

Identifying Healthcare-Associated Infections (HAI) for NHSN Surveillance
(Revised January 1, 2018)

To standardize the classification of an infection as present on admission (POA) or healthcare-associated infection (HAI), the following objective surveillance definitions and guidance will be used for NHSN surveillance:

- 7-day Infection Window Period
- Date of Event
- POA
- HAI
- 14-day Repeat Infection Timeframe (RIT)
- Secondary Bloodstream Infection Attribution Period
- Pathogen Assignment Guidance
- Location of Attribution (LOA)

NOTE:

- Infection window period, Date of Event, POA, HAI, and RIT Secondary BSI Attribution Period definitions as defined in this chapter **do not** apply to [SSI](#), [VAE](#) or LabID Events.
- Organisms belonging to the following genera are typically causes of community-associated infections and are rarely or are not known to be causes of healthcare-associated infections. They are excluded, and cannot be used to meet any NHSN definitions: *Blastomyces*, *Histoplasma*, *Coccidioides*, *Paracoccidioides*, *Cryptococcus* and *Pneumocystis*. Additionally refer to the individual protocol/checklist for pathogen exclusions to the event being reported, for example, BSI, UTI, PNEU, ENDO, GIT and IAB.

ADDITIONAL INFORMATION

- If the date of specimen collection is on or after the date of documentation of evidence of consent AND the patient is declared brain dead AND the patient is being supported for organ donation purposes, an event identified using the specimen culture result or microbiological non-culture based diagnostic test result should not be reported as an HAI. The patient should, however, still be included in device and patient day denominator data collection.
- Hospice patients are not excluded from NHSN surveillance.
- Identification of organisms from specimens collected during post-mortem examination (autopsy) are only eligible for use in meeting the CNS/IC (Intracranial) infection definition and the PNEU infection definition using lung tissue specimen obtained by transthoracic or transbronchial biopsy immediately post-mortem. For all other NHSN definition autopsy specimens/reports are not eligible for use.
- Infections occurring in newborns with date of event on hospital day 1 or day 2 are considered POA. Those with date of event on day 3 or later are HAI. This includes infections acquired transplacentally (for example but not limited to herpes simplex, toxoplasmosis, rubella, cytomegalovirus, or syphilis) or as a result from passage through the birth canal.

Exception: See guidance about non-reporting of CLABSIs with Group B *Streptococcus* during a neonate's first 6 days of life found in Comments and Reporting section of the Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and Non-central line-associated Bloodstream Infection) Protocol.

- Reactivation of a latent infection (for example but not limited to herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis) is not considered to be an HAI.

Definition Application

Table 1: Exceptions to application of Chapter 2

	SSI*	LabID*	VAE*
Infection Window Period [†]	Not Applicable	Not Applicable	Not Applicable
Date of Event			
POA			
HAI			
Repeat Infection Timeframe (RIT) [†]			
Secondary BSI Attribution Period [†]			

[†]See ENDO criteria in Chapter 17: CDC/NHSN Surveillance Definitions for Specific Types of Infections for endocarditis

*See SSI, LabID and VAE surveillance protocols

N/A=Not Applicable

**Observation Patients in Inpatient Locations
(Revised January 1, 2018)**

For purposes of NHSN surveillance, if an observation patient is admitted to an inpatient location, the patient must be included in all infection surveillance events designated in the monthly reporting plan and included in patient and device day counts. The patient is being housed, monitored, and cared for in an inpatient location and therefore is at risk for acquisition of an HAI.

**NHSN Infection Window Period
(Revised January 1, 2018)**

The NHSN Infection Window Period is defined as the 7-days during which all site-specific infection criteria must be met. It includes the date the first positive diagnostic test that is used as an element of the site-specific infection criterion, was obtained, the 3 calendar days before and the 3 days after.

For purposes of defining the Infection Window Period the following are considered diagnostic tests:

- laboratory specimen collection
- imaging test
- procedure or exam

Infection Window Period

Infection Window Period		3 days before
	Date of first positive diagnostic test that is used as an element of the site-specific criterion	
	OR	
	In the absence of a diagnostic test, use the date of the first documented <u>localized</u> sign or symptom that is used as an element of the site-specific criterion	
		3 days after

It is important to use the first diagnostic test that creates an infection window period during which all elements of the criterion can be found.

Example:

When meeting PNEU definition using the PNU2 criterion, identification of an eligible organism from blood or from a site-specific specimen, and an imaging test may be available. Both the organism identification and the imaging test are diagnostic tests. Use the first diagnostic test for which all elements of the PNU2 criterion occur within the infection window period.

