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# IP in Long Term Care Infection Prevention Program Basics

- Part I
  - Regulatory requirements
  - Comprehensive infection prevention risk assessment and program development
  - Surveillance and reporting
- Part II
  - Environmental cleaning and disinfection
  - Multi-drug Resistant Organisms
  - Antimicrobial Stewardship Programs
  - Unique long-term care issues such as care transitions and life enrichment activities
  - Occupational health, immunization programs, and staff education

# **Infection Prevention Program Basics: Part I**

**Regulations and Guidelines**  
**Resources**  
**Risk Assessment**  
**IP Program Plan**  
**Surveillance Basics**

# Key Concepts

- Infection Preventionists in long-term care have unique challenges, for example:
- Aging Residents at greater risk of infection
- Developing an Infection Prevention and Control Program, the IP must consider the characteristics of:
  - Healthcare personnel
  - Resident populations
  - Work environment

# Direct Caregivers in LTC

- 1.85 million employees in facility-based LTC
- Primarily paraprofessionals including: nurse's aides, attendants, orderlies, contract caregivers
- Turnover high
- Inadequate staffing for assistance or proper supervision



# Burden of Infections

- Range 1-5 infections/1,000 resident days
  - Single day, point prevalence = 3-5%
    - 25% had devices; 10% of them with infection
  - Prospective study (MI):
    - No device: 5.7/1,000 days
    - Device: 9-11/1,000 device-days
- Nationwide estimates: 765K- 2.8 million/yr
- UTIs, pneumonia, skin and soft tissue, GI infections
  - 12%-30% treated for a UTI annually; more females than males

# Consequences of Nursing Home Infections

- Leading cause of mortality and morbidity
- 150,000-300,000 hospital admissions each year
  - 26-50% of transfers due to infections
- Costliest of all adverse event related hospitalization
- Between 350,000 and 400,000 deaths from infections in LTC—cost between \$673 million to \$2 billion

**The goal of infection prevention is to prevent these infections from occurring and promote**

Ageing health. 2011 December ; 7(6): 889–899. doi:10.2217/AHE.11.80.

Stone et al ICHE 2012.

Smith PW et al ICHE 2008.

Htwe. Infection in the

elderly. Infect Dis Clin N Am 2007.

# Common Resident Safety Concerns in Nursing Homes

- Physical restraints
- Pressure ulcers
- Pain
- Pharmacologic errors (adverse drug events)
- Psychiatric (difficult behaviors, chemical restraints)
- Poor mobility and falls
- **Preventable infections**



# What are the most common infections?

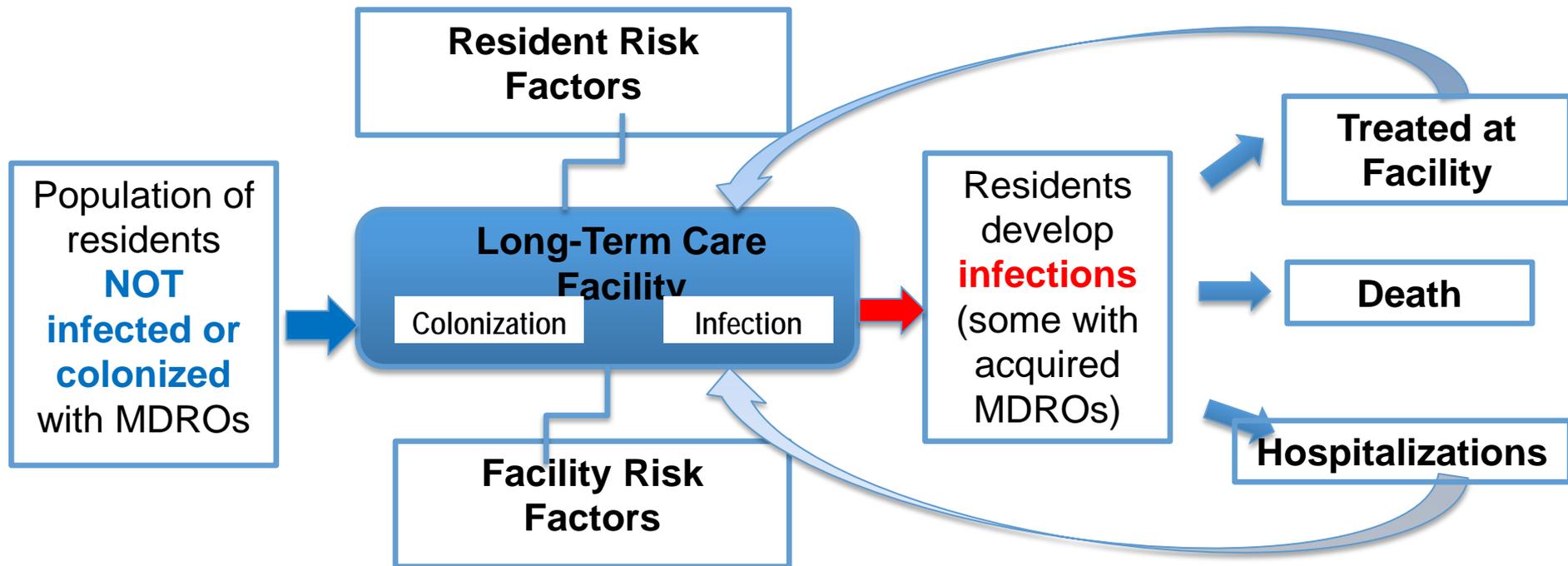
**HAI** = Health care Associated Infection

