



Laying a Strong Foundation for NHSN Surveillance and Device-associated Infections

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Objectives

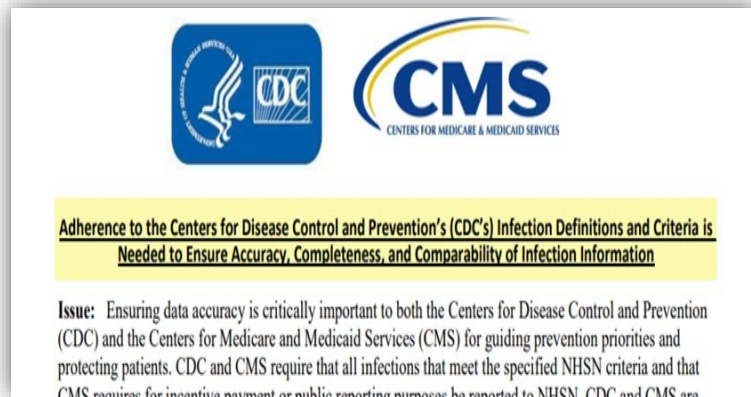
By the end of this presentation, you will be able to:

- Understand the concepts outlined in the NHSN Patient Safety Component Chapter 2 “Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance”
- Apply NHSN surveillance concepts/criteria to clinical case scenarios
- Improve accuracy/consistency of reporting of healthcare-associated infection (HAI) data

Pre-Foundation Groundwork

Facilities Reporting to NHSN

- Required to follow NHSN methods and use NHSN definitions and criteria
- Expected to accurately apply and report events that meet NHSN criteria



The screenshot shows the NHSN Patient Safety Component (PSC) interface. The header reads "National Healthcare Safety Network (NHSN)" and "CDC > NHSN Home". The left sidebar contains navigation options: NHSN Home, NHSN Login, About NHSN, Enroll Facility Here, CMS Requirements, Change NHSN Facility Admin, Resources by Facility, Patient Safety Component (highlighted), Annual Surveys, Locations & Monthly Reporting Plans, Analysis Resources, Antimicrobial Use & Resistance, BSI (CLABSI), CLIP, MDRO & CDI, and PedVAE. The main content area is titled "Patient Safety Component (PSC)" and includes a "Print" link and a description: "Use the Patient Safety Component (PSC) to access modules that focus on process measures and events associated with medical devices, surgical procedures, antimicrobial agents used during the provision of healthcare, and multidrug-resistant organisms." Below this is a section for "Facilities Reporting in PSC" with links for Acute Care / Critical Access Hospitals, Long-term Acute Care Hospitals, Inpatient Rehabilitation Facilities, and Inpatient Psychiatric Facilities. A "PSC Manual" section lists the 2023 and 2022 PSC Manuals (PDF - 8 MB). A right sidebar titled "New Users" includes links for Enroll New Facility, PSC Training, and Educational Roadmap. A bottom right box contains an information icon and a link to "Annual Facility Surveys, Locations & Monthly Reporting Plans". A purple arrow points from the "Patient Safety Component" menu item to the main content area, and a blue arrow points from the "CLIP" menu item to the 2023 PSC Manual link.

Patient Safety Component Manual

- Chapter 2: Identifying Healthcare-associated Infections for NHSN Surveillance
 - Device-associated infections
 - CLABSI (Chapter 4)
 - CAUTI (Chapter 7)
 - Pneumonia (Chapter 6)
 - Specific Types of Infections (Chapter 17)
- ***Exception:** SSI (Chapter 9), VAE (Chapter 10), PedVAE (Chapter 11), LabID (Chapter 12)

National Healthcare Safety Network (NHSN) Patient Safety Component Manual

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Chapter 1: National Healthcare Safety Network (NHSN) Overview
Chapter 2: Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance
Chapter 3: Patient Safety Monthly Reporting Plan and Annual Surveys
Chapter 4: Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and non- central line-associated Bloodstream Infection)
Chapter 5: Central Line Insertion Practices (CLIP) Adherence Monitoring
Chapter 6: Pneumonia (Ventilator-associated [VAP] and non-ventilator-associated Pneumonia [PNEU]) Event
Chapter 7: Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and non- catheter-associated Urinary Tract Infection [UTI]) and Other Urinary System Infection (USI) Events
Chapter 9: Surgical Site Infection (SSI) Event
Chapter 10: Ventilator-Associated Event (VAE)
Chapter 11: Pediatric Ventilator-Associated Event (pedVAE)
Chapter 12: Multidrug-Resistant Organism & Clostridium difficile Infection (MDRO/CDI) Module
Chapter 14: Antimicrobial Use and Resistance (AUR)
Chapter 15: CDC Locations and Descriptions and Instructions for Mapping Patient Care Locations
Chapter 16: General Key Terms
Chapter 17: CDC/NHSN Surveillance Definitions for Specific Types of Infections

Excluded Organisms

- Rarely or not known to be causes of healthcare-associated infections
 - Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis
- Latent infections
 - For example, but not limited to herpes, shingles, syphilis, or tuberculosis
- Individual event protocols for pathogen exclusions specific to the event

The following excluded organisms cannot be used to meet the UTI definition:

- Any *Candida* species as well as a report of “yeast” that is not otherwise specified
- mold
- dimorphic fungi or
- parasites

NHSN Organism List

It is possible that your laboratory may identify an organism that cannot be found when referencing the NHSN Organism List. DO NOT interpret the absence of an organism to mean the event is not reportable. If you have an organism which is not found on the NHSN Organism List, please contact us at nhsn@cdc.gov for guidance on appropriate reporting.