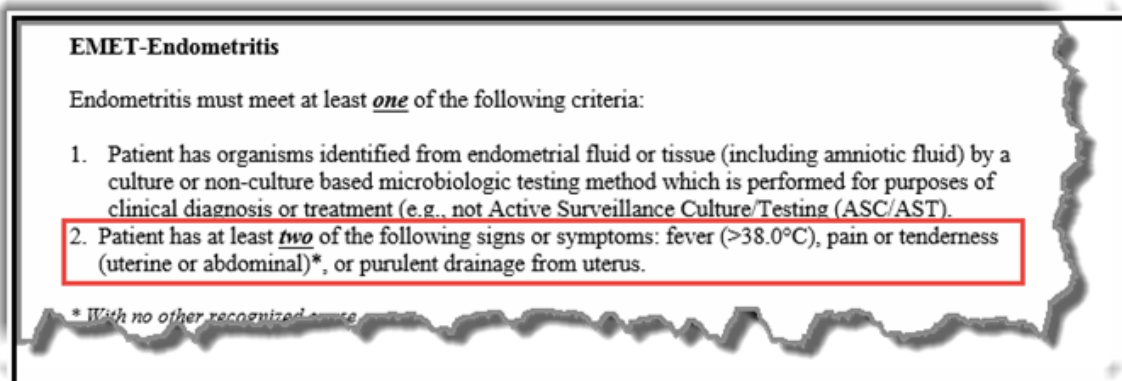
In this example below, Option 1 uses the imaging test (not the blood culture) to set the infection window period. This is the first diagnostic test that creates an infection window period in which all elements of PNU2 criterion occur.

<u>Option 1: Correct diagnostic test selection</u>		<u>Option 2: Incorrect diagnostic test selection</u>	
Hospital Day	Infection Window Period	Hospital Day	Infection Window Period
-2		-2	
-1		-1	
1		1	
2 POA	New onset cough	2	New onset cough
3	Imaging test: Infiltrate	3 HAI	Imaging test: Infiltrate
4	Fever > 38.0 C	4	Fever > 38.0 C
5	Fever > 38.0 C	5	Fever > 38.0 C
6	Blood culture: <i>A. baumannii</i>	6	Blood culture: <i>A. baumannii</i>
7	Rales, Fever > 38.0 C	7	Rales, Fever > 38.0 C
8	Cough, Rales	8	Cough, Rales
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
17		17	

Infection Window Period Special Considerations

1. **Infection criteria that do not include a diagnostic test:** For site-specific infection criteria **that do not include a diagnostic test**, the date of the first documented localized sign or symptom that is used as an element of site-specific infection criterion is used to define the infection window period for example,, diarrhea, site-specific pain, purulent drainage. Note that a non-specific sign or symptom for example, fever is not considered to be localized and therefore is not to be used to define the infection window period.

For example, when meeting EMET using criterion 2, there is no diagnostic test as a part of this criterion. The date of the first documented localized sign or symptom, purulent drainage or pain or tenderness that is used as an element to meet EMET criterion 2 is to be used to set the infection window period. Fever is not a localized sign.



2. **More than one criteria can be met:** When more than one criterion of a site-specific infection definition is met, identify the infection window period that results in the earliest date of event.

Example: A patient has purulent drainage noted at a superficial wound site on hospital day 2. It is documented on day 3 that the wound site is painful and swelling is present. *S. aureus* is identified from a wound specimen with collection date on day 4. SKIN definition can be met using criterion 2a with pain, swelling and positive culture from the site-specific specimen (diagnostic test) and also met using criterion 1 with purulent drainage (sign). Using the sign of infection, purulent drainage, to set the infection window period results in Criterion 1 being met and provides the earliest date of event.

SKIN Criterion 1 - Correct Determination

Hospital Day	Infection Window Period
-2	
-1	
1	
2 POA	Purulent Drainage from wound (SKIN Criterion 1)
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	

SKIN Criterion 2a

Hospital Day	Infection Window Period
-2	
-1	
1	
2	
3 HAI	Pain, swelling (SKIN Criterion 2a)
4	Drainage culture: <i>S. aureus</i>
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	

3. **Endocarditis:** When meeting the Endocarditis (ENDO) definition, the Infection Window Period (IWP) is defined as the 21 days during which all site-specific infection criteria must be met. It includes the date the first positive diagnostic test that is used as an element of the ENDO infection criterion was obtained, the 10 calendar days before and the 10 calendar days after. The IWP is lengthened for ENDO to accommodate the ***extended*** diagnostic timeframe that is frequently required to reach a clinical determination of endocarditis.

