NHSN Overview

Two-Day Healthcare-Associated Infections Workshops

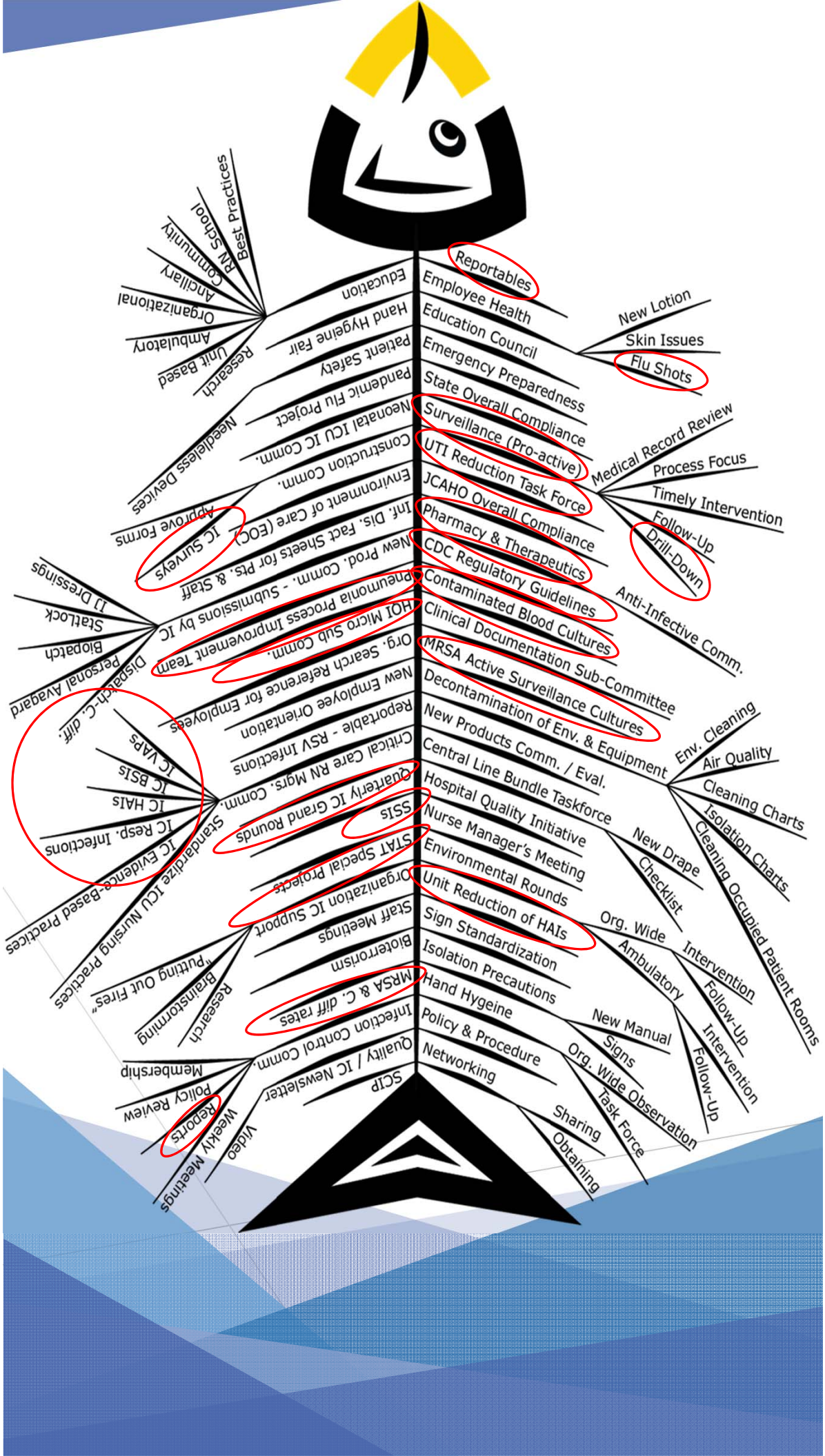
Infectious Disease Epidemiology

2017

Objectives

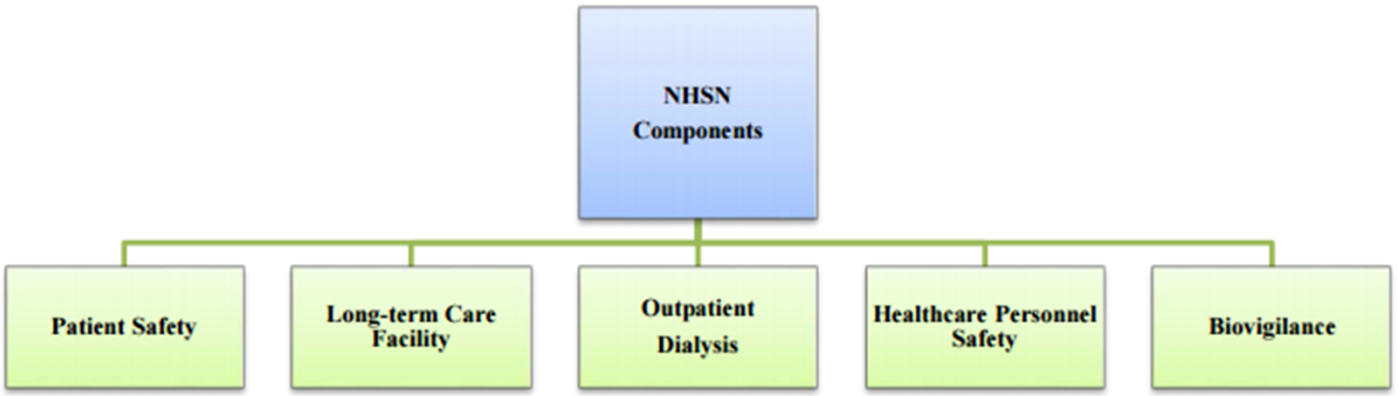
By the end of the presentation, attendees will be able to:

- Summarize the purpose of the National Healthcare Safety Network (NHSN)
  - Structure
  - Identifying a healthcare-associated infection (HAI)
- Define common terms associated with NHSN surveillance
  - Infection Window Period (IWP)
  - Location of Attribution (LOA)
  - Present on Admission (POA)
  - Transfer Rule


Reportables
Employee Health
New Lotion
Skin Issues
Flu Shots
Education Council
Emergency Preparedness
State Overall Compliance
Surveillance (Pro-active)
Medical Record Review
UTI Reduction Task Force
Process Focus
JCAHO Overall Compliance
Timely Intervention
Pharmacy & Therapeutics
Follow-Up
CDC Regulatory Guidelines
Drill-Down
Contaminated Blood Cultures
Anti-Infective Comm.
Clinical Documentation Sub-Committee
MRSA Active Surveillance Cultures
Decontamination of Env. & Equipment
Env. Cleaning
New Products Comm. / Eval.
Air Quality
Central Line Bundle Taskforce
Cleaning Charts
Hospital Quality Initiative
Isolation Charts
New Drape
Nurse Manager's Meeting