- An infection acquired from a health care facility

## What are the most common HAIs in LTCFs?

- Urinary tract infections (UTIs)
- Lower respiratory tract infections
- Skin and soft tissue infections
- Gastroenteritis

# Pathway to Nursing Home Infections



# Resident Risk Factors

- Age
- Multiple morbidities
- Impaired immunity/vaccination declination
- Functional impairment
- Indwelling devices
- Antibiotic use



# Facility Level Factors

- Prolonged exposure to health care
- Frequent care transitions
- Exposure to recently hospitalized/sick residents
- Diagnosis and therapy delays
- Staff and resident vaccine compliance
- Rapid staff turnover, understaffing, presenteeism
- Poor hand hygiene
- No resident hand hygiene program
- Lack of antibiotic stewardship
- Equipment cleaning challenges
- Environmental hygiene challenges
- Compliance with isolation precautions

# Regulatory Issues

- In 1987, congress enacted the Nursing Home Reform Act
- This law mandated quality of care standards for LTCFs receiving Medicare and Medicaid funding
- F tag 441 provides interpretive guidelines for infection control program implementation

# F tag 441

## A. Infection Control Program

- A. Infection Control Program:** The facility must establish an infection control program under which it:
1. Investigates, control and prevents infections
  2. Decides what procedures, such as isolation, should be applied to an individual resident
  3. Maintains records of incidents and corrective actions related to infections

## B. Prevention of the spread of infections

1. The facility must isolate the resident when isolation is needed
2. The facility must prohibit employees with communicable diseases from direct contact with residents or their food if this would transmit the infectious disease
3. The facility must require staff to wash their hands after each direct resident contact

# C. Patient Linens

- Personnel must handle, store, process, and transport linens to prevent spread of infection



# Other Regulations and Guidelines

- Occupational Safety and Health Administration (OSHA)
  - Respiratory Protection
  - Bloodborne Pathogen Standards
- Centers for Disease Control and Prevention (CDC)
  - Infection Control Guidelines
- South Dakota: state Inter-facility Transfer Form
- Association for Professionals in Infection Control and Epidemiology (APIC)
  - LTC section on Professional Practices and updates

# Infection Risk Assessment

- Cornerstone of any infection prevention program
- LTCF-specific
- Must be conducted at least on an annual basis
  - Or when there are significant changes or challenges (such as outbreaks, pandemic threat, antibiotic and/or vaccine shortages)