Date of Event (Event Date)
(Revised January 1, 2018)

The Date of Event is the date the first element used to meet an NHSN site-specific infection criterion occurs for the first time within the seven-day infection window period.

- 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, and the calendar day after admission. For purposes of NHSN surveillance and determination of the Repeat Infection Timeframe (as defined below) if the date of event is determined to be either of the two days prior to inpatient admission, then the date of event will be hospital day 1.
- An infection is considered a **Healthcare Associated Infection (HAI)** if the date of event of the NHSN site-specific infection criterion occurs on or after the 3rd calendar day of admission to an inpatient location where day of admission is calendar day 1.
- **Note:**

Accurate determination of DOE is critical because DOE is used to determine:

- if an event is HAI or POA
- location of attribution
- device association
- day 1 of the Repeat Infection Timeframe

Date of Event and Classification Determination

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	

**Infection Window Period and Date of Event
(Patient age <65)**

Note the date of event is the date the **first** element used to meet the site-specific infection criterion occurs for the **first** time in the infection window period. In the first example, it is day 2, the date the fever occurs for the first time in the infection window period and this results in a POA determination. In the second example it is day 4, the date of the diagnostic test, which is the first element in the infection window period and this results in an HAI determination. Date of event may be, but is not always, the date of the diagnostic test which is used to set the infection window period.

Infection Window Period
(first positive diagnostic test, 3 days before
and 3 days after)

Date of event
(date the first element occurs for the first
time within the infection window period)

HOSPITAL DAY	INFECTION WINDOW PERIOD
1	
2	Fever > 38.0 C
3	Fever > 38.0 C
4	Urine culture: >100,000 cfu/ml <i>E. coli</i>
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
	SUTI-POA Date of Event = 2 Pathogen = <i>E. coli</i>

HOSPITAL DAY	INFECTION WINDOW PERIOD
1	
2	
3	
4	Urine culture: >100,000 cfu/ml <i>E. coli</i>
5	Fever > 38.0 C
6	Fever > 38.0 C
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
	SUTI-HAI Date of Event = 4 Pathogen = <i>E. coli</i>

NOTE:

- Acceptable documentation includes patient-reported signs or symptoms documented in the medical record by a healthcare professional. Information communicated verbally from facility to facility, or information found in another facility's medical record (with the exception of post-discharge SSI surveillance). For example, the following would be eligible for use if documented in the current facilities medical record.
 - patient states measured fever $>38.0^{\circ}\text{C}$ or $>100.4^{\circ}\text{F}$
 - nursing home documents fever prior to arrival to the hospital and in the POA timeframe
 - patient complains of dysuria
- Physician diagnosis can be accepted as evidence of an infection only when physician diagnosis is an element of the specific infection definition. For example, physician diagnosis is not an element of any UTI criteria; therefore, physician diagnosis of a UTI may not be used to satisfy POA status of a UTI.

Repeat Infection Timeframe (RIT)
(Revised January 1, 2018)

The Repeat Infection Timeframe is a 14-day timeframe during which no new infections of the same type are reported.

- **The RIT applies to both POA and HAI determinations.**
- The date of event is Day 1 of the 14-day RIT.

If criteria for the same type of infection are met and the date of event is within the 14 day RIT, another new event is not identified for purposes of tracking or reporting, however additional pathogens recovered during the RIT from the same type of infection are added to the event. Note the original date of event is maintained as is the original 14-day RIT. Additionally, device association determination, location of attribution are not amended.

- The RIT will apply at the level of specific type of infection with the exception of BSI, UTI, and PNEU where the RIT will apply at the major type of infection.

Specific Type Example:

- Patients will have no more than one SKIN infection in a SKIN RIT, but may have overlapping or simultaneous SKIN RIT and DECU RIT.

Major Type Examples:

- Patients will have no more than one BSI reported in a BSI RIT (LCBI 1, LCBI 2, LCBI 3, MBI-LCBI 1, MBI-LCBI 2, MBI-LCBI3)

ADDITIONAL INFORMATION

- Patients will have no more than one PNEU reported in a PNEU RIT (PNU1, PNU2, PNU3)
- Patients will have no more than one UTI reported in a UTI RIT (SUTI, ABUTI, USI)

ADDITIONAL INFORMATION

- The RIT applies during a patient's single admission, including the day of discharge and the day after, in keeping with the Transfer Rule. **An RIT does not carry over from one admission to another even if readmission is to the same facility.**
- The RIT for Endocarditis (ENDO) is extended to include the remainder of the patient's current admission.

