lungs clear bilaterally. Foley remains in place draining, clear yellow urine. Patient remains ventilated, sputum production slightly increased.

# ABUTI Example

- May 22: Tmax 100.4°F; vent settings stable. No change to sputum production.
- May 23: Tmax 100.4°F; WBC 14,000/mcL. Lungs sounds clear; CXR clear, remains on vent; Foley and central line remain in place. Pan cultures sent. Empiric antibiotic treatment begun.
- May 24: Urine culture: >100,000 CFU/ml of *P. aeruginosa* and >100,000 CFU/ml of *C. glabrata*. Blood culture: *P. aeruginosa*. Physical assessment normal. No patient response to suprapubic or costovertebral angle palpation.

# ABUTI Example

| Date   | SUTI criterion  | Hospital Day |
|--------|---|--------------|
| May 15 | Admit with Foley catheter and central line  | 1            |
| May 21 | Tmax 99.8°F   | 7            |
| May 22 | Tmax 100.4°F  | 8            |
| May 23 | Tmax 100.4°F<br>Pan cultures sent.  | 9            |
| May 24 | Urine culture: >100,000 CFU/ml of P. aeruginosa and >100,000 CFU/ml of C. glabrata. Blood culture: P. aeruginosa.     | 10           |
|        |   |              |
|        |   |              |

# Does this patient have a UTI? If so, what type and pathogen(s) ?

1. No UTI.
2. Yes, ABUTI with *P. aeruginosa* and *C. glabrata*.
-  3. Yes, ABUTI with *P. aeruginosa*
4. Yes, SUTI 1a.

# ABUTI Example

Admit date: 5/15/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)   | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|-------------------|-----------------------|---|---------------|--------------------------------|--------------------------------------|
| 6. - 5/20/2015    |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 7. - 5/21/2015    |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 8. - 5/22/2015    |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 9. - 5/23/2015    | ✓                     | <input checked="" type="checkbox"/> Urine culture: >100,000 CFU/ml of <i>P. aeruginosa</i> and >100,000 CFU/ml of <i>C. glabrata</i> .<br>Blood culture: <i>P. aeruginosa</i> . | - HAI         |                                | Blood culture: <i>P. aeruginosa</i>  |
| 10. - 5/24/2015   |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 11. - 5/25/2015   |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 12. - 5/26/2015   |                       | <input type="checkbox"/> no UTI s/s   | -             |                                |                                      |
| 13. - 5/27/2015   |                       |   | -             |                                |                                      |
| 14. - 5/28/2015   |                       |   | -             |                                |                                      |
| 15. - 5/29/2015   |                       |   | -             |                                |                                      |
| 16. - 5/30/2015   |                       |   | -             |                                |                                      |
| 17. - 5/31/2015   |                       |   | -             |                                |                                      |
| 18. - 6/1/2015    |                       |   | -             |                                |                                      |
| 19. - 6/2/2015    |                       |   | -             |                                |                                      |
| 20. - 6/3/2015    |                       |   | -             |                                |                                      |
| 21. - 6/4/2015    |                       |   | -             |                                |                                      |
| 22. - 6/5/2015    |                       |   | -             |                                |                                      |

This meets ABUTI with *P. Aeruginosa*

*C. glabrata* is an excluded pathogen for UTI

# ABUTI Example

## Rationale

- Patient without UTI criteria symptoms in the presence of blood culture matching urine culture ( $\geq 100,000$  CFU/ml) both within the infection window period = ABUTI.
- *Candida* sp. is not a pathogen for UTI therefore not documented in pathogen list.
- Note that fever must be GREATER than 100.4° F to meet the fever requirements for NHSN definitions.

# COMMON MISCONCEPTIONS

# Misconception #1: Fever Can Be Attributed to Another Cause

*\*With no other recognized cause*

**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.*

## Misconception #2: Positive Culture on Admission = Present on Admission (POA)

An infection is considered Present on Admission (POA) if the **date of event** of the NHSN site-specific infection criterion occurs during the POA time period, which is defined as

- the day of admission to an inpatient location (calendar day 1)
- the 2 days before admission
- the calendar day after admission

# Healthcare-associated (HAI)

**Date of Event** of the NHSN site-specific infection criterion occurs on or after the 3rd calendar day of admission to an inpatient location