NHSN Code	NHSN Organism Category	NHSN Display Name	SNOMED Preferred Term	SNOMED Code
ABISP	ALL/MBI/UTI	Abiotrophia	Abiotrophia	115161005
GRADJ*2	ALL/MBI/UTI	Abiotrophia adiacens	Granulicatella adiacens	113713009
GRADJ*3	ALL/MBI/UTI	Abiotrophia adjacens	Granulicatella adiacens	113713009
STRDF	ALL/MBI/UTI	Abiotrophia defectiva	Abiotrophia defectiva	113714003
GRANELEG*1	ALL/MBI/UTI	Abiotrophia elegans	Granulicatella elegans	115944008
ACANT	ALL	Acanthamoeba	Acanthamoeba	50875003
ACHOSP	ALL/UTI	Acholeplasma	Acholeplasma	84858009
ACHOLAID	ALL/UTI	Acholeplasma laidlawii	Acholeplasma laidlawii	89082003
ACHOOCUL	ALL/UTI	Acholeplasma oculi	Acholeplasma oculi	86450009
ACHSP	ALL/UTI	Achromobacter	Achromobacter	91620006
ACHDENI	ALL/UTI	Achromobacter denitrificans	Achromobacter denitrificans	413414001
ACHPIEC	ALL/UTI	Achromobacter piechaudii	Achromobacter piechaudii	413420000
ACHRUHL	ALL/UTI	Achromobacter ruhlandii	Achromobacter ruhlandii	413421001
ALCXYL	ALL/UTI	Achromobacter xylosoxidans	Achromobacter xylosoxidans	413424009
ACHXYL	ALL/UTI	Achromobacter xylosoxidans xylosoxidans	Achromobacter xylosoxidans xylosoxidans	423897003
ACISP	ALL/UTI	Acidaminococcus	Acidaminococcus	28207003
ACIFE	ALL/UTI	Acidaminococcus fermentans	Acidaminococcus fermentans	63005002
AFB	ALL/UTI	Acid-fast bacillus	Acid-fast bacillus	243365003
ACIDSP	ALL/UTI	Acidovorax	Acidovorax	115153000
ACDEL	ALL/UTI	Acidovorax delafieldii	Acidovorax delafieldii	113685003
ACIDFACI	ALL/UTI	Acidovorax facilis	Acidovorax facilis	113686002
ACIDTEMP	ALL/UTI	Acidovorax temperans	Acidovorax temperans	113687006
ACS	ALL/UTI	Acinetobacter	Acinetobacter	7757008
ACBA	ALL/UTI	Acinetobacter baumannii	Acinetobacter baumannii	91288006
ACICBA	ALL/UTI	Acinetobacter calcoaceticus	Acinetobacter calcoaceticus	82550008
ACCA	ALL/UTI	Acinetobacter calcoaceticus-baumannii complex	Acinetobacter calcoaceticus-Acinetobacter baumannii complex	113376007

[READ ME](#)
[Combined](#)
[All Organisms \(ALL\)](#)
[Common Commensals \(CC\)](#)
[MBI Organisms \(MBI\)](#)
[UTI Bacteria \(UTI\)](#)

- If you have an organism which is not found on the NHSN Organism List, please contact us at nhsn@cdc.gov for guidance on appropriate reporting.

Observation Patients

- If an observation patient is admitted to an inpatient location:
 - included in all surveillance events in the monthly reporting plan
 - included in patient and device day counts
- Housed, monitored, and cared for in an inpatient location
 - At risk for healthcare-associated infection

24-hour observation unit \neq inpatient unit

Organ Donation Patients

- Organ donation patients **NOT** a healthcare-associated infection **IF**:
 - Date of specimen collection on or after date of documentation of evidence of consent**AND**
 - Supported for organ donation purposes



Include in device and patient day denominator data collection



Newborn Infections

- Includes infections:
 - acquired transplacentally
 - for example, but not limited to herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis
 - a result from passage through the birth canal
- Exception: Group B Streptococcus during a neonate's first 6 days of life
 - See guidance about non-reporting of central line-associated bloodstream infections (CLABSIs)

Additional Pre-Foundation Information

- Hospice, palliative, or comfort care patients **NOT** excluded
- Autopsy specimens/reports are **NOT** eligible for use except for:
 - Central nervous system (CNS)/intracranial (IC) infection
 - Pneumonia (PNEU)
 - lung tissue specimen obtained by transthoracic or transbronchial biopsy immediately post-mortem

Physician Diagnosis

- ONLY can be used when physician diagnosis is an element of the specific infection definition:
 - For example, physician diagnosis is an element of EAR definition
 - physician diagnosis of otitis interna may be used to satisfy the inner ear infection definition

Knowledge Check #1

- The concepts reviewed in this presentation do not apply to Surgical Site Infections (SSIs), Laboratory-Identified Events (LabIDs), or Ventilator-Associated Events (VAEs).

A. True

B. False

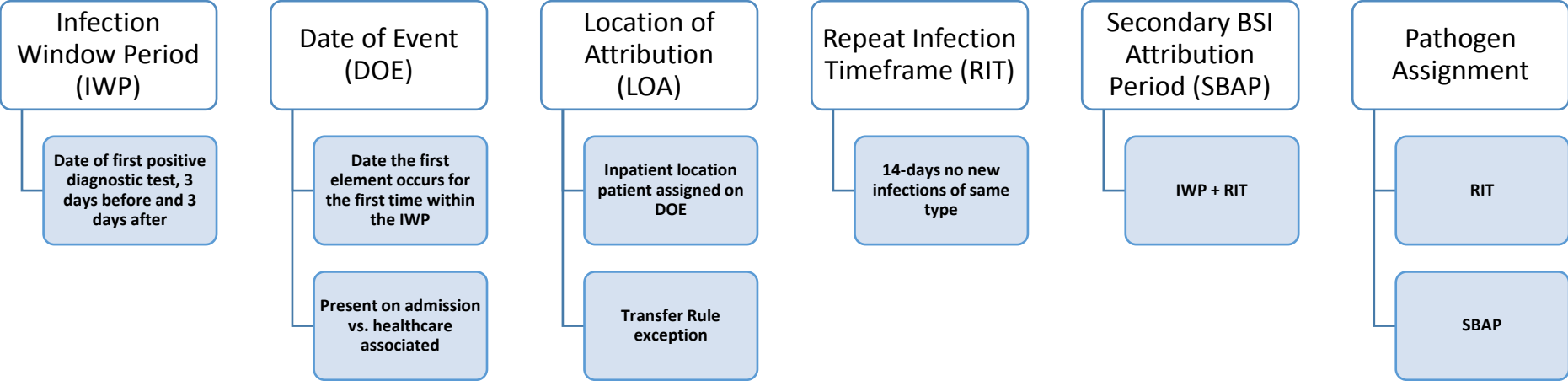
***Chapter 2 does NOT apply to:** SSI (Chapter 9), VAE (Chapter 10), PedVAE (Chapter 11), LabID (Chapter 12)