In the example below, the Date of Event is hospital day 4. The 14-day RIT is hospital day 4 through day 17. On hospital day 12, within the RIT, a urine culture with >100,000 CFU/ml *S. aureus* is identified. The urine pathogen identified from the hospital day 12 culture is added to the originally identified infection on day 4. Determination of a new infection or continuation of ongoing infection is not required. The original date of event and RIT are maintained.

Repeat Infection Timeframe

Infection Window Period
(first positive diagnostic test, 3 days before
and 3 days after)

**Repeat Infection Timeframe
(RIT)**
(date of event = day 1)

Date of Event
(date the first element occurs for the first
time within the infection window period)

HOSPITAL DAY	RIT	INFECTION WINDOW PERIOD
1		
2		
3		
4	1	Urine culture: >100,000 cfu/ml <i>E. coli</i>
5	2	Fever > 38.0 C
6	3	Fever > 38.0 C
7	4	
8	5	
9	6	Urine culture: No growth
10	7	
11	8	
12	9	Urine culture: > 100,000 cfu/ml <i>S. aureus</i>
13	10	
14	11	
15	12	
16	13	
17	14	
18		
19		
		SUTI-HAI Date of Event = 4 Pathogens = <i>E. coli</i>, <i>S. aureus</i>

ADDITIONAL INFORMATION

In the example below a non-catheter associated UTI is identified with date of event on day 4. This sets an RIT day 4-17. On day 5 a Foley catheter is inserted. On day 8, within the RIT, a urine culture with > 100,000 CFU/ml *E. coli* is identified. The *E.coli* is added to the originally identified day 4 event. The device association does not change and the date of event and RIT are maintained.

Repeat Infection Timeframe and Interim Device Insertion

HOSPITAL DAY	RIT	INFECTION WINDOW PERIOD
1		No Foley catheter
2		No Foley catheter
3		No Foley catheter
4	1	Urine culture: >100,000 CFU /ml <i>S. aureus</i> ; dysuria
5	2	Foley catheter inserted
6	3	Foley catheter
7	4	Foley catheter
8	5	Foley catheter Urine culture: >100,000 CFU/ml <i>E. coli</i> ; Fever 39.0°C
9	6	
10	7	
11	8	Non-catheter associated SUTI Date of Event = Day 4 UTI RIT = Day 4 - 17 Pathogens: <i>S.aureus</i>, <i>E.coli</i> (Note: Meeting an event within the RIT does not alter the original determination. Date of Event, device association or RIT does NOT change)
12	9	
13	10	
14	11	
15	12	
16	13	
17	14	
18		
19		

NOTE:

- A patient may have negative cultures during the RIT without impact on the RIT.
- Do not change the device association determination during the RIT.
- Do not change location of attribution determination during the RIT.

Secondary BSI Attribution Period
(Refer to “Secondary BSI Guide” at the end of the BSI checklist)
(Revised January 1, 2018)

The secondary BSI Attribution Period* (SBAP) is the period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary site infection. This period includes the Infection Window Period combined with the Repeat Infection Timeframe (RIT). It is 14-17 days in length depending upon the date of event.

For purposes of NHSN, in order for a bloodstream infection to be determined secondary to another site of infection, the following requirements must be met:**

- ☐ An NHSN site-specific definition must be met; either one of the CDC/NHSN Surveillance Definitions for Specific Types of Infections (defined in (Chapter 17), or UTI, PNEU or SSI definition.

AND

- ☐ One of the following scenarios must be met:

- **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 AND the blood specimen is collected in the secondary BSI attribution period (infection window period + repeat infection timeframe).

OR

- **Scenario 2:** An organism identified in the blood specimen is an element used to meet the NHSN site-specific infection criterion, and therefore is collected during the site-specific infection window period.

NOTE:

- When meeting the Endocarditis (ENDO) definition, the secondary BSI attribution period includes the 21-day infection window period and all subsequent days of the patient’s current admission.
 - As result of this lengthy (ENDO) secondary BSI attribution period, secondary BSI pathogen assignment for ENDO, is limited to organism(s) identified in blood specimen that match the organism(s) used to meet the ENDO definition.
 - For example, if the ENDO definition was met using a site-specific specimen (cardiac vegetation) or using a blood specimen where *S.aureus* was the identified organism and subsequently a blood specimen collected during the ENDO secondary BSI attribution period is positive for *S.aureus* and *E.coli* while the *S.aureus* can be assigned to the ENDO event, it cannot be assumed the *E.coli* can be assigned as a secondary BSI pathogen. The blood organism (*E.coli*) does not match the organism (*S.aureus*) used to meet the ENDO definition. If the blood specimen can be used to meet an ENDO definition criterion both organisms can be assigned.