# POA or HAI Example #1

- 45 year old female was transferred to LTAC from an outside hospital on 8/1/15 with recent intracranial hemorrhage. Indwelling urinary catheter has been in place prior to admission to the LTAC.
- A urine culture  $>100,000$  CFU/ml *E coli* is collected on hospital day two
- Cloudy urine is observed and there is another culture collected on hospital day nine which results as  $>100,000$  CFU/ml *E coli*
- Fever  $>38.0^{\circ}\text{C}$  on 8/10

# POA or HAI Example 1

| DAY        | SUTI Criterion                                  | LCBI Criterion  | DAY |
|------------|---|---|-----|
| 8/1<br>Adm |   |   | 1   |
| 8/2        | Positive urine culture >100,000<br>CFU/ml Ecoli |  | 2   |
| 8/3        |   |   | 3   |
| 8/4        |   |   | 4   |
| 8/5        |   |   | 5   |
| 8/6        |   |   | 6   |
| 8/7        |   |   | 7   |
| 8/8        |   |   | 8   |
| 8/9        | Positive urine culture >100,000<br>CFU/ml Ecoli |   | 9   |
| 8/10       | Fever >38.0°C                                   |   | 10  |
| 8/11       |   |   | 11  |
| 8/12       |   |   | 12  |
| 8/13       |   |   | 13  |
| 14         |   |   | 14  |
| 15         |   |   | 15  |
| 16         |   |   | 16  |
| 17         |   |   | 17  |
| 18         |   |   | 18  |
| 19         |   |   | 19  |

# POA or HAI Example #1 Answer

## no UTI signs/symptoms

This is not a POA event

Admit date: 8/1/2015

| Hospital Day/Date          | First Diagnostic Test | Infection Window Period (*)  |
|----------------------------|-----------------------|--|
| 7/30/2015                  |                       | <input type="checkbox"/> no UTI signs/symptoms   |
| 7/31/2015                  |                       | <input type="checkbox"/> no UTI signs/symptoms   |
| 1. - 8/1/2015 - Admit Date |                       | <input type="checkbox"/> no UTI signs/symptoms   |
| 2. - 8/2/2015              | ✓                     | <input checked="" type="checkbox"/> Urine culture positive for E. coli > ≥100,000 CFU/ml |
| 3. - 8/3/2015              |                       | <input type="checkbox"/> no UTI signs/symptoms   |
| 4. - 8/4/2015              |                       | <input type="checkbox"/> no UTI signs/symptoms   |
| 5. - 8/5/2015              |                       | <input type="checkbox"/> no UTI signs/symptoms   |

# POA or HAI Example #1

| DAY        | SUTI Criterion   | LCBI Criterion  | DAY |
|------------|--|---|-----|
| 8/1<br>Adm |  |   | 1   |
| 8/2        | Positive urine culture >100,000<br>CFU/ml <i>Ecoli</i> |   | 2   |
| 8/3        |  |   | 3   |
| 8/4        |  |   | 4   |
| 8/5        |  |   | 5   |
| 8/6        |  |   | 6   |
| 8/7        |  |   | 7   |
| 8/8        |  |   | 8   |
| 8/9        | Positive urine culture >100,000<br>CFU/ml <i>Ecoli</i> |  | 9   |
| 8/10       | Fever >38.0°C  |   | 10  |
| 8/11       |  |   | 11  |
| 8/12       |  |   | 12  |
| 8/13       |  |   | 13  |
| 14         |  |   | 14  |
| 15         |  |   | 15  |
| 16         |  |   | 16  |
| 17         |  |   | 17  |
| 18         |  |   | 18  |
| 19         |  |   | 19  |

# POA or HAI Example #1 Answer

## Positive urine culture and fever later in hospitalization

Admit date: 8/1/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)  | Date of Event * | Repeat Infection Timeframe (*) |
|-------------------|-----------------------|--|-----------------|--------------------------------|
| 6. - 8/6/2015     |                       | <input type="checkbox"/>   | -               |                                |
| 7. - 8/7/2015     |                       | <input type="checkbox"/>   | -               |                                |
| 8. - 8/8/2015     |                       | <input type="checkbox"/>   | -               |                                |
| 9. - 8/9/2015     | ✓                     | <input checked="" type="checkbox"/> positive urine culture for E. coli ≥100,000 CFU/ml | - HAI           |                                |
| 10. - 8/10/2015   |                       | <input checked="" type="checkbox"/> Fever >38.0°C                                      | -               |                                |
| 11. - 8/11/2015   |                       | <input type="checkbox"/>   | -               |                                |
| 12. - 8/12/2015   |                       | <input type="checkbox"/>   | -               |                                |
| 13. - 8/13/2015   |                       |  | -               |                                |
| 14. - 8/14/2015   |                       |  | -               |                                |
| 15. - 8/15/2015   |                       |  | -               |                                |
| 16. - 8/16/2015   |                       |  | -               |                                |
| 17. - 8/17/2015   |                       |  | -               |                                |
| 18. - 8/18/2015   |                       |  | -               |                                |
| 19. - 8/19/2015   |                       |  | -               |                                |
| 20. - 8/20/2015   |                       |  | -               |                                |
| 21. - 8/21/2015   |                       |  | -               |                                |
| 22. - 8/22/2015   |                       |  | -               |                                |

