



Overview of the Patient Safety Component

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Objectives

1. Describe NHSN and its purposes
2. Define the authority and confidentiality protections for NHSN
3. Identify the requirements for participating in the Patient Safety Component
4. Describe the NHSN surveillance methodology
5. List the modules of the Patient Safety Component
6. Explain key terms used in the Patient Safety Component
7. Describe the Monthly Reporting Plan



National Healthcare Safety Network (NHSN)

- NHSN is an Internet-based surveillance system that integrates the surveillance systems operated by the Division of Healthcare Quality Promotion (DHQP) at CDC
 - Patient safety
 - Healthcare personnel safety
 - Biovigilance



Purposes of NHSN

- Collect data from a sample of US healthcare facilities to permit valid estimation of the
 - magnitude of adverse events among patients and healthcare personnel
 - adherence to practices known to be associated with prevention of these adverse events
- Analyze and report collected data to permit recognition of trends



Purposes of NHSN

- Provide facilities with risk-adjusted metrics that can be used for inter-facility comparisons and local quality improvement activities
- Assist facilities in developing surveillance and analysis methods that permit timely recognition of patient and healthcare worker safety problems and prompt intervention with appropriate measures
- Conduct collaborative research studies with member facilities



Purposes of NHSN

- Comply with legal requirements – including but not limited to state or federal laws, regulations, or other requirements – for mandatory reporting of healthcare facility-specific adverse event, prevention practice adherence, and other public health data.

Effective for enrolling facilities as of 10/29/2010 and for existing NHSN facilities upon re-consent after 12/20/2010.



Purposes of NHSN

- Enable healthcare facilities to report HAI and prevention practice adherence data via NHSN to the U.S. Center for Medicare and Medicaid Services (CMS) in fulfillment of CMS's quality measurement reporting requirements for those data.

Effective for enrolling facilities as of 10/29/2010 and for existing NHSN facilities upon re-consent after 12/20/2010.



Purposes of NHSN

- Provide state departments of health with information that identifies the healthcare facilities in their state that participate in NHSN.

Effective for enrolling facilities as of 10/29/2010 and for existing NHSN facilities upon re-consent after 12/20/2010.



Purposes of NHSN

- Provide to state agencies, at their request, facility-specific, NHSN patient safety component and healthcare personnel safety component adverse event and prevention practice adherence data for surveillance, prevention, or mandatory public reporting.

Effective for enrolling facilities as of 10/29/2010 and for existing NHSN facilities upon re-consent after 12/20/2010.



Authority and Confidentiality for NHSN

- Public Health Service Act (42 USC 242b, 242k, and 242m(d))
 - Confidentiality Protection
 - Sections 304, 306, and 308(d) of the PHS Act
- “The voluntarily provided information contained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306, and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d)).”

Effective for enrolling facilities as of 10/29/2010 and for existing NHSN facilities upon re-consent after 12/20/2010.



Data Collection and Reporting Requirements for Patient Safety Component

1. Submit a Monthly Reporting Plan to inform CDC which, if any, of the NHSN modules will be used for that month
2. Adhere to the selected module's protocol(s) exactly as described in the *NHSN Manual: Patient Safety Component Protocol*

http://www.cdc.gov/nhsn/TOC_PSCManual.html





Data Collection and Reporting Requirements for Patient Safety Component

(continued)

3. Use surveillance methodology as described in the module protocols (detailed in the next section)
4. Report events and appropriate summary or denominator data indicated on the Plan to CDC within 30 days of the end of the month



Data Collection and Reporting Requirements for Patient Safety Component

(continued)

5. Submit data for at least one module for a minimum of 6 months of the calendar year
6. Complete annual survey(s) as required by the component
7. Pass quality control acceptance checks that assess the data for completeness and accuracy





Data Collection and Reporting Requirements for Patient Safety Component

(continued)

8. Agree to report to state health authorities adverse event outbreaks identified in the facility by the surveillance system and about which you are contacted by CDC.