ADDITIONAL INFORMATION

Otherwise the *E.coli* will need to be investigated as a separate BSI and be identified as a secondary BSI to another site-specific infection or determined to be a primary BSI.

++EXCEPTION: Necrotizing enterocolitis (NEC) criteria include neither a site-specific specimen nor organism identified from blood specimen, however an exception for assigning a BSI secondary to NEC is provided.

A BSI is considered secondary to NEC if the patient meets one of the two NEC criteria AND an organism identified from blood specimen collected during the secondary BSI attribution period is an LCBI pathogen or the same common commensal which is identified from two or more blood specimens drawn on separate occasions collected on the same or consecutive days.

ADDITIONAL INFORMATION

Secondary BSI Attribution Period Tables

In the example below, the Date of Event is hospital day 4. The 14-day RIT is hospital day 4 through day 17. The secondary BSI Attribution Period is the Infection Window Period combined with the Repeat Infection Timeframe (RIT), 17 days in this example. The blood culture collected on hospital day 10 has a matching pathogen to the site-specific culture used to meet the SUTI definition and therefore a secondary BSI is identified.

Infection Window Period
(first positive diagnostic test, 3 days before
and 3 days after)

**Repeat Infection Timeframe
(RIT)**
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time
within the infection window period)

HOSPITAL DAY	BSI	RIT	INFECTION WINDOW PERIOD
1			
2			
3			
4		1	Urine culture: >100,000 cfu/ml <i>E. coli</i>
5		2	Fever > 38.0 C
6		3	Fever > 38.0 C
7		4	
8		5	
9		6	
10		7	Blood culture : <i>E.coli</i>
11		8	
12		9	Urine culture: > 100,000 cfu/ml <i>S. aureus</i>
13		10	
14		11	
15		12	
16		13	
17		14	
18			
19			
			SUTI & Secondary BSI Date of Event = 4 Pathogens = <i>E. coli</i>, <i>S. aureus</i>

ADDITIONAL INFORMATION

In the example below, the Date of Event is hospital day 4. The 14-day RIT is hospital day 4 through day 17. The secondary BSI Attribution Period is 17 days in length. The blood culture collected on hospital day 5 is used as an element to meet the PNU2 infection definition and therefore a secondary BSI is identified.

Secondary BSI Attribution Period

	HOSPITAL DAY	BSI	RIT	INFECTION WINDOW PERIOD
	1			
	2			
	3			
	4		1	Chest Imaging: infiltrate
	5		2	Blood Culture: <i>S. aureus</i> , Fever > 38.0 C, new onset cough
	6		3	Fever > 38.0 C, rales
	7		4	
	8		5	
	9		6	
	10		7	
	11		8	
	12		9	
	13		10	
	14		11	
	15		12	
	16		13	
	17		14	
	18			
	19			
				PNEU (PNU2) & Secondary BSI Date of Event = 4 Pathogens = <i>S. aureus</i>

Infection Window Period
(first positive diagnostic test, 3 days before
and 3 days after)

**Repeat Infection Timeframe
(RIT)**
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time
within the infection window period)

Pathogen Assignment Guidance
(Revised January 1, 2018)

The following provides guidance for reporting pathogens associated with site-specific infections that are identified during the RIT or during the secondary BSI attribution period.

- Additional eligible pathogens recovered during the RIT from the same type of infection are added to the event.
 - Report all site-specific pathogens before secondary BSI pathogens
 - SUTIs can only have two organisms entered according to NHSN application rules. However, if yes is selected for the secondary BSI field, the third pathogen field will become available for data entry.
 - If at least one BSI pathogen with a collection date in the secondary BSI attribution period matches organism from a specimen (either a site-specific specimen or a blood specimen) that was used to meet a site-specific infection criterion, additional eligible BSI pathogens are also considered secondary to the event.
 - BSI pathogens may be assigned to more than one infection source at the same time in the following scenarios:
 1. Secondary BSI pathogen assigned to two different site-specific infections (see example 1)
- OR**
2. Secondary BSI pathogen assigned to a site-specific infection and assigned as pathogen to a primary BSI event (see example 2)

Example 1: *K. pneumoniae* is identified in a blood culture during the RIT of a SUTI with *K. pneumoniae*. The patient is also recovering from COLO surgery performed at your facility in the past week and now has:

- Fever >38.0°C
- Abdominal pain, and
- CT showing abdominal abscess

These three elements, when combined with a positive blood culture, meet IAB criterion 3b. **If a facility includes both UTI and SSI (for COLO) in their monthly reporting plan, a UTI and SSI would be reported, both with a secondary BSI and with pathogen *K. pneumoniae*.**

Note: As per the SSI protocol, the SSI-IAB does not have an Infection Window Period or RIT. The secondary BSI attribution period is 17 days in duration including the date of event, 3 days prior and 13 days after the date of event.