# IP Risk Assessment Example

Potential Risks/Problems	Probability					Risk/Impact (Health, Financial, Legal, Regulatory)					Current Systems/Preparedness					Score
	Expect it	Likely	Maybe	Rare	Never	Catastrophic Loss (life/limb/function/financial)	Serious Loss (Function/Financial/Legal)	Prolonged Length of Stay	Moderate Clinical/Financial	Minimal Clinical/Financial	None	Poor	Fair	Good	Solid	
	4	3	2	1	0	5	4	3	2	1	5	4	3	2	1	
ABX Resistant organisms																
MRSA																
C Diff																
VRE																
ESBL/other Gram Negative bacteria																
<b>Failure of Prevention Activities</b>																
Lack of Hand Hygiene																
Lack of Respiratory Hygiene/ Cough Etiquette																
Lack of Patient Influenza Immunization																
Lack of Patient Pneumovax Immunization																
<b>Isolation Activities</b>																
Lack of Standard Precautions																
Lack of Airborne Precautions																
Lack of Droplet Precautions																
Lack of Contact Precautions																
<b>Policy and Procedure</b>																
Lack of current policies or procedures (specify)																

# Infection Risk Assessment: Basic Components

- Associated infection risks of the types of residents who receive care at the facility
  - Includes pre-admission screening
  - Infection prevention when identified after admission
- Community infection risks and communicable disease rates that may impact facility
- Utilization of invasive devices
- Immunization rates and other health promotion activities for residents and staff

# Risk Assessment Basics

- Adherence to hand hygiene programs for staff, visitors and residents
- Use of isolation systems, their frequency of use, and barriers to effective implementation
- Antibiotic stewardship program implementation
- Cleaning and disinfection of hard and soft surfaces throughout the facility
- Facility readiness to respond to urgent or emergent threats:
  - Outbreaks, pandemics
  - Interruptions in power
  - Weather-related emergencies
  - Workplace violence

# Infection Prevention and Control Plan

- Evolves from the risk assessment
- IP program described in a written plan
- Scope of IP program clearly defined
- Program oversight and management described
- Policies and procedures documented

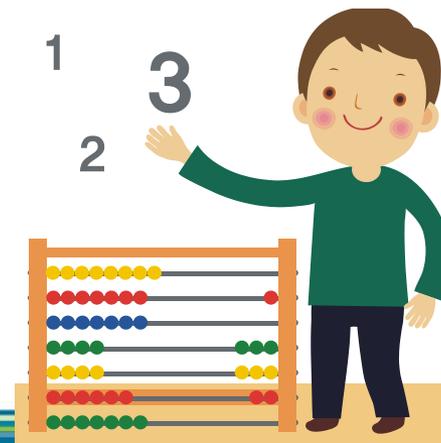
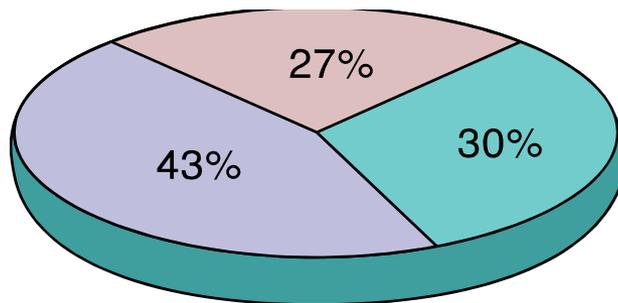
# Surveillance, Epidemiology, Reporting

- LTCF IPs need to know purpose, methods, and definitions for surveillance
- Surveillance strategies must be consistent and compliant with LTC guidelines and regulations
- IPs must know reporting rationale, opportunities and requirements for LTCFs

# Surveillance: Data Collection

# Surveillance – What is it?

- Counting infections?
- Gathering data?
- Infection rates?