Failure to comply with these requirements will result in removal from the NHSN





Staffing Requirements for Participating in the PS Component

- There are no specific FTE requirements, but a trained Infection Preventionist (IP) or Hospital Epidemiologist should oversee the HAI surveillance program
- Other personnel can be trained to
 - Screen for events (e.g., infections)
 - Collect denominator data
 - Collect infection prevention practices (process measure) data
 - Enter data
 - Analyze data



NHSN Surveillance Methodology

- Active
- Patient-based
- Prospective
- Priority-directed
- Risk-adjusted rates
- Incidence rates





NHSN Surveillance Methodology

ACTIVE vs. PASSIVE

- **ACTIVE** Trained personnel use standard definitions and a variety of data sources to identify events
- **PASSIVE** Personnel, such as staff nurses, not trained to do surveillance report events





NHSN Surveillance Methodology

PATIENT-BASED vs. LABORATORY-BASED

- **PATIENT-BASED** Monitoring patients for events, risk factors, and procedures and practices related to patient care
 - Visit patient care areas
 - Review patient charts
 - Discuss with caregivers
- **LABORATORY-BASED** Case-finding based solely on positive lab findings





NHSN Surveillance Methodology

PROSPECTIVE vs. RETROSPECTIVE

- **PROSPECTIVE** Monitoring patients while still in the institution; includes post-discharge period for SSI
- **RETROSPECTIVE** Case-finding based solely on chart review after patient discharged





NHSN Surveillance Methodology

PRIORITY-DIRECTED vs. COMPREHENSIVE

- **PRIORITY-DIRECTED** Objectives for surveillance are defined and focused on specific events, processes, organisms, and/or patients/populations
- **COMPREHENSIVE** Continuous monitoring of all patients for all events and/or processes





NHSN Surveillance Methodology

RISK-ADJUSTED vs. CRUDE RATES

- **RISK-ADJUSTED** Rates are controlled for variations in the distribution of major risk factor(s) associated with an event's occurrence
 - Comparison of rates or other metrics derived from the rates is useful
- **CRUDE** Rates assume equal distribution of risk factors for all events
 - Comparison of rates not recommended





NHSN Surveillance Methodology



INCIDENCE RATES vs. PREVALENCE RATES

- **INCIDENCE (I)**
New events in a population occurring during some defined time period

$$I = \frac{\text{new events}}{\text{population during time period}}$$

- **PREVALENCE (P)**
All events in a population occurring at either a point in time (P_{point}) or during some defined time period (P_{period}).

$$(P_{\text{point}}) = \frac{\text{new and existing events}}{\text{population at a point in time}}$$

$$(P_{\text{period}}) = \frac{\text{new and existing events}}{\text{population during time period}}$$