ADDITIONAL INFORMATION

Example 1 cont.

Infection Window Period
(first positive diagnostic test, 3 days before and 3 days after)

Repeat Infection Timeframe (RIT)
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Secondary BSI Attribution Period for SSI

Date of Event
(date the first element occurs for the first time within the infection window period)

Hospital Day	BSI	RIT	Infection Window Period	Infection Window Period	BSI-SSI
1					
2					
3					
4		1	Urine culture: >100,000 cfu/ml <i>K. pneumoniae</i>		
5		2	Fever > 38.0 C		
6		3			
7		4			
8		5		Fever > 38.0 C, Abdominal pain	
9		6		CT Scan : Abdominal abscess	
10		7	Blood culture: <i>K. pneumoniae</i>	Blood culture: <i>K. pneumoniae</i>	
11		8			
12		9			
13		10			
14		11			
15		12			
16		13			
17		14			
18					
19					
20					
21					
22					
23					
			SUTI & Secondary BSI Date of Event = 4 Pathogen: <i>K. pneumoniae</i>	SSI-IAB & Secondary BSI Date of Event = 8 Pathogen: <i>K. pneumoniae</i>	

ADDITIONAL INFORMATION

Example 2: On day 4 of hospital admission *S. aureus* is identified in a blood culture meeting the HAI, LCBI 1 criterion. On day 8 the patient has a fever of >38.0°C and *E. coli* is identified in a urine culture meeting the SUTI definition. On hospital day 13, a blood culture positive for *E. coli* is identified. Because the blood culture occurs within both the LCBI RIT and the SUTI secondary BSI attribution period, the pathogen, *E. coli* is assigned to both events.

Hospital Day	RIT	Infection Window Period	Infection Window Period	RIT	BSI
1					
2					
3					
4	1	Blood culture: <i>S. aureus</i>			
5	2				
6	3				
7	4				
8	5		Fever >38.0 C,	1	
9	6		Urine culture: >100,000 cfu / ml <i>E.coli</i>	2	
10	7			3	
11	8			4	
12	9			5	
13	10			6	
14	11			7	
15	12			8	
16	13	Blood Culture: <i>E.coli</i>	Blood Culture: <i>E.coli</i>	9	
17	14			10	
18				11	
19				12	
20				13	
21				14	
22					
		LCBI Date of Event = 4 Pathogen: <i>S. aureus</i> and <i>E.coli</i>	SUTI & Secondary BSI Date of Event = 8 Pathogen: <i>E.coli</i>		

Infection Window Period
(first positive diagnostic test, 3 days before and 5 days after)

Repeat Infection Timeframe (RIT)
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time within the infection window period)

- Pathogens excluded from specific infection definitions (for example, yeast in UTI, or *Enterococcus* spp. in PNEU) are also excluded as pathogens for BSIs secondary to that type of infection (specifically, they cannot be added to one of these infections as a pathogen). The excluded organism must be accounted for as either:

1. A primary bloodstream infection (BSI/CLABSI) (see example 3).

OR

2. A secondary BSI attributed to another primary infection (for example, to an IAB or SINU, etc.), in accordance with the “Secondary BSI Guide” of the BSI checklist (see example 4).

ADDITIONAL INFORMATION

Example 3: A SUTI with *Enterococcus faecalis* is identified and a subsequent blood culture with yeast and *E. faecalis* is collected during the SUTI secondary BSI attribution period. A BSI secondary to SUTI is identified. *E. faecalis* is already documented as a pathogen, but the yeast will not be reported as a secondary BSI pathogen, because yeasts are excluded as organisms in the UTI definition. In this example, no other primary source of infection for which the yeast BSI can be assigned as secondary is identified. Therefore a primary BSI with yeast only is identified.

NOTE: The *Enterococcus faecalis* is not assigned as a pathogen for the primary BSI because if an excluded organism had not been identified, a primary BSI would not have been reported.

