



## Identifying Healthcare-associated Infections (HAI) for NHSN Surveillance

To standardize the classification of an infection as present on admission (POA) or a healthcare-associated infection (HAI), the following objective surveillance definitions and guidance are 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

The intention of this approach is to align criteria and definitions and decrease subjectivity while maintaining epidemiologic standardization and clinical relevance. A variety of scenarios to include repeat infections of the same type, concurrent infections of differing types, and pathogen assignment in multi-pathogen infections are addressed. See [Appendix Flow Diagram for NHSN Event Determination](#).

### General Instructions

1. Infection window period, POA, HAI, and RIT definitions **do not** apply to [SSI](#), [VAE](#), or [LabID](#) Events ([Table 1](#)).
2. [Date of Event](#), as defined in this chapter, **does not** apply to VAE or LabID Events ([Table 1](#)).
3. Secondary BSI attribution period, as defined in this chapter, does not apply to SSI, VAE, LabID or primary [BSI](#) events ([Table 1](#)).
  - SSI surveillance uses a 30 or 90-day surveillance period. Since the Infection Window Period and RIT do not apply, the secondary BSI attribution period, by name, also cannot apply. However, a 17-day period that includes the date of SSI event, 3 days prior and 13 days after, is still used to attribute a BSI as secondary to an SSI. The requirements included in the BSI Event protocol, [Appendix B](#), Secondary Bloodstream Infection (BSI) Guide must be met to determine that a BSI is secondary to an SSI.
  - Specific guidance can be found in the VAE protocol for secondary BSI attribution.
  - A primary BSI/CLABSI by definition can never have a secondary BSI.



4. 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 definition: *Blastomyces*, *Histoplasma*, *Coccidioides*, *Paracoccidioides*, *Cryptococcus* and *Pneumocystis*.
5. If the date of specimen collection is on or after the date 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 microbiologic 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. Note: This exemption for reporting an event is applicable only when both requirements are present: brain death and organ donation. This does not apply to **all** patients that are declared brain dead.
6. Hospice patients are not excluded from NHSN surveillance.
7. 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 definitions autopsy specimens/reports are not eligible for use.
8. 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 (e.g., 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 [Table 3](#) comment section of the Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and Non-central line-associated Bloodstream Infection) protocol.
9. Reactivation of a latent infection (e.g., herpes zoster [shingles], herpes simplex, syphilis, or tuberculosis) is not considered to be an HAI.



**Table 1:** Exceptions to Application of Definitions

	SSI	LabID <sup>^</sup>	VAE <sup>^</sup>	BSI
Infection Window Period	N/A	<b>Not Applicable</b>	<b>Not Applicable</b>	Yes
Date of Event	Yes			Yes
POA	N/A			Yes
HAI	N/A			Yes
Repeat Infection Timeframe (RIT)	N/A			Yes
Secondary BSI Attribution Period	*			N/A

\*See SSI surveillance protocol

<sup>^</sup>See LabID and VAE surveillance protocols

N/A=Not Applicable

**Observation Patients in Inpatient Locations:**

For purposes of NHSN surveillance, if an observation patient is admitted to an inpatient location, the patient must be included in all 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:**

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 calendar days after ([Table 2](#)). For purposes of defining the Infection Window Period the following are considered diagnostic tests:

- laboratory specimen collection
- imaging test
- procedure or exam
- physician diagnosis
- initiation of treatment



**Table 2:** Infection Window Period

<b>Infection Window Period</b>		<b>3 days before</b>
	<b>Date of first positive diagnostic test that is used as an element of the site-specific criterion</b> <b>OR</b> <b>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</b>	
		<b>3 days after</b>

**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. See example below.**

**Example**

When meeting PNEU definition using the PNU2 criterion, identification of an 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.



<b><u>Option 1: Correct diagnostic test selection</u></b>		<b><u>Option 2: Incorrect diagnostic test selection</u></b>	
<b>Hospital Day</b>	<b>Infection Window Period</b>	<b>Hospital Day</b>	<b>Infection Window Period</b>
-2		-2	
-1		-1	
1		1	
<b>2 POA</b>	New onset cough	2	New onset cough
3	<b>Imaging test: Infiltrate</b>	<b>3 HAI</b>	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	<b>Blood culture: <i>A. baumannii</i></b>
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 the site-specific infection criterion is used to define the infection window period (e.g., diarrhea, site-specific pain, purulent drainage). Note that a non-specific sign or symptom (e.g., 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.

**EMET-Endometritis**

Endometritis must meet at least ***one*** of the following criteria:

1. Patient has organisms identified from endometrial fluid or tissue (including amniotic fluid) by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (e.g., not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has at least ***two*** of the following signs or symptoms: fever ( $>38.0^{\circ}\text{C}$ ), pain or tenderness (uterine or abdominal)\*, or purulent drainage from uterus.

\* With no other recognized cause.

### 2. More than one criterion 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 1 with redness, swelling and positive culture from the site-specific specimen (diagnostic test) and also met using criterion 2a 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		SKIN Criterion 2a	
Hospital Day	Infection Window Period	Hospital Day	Infection Window Period
-2		-2	
-1		-1	
1		1	
<b>2 POA</b>	<b>Purulent Drainage</b> from wound (SKIN Criterion 1)	2	
3		<b>3 HAI</b>	<b>Pain, Swelling</b> (SKIN Criterion 2a)
4		4	<b>Drainage culture: <i>S. aureus</i></b>
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	
11		11	
12		12	
13		13	
14		14	
15		15	
16		16	
17		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):**

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 ([Table 3](#) and [Table 4](#)).

