**RR #1: “Recommended Practices for Surveillance”**

**Infection Control**
University of South Florida
College of Public Health

PHC 6251: Week 3
Healthcare Associated Infection & Healthcare Surveillance, Part I

**Healthcare Surveillance**

- Healthcare-associated infection (HAI) surveillance*
- Environmental surveillance
- Product-related surveillance
- Employee-related surveillance

* = Formerly nosocomial infection (NI)

**How Healthcare Surveillance Differs from Other Surveillance**

- In hospitals & other healthcare settings, epidemiologists often called to act upon a few cases or even one case of disease/infection
- Much information routinely collected & available in healthcare setting for retrieval (e.g., 3 procedures, persons involved)

**Evolution of HAI Surveillance**

- National Nosocomial Infections Surveillance System (NNIS)
- Monitored & reported trends in NI in acute care hospitals in U.S.
- Volunteer hospitals contributed infection data using standardized definition/rates
- Other hospitals used as benchmark

**NNIS**

- CDC & hospitals created national nosocomial infections database
- Data collected by trained infection control personnel
- ~300 acute care hospitals participated
- Hospital names kept confidential
- Data published annually on NNIS web page & AJIC (last report thru 2004)
What is NHSN?

- internet-based surveillance system
- integrates patient & healthcare personnel safety surveillance systems
- access to HAI prevention tools & best practices
- data to facilities, states, region & nation
- tracking blood safety errors & health care process measures

NHSN

>14,500 facilities as of 3/2015

- Identifying infection prevention problems, benchmarking IP efforts, compliance with state & federal reporting mandates, & driving national progress toward eliminating HAIs
- Current participants: see transcript
- Components & modules: see transcript

Mandatory & Public Reporting

- Legislation in at least 35 states requiring healthcare facilities to publicly report HAIs
- Center for Medicare & Medicaid Services (CMS) phasing in public reporting, pay for performance, & value-based purchasing initiatives for healthcare providers
- Goal of public reporting
- Responsibilities of IPs
- CMS required reporting

Recommended Practices

- Assess population
- Select outcome or process for surveillance
- Use surveillance definitions
- Collect surveillance data
- Calculate & analyze infection rates
- Apply risk stratification methodologies
- Report & use surveillance information

I. Assess the Population

- What types of patients are served?
- What are most common diagnoses, surgical/other procedures performed, most frequently used services/treatments?
- What types of community health concerns?
- Which type of patients at increased risk for infections?
II. Select Outcome or Process

**Outcome** - result of care or performance
- Can be negative (infection, injury)
- Can be positive (patient satisfaction)

**Process** - series of steps to achieve an outcome (e.g., immunization, compliance with policies)

*Either choice should be guided by assessing the population*

III. Use Surveillance Definitions*

- Centers for Disease Control & Prevention
- Association for Professionals in Infection Control & Epidemiology
- Regulatory agencies (TJC)
- Make some up

* For all, use same definitions when comparing data

IV. Collect Data

- Train personnel
- Develop data collection form
- Consider commercially available software
- Decide retrospective, prospective
- Incorporate post-discharge surveillance

Sources of Data

- Medical Records
- Laboratory
- Financial & Information Services
- Surgical Database
- Administrative reports
- Employee Health
- Human Resources
- Monitoring Systems

Sources of Data continued

- Antibiotic reports
- Autopsy reports
- Interviews with caregivers, patients, families
- Admission records
- X-rays
- Activity logs

V. Calculate & Analyze

- Products: rates, ratios, proportions, incidence density
- Consistency in methods essential
- Some examples (e.g., NSI, HAI, BSI)
About Rates...

- General formula is $x/y \times (k)$
- "x" = numerator
- "y" = denominator
- In proportions, $y =$ population at risk
- In incidence density, $y =$ total person-time units
- "k" = constant, multiple of 10 (100 in proportions; 1000 in device-days)

Numerator

The event of interest: e.g., #urinary tract infections, # positive sterilizer tests, # of safety syringes which contributed to a needlestick

Denominator

Measurement of the population in which the event may occur
- e.g., # catheterized patients, # nursing home patients, # catheter days
- # implantable devices run, # all loads run
- # devices purchased, # devices used, # needlestick injuries

Standardized Infection Ratio

- Summary measure used to track HAIs over time
- Adjusted for risk factors associated with differences in infection rates

VI. Apply Risk Stratification

- Purposes: foster understanding to data recipients, allow for comparisons, facilitate utility & validity of interventions
- Determine if methods available- use statistician
- If stratifying, assure large enough sample size

VII. Report & Use Surveillance Information

- User-friendly reports that are accurate & interpretable (confidentiality)
- Use epidemiology-trained persons to interpret data
- Take care when comparing to others
- Report in a manner to stimulate process or outcome improvement
Scope of Surveillance AKA “Methods”

- Hospital-wide or Facility-wide
  OR
- Targeted
  a. Unit-based (e.g., intensive care)
  b. Site-directed (e.g., bloodstream)
  c. Rotating surveillance

Hospitalwide Surveillance

- All data on all types of infections
- Can calculate overall infection rates using discharges or patient days

Hospitalwide Infection Rates

- Time-intensive to collect
- ? efficacy of findings
- Adjustment for risk
- Difficult to compare results with other institutions
- Discontinued by NNIS in 1999

Targeted Surveillance*

- Select unit, type of infection, risk group (e.g., intensive care unit, neonatal intensive care unit, ventilated patients, bone marrow transplant patients)
- Can do one type the same time each year
- Can rotate

*aka “priority-directed” surveillance

Statement from Reading

“Although there is no single or ‘right’ method of surveillance…sound epidemiologic principles must form the foundation of effective systems, must be understood by key participants…and supported by senior management”