# Surveillance

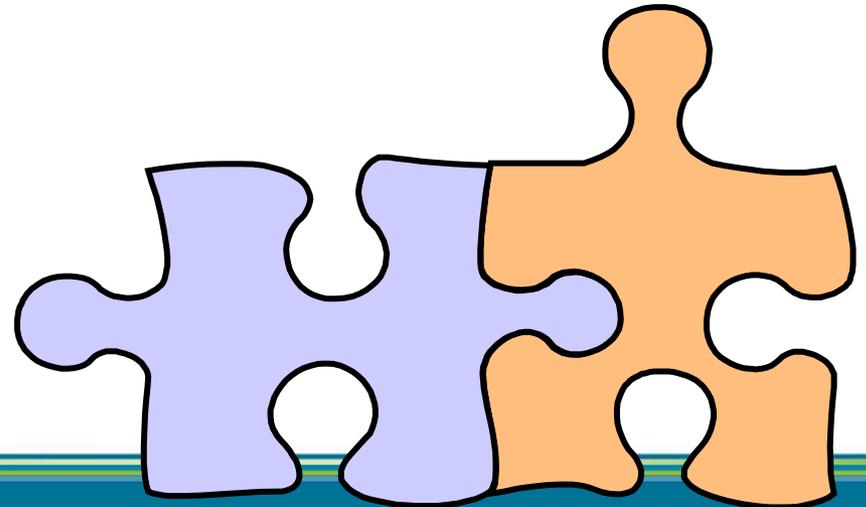
- “The ongoing systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health.”

Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group. MMWR 2001;50:1-35



# Surveillance

- Essential component of effective IPC program
- Required for accurate quantification of events and demonstration of PI





# Surveillance

- **MUST BE:**
  - Epidemiologically sound
  - Understood by stakeholders
  - A result of teamwork and collaboration
  - Supported by senior management

# Surveillance

- One size does not fit all...
- We need a tailor!





# Recommended Surveillance Practices

- Assessing the population
- Selecting the outcome or process
- Using surveillance definitions
- Collecting surveillance data
- Calculating and analyzing rates
- Applying risk stratification
- Reporting and using surveillance information

# Assessing the Population

- Risk Assessment
  - Goes along with selection of surveillance indicators





# Risk Assessment Questions

- Types of patients/ clients served
- Most common diagnoses
- Most frequently performed surgical or other invasive procedures
- Services or treatments that increase risk of infection
- Organization's strategic plan
- Patients at increased risk for infection



# Selecting Outcome/Process

- Use logical method for choosing surveillance indicators (= setting priorities)
- Base selections on organizational and patient population risk assessment



# Examples of Outcomes

1. HAIs (e.g., BSI, UTI)
2. Infection or colonization with MDRO
3. Pressure ulcers
4. Patient or resident falls
5. Tuberculosis test conversions
6. Sentinel events
7. Sharps injuries in health care providers
8. Reportable diseases



# Examples of Process Measures

1. **Antimicrobial prescribing & administration**
2. **Vaccination administration**
3. Compliance with **infection prevention policies/protocols**: hand hygiene, isolation precautions, tuberculosis skin testing (TST), instrument processing, barriers during construction, central line insertion practices (compliance with bundles)



# Surveillance Methodology Terms

- Comprehensive (Whole house)
- Priority directed (Targeted)
- Combination



# Comprehensive (Whole House)

- Monitor:
  - All infections
  - Entire population
  - All units





# Comprehensive (Whole House)

- Pros
  - Monitor all infections
- Cons
  - Overall rate not sensitive or risk
  - No trends or comparisons
  - Labor intensive
  - Not based on risk assessment
  - Inefficient use of resources



# Priority Directed (Targeted)

- Focus on:
  - Particular care units
  - Infections related to devices
  - Invasive procedures
  - Significant organisms
  - High-risk, high volume procedures
  - Infections having known risk reduction methods





# Targeted Surveillance



- Pros
  - Rates risk adjusted
  - Can measure trends & make comparisons
  - More efficient use of resources
  - Can target potential problem areas to direct performance improvement activities
  - Can evaluate the effectiveness of prevention
- Cons
  - May miss some infections
  - Limited information on endemic rates

# Combination

- Monitor:
  - Targeted events in defined populations
  - and
  - Selected whole-house events





# Combination

- Pros
  - Rates risk adjusted
  - Can measure trends & make comparisons
  - Target potential problem areas
  - Ability to track selected events house-wide
- Cons
  - May miss some infections

# Public Reporting of HAIs

- State Requirements
  - Some require reporting of all HAIs
  - Most require reporting of specific HAIs
  - Learn what is required in your state



# CMS Reporting Requirements

- CMS Reporting Program
  - Acute care facilities
  - Outpatient
  - ESRD
  - **Long Term Care**
  - **Inpatient Rehabilitation Facilities**
  - Ambulatory Surgery
  - PPS-Exempt Cancer Hospitals
  - Inpatient Psychiatric Facility (October 2015)



# The IP's Role in Shaping Surveillance

- Expertise in measurement, data analysis, risk assessment, implementation of infection prevention measures
- Influence - Using your voice
  - Your organization
  - Corporate office
  - State or local regulatory group
  - National feedback – CDC, TJC, CMS, others



# Set and Prioritize Goals

If you don't know where  
you're going,  
you're not going to  
get there.