Hospital Day	BSI	RIT	Infection Window Period	Infection Window Period	RIT
1					
2					
3		1	Dysuria		
4		2	Urine culture: > 100,000 cfu/ml <i>E. faecalis</i>		
5		3			
6		4			
7		5			
8		6			
9		7			
10		8			
11		9	Blood culture: <i>E. faecalis</i> / Yeast	Blood culture: <i>E. faecalis</i> / Yeast	1
12		10			2
13		11			3
14		12			4
15		13			5
16		14			6
17					7
18					8
19					9
20					10
21					11
22					12
23					13
24					14
25					
			UTI & Secondary BSI Date of Event = 3 Pathogen: <i>E. faecalis</i>	Primary BSI Date of Event = 11 Pathogen: Yeast	

Infection Window Period
(first positive diagnostic test, 3 days before and 3 days after)

Repeat Infection Timeframe (RIT)
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time within the infection window period)

ADDITIONAL INFORMATION

Example 4: A PNU2 with *Acinetobacter baumannii* culture from blood is identified.

NOTE: The positive chest imaging result is the diagnostic test that is used to define the infection window period. A subsequent blood culture with *Enterococcus faecalis* and *A. baumannii* is collected during the secondary BSI attribution period of this PNU2 event. ***Enterococcus faecalis* will not be reported as a pathogen for the PNU2, because *Enterococcus* spp. are excluded as organisms in the PNEU definition.** Another primary source of infection, SUTI, is found and *Enterococcus faecalis* is assigned as a secondary BSI pathogen.

Infection Window Period
(first positive diagnostic test, 3 days before and 3 days after)

Repeat Infection Timeframe (RIT)
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time within the infection window period)


Hospital Day	BSI	RIT	Infection Window Period	Infection Window Period	RIT	BSI
1						
2						
3						
4						
5						
6						
7		1	New onset cough			
8		2	Imaging test: Infiltrate			
9		3	Fever > 38.0 C	Fever > 38.0 C	1	
10		4	Fever > 38.0 C	Fever > 38.0 C	2	
11		5	Blood culture: <i>A. baumannii</i>	Urine culture: > 100,000 cfu/ml <i>E. faecalis</i>	3	
12		6	Blood culture: <i>A. baumannii</i> , <i>E. faecalis</i>	Blood culture: <i>A. baumannii</i> , <i>E. faecalis</i>	4	
13		7			5	
14		8			6	
15		9			7	
16		10			8	
17		11			9	
18		12			10	
19		13			11	
20		14			12	
21					13	
22					14	
23						
24						
25						
26						
			PNU2 & Secondary BSI Date of Event = 7 Pathogen: <i>A. baumannii</i>	SUTI & Secondary BSI Date of Event = 9 Pathogens: <i>E. faecalis</i> , <i>A. baumannii</i>		

ADDITIONAL INFORMATION

- Determination of a **secondary** BSI to a primary site of infection does not set an RIT for all subsequent BSIs. If a blood culture occurs during a site-specific infection's secondary BSI attribution period and it cannot be used as an element to meet the infection definition or does not have at least one matching pathogen to the site-specific infection culture used to meet the site-specific infection criterion the BSI must be evaluated as a new BSI event.

Example 5: A SUTI with *Enterococcus faecalis* is identified and a blood culture with *E. faecalis* collected on hospital day 11 within the SUTI secondary BSI attribution period is also identified. On hospital day 15, (also within the SUTI RIT and secondary BSI attribution period), a blood culture growing *Staphylococcus aureus* is identified. **Because the blood growing *S. aureus* does not have at least one pathogen that matches the urine culture used to meet the SUTI criterion the BSI cannot be attributed as secondary to the SUTI. The BSI will need to be investigated as a new BSI event** and either assigned as a secondary BSI to another primary site of infection or determined to be a primary BSI.

Note: The secondary BSI attribution period for a primary site of infection does not establish a repeat infection timeframe for all subsequent BSIs.

Hospital Day	BSI	RIT	Infection Window Period
1			
2			
3		1	Dysuria
4		2	Urine culture: > 100,000 cfu/ml <i>E. faecalis</i>
5		3	
6		4	
7		5	
8		6	
9		7	
10		8	
11		9	Blood culture: <i>E. faecalis</i>
12		10	
13		11	
14		12	
15		13	Blood culture: <i>S. aureus</i> 
16		14	
17			
18			
19			
20			
21			
			UTI & Secondary BSI Date of Event = 3 Pathogen: <i>E. faecalis</i>

Infection Window Period
(first positive diagnostic test, 3 days before and 3 days after)

Repeat Infection Timeframe (RIT)
(date of event = day 1)