NHSN Structure



Patient Safety Component Modules



Patient Safety Component

Device-associated
Module

Procedure-associated
Module

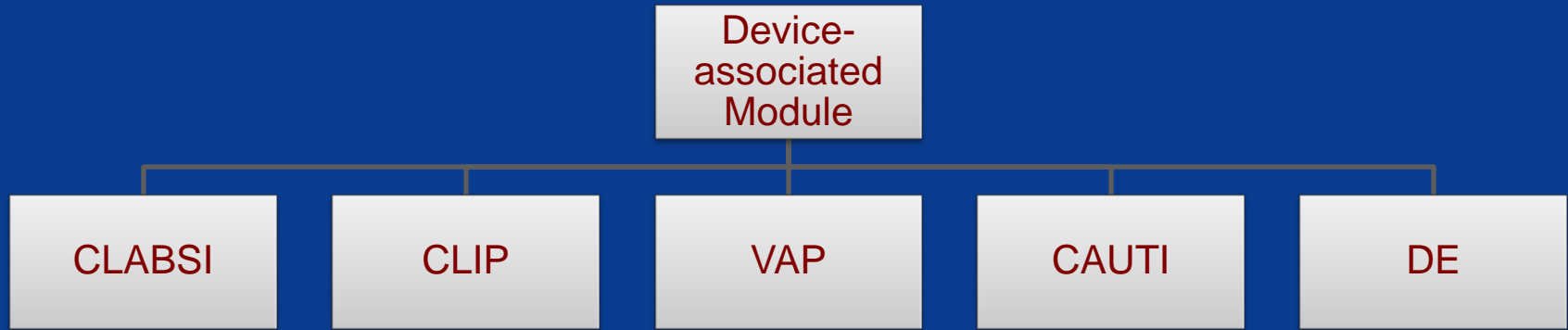
Medication-associated
Module

MDRO & CDI
Module

Vaccination
Module



Patient Safety Component Modules



CLABSI Central line-associated bloodstream infection

CLIP Central line insertion practices*

VAP Ventilator-associated pneumonia

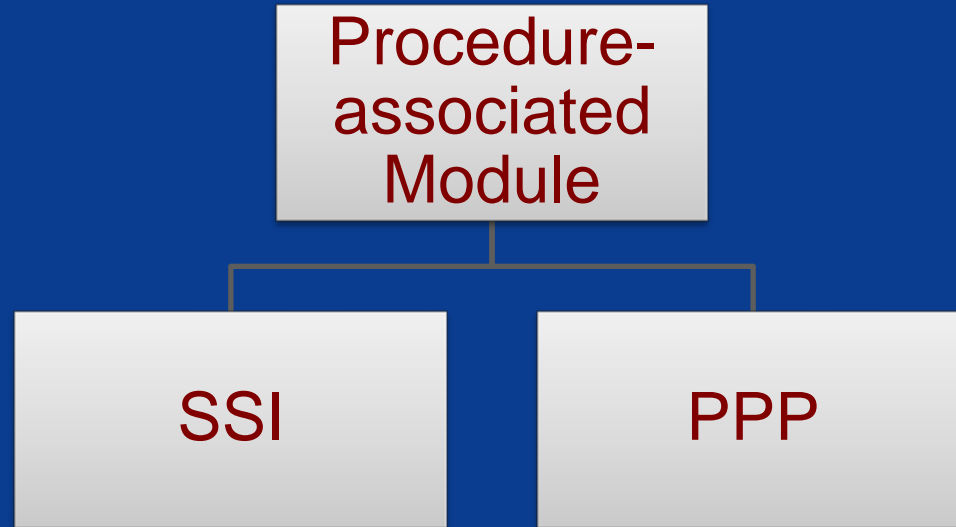
CAUTI Catheter-associated urinary tract infection

DE Dialysis event

*Process measure: Adherence to hand hygiene, protective sterile barriers, appropriate antiseptic skin prep, etc.



Patient Safety Component Modules



SSI Surgical site infection

PPP Post-procedure pneumonia





Patient Safety Component

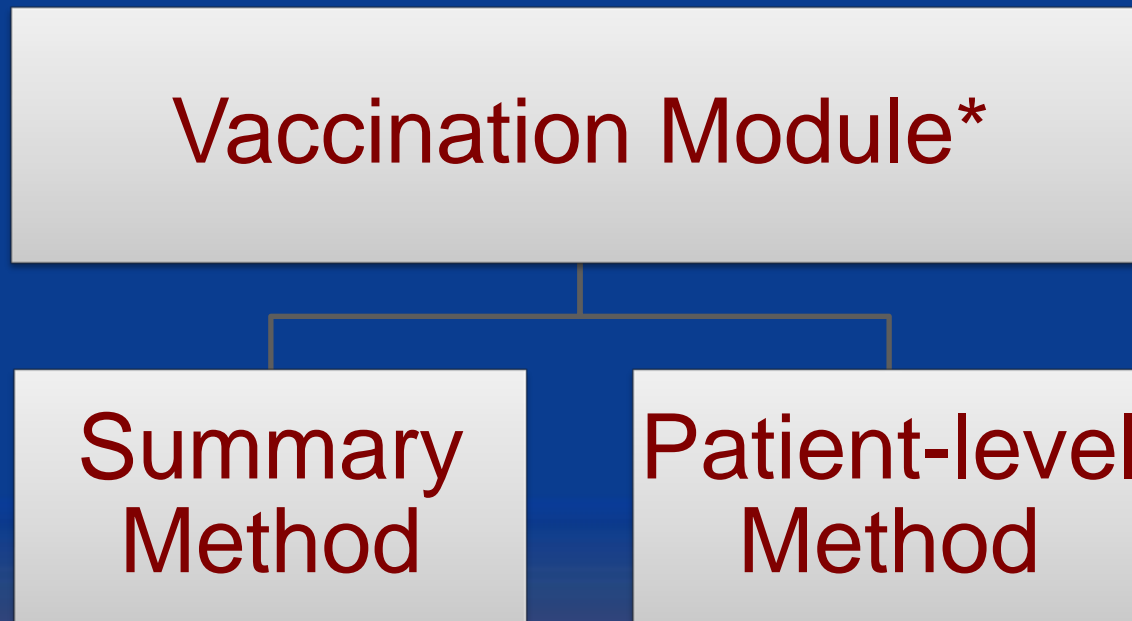
MDRO & CDI Module



- Two options
 - Multi-drug resistant organism (MDRO)
 - *C. difficile* infection (CDI)
- Process measures
 - Adherence to active surveillance testing (AST)
 - Hand hygiene, gown and glove use
- Provides direct and proxy outcome measures
 - E.g., MDRO & *C. difficile* healthcare-associated infection incidence rates
 - E.g., Prevalence and incidence rates based on AST