Cleaning Occupied Patient Rooms
Checklist
Environmental Rounds
Unit Reduction of HAIs
Org. Wide
Sign Standardization
Intervention
Ambulatory
Isolation Precautions
Follow-Up
Hand Hygeine
New Manual
Intervention
Policy & Procedure
Signs
Follow-Up
Networking
Org. Wide Observation
Task Force
Sharing
Obtaining
SCIP
Quality / IC Newsletter
Infection Control Comm.
Membership
Policy Review
Reports
Weekly Meetings
Video
Brainstorming
„Putting Out Fires"
Research
Standardize ICU Nursing Practices
Evidence-Based Practices
IC Resp. Infections
IC HAIs
IC BSIs
IC VAPs
Dispatch-C. diff.
Personal Avagard
Biopatch
Statlock
IJ Dressings
Pneumonia Process Improvement Team
New Prod. Comm. - Submissions by IC
Inf. Dis. Fact Sheets for Pts. & Staff
Environment of Care (EOC)
Construction Comm.
Neonatal ICU IC Comm.
Pandemic Flu Project
Patient Safety
Hand Hygeine Fair
Education
Research
Unit Based
Ambulatory
Organizational
Ancillary
Community
AN Schools
Best Practices
IC Surveys
Approve Forms
Needleless Devices
HOI Micro Sub Comm.
Org. Search Reference for Employees
New Employee Orientation
Reportable - RSV Infections
Critical Care RN Mgrs. Comm.
Quarterly IC Grand Rounds
SSIs
STAT Special Projects
Organization IC Support
Staff Meetings
Bioterrorism
MRSA & C. diff rates