Knowledge Check #2

- If there is an organism reported and you cannot find it on the NHSN Organism List, you should?
 - A. Not report any event since you could not find on the organism list
 - B. Email nhsn@cdc.gov for guidance on appropriate reporting
 - C. Pick the organism on the list you feel is the right choice

Laying a Strong Foundation

NHSN Foundational Building Blocks



Infection Window Period (IWP)

- 7-day window of **time** during which all site-specific infection criteria must be met
 - the collection date of the first positive diagnostic test that is used as an element to meet the site-specific infection criterion,

PLUS

- the 3-calendar days before
- and
- the 3-calendar days after

AUGUST 2022						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	★ 17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	1	2	3
4	5	6	7	8	9	10

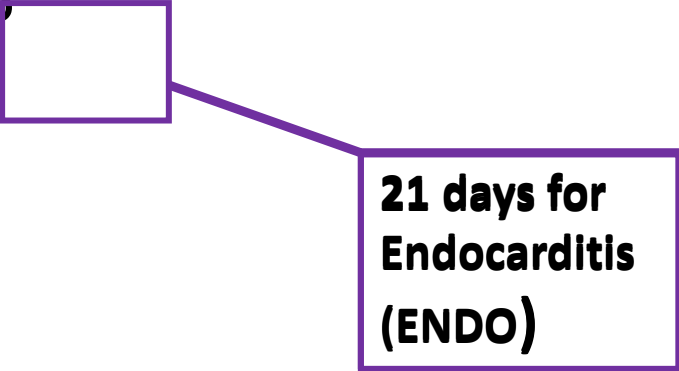
Infection Window Period Considerations

- Use the **first** diagnostic test* that creates an IWP during which **ALL** elements of the criterion can be found
 - *Examples of diagnostic test include:
 - Laboratory specimen collection
 - Imaging test
 - Procedure or exam
- When a diagnostic test is not a part of the site-specific criterion, localized signs or symptoms may be used to set the IWP
 - diarrhea
 - site specific pain
 - purulent exudate

Cannot use a non-specific sign/symptom such as fever

Date of Event (DOE)

- The date the FIRST element used to meet the CDC NHSN site-specific infection criterion occurs for the first time within the 7-day IWP
 - May **NOT** always be the date of the diagnostic test
- Accurate determination of DOE is critical because DOE is used to determine:
 - if an event is HAI or POA
 - device association
 - location of attribution
 - day 1 of the repeat infection timeframe

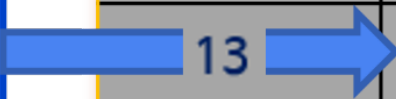


**21 days for
Endocarditis
(ENDO)**

Infection Window Period

Hospital Day	Criterion
8	
9	
10	
11	Pain at site
12	Swelling at site
13	Drainage culture: <i>Staphylococcus aureus</i>
14	
15	
16	
17	

Diagnostic Test



3-days before

3-days after

7-Day Infection Window Period

Infection Window Period and Date of Event

Hospital Day	SKIN 2a Criterion
8	
9	
10	
11	Pain at site
12	Swelling at site
13	Drainage culture: <i>Staphylococcus aureus</i>
14	
15	
16	
17	

Date of Event →

7-Day Infection Window Period

Infection Window Period and Date of Event – cont.

Hospital Day	SKIN 2a Criterion
8	
9	Pain at site
10	Pain at site
11	
12	Swelling at site
13	Drainage culture: <i>Staphylococcus aureus</i>
14	
15	
16	
17	

Date of Event → 10

7-Day Infection Window Period

Knowledge Check #3

- In the absence of a diagnostic test, a non-specific symptom, such as fever, may be used to set the infection window period (IWP).
 - A. True
 - B. False

A non-specific sign/symptom, such as fever, cannot be used to set the IWP

Knowledge Check #4

- The date of event (DOE) is ALWAYS the date of the diagnostic test.

A. True

B. False

May **NOT** always be the date of the diagnostic test

What Time Is It?

- Present on Admission (POA)
 - DOE occurs during the POA time period
 - Day of admission to an inpatient location
 - 2 days before admission
 - Calendar day after admission to an inpatient location

- Healthcare-associated Infection (HAI)
 - DOE on or after 3rd calendar day of inpatient admission

Hospital Day	Date of Event Assignment for RIT	Classification
2 days before admit	Hospital Day 1	POA
1 day before admit	Hospital Day 1	
1	Hospital Day 1	
2	Hospital Day 2	HAI
3	Hospital Day 3	
4	Hospital Day 4	
5	Hospital Day 5	

Admission Time

- Admission = the date admitted to an inpatient location
- Day of admission is calendar day 1
- If DOE is either of the 2 days prior to inpatient admission
 - DOE will be hospital day 1
- Time spent in any outpatient locations, such as the ED, are **NOT** to be used to set the date of admission

BSI DOE

Date	Patient Location	Hospital Day
8/6	ED	-2
8/7	ED	-1
8/8	MICU	1
8/9	MICU	2
8/10	MICU	3

Location of Attribution (LOA)

- Inpatient location where the patient is assigned on the DOE
 - Non-bedded locations are not eligible for assignment
 - Operating room (OR)
 - Interventional Radiology (IR)
- Exception = Transfer Rule
 - DOE on date of transfer or discharge, or the next day
 - Attributed to the transferring/discharging location
 - Addresses incubation of infection

**Does NOT apply to SSI
or LabID events**

Exception: Transfer Rule

- Multiple transfers
 - Attribute the infection to the first location in which the patient was housed on the day before the DOE

Date	Patient Location	Location of Attribution
7/8	SICU	
7/9	SICU	
7/10	SICU 3 West 4 East	
7/11	4 East	SICU
7/12	4 East	
7/13	4 East	

Repeat Infection Timeframe (RIT)

- 14-day time period during which no new infections of the same type are reported
- Day 1 of the RIT is the date of event (DOE)
- If a subsequent infection of the same type occurs within this 14-day time frame
 - Do not report a new event
 - Additional eligible pathogens identified from same type of infection within a repeat infection timeframe are added to the event

Applies to both POA and HAI determinations

Repeat Infection Timeframe (RIT) – cont.