Patient Safety Component Modules



*Process measure: proportion of eligible patients getting vaccinated prior to discharge





Patient Safety Component Key Terms

- Healthcare-associated Infection (HAI)
- Location
 - CDC Location
 - 80% Rule
- Attribution of HAI
 - Facility-level
 - Location-level for device-associated HAI
 - Procedure-level for procedure-associated HAI

http://www.cdc.gov/nhsn/TOC_PSCManual.html





Healthcare-associated Infection (HAI)

- A localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) that
 - Occurs in a patient in a healthcare setting and
 - Was not present or incubating at the time of admission, unless the infection was related to a previous admission
- When the setting is a hospital, meets the criteria for a specific infection (body) site as defined by CDC
- When the setting is a hospital, may also be called a nosocomial infection





Location

- In the Patient Safety Component, location is the area where a patient was assigned while receiving care in the healthcare facility
 - Inpatient location: Area where patients are housed overnight
- For DA Module surveillance of events, only inpatient locations where denominator data can be collected are eligible for monitoring (e.g., ICU, ward)
 - Examples of locations not eligible: operating room, interventional radiology, emergency department, etc
- For DA Module process measure surveillance, location is the area where the patient was assigned when the practice under surveillance was performed





Location

- Location is used to stratify device-associated infection rates, device utilization ratios, and device-associated standardized infection ratios
- A location may treat patients from more than one clinical service





CDC Locations

- A list of standard descriptions for patient care and other areas of healthcare facilities
 - List can be found in the *NHSN Manual: Patient Safety Component Protocol*
- Each location under surveillance must be “mapped” to one standard CDC Location description
- The correct mapping to a CDC Location is determined by the type of patients receiving care
 - 80% Rule: 80% of the patients must be of a consistent type to classify the location as that specific type

http://www.cdc.gov/nhsn/TOC_PSCManual.html





CDC Location

80% Rule

Example

If 80% of patients on a ward are pediatric patients with orthopedic problems, the location is designated as an Inpatient Pediatric Orthopedic Ward.

EXCEPTION

For patient care areas where the mix of medical and surgical patients is approximately equal, use the combined medical/surgical location designation.

- For instructions on setting up locations in NHSN, refer to the training “Facility Start-up”.

http://www.cdc.gov/nhsn/PDFs/slides/NHSN_Getting_Started.pdf





Attribution of HAI

- Once an HAI is identified, the next step is to determine the level of attribution
- The three levels of attribution are:
 - Facility-Level
 - Location-Level
 - Procedure-Level





Attribution of HAI: Facility-Level

- When a patient is admitted to a facility with an HAI, determine whether or not to attribute the HAI to this facility.

Examples

Patient is discharged from Hospital A and returns 15 hours later to Hospital A with an HAI. This is an HAI for Hospital A.

Patient is admitted to Hospital B with an infection which was determined to be attributed to Hospital A. This is an HAI for Hospital A, not Hospital B.



Attribution of Device-associated HAI: Location-Level

- A device-associated HAI is attributed to the inpatient location where the patient was assigned on the date the HAI was identified

Example

Patient has a central line inserted in the Emergency Department and then is transferred to the MICU. Within 24 hours of admission to the MICU, patient meets criteria for BSI. This is reported to NHSN as a CLABSI for the MICU.



Attribution of Device-associated HAI: Location-Level

- **EXCEPTION:** Transfer Rule
 - If a device-associated HAI develops within 48 hours of transfer from one inpatient location to another in the same facility, the HAI is attributed to the transferring location.

Example

Patient with a central line is transferred from the surgical ICU to an orthopedic ward and develops a BSI within 24 hours. This CLABSI is attributed to the surgical ICU.





Attribution of Procedure-associated HAI

Procedure-associated HAIs
are attributed to the procedure
NOT the location





Monthly Reporting Plan

- The Monthly Reporting Plan informs CDC which modules a facility is following during a given month
- A facility must enter a Plan for every month of the year, even those in which no modules are followed
- A facility may enter data only for months in which Plans are on file





Monthly Reporting Plan Options

Choose either:

- Enter a Plan that conforms to one or more of the modules of the Patient Safety Component

or

- Enter a “No Patient Safety Modules Followed” option



Sample Monthly Reporting Plan



- NHSN Home
- Reporting Plan
 - Add
 - Find
- Patient
- Event
- Procedure
- Summary Data
- Analysis
- Surveys
- Users
- Facility
- Group
- Log Out

Logged into Medical Center East (ID 10000) as TCH.
Facility Medical Center East (ID 10000) is following PS component.

