Overview of the Patient Safety Component
This training is designed for those who will collect and analyze Patient Safety Component data or enroll a hospital into NHSN. This includes:

- NHSN Facility Administrator
- Patient Safety Primary Contact
- Infection Control Professional (ICP)
- Epidemiologist
- Microbiologist
- Pharmacist
- Data entry staff
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 previously managed separately in the Division of Healthcare Quality Promotion (DHQP) at CDC
  - National Nosocomial Infections Surveillance (NNIS) system
  - Dialysis Surveillance Network (DSN)
  - National Surveillance System for Healthcare Workers (NaSH)
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 associated with prevention of healthcare-associated infections (HAI)
- Analyze and report collected data to permit recognition of trends
Purposes of NHSN

- Provide facilities with risk-adjusted data 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 personnel safety problems and prompt intervention with appropriate measures
- Conduct collaborative research studies with members
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 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))."
There are 8 requirements for data collection and reporting. The first 7 relate to successful completion of the patient safety modules selected for use. The requirements include:

• **1\textsuperscript{st},** submit a monthly \textit{reporting plan} to inform CDC which, if any, of the patient safety modules will be used for that month.

• **2\textsuperscript{nd},** adhere to the selected module’s protocol(s) exactly as described in the \textit{NHSN Manual: Patient Safety Component Protocol}.
• Third, use surveillance methodology as described in the Protocol, which will be detailed in the next section.

• Fourth, report events and appropriate summary or denominator data indicated on the Plan to CDC within 30 days of the end of the month.
• Fifth, submit data for at least one module for a minimum of 6 months of the calendar year

• Sixth, complete an annual survey for your facility, and

• Seventh, pass quality control acceptance checks that assess the data for completeness and accuracy.
The eighth requirement for data collection and reporting involves reporting to state health authorities any adverse event outbreaks identified in one's facility by the surveillance system and about which they are contacted by CDC.

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

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Staffing Requirements for Participating in the PS Component

- There are no specific FTE requirements, but a trained Infection Control Professional (ICP) 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 is the active, patient-based, prospective, priority-directed collection of data that results in risk-adjusted, incidence rates. The following slides will look at these characteristics in greater depth.
Active surveillance methodology requires personnel who have been trained to identify events using standard definitions and a variety of data sources.

In contrast, passive surveillance methodology allows staff not specifically trained to do surveillance, to identify and report events. An example of passive surveillance is a report from a staff nurse to the infection control department regarding a patient with pneumonia. Since no standard criteria to define pneumonia were used, it is possible that another person might interpret the patient’s illness differently and not reported it as an infection.
Case finding using patient-based surveillance methodology is defined as monitoring patients for events, risk factors, and procedures and practices related to patient care. For identifying infectious events, this methodology requires visits to patient care areas, review of patient charts and discussions with caregivers. In contrast, laboratory-based case-finding is the identification of infectious events based solely on positive lab findings, without reviewing clinical findings or results of other diagnostic or therapeutic tests. Some events, such as pneumonia, will be grossly under-ascertained using only laboratory-based surveillance.
Prospective case finding is a patient-based methodology that includes monitoring patients while they are in the institution, either during the initial admission or upon readmission. Prospective case finding for SSI also includes monitoring patients in the post-discharge period (called post-discharge surveillance). In contrast, retrospective case finding is based on chart review only after the patient is discharged, and is limited to the information contained in the chart. Without visits to the patient care area for direct observation and discussions with caregivers, retrospective case-findings is likely to under-ascertain certain events.
NHSN surveillance methodology uses priority-directed surveillance, where objectives are defined and focused on specific events, processes, organisms, and/or patients/populations.

In contrast, comprehensive surveillance monitors all patients continuously for all processes, infections or other events at all body sites in all locations of a facility. Ongoing comprehensive surveillance for infectious events has proven to be too resource intensive for large facilities to maintain.
Risk adjusted rates are controlled for variations in the distribution of major risk factor(s) associated with an event’s occurrence. For example, device-associated rates stratified by type of location are risk-adjusted rates, such as ventilator-associated pneumonia in a surgical ICU. Comparison of risk-adjusted rates initially between a facility and a national aggregate, such as NHSN, or within a location in a facility from one time period to another, is useful to measure progress with interventions.