This is a new event. Does not relate back to E.coli positive urine culture on admission

# POA or HAI #1 Rationale

- 8/2 Positive Urine Culture during the POA timeframe without UTI signs or symptoms in the IWP is not an event; therefore is not POA
- 8/9 Positive urine culture and 8/10 fever later in hospitalization meet criteria, occur in the HAI time period, and is a new event
- This does not relate back to the positive urine culture on admission

# What IF?

- What if on 8/17 another urine culture is collected and is positive for  $> 100,000$  CFU/ml of *Acinetobacter baumannii*?

# What IF? Answer

Admit date: 8/1/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)  | Date of Event | Repeat Infection Timeframe (*)   |
|-------------------|-----------------------|--|---------------|--|
| 6. - 8/6/2015     |                       | <input type="checkbox"/>   | -             |  |
| 7. - 8/7/2015     |                       | <input type="checkbox"/>   | -             |  |
| 8. - 8/8/2015     |                       | <input type="checkbox"/>   | -             |  |
| 9. - 8/9/2015     | ✓                     | <input checked="" type="checkbox"/> urine culture > Ecoli > 100,000 CFU/ml | - HAI         | <div data-bbox="1458 649 1806 921" style="border: 2px solid red; border-radius: 15px; padding: 10px; display: inline-block;">                     urine culture falls within the RIT and pathogen is added to the 8/9 event                 </div> |
| 10. - 8/10/2015   |                       | <input checked="" type="checkbox"/> Fever >38.0°C                          | -             |  |
| 11. - 8/11/2015   |                       | <input type="checkbox"/>   | -             |  |
| 12. - 8/12/2015   |                       | <input type="checkbox"/>   | -             |  |
| 13. - 8/13/2015   |                       |  | -             |  |
| 14. - 8/14/2015   |                       |  | -             |  |
| 15. - 8/15/2015   |                       |  | -             |  |
| 16. - 8/16/2015   |                       |  | -             |  |
| 17. - 8/17/2015   |                       |  | -             |  |
| 18. - 8/18/2015   |                       |  | -             |  |
| 19. - 8/19/2015   |                       |  | -             | Acinetobacter baumannii  |
| 20. - 8/20/2015   |                       |  | -             |  |
| 21. - 8/21/2015   |                       |  | -             |  |
| 22. - 8/22/2015   |                       |  | -             |  |

# What IF? RIT Rationale

- The 8/17 urine culture falls within the RIT
- No new infections of the same type are reported
- Additional pathogens identified are added to the event

## **Misconception # 3 UTI signs or symptoms on admission = POA**

- UTI s/s must occur within the infection window period of the positive urine culture
- Date of event must occur within the POA time period

# POA or HAI Example #2

- Patient admitted 8/1 post CVA with Foley catheter in place and complains of suprapubic tenderness
- On 8/10 again complains of suprapubic tenderness
- On 8/11 a positive urine culture  $> 100,000$  CFU/ml *E. coli*

## POA or HAI Example #2

| Date | SUTI criterion  | Hospital Day |
|------|---|--------------|
| 8/1  | Admit with Foley catheter in place<br>c/o suprapubic tenderness | 1            |
| 8/10 | c/o suprapubic tenderness                                       | 10           |
| 8/11 | positive urine culture > 100,000<br>CFU/ml <i>Ecoli</i>         | 11           |
|      |   |              |
|      |   |              |
|      |   |              |
|      |   |              |
|      |   |              |