About the National Healthcare Safety Network

- Free, internet-based surveillance system
- Operated by the Division of Healthcare Quality Promotion (DHQP) at Centers for Disease Control and Prevention (CDC)
- Facilities participate largely for reporting compliance with Centers for Medicare and Medicaid Services (CMS)
- Collects data about HAI and adherence to clinical practices



Surveillance Techniques

- Active, patient-based, prospective surveillance of events and denominator data
- Data sources:
  - Laboratory
  - Pharmacy
  - Admission/Discharge/Transfer (ADT)
  - Radiology/Imaging
  - Pathology databases
  - Patient charts
  - Nurses/physicians notes

Identifying HAI for NHSN Surveillance

To standardize the classification of an infection as present on admission (POA) or a 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

Key Terms: Healthcare-Associated Infection (HAI)

An infection is considered an 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.

- Does not apply to surgical site infections (SSI), ventilator-associated events (VAE), or laboratory-identified events (LabID) protocols
- 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

Reactivation of a latent infection (e.g., shingles, syphilis, TB, herpes simplex) is not considered to be an HAI.

Key Terms: Date of Event

- Date the first element used to meet an NHSN site-specific criterion occurs for the first time within the seven-day infection window period
- Does not apply to LabID event or VAE

Key Terms: 7-Day Infection Window Period

- Time frame during which all site-specific infection criteria must be met
- 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
- Important: use the first diagnostic test that creates an infection window period during which all elements of the criterion can be found

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 localized sign or symptom that is used as an element of the site-specific criterion**	
		3 days after

Diagnostic Tests:

- Laboratory specimen collection
- Imaging test
- Procedure or exam
- Physician diagnosis
- Initiation of treatment

Infection Window Period Example

Option 1: Correct diagnostic test selection

Hospital Day	Infection Window Period
-2	
-1	
1	
2 POA	New onset cough
3	**Imaging test: Infiltrate**
4	Fever > 38.0 C
5	Fever > 38.0 C
6	Blood culture: *A. baumannii*
7	Rales, Fever > 38.0 C
8	Cough, Rales
9	
10	
11	
12	
13	
14	
15	
16	
17	

Option 2: Incorrect diagnostic test selection

Hospital Day	Infection Window Period
-2	
-1	
1	
2	New onset cough
3 HAI	Imaging test: Infiltrate
4	Fever > 38.0 C
5	Fever > 38.0 C
6	**Blood culture: *A. baumannii***
7	Rales, Fever > 38.0 C
8	Cough, Rales
9	
10	
11	
12	
13	
14	
15	
16	
17	

Key Terms: 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
- Note: POA should not be applied to SSI, VAE, or LabID Events

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	

Infections occurring in newborns with date of event on hospital day 1 or day 2 are considered POA.

Key Terms: Repeat Infection Timeframe (RIT)

- 14-day period during which no new infections of the same type are reported
- 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 140day RIT, the new event is not identified or reported
- Note 1: RIT should not be applied to SSI, VAE, or LabID events
- Note 2: A patient may have negative cultures during the RIT without impact on the RIT
- Note 3: Do not change the device-association determination during the RIT

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 *E. coli*
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 *S. aureus*
13	10	
14	11	
15	12	
16	13	
17	14	
18		
19		
		SUTI-HAI **Date of Event = 4** **Pathogens = *E. coli, S. aureus***

Repeat Infection Timeframe Example

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 *S. aureus;* dysuria
5	2	Foley catheter inserted
6	3	Foley catheter
7	4	Foley catheter
8	5	Foley catheter **Urine culture**: >100,000 CFU/ml *E. coli;* 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)

Key Terms: Location of Attribution

- The inpatient location where the patient was assigned on the date of event

Location:

- Patient care area to which a patient is assigned while receiving care in the healthcare facility
- Only mapped inpatient locations where denominator data are collected can be used for reporting infection events via the Device-associated Module
- Operating rooms and outpatient locations are not valid locations for these types of surveillance
- The specific CDC Location code is determined by the type of patients cared for in that area according to the **80% Rule**.