Edit Monthly Reporting Plan

[Print PDF Form](#)

Mandatory fields marked with *

Facility ID*: Medical Center East (ID 10000)

Month*: January

Year*: 2007

No NHSN Patient Safety Modules Followed this Month

Device-Associated Module

Locations	CLA	BSI	DI	VAP	CAUTI	CLIP
SICU - SURGICAL ICU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
NCC3 - NEONATAL CRITICAL CARE LEVEL III	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MSICU - MEDSURG ICU	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Procedure-Associated Module

Procedures	SSI	Post-procedure PNEU
CARD - Cardiac surgery	IN - Inpatient	
CBGB/CBGC - Coronary artery bypass graft	IN - Inpatient	
HPRO - Hip prosthesis	IN - Inpatient	
LAM - Laminectomy	IN - Inpatient	





MDRO & CDI Monthly Reporting Plan

Multi-Drug Resistant Organism Module [HELP](#)

Locations					Specific Organism Type					
FACWIDEIN - FacWideIN					ACINE - MDR-Acinetobacter					
Process and Outcome Measures										
Infection Surveillance	AST-Timing	AST-Eligible	Incidence	Prevalence	Lab ID Event All Specimens	Lab ID Event Blood Specimens Only	HH	GG		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

Locations					Specific Organism Type					
FACWIDEIN - FacWideIN					CDIF - C. difficile					
Process and Outcome Measures										
Infection Surveillance	AST-Timing	AST-Eligible	Incidence	Prevalence	Lab ID Event All Specimens	Lab ID Event Blood Specimens Only	HH	GG		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

Locations					Specific Organism Type					
FACWIDEIN - FacWideIN					KLEB - MDR-Klebsiella					
Process and Outcome Measures										
Infection Surveillance	AST-Timing	AST-Eligible	Incidence	Prevalence	Lab ID Event All Specimens	Lab ID Event Blood Specimens Only	HH	GG		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>

Locations					Specific Organism Type					
FACWIDEIN - FacWideIN					MRSA/MSSA - MRSA with MSSA					
Process and Outcome Measures										
Infection Surveillance	AST-Timing	AST-Eligible	Incidence	Prevalence	Lab ID Event All Specimens	Lab ID Event Blood Specimens Only	HH	GG		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>



Example Plan that conforms to the “No Patient Safety Modules Followed” option



Mandatory fields marked with *

Facility ID*:

Month*:

Year*:

No NHSN Patient Safety Modules Followed this Month

Save

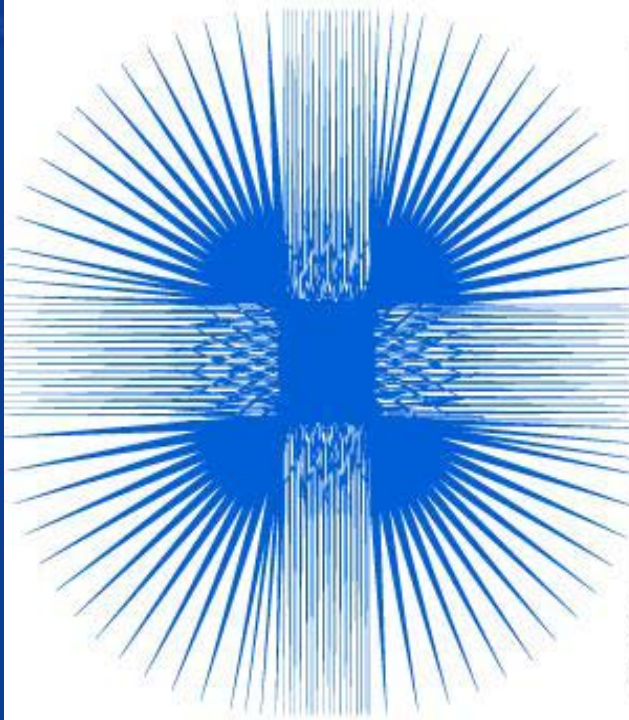
Back





References

- For more information about these topics, refer to the NHSN website:
<http://www.cdc.gov/nhsn>
 - *NHSN Manual: Patient Safety Component Protocol*
 - Tables of instructions for completing all forms
 - Key terms
 - CDC location codes
 - Operative procedure codes
 - Purposes, data collection requirements and assurance of confidentiality
 - NHSN data collection forms



NHSN

National Healthcare
Safety Network

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

nhsn@cdc.gov