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.

**Table 3:** 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	HAI
3	Hospital Day 3	
4	Hospital Day 4	
5	Hospital Day 5	





**Table 4:** Infection Window Period and Date of Event

(Patient age  $\leq$  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.

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



**Notes:**

- Acceptable documentation includes patient-reported signs or symptoms documented in the medical record by a healthcare professional (e.g., patients states measured fever > 38.0° C or >100.4° F, nursing home documents fever prior to arrival to the hospital, patient complains of dysuria). Information communicated verbally from facility to facility or information found in another facilities medical record cannot be used unless also documented in the current facility's medical record (with the exception of post – discharge SSI surveillance.)
- 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):**

The RIT 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, a new event is not identified or reported. 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 is not to be amended. See examples in [Table 5](#) and [Table 6](#) below:

- 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 BONE infection in an RIT, but may have a BONE and DISC in two overlapping RITs (specific type)

Major Type Examples:

- Patients will have no more than one LCBI in an RIT (e.g., LCBI 1, LCBI 2, MBI-LCBI 1, etc.)
- Patients will have no more than one PNEU in an RIT (e.g., PNU1, PNU2, PNU3)
- Patients will have no more than one UTI in an RIT (e.g., SUTI, ABUTI)



- 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 (Table 5), 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 hospital day 4. Determination of a new infection or continuation of ongoing infection is not required. The original date of event and the RIT are maintained.

**Table 5:** Repeat Infection Timeframe

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		
		<b>SUTI-HAI</b> Date of Event = 4 Pathogens = <i>E. coli</i> , <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)

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



In the example below (Table 6) 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.

**Table 6.** 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	
12	9	
13	10	
14	11	
15	12	
16	13	
17	14	
18		
19		

**Non-catheter associated SUTI**  
**Date of Event = Day 4**  
**UTI RIT = Day 4 - 17**  
**Pathogens: *S.aureus*, *E.coli***  
**(Note: Meeting an event within the RIT does not alter the original determination. Date of Event, device association or RIT does NOT change)**

**Notes:**

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



## Secondary BSI Attribution Period

(Refer to [Appendix B, Secondary Bloodstream Infection \(BSI\) Guide of the BSI Event Protocol](#))

The Secondary BSI Attribution Period\* 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 that is used to meet the NHSN site-specific infection criterion, and therefore is collected during the site-specific infection window period.

### \*Notes:

- SSI surveillance uses a 30 or 90 day surveillance period. Since the Infection Window Period and RIT do not apply, the secondary BSI attribution period, by name, also cannot apply. However, a 17-day period that includes the date of SSI event, 3 days prior and 13 days after, is still used to attribute a BSI as secondary to an SSI.
- 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 a 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 (e.g., 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. 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.



**Secondary BSI Attribution Period Tables:**

In the example below (Table 7), 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 SUTI definition, and therefore, a secondary BSI is identified.

**Table 7:** Secondary BSI Attribution 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			
			<b>SUTI &amp; Secondary BSI</b> Date of Event = 4 Pathogens = <i>E. coli</i> , <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)



In the example below ([Table 8](#)), 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.

**Table 8:** Secondary BSI Attribution Period

HOSPITAL DAY	BSI	RIT	INFECTION WINDOW PERIOD
1			
2			
3			
4		1	<b>Chest Imaging: infiltrate</b>
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			
			<b>PNEU (PNU2) &amp; Secondary BSI</b> <b>Date of Event = 4</b> <b>Pathogens = <i>S. aureus</i></b>

**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:

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 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 that was used to meet a site-specific infection criterion (either a site-specific specimen or a blood specimen) the BSI is 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  
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 will be reported, both with a secondary BSI and with pathogen *K. pneumoniae*.**

**Note:** 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.



Cont. Example 1

**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>	



**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 > 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.**

**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	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>		

- Pathogens excluded from specific infection definitions (e.g., yeast in UTI, *Enterococcus* spp. in PNEU) are also excluded as pathogens for BSIs secondary to that type of infection (i.e., 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 (e.g., IAB, SINU, etc.), in accordance with Appendix B, Secondary BSI Guide of the [BSI Event protocol](#) (see [Example 4](#))



**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 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)



**Example 4:**

A PNU2 with *Acinetobacter baumannii* cultured 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, E. faecalis</i>	Blood culture: <i>A. baumannii, 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, A.baumannii</i>		



- 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 (see [Example 5](#))

**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)



**Location of Attribution:**

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

**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 and examples are found in UTI, BSI and PNEU modules. Receiving facilities should share information about such HAIs with the transferring location or facility to enable reporting.

**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.

Example of multiple transfers within the transfer rule time-frame:

	3/22	3/23	3/24
Locations in which patient was housed	Unit A	Unit A Unit B Unit C	Unit C Unit D This is also the date of event for a CAUTI. CAUTI is attributed to Unit A since Unit A was the first location in which the patient was housed the day before the date of event.

**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 Chapter 17, CDC/NHSN [Surveillance Definitions](#) for Specific Types of Infections, PNEU ([Chapter 6](#)), UTI ([Chapter 7](#)) and SSI ([Chapter 9](#)) .



APPENDIX: Flow Diagram for NHSN Event Determination