# POA or HAI Example # 2 Answer

## UTI s/s on admission not always POA

suprapubic tenderness

1

Admit date: 8/1/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)  | Date of Event | Repeat Infection Timeframe (*) |
|-------------------|-----------------------|--|---------------|--------------------------------|
| 8. - 8/8/2015     |                       | <input type="checkbox"/>   | -             |                                |
| 9. - 8/9/2015     |                       | <input type="checkbox"/>   | -             |                                |
| 10. - 8/10/2015   |                       | <input checked="" type="checkbox"/> suprapubic tenderness                  | - HAI         |                                |
| 11. - 8/11/2015   | ✓ 2                   | <input checked="" type="checkbox"/> Urine culture > 100,000 CFU/ml E. coli |               |                                |
| 12. - 8/12/2015   |                       | <input type="checkbox"/>   |               |                                |
| 13. - 8/13/2015   |                       | <input type="checkbox"/>   |               |                                |
| 14. - 8/14/2015   |                       | <input type="checkbox"/>   |               |                                |
| 15. - 8/15/2015   |                       |  |               |                                |
| 16. - 8/16/2015   |                       |  |               |                                |
| 17. - 8/17/2015   |                       |  |               |                                |
| 18. - 8/18/2015   |                       |  |               |                                |
| 19. - 8/19/2015   |                       |  |               |                                |
| 20. - 8/20/2015   |                       |  |               |                                |
| 21. - 8/21/2015   |                       |  |               |                                |
| 22. - 8/22/2015   |                       |  |               |                                |
| 23. - 8/23/2015   |                       |  |               |                                |

3

This meets HAI CAUTI

# **POA or HAI Example # 2 Rationale**

## **UTI s/s on admission not always POA**

- All elements must occur in the IWP
- Cannot use the 8/1 UTI symptom of suprapubic tenderness because it does not occur in the IWP
- The 8/11 urine culture sets the IWP
- The 8/10 UTI symptom of suprapubic tenderness can be used because it occurs in the IWP

## POA or HAI

### Example # 3

- ❑ 4/15 Admit Patient age 73 for pneumonia, Fever 101, Foley Catheter (FC) inserted
- ❑ 4/16 Urine culture positive for 100,000 CFU/ml *E. Coli*
- ❑ 4/17 – 4/19 no UTI symptoms
- ❑ 4/20 Patient complains of suprapubic tenderness and Urine culture positive for > 100,000 CFU/ml *E. Coli*
  
- ❑ **QUESTION: With positive urine culture on day 2, is this POA?**

## POA or HAI Example #3

| Date | SUTI Criterion   | Hospital Day |
|------|--|--------------|
| 4/15 | Age 73, fever, FC inserted   | 1            |
| 4/16 | Urine culture positive for <i>E. Coli</i> 100,000 CFU/ml                             | 2            |
| 4/20 | suprapubic tenderness and Urine culture positive for > 100,000 CFU/ml <i>E. Coli</i> | 6            |
|      |  |              |



# POA or HAI Example # 3

## Fever and age

Fever cannot be used in patient > 65 years when FC in < 2 days

|        |              |  | Admit 4/15      |               |                                      |
|--------|--------------|--|-----------------|---------------|--------------------------------------|
| Date   | Hospital Day | Infection Window Period (IWP)          | UTI Symptoms    | Date of Event | Comments                             |
| 13-Apr | -2           | IWP is 4/13 - 4/19                     |                 |               | Age 73<br>HCW documented s/s of UTI? |
| 14-Apr | -1           |  |                 |               | HCW documented s/s of UTI?           |
| 15-Apr | 1            |  | Fever > 100.4 F |               | FC inserted, Age 73                  |
| 16-Apr | 2            | Urine Culture<br>E Coli 100,000 CFU/ml |                 |               |                                      |
| 17-Apr | 3            |  |                 |               |                                      |
| 18-Apr | 4            |  |                 |               |                                      |
| 19-Apr | 5            |  |                 |               |                                      |

No Event

This does not meet POA UTI

## **POA or HAI Example # 3 *Continued***

- ❑ **What about the 4/20 urine culture?**

## POA or HAI Example # 3 Continued

| Date | SUTI Criterion   | Hospital Day |
|------|--|--------------|
| 4/15 | Age 73, fever, FC inserted   | 1            |
| 4/16 | Urine culture positive for <i>E. Coli</i> 100,000 CFU/ml                             | 2            |
| 4/20 | suprapubic tenderness and Urine culture positive for > 100,000 CFU/ml <i>E. Coli</i> | 6            |
|      |  |              |