- Original DOE and RIT is maintained
- Keep the same device association determination and location of attribution (LOA)
- Negative cultures during the RIT do **NOT** impact the RIT
- Applies during a patient's single admission
 - Includes the day of and day after discharge (transfer rule)
 - Does **NOT** carry from one admission to another
- *Exception = Endocarditis (ENDO)*
 - Remainder of the patient's current admission

Repeat Infection Timeframe Example

Date
of
event



14-Day UTI
Repeat
Infection
Timeframe
(RIT)



Hospital Day	SUTI Criterion
8	
9	
10	
11	urine culture: >100,000 <i>Pseudomonas aeruginosa</i> CFU/ml
12	Suprapubic tenderness
13	Temperature = 38.6°C
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Repeat Infection Timeframe Example- cont.

Date
of
event

14-Day UTI
Repeat
Infection
Timeframe
(RIT)

Hospital Day	SUTI Criterion
8	
9	
10	
11	urine culture: >100,000 CFU/ml <i>Pseudomonas aeruginosa</i>
12	Suprapubic tenderness
13	Temperature = 38.6°C
14	
15	
16	
17	
18	
19	urine culture: >100,000 CFU/ml <i>Enterobacter cloacae</i>
20	
21	
22	
23	
24	

- No change in date of event
- No new RIT is established
- *E. cloacae* is added as a pathogen to the UTI event

Knowledge Check #5

- An event is considered a Healthcare-associated Infection (HAI) if the DOE is on or after 3rd calendar day of inpatient admission.

A. True

B. False

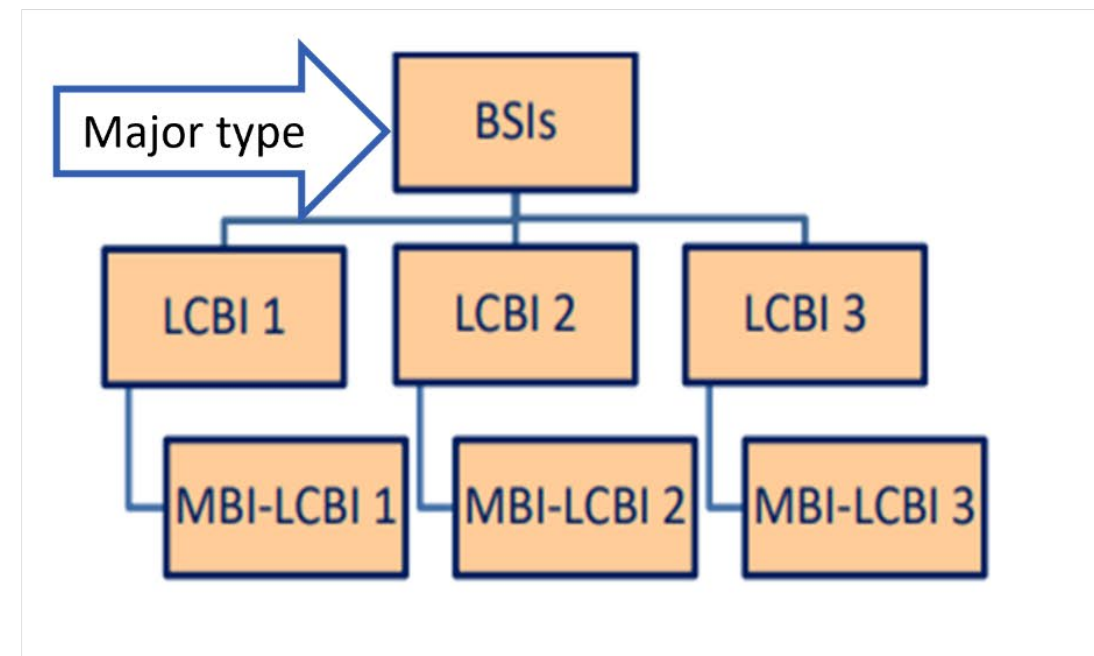
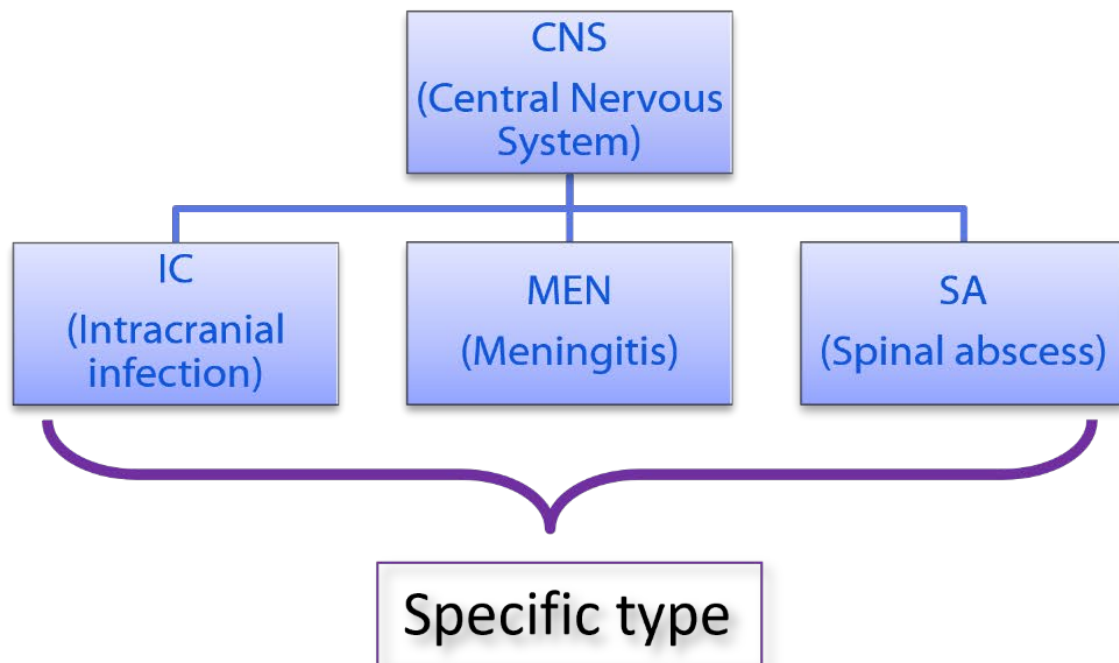
Hospital Day	Date of Event Assignment for RIT	Classification
2 days before admit	Hospital Day 1	POA
1 day before admit	Hospital Day 1	
1	Hospital Day 1	
2	Hospital Day 2	
3	Hospital Day 3	HAI
4	Hospital Day 4	
5	Hospital Day 5	