80% Rule:
If 80% of patients are of a certain type, then that area is designated as that type of location. The admission/discharge diagnosis should be used when determining the appropriate location mapping.

Key Terms: Transfer Rule

- If the date of event is on the date of transfer/discharge or the next day, the infection is attributed to the transferring/discharging location and admission
- This rule does not apply to LabID Event Reporting or SSI Surveillance

	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.

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.

Secondary Bloodstream Infection (BSI) Attribution Period

- Period in which a blood specimen must be collected for a secondary bloodstream infection to be attributed to a primary site infection
- Includes the Infection Window Period combined with the Repeat Infection Time Frame
- Ranges from 14-17 days in length depending upon the date of event
- To determine a secondary BSI:
  - An NHSN site-specific definition must be met (chapter 17, UTI, PNEU, or SSI) AND one of the following scenarios must be met:
    1. At least one organism from the blood matches an organism identified from the site-specific infection that is used as an element to meet infection criteria and the blood specimen is collected in the attribution period

       OR

    2. An organism identified in the blood specimen matches an organism identified from the site-specific infection criterion, and therefore is collected during the infection window period

Secondary BSI Attribution Period Example

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)

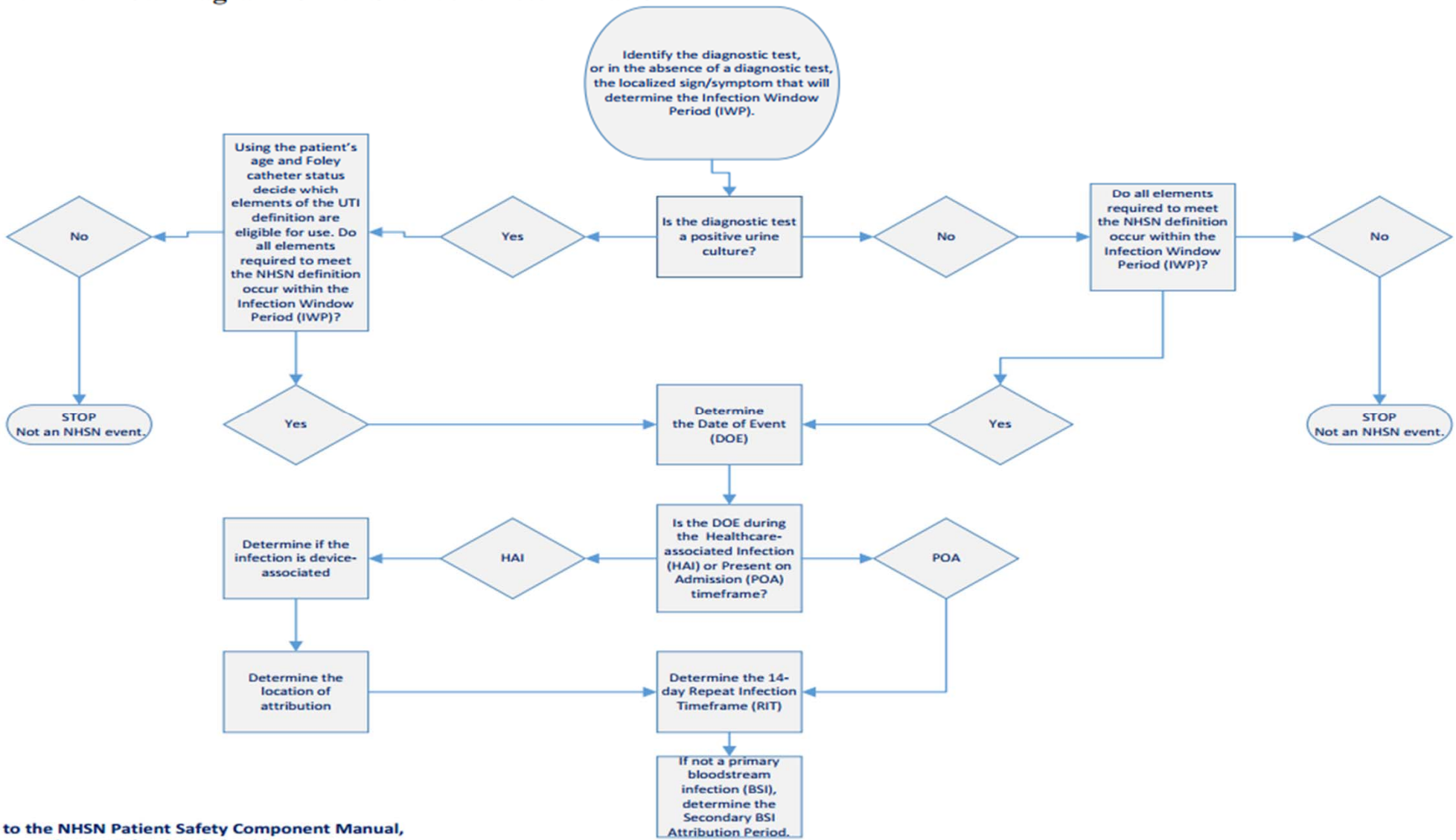
Date of Event
(date the first element occurs for the first time within the infection window period)