This meets  
SUTI 1a:  
CAUTI  
4/20 DOE  
and is HAI

# POA or HAI Example # 3 Answer Continued

Move to the next positive urine culture

| Date   | Hospital Day | Infection Window Period (IWP)          | UTI Symptoms             | Date of Event | Repeat Infection Timeframe (RIT) | Secondary BSI Attribution Period |
|--------|--------------|--|--------------------------|---------------|----------------------------------|----------------------------------|
| 17-Apr | 3            | IWP is 4/17 - 4/23                     |                          |               |                                  |                                  |
| 18-Apr | 4            |  |                          |               |                                  |                                  |
| 19-Apr | 5            |  |                          |               |                                  |                                  |
| 20-Apr | 6            | Urine Culture<br>E Coli 100,000 CFU/ml | Suprapubic<br>tenderness | HAI           | SUTI 1a: CAUTI                   |                                  |
| 21-Apr | 7            |  |                          |               |                                  |                                  |
| 22-Apr | 8            |  |                          |               |                                  |                                  |
| 23-Apr | 9            |  |                          |               |                                  |                                  |
| 24-Apr | 10           |  |                          |               |                                  |                                  |
| 25-Apr | 11           |  |                          |               |                                  |                                  |
| 26-Apr | 12           |  |                          |               |                                  |                                  |
| 27-Apr | 13           |  |                          |               |                                  |                                  |
| 28-Apr | 14           |  |                          |               |                                  |                                  |
| 29-Apr | 15           |  |                          |               |                                  |                                  |
| 30-Apr | 16           |  |                          |               |                                  |                                  |
| 1-May  | 17           |  |                          |               |                                  |                                  |
| 2-May  | 18           |  |                          |               |                                  |                                  |
| 3-May  | 19           |  |                          |               |                                  |                                  |

# POA or HAI

## Example # 3 Rationale

- The fever on date of admission cannot be used because this patient is over 65 years and Foley Catheter has been in place < 2 days. There are no other UTI s/s during the IWP so this is not an infection event.
- The UTI symptom of suprapubic tenderness on 4/20 occurs in the IWP of the 4/20 urine culture and can be used as an element to meet the definition

# Transfer rule

- *Transfer Rule*: If the **date of event** for a CAUTI is on the date of transfer or discharge, or the next day, the infection is attributed to the transferring/discharging location
- Receiving facilities should share information about such HAIs with the transferring location or facility to enable reporting

# Transfer rule case study

- Mr. Jones has been cared for in an inpatient acute care hospital (ACH).
- He is now transferred on October 4 to your LTAC hospital with a Foley catheter which has been in place for 2 weeks.
- Mr. Jones complains of suprapubic pain upon admission to your facility. Urine cultures collected on admission are positive for 100,000 CFU/ml of *E. coli*

# Which of the following is most accurate?

1. Mr Jones does not have an NHSN CAUTI.
2. Mr Jones has a CAUTI attributed to the new hospital.
- 3  Mr Jones has a CAUTI attributable to the previous admission and POA to the LTAC.

# Transfer Rule

Admit date: 10/4/2015

| Hospital Day/Date           | First Diagnostic Test                          | Infection Window Period (*)  | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|-----------------------------|--|--|---------------|--------------------------------|--------------------------------------|
| 10/2/2015                   | DOE is on day of transfer so attributed to ACH | <input type="checkbox"/>   | -             |                                |                                      |
| 10/3/2015                   |  | <input type="checkbox"/>   | -             |                                |                                      |
| 1. - 10/4/2015 - Admit Date | ✓  | <input checked="" type="checkbox"/> Urine culture > 100,000 <i>E. coli</i><br> <br>suprapubic pain | POA           |                                |                                      |
| 2. - 10/5/2015              |  | <input type="checkbox"/>   | -             |                                |                                      |
| 3. - 10/6/2015              |  | <input type="checkbox"/>   | -             |                                |                                      |
| 4. - 10/7/2015              |  | <input type="checkbox"/>   | -             |                                |                                      |
| 5. - 10/8/2015              |  |  | -             |                                |                                      |
| 6. - 10/9/2015              |  |  | -             |                                |                                      |
| 7. - 10/10/2015             |  |  | -             |                                |                                      |
| 8. - 10/11/2015             |  |  | -             |                                |                                      |
| 9. - 10/12/2015             |  |  | -             |                                |                                      |
| 10. - 10/13/2015            |  |  | -             |                                |                                      |
| 11. - 10/14/2015            |  |  | -             |                                |                                      |
| 12. - 10/15/2015            |  |  | -             |                                |                                      |
| 13. - 10/16/2015            |  |  | -             |                                |                                      |
| 14. - 10/17/2015            |  |  | -             |                                |                                      |