Knowledge Check #6

- What is the repeat infection timeframe (RIT) of an event with a date of event (DOE) of 11/26?
 - A. 11/27-12/10
 - B. 11/26-12/9
 - C. 11/26-12/8

Major Type of Infection vs. Specific Type of Infection

- RIT applies at the level of specific type of infection
 - Exception = BSI, UTI and PNEU
 - Applies at the major type of infection



Secondary Bloodstream Infection (BSI) Attribution Period (SBAP)

- Period in which a positive blood specimen must be collected to be considered a secondary bloodstream infection to a primary site infection when matching a primary site organism
- Infection Window Period (IWP) + the Repeat Infection Timeframe (RIT)
 - 14 – 17 days
 - Depends on DOE
- NHSN site-specific definition must be met AND 1 of 2 scenarios



CDC/NHSN Surveillance Definitions for Specific Types of Infection (Chapter 17), UTI, PNEU or SSI

A primary BSI does not have a SBAP

A Tale of Two Scenarios

■ Scenario 1

- At least one organism from the blood specimen matches an organism identified from the site-specific infection that is used as an element to meet the NHSN site-specific infection criterion
- collected in the secondary BSI attribution period. (infection window period + repeat infection timeframe).

■ Scenario 2

- organism identified in the blood specimen is an element that is used to meet the NHSN site-specific infection criterion
- collected during the site-specific infection window period

Table B1: Secondary BSI Guide: List of all NHSN primary site-specific definitions available for making secondary BSI determinations using Scenario 1 or Scenario 2

Scenario 1		Scenario 2	
A positive blood specimen must contain at least one eligible matching organism to the site-specific specimen		Positive blood specimen must be an element of the site-specific definition	
And the blood specimen is collected in the site-specific secondary BSI attribution period		And blood specimen is collected in the site-specific infection window period	
And an eligible organism identified from the site-specific specimen is used as an element to meet the site-specific definition		And an eligible organism identified in a blood specimen is used as an element to meet the site-specific definition	
Site	Criterion	Site	Criterion
ABUTI	ABUTI	ABUTI	ABUTI
BONE	1	BONE	3a
BRST	1	BURN	1
CARD	1	DISC	3a
CIRC	2 or 3	ENDO	4a, 4b, 5a or 5b (specific organisms) 6e or 7e plus other criteria as listed
CONJ	1a	GIT	1b or 2c
DECU	1	IAB	2b or 3b
DISC	1	JNT	3c
EAR	1, 3, 5 or 7	MEN	2c or 3c
EMET	1	OREP	3a
ENDO	1	PNEU	2 or 3
EYE	1	SA	3a
GE	2a	UMB	1b
GIT	2a, 2b (only yeast)	USI	3b or 4b
IAB	1 or 3a		
IC	1		
JNT	1		
LUNG	1		
MED	1		
MEN	1		
ORAL	1, 3a, 3d (only yeast)		
OREP	1		
PJI	1 or 3e		
PNEU	2 or 3		
SA	1		
SINU	1		
SSI	SI, DI or OS		
SKIN	2a		
ST	1		
UMB	1a		
UR	1a or 3a		
USI	1		
SUTI	1a, 1b or 2		
VASC <i>only as SSI</i>	1		
VCUF	3		

Pathogen Assignment During a Secondary BSI Attribution Period

- At least 1 matching pathogen to the organism from a specimen (site-specific or blood) that was used to meet a site-specific infection criterion
 - Eligible BSI pathogens from same blood specimen are also considered secondary to the event
- Pathogen exclusions for specific infection definitions (such as yeast in UTI) also apply to secondary bloodstream infection pathogen assignment
 - Excluded pathogens must be attributed to another primary site-specific infection as either a secondary BSI or identified as a primary BSI

Additional Pathogen Assignment Guidance

- A BSI pathogen may be reported for more than one infection source
 - Scenario #1
 - Assigned as a secondary BSI pathogen to different primary site infections (such as UTI and IAB)
 - Scenario #2
 - Assigned as a secondary BSI organism to a site-specific infection (e.g., UTI) and assigned as an organism to a primary BSI event
 - Exception = MBI-RIT
 - ★ Will not change to an LCBI event if:
 - 1. The blood culture with the non-MBI organism is collected during an existing BSI (MBI-LCBI) RIT
 - 2. The blood culture with the non-MBI organism is deemed secondary to an NHSN site-specific infection

Pathogen Assignment During RIT & SBAP

Secondary BSI Attribution Period

DAY	SUTI Criterion	LCBI Criterion	DAY
1 Adm		LCBI Pathogen: <i>C. albicans</i> (excluded UTI pathogen) Date of Event: Day 14	
9			
10			
11	Temp = 101.5° F		11
12	Temp = 102.1° F		12
13	Urine culture: >100,000 CFU/ml, <i>E. coli</i>		13
14	Blood culture: <i>E. coli</i> & <i>C. albicans</i>	Blood culture: <i>C. albicans</i>	14
15			15
16			16
17			17
18	Urine culture: >100,000 CFU/ml, <i>Enterococcus</i> spp.		18
19			19
20			20
21			21
22		SUTI with Secondary BSI Pathogen: <i>E. coli</i> & <i>Enterococcus</i> Date of Event: Day 11	22
23			23
24			24
25			25
26-27			26-27

14-day BSI RIT

Knowledge Check #7

- The Secondary Bloodstream Infection (BSI) Attribution Period (SBAP) can be 14-17 days in length.
 - A. True
 - B. False

Infection Window Period (IWP) + the Repeat Infection Timeframe (RIT)