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

Pathogen Assignment Guidance

- Additional pathogens recorded during the RIT from the same type of infection are added to the event
- Report all site-specific pathogens before secondary BSI pathogens
- 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, the BSI is considered secondary to the event

APPENDIX: Flow Diagram for NHSN Event Determination



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

Getting Started: Monthly Reporting Plan

- First step in indicating that data should be submitted to CMS as part of the CMS Quality Reporting Programs
- Informs CDC which Patient Safety modules are used during a given month
- Identifies modules used, events, locations and/or procedures that will be monitored in-plan
- Only in-plan data are submitted to CMS in accordance with the IQR Program
- A plan must be completed for every month that data are entered into NHSN

If your facility does not complete measures that are part of CMS's Inpatient Prospective Payment System, you may complete a QualityNet Exception Form annually: http://bit.ly/2mA0I6c

- Hospital performed a combined total of 9 or fewer colon surgeries and abdominal hysterectomies in the calendar year prior to the reporting year
- Hospital has no ICU locations or adult or pediatric medical, surgical or medical/surgical wards (CAUTI/CLABSI)
- Hospital has no obstetrics department and does not deliver babies (PC-01)
- Hospital has no Emergency Department and does not provide emergency care

How Your Acute Care Hospital MRP Should Look:

- Device-Associated Module
  - Central Line-Associated Bloodstream Infections
    - All ICU locations
    - Adult/pediatric medical, surgical and med/surg wards
  - Catheter-Associated Urinary Tract Infections
    - Adult ICU locations
    - Adult/pediatric medical, surgical and med/surg wards
- Procedure-Associated Module
  - Inpatient Abdominal hysterectomies (HYST)
  - Inpatient Colon surgeries (COLO)
- Multi Drug-Resistant Organisms – LabID Events
  - Locations: 1) emergency department; 2) IRF/IPF; 3) FACWIDEIN; 4) 24-hour observation
  - MRSA Bacteremia: Blood specimens only
  - Clostridium difficile: All specimens

Facilities should also track Healthcare Worker Vaccination data in the Healthcare Personnel Safety Component. Monthly Reporting Plans should be indicated and healthcare worker Flu vaccination summary data should be entered by May 15th each year.

Annual Facility Survey

- One or more annual facility surveys must be completed upon enrollment in to NHSN, activation of an NHSN component, and/or identification of select CMS-certified unites
- A new facility survey(s) must be completed to reflect data from the prior calendar year
  - Example: an acute care hospital completes its 2016 Annual Hospital Survey containing data from 2016 at the beginning of 2017

Tips and Tricks:

Adding Users:

- Must be done by the NHSN Facility Administrator
- Ensure that the e-mail address of the user is correct
- When adding users, they will need to go through the grid card identification process; ensure that the new user's home address is used when verifying

Generate Datasets:

- Do this often!
- Read footnotes on data outputs

Resolve Alerts:

- Alerts tell you about missing data. Consult these ahead of each reporting deadline
- Ensure you're entering data at least within 30 days of the end of each month
- You will receive quarterly quality reports from IDEpi around two weeks before each deadline. Ensure your data are complete for an accurate report!

Ensure Your Success!

- Stay up-to-date with reporting guidelines
- Read the NHSN e-Newsletters (generally distributed quarterly)
- Ask your peers! Use your collaborative networks, APIC chapters, and networking time today to discuss difficult cases
- Consult with the Louisiana HAI Program about cases
- Contact nhsn@cdc.gov if you encounter system errors

Questions?