POA to LTAC RIT is set



# Transfer Rule Rationale

- Day of admission presence of UTI symptom: suprapubic tenderness and positive urine culture  $\geq 10^5$
- Date of event = day of transfer
- Transfer Rule: attribute to transferring location because the date of event = day of transfer
- POA to LTAC and RIT is set

# Case Studies

## Investigating a Positive Urine Culture as Possible CAUTI

|    |   |
|----|---|
| 1. | Determine the date of the diagnostic test that is an element of the site-specific 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. | Use 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 or discharge, or the next day, the infection is attributed to the transferring/discharging location. |

# Case 1

- February 1, hospital day 4. Foley has been in place for >2 days and patient spikes temp of >38.0°C. Urine culture collected and positive for  $10^5$  CFU/ml of *Klebsiella pneumoniae* and *Citrobacter freundii* (2 species)
- February 3, urine culture collected and positive for  $10^5$  CFU/ml *Klebsiella oxytoca*

# Urine culture with no more than two species of organisms

| Date  | UTI criterion  | Hospital Day |
|-------|--|--------------|
| Feb 1 | FC > 2 days, fever, Urine culture collected and positive for $10^5$ CFU/ml of <i>Klebsiella pneumoniae</i> and <i>Citrobacter freundii</i> | 4            |
| Feb 3 | urine culture collected and positive for $10^5$ CFU/ml <i>Klebsiella oxytoca</i>   | 6            |
|       |  |              |
|       |  |              |

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

- ✓ A. True
- B. False

This patient meets criteria for CAUTI on Feb 1 with fever, positive urine culture  $\geq 100,000$  CFU/ml of not more than 2 organisms.

Foley had been in place  $> 2$  days therefore= CAUTI

The Feb 3 positive urine culture  $\geq 100,000$  CFU/ml falls within the RIT and pathogen is added to the Feb 1 event

**NOTE: Do NOT total # organisms from multiple urine cultures.**

## Case 2

- Day 1: 58-year-old patient is admitted to LTAC from ACH for ventilator care with an indwelling urinary catheter in place.
- 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?

1. Yes, healthcare-associated UTI but not a CAUTI because catheter had not been in for > 2 calendar days
-  2. No, it is a UTI that is POA
3. Yes, CAUTI, SUTI criterion 1a

# Case 2 Answer

## POA UTI

Admit date: 9/1/2015

| Hospital Day/Date          | First Diagnostic Test | Infection Window Period (*)   | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|----------------------------|-----------------------|---|---------------|--------------------------------|--------------------------------------|
| 8/31/2015                  |                       | <input type="checkbox"/>  | -             |                                |                                      |
| 1. - 9/1/2015 - Admit Date |                       | <input type="checkbox"/>  | -             |                                |                                      |
| 2. - 9/2/2015              |                       | <input checked="" type="checkbox"/> Fever                                       | - POA         |                                |                                      |
| 3. - 9/3/2015              | ✓                     | <input checked="" type="checkbox"/> urine culture >100,000 <i>P. aeruginosa</i> |               |                                |                                      |
| 4. - 9/4/2015              |                       | <input type="checkbox"/>  |               |                                |                                      |
| 5. - 9/5/2015              |                       | <input type="checkbox"/>  |               |                                |                                      |
| 6. - 9/6/2015              |                       | <input type="checkbox"/>  |               |                                |                                      |
| 7. - 9/7/2015              |                       |   |               |                                |                                      |
| 8. - 9/8/2015              |                       |   |               |                                |                                      |
| 9. - 9/9/2015              |                       |   |               |                                |                                      |
| 10. - 9/10/2015            |                       |   |               |                                |                                      |
| 11. - 9/11/2015            |                       |   |               |                                |                                      |
| 12. - 9/12/2015            |                       |   |               |                                |                                      |
| 13. - 9/13/2015            |                       |   |               |                                |                                      |
| 14. - 9/14/2015            |                       |   |               |                                |                                      |
| 15. - 9/15/2015            |                       |   |               |                                |                                      |

POA to LTAC, RIT is set

# Case 2 Rationale

- Date that the first element of the UTI criterion occurred during the infection window period was on Day 2 of hospitalization.
- Date of event = Day 2. This is within the POA time period.