- 14 – 17 days
- Depends on DOE

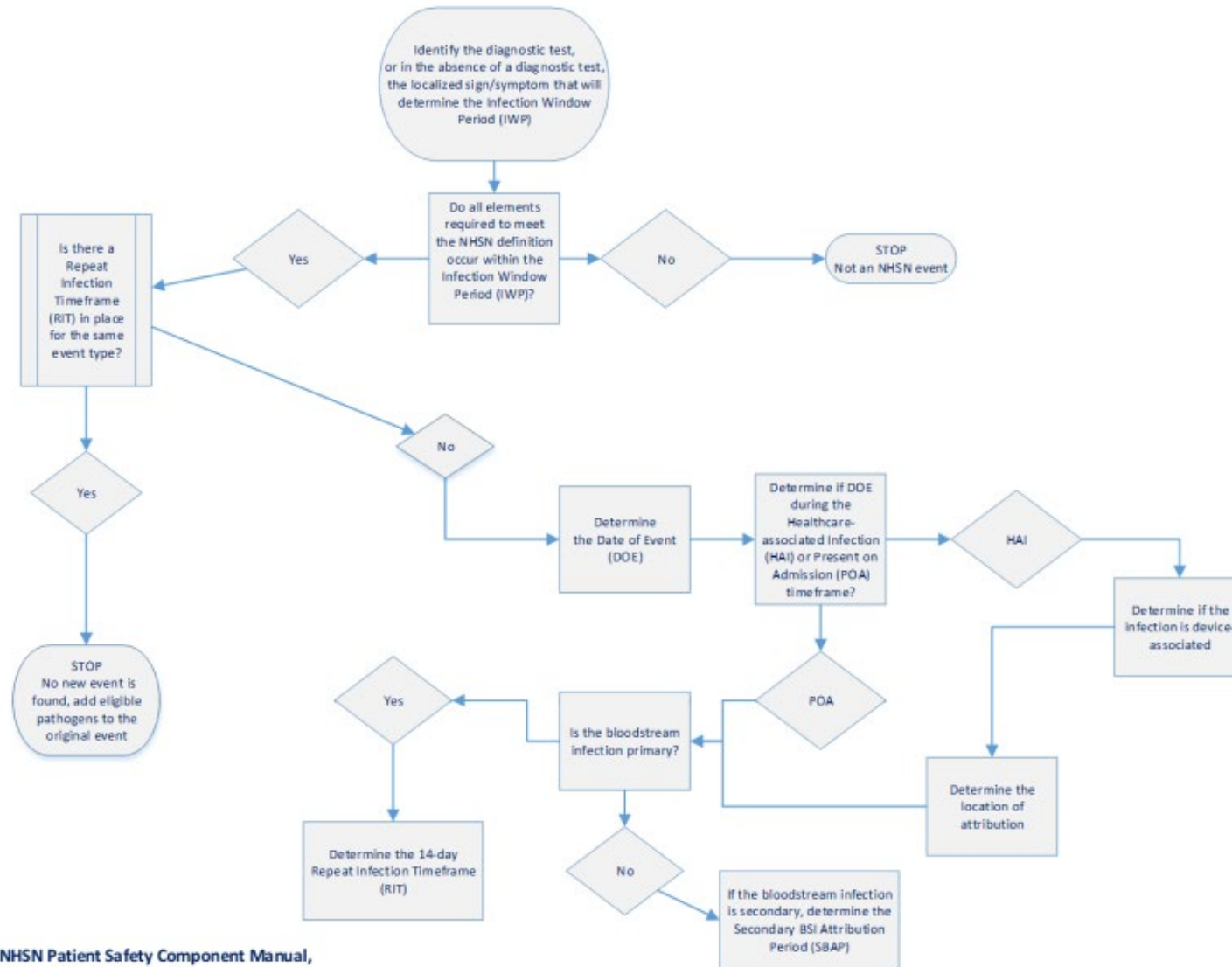
Strengthening Your Foundation

Steps to Case Determination

1. First determine the date of the diagnostic test that is an element of the NHSN site-specific infection criterion that is met.
2. Next determine the infection window period (3 days before the diagnostic test, the day of the test and 3 days after for a total of 7 days). NOTE: when the diagnostic test used to set the IWP is hospital day 3 or earlier, the days before the diagnostic test can only include those that occur in the POA timeframe specifically 2 days prior to admission.
3. Then determine if all 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. If there is an event, next determine the date of event, specifically, 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 (specifically during the 2 days before admission, the day of admission or the next day)? If yes, the infection is POA, if not, it is an HAI.

Flow Diagram for NSHN Event Determination Page 2-28

Appendix: Flow Diagram for NSHN Event Determination



Refer to the NSHN Patient Safety Component Manual, Chapter 2 for detailed guidance.

Calculator & Worksheet

- NHSN Home
- NHSN Login
- About NHSN +
- Enroll Facility Here +
- CMS Requirements +
- Change NHSN Facility Admin
- Resources by Facility +
- Patient Safety Component -**
 - Annual Surveys, Locations & Monthly Reporting Plans
 - Analysis Resources +
 - Antimicrobial Use & Resistance +
 - BSI (CLABSI)
 - CLIP
 - MDRO & CDI
 - PedVAE
 - PNEU
 - SSI
 - UTI (CAUTI)
 - VAE
 - Frequently Asked Questions (FAQs) +
 - Calculators & Worksheets -
 - HAI & POA Worksheet Generator**
 - MDRO & CDI LabID Event Calculator

Healthcare-associated Infection (HAI) and Present on Admission Infection (POA) Worksheet Generator

[Print](#)

Welcome to the NHSN Healthcare-associated Infection (HAI) and Present on Admission Infection (POA) Worksheet Generator Version 1.0. The Generator operates based upon the currently posted guidance found in the Patient Safety Component Manual, Chapter 2, [Identifying Healthcare-associated Infections \(HAIs\) in NHSN](#) [PDF - 1M].

The Worksheet Generator is a web-based tool that is designed to identify the:

- 7-day Infection Window Period
- Date of Event and POA or HAI determination
- 14-day Repeat Infection Timeframe (RIT)
- Secondary Bloodstream Infection Attribution Period (if applicable)

This worksheet Generator **does not** determine that all NHSN infection criteria have been met. It is incumbent upon the user to determine that the infection criterion was met as reflected in the dates and information supplied.

Please note that the Worksheet Generator will not ask you to enter any patient identifiers. The Worksheet Generator does not store any data that you enter, and it will not report any data that you enter or any determinations to the NHSN. You will not be able to export data entered into the Worksheet Generator but you will be able to print the worksheet.

Use the [VAE calculator](#) and [MDRO & CDI LabID Event calculator](#) when conducting VAE or MDRO/LabID event surveillance. Also note, the Worksheet Generator is not for use when conducting SSI surveillance or when making determinations for meeting the ENDO definition.



Healthcare-associated Infection (HAI) and Present on Admission Infection (POA) Worksheet Generator
Version 1.0 (must have javascript enabled)



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Calculator & Worksheet (cont.)