In contrast, crude unadjusted rates, assume equal distribution of risk factors for all events. For example, using crude rates to describe risk of surgery for all hospitalized patients would assume all patients are at equal risk of having surgery. Comparison of crude rates is not recommended.
NHSN surveillance methodology yields **incidence** rates which are new events occurring in a population during a specific time period. A **prevalence** rate, on the other hand, is all events, both new and existing, in a population occurring at either a point in time or during a defined period of time.
NHSN is organized into four components: Patient Safety, Healthcare Personnel Safety, Biovigilance, and Research and Development. Patient Safety is used for monitoring patient healthcare-associated infection events and process measures for their prevention, Healthcare Personnel Safety is for monitoring healthcare personnel occupational-associated adverse events and process measures for their prevention. The Biovigilance component tracks adverse events and incidents associated with receipt of blood transfusions. The Research and Development component is for performance of special studies.
Patient Safety Component Modules

Device-associated

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

Procedure-associated

SSI  PPP

SSI  Surgical site infection
PPP  Post-procedure pneumonia
Patient Safety Component
MDRO & CDAD Module

- Two options
  - Multi-drug resistant organism (MDRO)
  - *C. difficile*-associated disease (CDAD)

- Process measures
  - adherence to active surveillance testing (AST)
  - hand hygiene, gown and glove use

- Provides direct and proxy outcome measures
  - E.g. - MDRO & CDAD healthcare-associated infection incidence rates
  - E.g.- Prevalence and incidence rates based on AST
Patient Safety Component Modules

High Risk Inpatient Influenza Vaccination (HRIIV)*

Method A
Method B

Method A Summary Data
Method B Patient-level Data

*Process measure: proportion of high-risk patients getting vaccinated prior to discharge.
Key terms to be reviewed include:

- Healthcare-Associated infection or HAI
- NHSN location, including the 80% rule and we will define attribution of HAI at three levels, facility, location and procedure.

NHSN key terms can also be found in the **NHSN Patient Safety Component Protocol** document.
The first key term, **healthcare-associated Infection or HAI** is a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s).

An HAI is **an infection that occurs in a patient in a healthcare setting** which 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, the HAI **must** meet the criteria for a specific infection at an anatomic body site as defined by CDC.

In a hospital, an HAI may also be called a nosocomial infection.
In the Patient Safety Component, the **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.

In the Patient Safety Component, the **location** is the area where a patient was assigned while receiving care in the healthcare facility. For DA Module event surveillance, only inpatient locations (i.e., where patients are housed overnight) where denominator data can be collected are eligible for monitoring. Examples include ICU, SCA, inpatient ward; examples not eligible include operating room, interventional radiology, emergency department. For DA Module process measure surveillance, location is the area where the patient was assigned when the practice under surveillance was performed. For example, central line insertion practices (CLIP) monitoring could be done in the emergency department or in an ICU.
Location is also used to stratify device-associated infection rates. Remember, a specific location may treat patients from more than one clinical service.
CDC Locations are a list of standard descriptions for patient care and other areas of healthcare facilities. The list of CDC Locations can be found in the *NHSN Manual: Patient Safety Component Protocol* document. 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. The 80% rule means 80% of the patients must be of a consistent type to classify the location as that specific type.
For example, if 80% of patients on a ward are pediatric patients with orthopedic problems, the location is designated as an Inpatient Pediatric Orthopedic Ward.

An exception to this rule would be patient care areas where the mix of medical and surgical patients is approximately equal. In this case you would use the combined medical/surgical location designation.

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

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An exception to this rule would be patient care areas where the mix of medical and surgical patients is approximately equal. In this case you would use the combined medical/surgical location designation.

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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 and procedure-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.

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In another example, 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.
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.

For example, a patient with a central line is discharged from the surgical ICU to an orthopedic ward and develops a bloodstream infection within 24 hours. This CLA-BSI would be attributed to the surgical ICU, not the orthopedic ward.
If the device-associated HAI develops in a patient within 48 hours of transfer from one inpatient location to another in the same facility, the HAI is attributed to the transferring location. This is called the Transfer Rule.

For example, a patient with a central line is transferred from the surgical ICU to an orthopedic ward and develops a bloodstream infection within 24 hours. This CLABSI is attributed to the surgical ICU.
Remember, *procedure-associated HAIs are attributed to the procedure NOT the location*. 
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.

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There are two options for entering a Plan.

You can enter a Plan that conforms to one or more of the modules of the Patient Safety Component or you may use the “No Patient Safety Modules Followed” option.
Here is a view of what the actual screen would look like in NHSN, showing the first option. Using pull down menus you can clarify your plan, choosing the locations, modules, procedures and events that you will follow that month.
...or, as shown in this view of an actual screen, you can choose to select *No Patient Safety Module followed* this month.
References

- For more information about these topics, refer to the NHSN website: http://www.cdc.gov/nhsn
    - 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
http://www.cdc.gov/nhsn
nhsn@cdc.gov