# Does this meet the Transfer rule?



- Yes
- No

# Case 2 Transfer rule

Admit date: 9/1/2015

| Hospital Day/Date          | First Diagnostic Test                          | Infection Window Period (*)   | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|----------------------------|--|---|---------------|--------------------------------|--------------------------------------|
| 8/31/2015                  | DOE is the day after transfer attribute to ACH |   | -             |                                |                                      |
| 1. - 9/1/2015 - Admit Date |  |   | -             |                                |                                      |
| 2. - 9/2/2015              |  | <input checked="" type="checkbox"/> Fever                                       | - POA         |                                |                                      |
| 3. - 9/3/2015              | ✓  | <input checked="" type="checkbox"/> urine culture >100,000 <i>P. aeruginosa</i> | -             |                                |                                      |
| 4. - 9/4/2015              |  | <input type="checkbox"/>  | -             |                                |                                      |
| 5. - 9/5/2015              |  | <input type="checkbox"/>  | -             |                                |                                      |
| 6. - 9/6/2015              |  | <input type="checkbox"/>  | -             |                                |                                      |
| 7. - 9/7/2015              |  |   | -             |                                |                                      |
| 8. - 9/8/2015              |  |   | -             |                                |                                      |
| 9. - 9/9/2015              |  |   | -             |                                |                                      |
| 10. - 9/10/2015            |  |   | -             |                                |                                      |
| 11. - 9/11/2015            |  |   | -             |                                |                                      |
| 12. - 9/12/2015            |  |   | -             |                                |                                      |
| 13. - 9/13/2015            |  |   | -             |                                |                                      |
| 14. - 9/14/2015            |  |   | -             |                                |                                      |
| 15. - 9/15/2015            |  |   | -             |                                |                                      |

POA to LTAC, RIT is set

# Transfer rule Rationale

- The date of event is the day after transfer from the ACH so this event is attributed to the ACH.
- Receiving facilities should share information about such HAIs with the transferring location or facility to enable reporting
- This is POA to the LTAC and RIT is set

# Case 3

## UTI s/s

- Admit 77 year old female on July 1 for Heart Failure, placed on Lasix, Foley inserted
- July 2 patient complains of dysuria
- July 4 urine culture is positive for *E. Coli* > 100,000 CFU/ml
- July 5 Fever > 38 ° C

### QUESTION:

What is the UTI determination?

# Case 3 Answer

## UTI s/s

Dysuria cannot be used when FC IN PLACE

This meets SUTI 1a:  
CAUTI  
7/4 DOE  
HAI

CASE SUMMARY  
77 yr.  
7/1 admit, FC inserted,  
7/2 dysuria  
7/4 + Urine culture  
7/5 Fever > 100.4  
IWP is 7/1- 7/7

Admit date: 7/1/2015

| Hospital Day/Date          | First Diagnostic Test | Infection Window Period<br>(editable column)                | Date of Event | Repeat Infection Timeframe<br>(editable column) | Secondary BSI Attribution Period<br>(editable column) |
|----------------------------|-----------------------|---|---------------|---|---|
| 1. - 7/1/2015 - Admit Date |                       | <input type="checkbox"/>                                    | -             |   |   |
| 2. - 7/2/2015              |                       | <input checked="" type="checkbox"/> Dysuria                 | -             |   |   |
| 3. - 7/3/2015              |                       | <input type="checkbox"/>                                    | -             |   |   |
| 4. - 7/4/2015              | ✓                     | <input checked="" type="checkbox"/> urine culture > 100,000 | - HAI         |   |   |
| 5. - 7/5/2015              |                       | <input checked="" type="checkbox"/> Fever > 100.4           | -             |   |   |
| 6. - 7/6/2015              |                       | <input type="checkbox"/>                                    | -             |   |   |
| 7. - 7/7/2015              |                       | <input type="checkbox"/>                                    | -             |   |   |
| 8. - 7/8/2015              |                       |   | -             |   |   |
| 9. - 7/9/2015              |                       |   | -             |   |   |
| 10. - 7/10/2015            |                       |   | -             |   |   |
| 11. - 7/11/2015            |                       |   | -             |   |   |
| 12. - 7/12/2015            |                       |   | -             |   |   |
| 13. - 7/13/2015            |                       |   | -             |   |   |
| 14. - 7/14/2015            |                       |   | -             |   |   |
| 15. - 7/15/2015            |                       |   | -             |   |   |
| 16. - 7/16/2015            |                       |   | -             |   |   |
| 17. - 7/17/2015            |                       |   | -             |   |   |

# Case 3 Rationale

## UTI s/s

- Dysuria on 7/2 cannot be used because the patient complained of the symptom while the Foley Catheter was in place
- The next UTI sign/symptom in the IWP is fever on July 5. This fever can be used in this patient > 65 years because the FC was in place > 2 days

# Case 4

## Foley removed

- The patient is a 49 year old female that was transferred to LTAC on a ventilator from an outside hospital on 10/6/15 with Foley in place.
- Foley catheter discontinued on hospital day four with positive culture on hospital day six (two days after the Foley catheter was removed).
- Is this a CAUTI?