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 - HAI & POA Worksheet Generator
 - MDRO & CDI LabID Event Calculator
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Calculators & Worksheets

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Calculators & Worksheets

 MDRO & CDI LabID Event Calculator	 HAI & POA Worksheet Generator
 VAE Calculator	 PedVAE Calculator

Excel Worksheets

[Worksheet for Determining Date of Event, Infection Window Period, Repeat Infection Timeframe, and Secondary BSI Attribution Period 2017](#) [XLSX - 20 KB]

- [Example Worksheet](#) [XLSX - 25 KB]

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Page last reviewed: January 1, 2021

Content source: Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP)



Resources

- Patient Safety Component Manual
 - https://www.cdc.gov/nhsn/pdfs/pscmanual/pscmanual_current.pdf
- Chapter 2 - “Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance”
 - https://www.cdc.gov/nhsn/pdfs/pscmanual/2psc_identifyinghais_nhsncurrent.pdf
- Quick Learn Videos
 - <https://www.cdc.gov/nhsn/training/patient-safety-component/index.html>
- Miscellaneous Frequently Asked Questions
 - <https://www.cdc.gov/nhsn/faqs/faqs-miscellaneous.html>

American Journal of Infection Control

NHSN Case-Study Series

- Written to address common surveillance scenarios related to CLABSI, CAUTI, VAE, SSI, MDRO/CDI
- Test your knowledge
- Quiz and answers via web link
- Open access:
<https://www.sciencedirect.com/>

American Journal of Infection Control 49 (2021) 1075–1077

Contents lists available at ScienceDirect

 American Journal of Infection Control 

journal homepage: www.ajicjournal.org

Clinical Case Study

Healthcare-associated infections studies project: An American Journal of Infection Control and National Healthcare Safety Network data quality collaboration 

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Key Words:
Pneumonia
Ventilator-associated events
Bloodstream infections
COVID-19

This case study is part of a series centered on the Centers for Disease Control and Prevention/National Healthcare Safety Network (NHSN) healthcare-associated infection (HAI) surveillance definitions. This specific case study focuses on the application of the Pneumonia (PNEU), Ventilator-associated event (VAE), and Bloodstream infections (BSI) surveillance definitions to a patient with COVID-19. The intent of the case study series is to foster standardized application of the NHSN HAI surveillance definitions among Infection Preventionists (IPs) and encourage accurate determination of HAI events.
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This National Healthcare Safety Network (NHSN) surveillance case study is part of a case-study series in the American Journal of Infection Control (AJIC). These cases reflect some of the complex patient scenarios Infection Preventionists (IPs) have encountered in their daily surveillance of healthcare-associated infections (HAI) using NHSN definitions. Objectives have been previously published.¹

We hope that you will take advantage of this offering, and we look forward to your active participation. The online survey may be found at: <https://www.surveymonkey.com/r/NHSNCOVID>.
We strongly recommend participants review or reference the website and NHSN Patient Safety Component Manual Device-Associated Module for information that may be needed to answer the case study questions. The website links are <https://www.cdc.gov/nhsn/> and <https://www.cdc.gov/nhsn/patient-safety-component-manual-device-associated-module/>.

Using Your Foundational Skills

Case Study

- On August 29th, an 83-year-old male patient is seen at an acute care hospital emergency department (ED) for a fall at his home that resulted in loss of consciousness. The patient is admitted to the neurological intensive care unit (NICU) on August 30th for further testing. On September 2nd, the patient is transferred out of the ICU to a neurology ward. On arrival to the neurology ward the patient has a fever of 38.9°C. On September 3rd, a urine culture is collected which grows >100,000 CFU/ml *Enterococcus faecalis*. A new urine culture is collected on September 10th which grows >100,000 CFU/ml *Pseudomonas aeruginosa*. The patient is discharged to a rehab facility on September 15th.

Case Study Summary

- 8/29: emergency department (ED)
- 8/30: admitted to the neurological intensive care unit (NICU)
- 9/2: transferred out of the ICU to a neurology ward
 - fever of 38.9°C
- 9/3: urine culture is collected which grows >100,000 CFU/ml *Enterococcus faecalis*
- 9/10: urine culture collect which grows >100,000 CFU/ml *Pseudomonas aeruginosa*.
- 9/15: discharged to a rehab facility

Question #1

- What is the correct infection window period (IWP)?
 - A. 8/27-9/1
 - B. 8/31-9/6
 - C. 8/30-9/5
 - D. 9/7-9/13

- 8/29: ED
- 8/30: admitted to NICU
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml *Enterococcus faecalis*
- 9/10: urine culture collected >100,000 CFU/ml *Pseudomonas aeruginosa*.
- 9/15: discharged to rehab

Question #1 Rationale

Date	SUTI Criterion
8/29	
8/30	
8/31	3-days before
9/1	
9/2	
9/2	Temp: 38.9°C
9/3	>100,000 CFU/ml <i>Enterococcus faecalis</i>
9/4	3-days after
9/5	
9/6	
9/7	

Diagnostic Test →

7-Day Infection Window Period

Question #2

- What is the date of event (DOE)?
 - A. 8/30
 - B. 9/10
 - C. 9/2
 - D. 9/3



- 8/30: admitted to NICU
- 8/29: ED
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml Enterococcus faecalis
- 9/10: urine culture collected >100,000 CFU/ml Pseudomonas aeruginosa.
- 9/15: discharged to rehab

Question #2 Rationale

Date	SUTI Criterion
8/29	
8/30	
8/31	
9/1	
12	Temp: 38.9°C
9/3	>100,000 CFU/ml <i>Enterococcus faecalis</i>
9/4	
9/5	
9/6	
9/7	

Date of Event

7-Day Infection Window Period

Question #3

- Is this a present on admission (POA) or healthcare-associated infection (HAI) event?


A. Present on admission (POA)

B. Healthcare associated infection (HAI)

- 8/29: ED
- 8/30: admitted to NICU
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml Enterococcus faecalis
- 9/10: urine culture collected >100,000 CFU/ml Pseudomonas aeruginosa.
- 9/15: discharged to rehab

Question #3 Rationale

- Inpatient location on 8/30
- DOE occurs after the 3rd calendar day of admission (calendar day 4)
 - Healthcare-associated infection (HAI)
- The time spent in the ED on 8/29 was not used to begin the hospital day count since it is not an inpatient location.