Secondary BSI Attribution Period
(Infection Window Period + RIT)

Date of Event
(date the first element occurs for the first time within the infection window period)

ADDITIONAL INFORMATION

When identifying a BSI which appears to fall within a BSI-RIT, it is important to verify the initial BSI was indeed a primary BSI and not a secondary BSI to site-specific event. Only primary BSIs create a BSI RIT, therefore, incorrectly establishing a BSI-RIT for a secondary BSI event can result in the inaccurate assignment of a BSI pathogen(s) and the identification of a true CLABSI event will likely be missed. (see example 6)

Example 6:

Initially a BSI was identified as POA and therefore not further investigated. Upon identification of a subsequent BSI it cannot be assumed that the POA BSI set a BSI RIT. Instead, it must be verified that the initial BSI was indeed a primary BSI and not a secondary BSI to a site-specific infection. In the example below, upon further review the initial BSI was actually determined to be a secondary BSI to a SKIN infection. The SKIN Secondary BSI Attribution Period does not capture all subsequent BSIs. In this example it can only account for BSIs that have at least one matching pathogen to the site-specific specimen (wound drainage) used to meet SKIN. The BSI on hospital day 9 does not match and it also was determined not to be secondary to another site-specific infection and therefore a CLABSI is identified.

Hospital Day	Central Line	Initial and Incorrect Determination as a Single Event		Correct Determination as a Secondary BSI and a Primary BSI				
		Infection Window Period	RIT-BSI	Infection Window Period	RIT-SKIN	Secondary BSI Attrib SKIN	Infection Window Period	RIT-BSI
-2								
-1								
1								
2	CL placed	Blood culture: <i>S. aureus</i>	1			Blood culture: <i>S. aureus</i>		
3	X		2	Pain, Erythema	1			
4	X		3	Wound drainage culture: <i>S. aureus</i>	2			
5	X		4		3			
6	X		5		4			
7	X		6		5			
8	X		7		6			
9	X	Blood Culture: <i>S. epidermidis</i> x 2	8		7		Blood Culture: <i>S. epidermidis</i> x 2	1
10	X	Hypotension	9		8		Hypotension	2
11	X		10		9			3
12	X		11		10			4
13	X		12		11			5
14	X		13		12			6
15	X		14		13			7
16	X				14			8
17	X							9
18	X							10
19	X							11
20	X							12
21	X							13
22	X							14
		POA-BSI-LCBI 1 Date of Event = 2 Pathogen: <i>S. aureus</i> and <i>S. epidermidis</i>		HAL-SKIN with Secondary BSI Date of Event = 3 Pathogen: <i>S. aureus</i>			HAL-BSI-LCBI 2 Date of Event = 9 Pathogen: <i>S. epidermidis</i>	

Location of Attribution
(Revised January 1, 2018)

The inpatient location where the patient was assigned on the date of event is the location of attribution (see **Date of Event** definition).

Non-bedded patient locations, (for example Operating Room (OR) or Interventional Radiology (IR) are not eligible for assignments of location of attribution for HAI events. Location of attribution must be assigned to a location where denominator data (for example, patient days, device days) can be collected.

Exception to Location of Attribution:

Transfer Rule: 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. This is called the Transfer Rule. If the patient was in multiple locations within the transfer rule time frame, attribute the infection to the **first** location in which the patient was housed the **day before** the infection's date of event. Receiving locations or facilities should share information about such HAIs with the transferring location or facility to enable accurate reporting.

Location Example:

Date	Patient Location	Location of Attribution
3/22	Unit A	
3/23	Unit A Unit B	
3/24 Date of Event	Unit B	Unit A
3/25	Unit B	

Facility Example:

Date	Patient Location	Location of Attribution
3/22	Facility 1	
3/23	Facility 1 Facility 2	
3/24 Date of Event	Facility 2	Facility 1
3/25	Facility 2	

Multiple Transfers:

In instances where a patient has been transferred to more than one location on the date of an infection, or the day before, attribute the infection to the **first** location in which the patient was housed the **day before** the infection's date of event.

Examples of multiple transfers within the transfer rule time frame:

Date	Patient Location	Location of Attribution
3/22	Unit A	
3/23	Unit A Unit B Unit C	
3/24 Date of Event	Unit C Unit D	Unit A
3/25	Unit D	

NOTE: The complete set of CDC/NHSN HAI site-specific infection criteria, and the comments and reporting instructions integral to the correct application of the criteria, can be found in the corresponding site-specific checklists.

APPENDIX: Flow Diagram for NHSN Event Determination