# Case 4

| Hospital Day | Date  | Foley              | T <sub>max</sub> | Notes   |
|--------------|-------|--------------------|------------------|---|
| 1            | 10/6  | Yes                | 100.3            | Transferred from outside hospital – Foley Catheter in place.  |
| 2            | 10/7  | Yes                | 100.7            | Patient Extubated   |
| 3            | 10/8  | Yes                | 100.9            |   |
| 4            | 10/9  | Foley Discontinued | 100              | Incontinent    |
| 5            | 10/10 | No                 | 99.6             |   |
| 6            | 10/11 | No                 | 99.4             | Urine culture >100,000 CFU/mL <i>Proteus mirabilis</i> & 50,000 CFU/mL <i>E. coli</i>  |
| 7            | 10/12 | No                 | 99.6             |   |
| 8            | 10/13 | No                 | 98.7             | Patient discharged to rehab. Voiding OK.  |

# Case 4 Answer

## Foley removed

Admit date: 10/6/2015

| Hospital Day/Date | First Diagnostic Test | Infection Window Period (*)  | Date of Event | Repeat Infection Timeframe (*) | Secondary BSI Attribution Period (*) |
|-------------------|-----------------------|--|---------------|--------------------------------|--------------------------------------|
| 3. - 10/8/2015    |                       | <input checked="" type="checkbox"/> Fever 100.9 F  | - HAI         |                                |                                      |
| 4. - 10/9/2015    |                       | <input type="checkbox"/> Indwelling Foley Discontinued                                       | -             |                                |                                      |
| 5. - 10/10/2015   |                       | <input type="checkbox"/>   | -             |                                |                                      |
| 6. - 10/11/2015   | ✓                     | <input checked="" type="checkbox"/> positive urine culture >100,000 CFU/ml Proteus mirabilis | -             |                                |                                      |
| 7. - 10/12/2015   |                       | <input type="checkbox"/>   | -             |                                |                                      |
| 8. - 10/13/2015   |                       | <input type="checkbox"/>   | -             |                                |                                      |
| 9. - 10/14/2015   |                       | <input type="checkbox"/>   | -             |                                |                                      |
| 10. - 10/15/2015  |                       |  | -             |                                |                                      |
| 11. - 10/16/2015  |                       |  | -             |                                |                                      |
| 12. - 10/17/2015  |                       |  | -             |                                |                                      |
| 13. - 10/18/2015  |                       |  | -             |                                |                                      |
| 14. - 10/19/2015  |                       |  | -             |                                |                                      |
| 15. - 10/20/2015  |                       |  | -             |                                |                                      |
| 16. - 10/21/2015  |                       |  | -             |                                |                                      |

This meets CAUTI

# Case 4 Rationale

## Foley removed

- Even though the positive urine culture occurred 2 days after Foley catheter was removed, the 10/8 fever was the first element in the Infection Window Period and is the date of event
- On the date of event, the Foley catheter was in place > 2 days

# Summary

- Reviewed the major changes and NHSN UTI definitions for 2015
- Discussed the common misconceptions
- Made correct UTI determinations through case studies

**Questions?**

# For More Information.....

- Please see the following for more in-depth guidance
  - NHSN Definition and Rules Changes for 2015
  - CAUTI: Definition Changes for 2015
  - Device-associated Denominator Sampling for 2015

Available at <http://www.cdc.gov/nhsn/acute-care-hospital/CAUTI/index.html>

UTI protocol available at

<http://www.cdc.gov/nhsn/PDFs/pscManual/7pscCAUTIcurrent.pdf>

# Available Training

- NHSN Enrollment & Facility Set-up
- Overview of the Patient Safety Component, Device-associated module
- Data Entry, Surveillance, Analysis, Import, and Customization
- Introduction to the Device-associated Module (Training Course with quiz)
- Catheter-associated Urinary Tract Infection (CAUTI) (Training Course with quiz)
- <http://www.cdc.gov/nhsn/training/>



Questions: email user support  
[nhsn@cdc.gov](mailto:nhsn@cdc.gov)

NHSN Website:  
<http://www.cdc.gov/nhsn/>