Date	Patient Location	Hospital Day
8/29		-1
8/30	NICU	1
8/31	NICU	2
9/1	NICU	3
9/2	NICU Neurology Ward	4
9/3	Neurology Ward	5



Question #4

- What is the location of attribution (LOA)?

- A. Neurological intensive care unit (NICU)
- B. Neurology ward

- 8/29: ED
- 8/30: admitted to NICU
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml *Enterococcus faecalis*
- 9/10: urine culture collected >100,000 CFU/ml *Pseudomonas aeruginosa*.
- 9/15: discharged to rehab

Question #4 Rationale

- Since the date of event (DOE) of 9/2 is on the date of transfer, the infection is attributed to the transferring location
- The infection would be attributed to the NICU because the DOE falls on the date of transfer and the NICU is the transferring location



Date	Patient Location	Location of Attribution
8/29	ED	
8/30	NICU	
8/31	NICU	
9/1	NICU	
9/2	NICU Neurology Ward	NICU
9/3	Neurology Ward	

Question #5

- What is the repeat infection timeframe (RIT)?
 - A. 9/1-9/14
 - B. 9/2-9/15
 - C. 8/30-9/12
 - D. 9/10-9/23


- 8/29: ED
- 8/30: admitted to NICU
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml *Enterococcus faecalis*
- 9/10: urine culture collected >100,000 CFU/ml *Pseudomonas aeruginosa*.
- 9/15: discharged to rehab

Question #5 Rationale

**Date
of
event**



**14-Day UTI
Repeat
Infection
Timeframe
(RIT)**



Date	SUTI Criterion
8/31	
9/1	
9/2	Temp: 38.9°C
9/3	>100,000 CFU/ml <i>Enterococcus faecalis</i>
9/4	
9/5	
9/6	
9/7	
9/8	
9/9	
9/10	
9/11	
9/12	
9/13	
9/14	
9/15	
9/16	

Question #6

- Is the positive urine culture on 9/10 captured in the repeat infection timeframe (RIT)?

A. Yes

B. No

- 8/29: ED
- 8/30: admitted to NICU
- 9/2: transferred to Neurology ward
- 9/2: temperature of 38.9°C
- 9/3: urine culture collected >100,000 CFU/ml *Enterococcus faecalis*
- 9/10: urine culture collected >100,000 CFU/ml *Pseudomonas aeruginosa*.
- 9/15: discharged to rehab

Question #6 Rationale

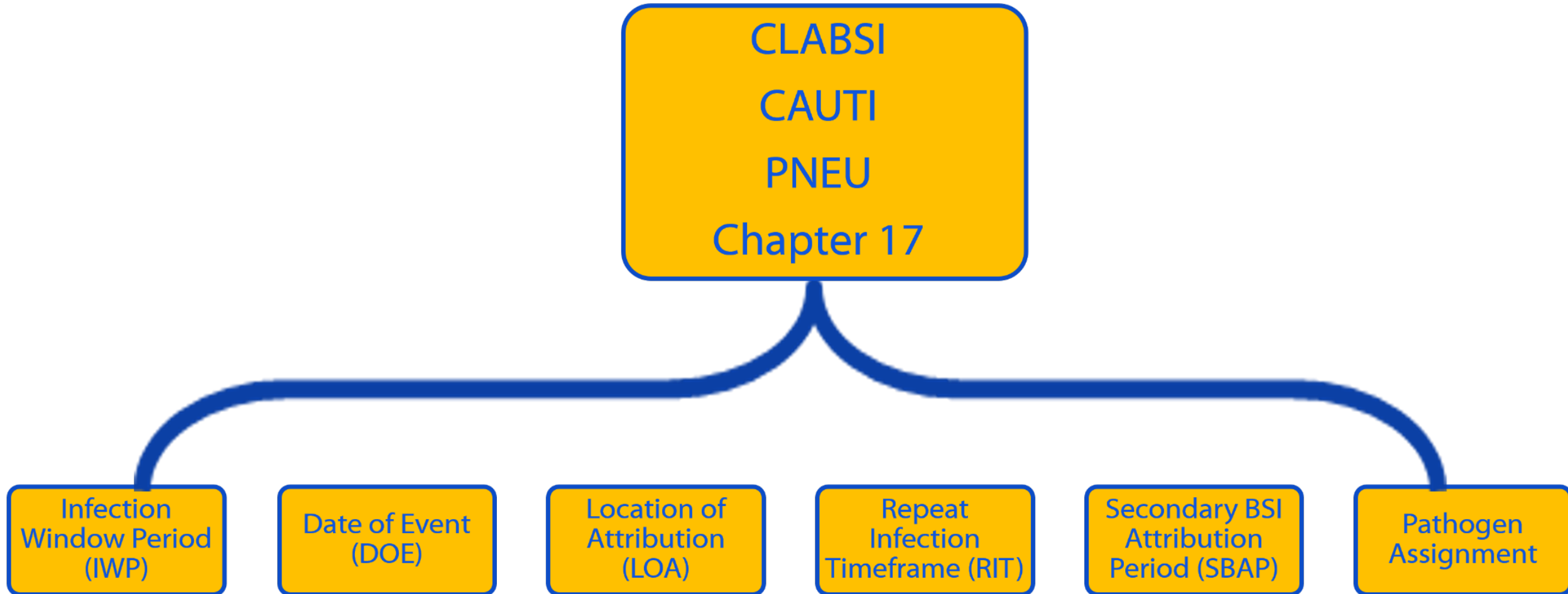
Date of event

14-Day UTI Repeat Infection Timeframe (RIT)

Date	SUTI Criterion
8/31	
9/1	
9/2	Temp: 38.9°C
9/3	>100,000 CFU/ml <i>Enterococcus faecalis</i>
9/4	
9/5	
9/6	
9/7	
9/8	
9/9	
9/10	>100,000 CFU/ml <i>Pseudomonas aeruginosa</i>
9/11	
9/12	
9/13	
9/14	
9/15	
9/16	

Building On Your Foundation

Adding to Your Foundation



*excludes SSI, VAE, LabID

**For any questions or concerns,
contact the NHSN Helpdesk and nhsn@cdc.gov**

**For more information, please contact Centers for Disease Control and Prevention
1600 Clifton Road NE, Atlanta, GA 30333
Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348
E-mail: cdcinfo@cdc.gov Web: www.cdc.gov**

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