# Set and Prioritize Goals

- Set goals for surveillance program
- Base goals on:
  - Organization needs & strategic plan
  - Risk assessment
  - Regulations & requirements
- Set priorities for reaching goals



# Develop Measurable Objectives

## GOAL

1. Reduce central line-associated BSI rate
2. Increase influenza immunization rate in personnel

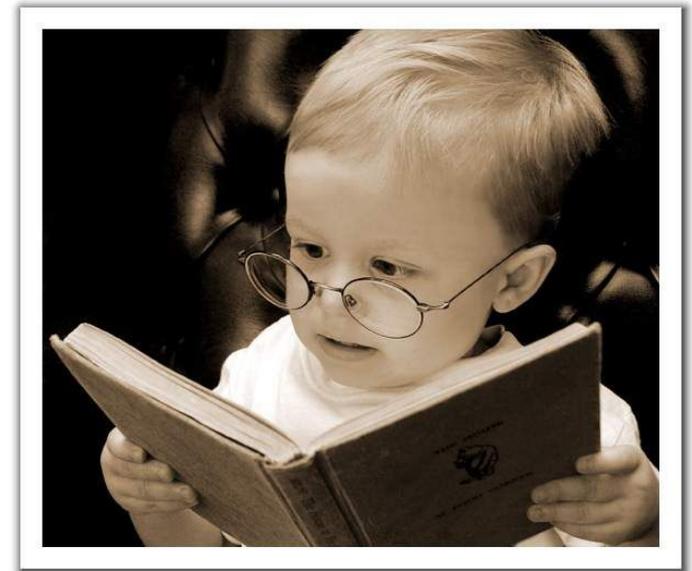


## OBJECTIVE

1. Reduce central line-associated BSI rate in ICU by 20% in next calendar year.
2. Increase immunization rate in personnel by 25% next flu season.

# Using Surveillance Definitions

- Valid definitions will enhance consistency, accuracy and reproducibility of surveillance information.
- HAI Definitions
  - Acute Care – NHSN (CDC)
  - Long-term Care – SHEA
  - Home Care/ Hospice
- Definitions for all parts of the system (population, risk factors, etc.)



# Collecting Surveillance Data

- Active vs. passive surveillance
  - Passively obtained data may be biased!



# Where Do We Find Data?

- Unique for your organization
- Specific to your surveillance plan
- Learn from colleagues, reports in literature

The screenshot displays a medical software interface with two overlapping windows. The background window is titled "Enter/Update Encounter Notes" and contains patient information: Patient ID 000008, Last Name BURNS, First Name MABEL, Chart Number MB1234, Pt Type PT-PATIENT, Last Note Date 03/30/2010, Provider Last Name NORTON, First Name NANCY, and Title HISTORY PHYSICAL - FEMA. The foreground window is titled "Encounter Charge Record" and shows Encounter # NEW for Patient 000008 BURNS, MABEL S. It includes an Inbound Referral from Code 0000, Last Name ROSSI, and First Name BERNARD. The Diagnosis Codes section lists ICD 1 (381.01), ICD 2 (250.00), ICD 3 (296.3), and ICD 4. A table below shows service details for 03/30/2010, including DP 123, Ins Cls 99214, and Procedure M1, M2, M3, M4. The interface also features a "Charge Encounters" table, "Referral Letters" section with a letter from DR. ROSSI, and a bottom menu with options like SOAP, Order Sets, and Confidential Note.

Type	Control Number	Pr
<input type="checkbox"/> EMR - ELECTRONIC M...	0000000488	00
<input type="checkbox"/> APT - APPOINTMENT ...	0000000489	00
<input type="checkbox"/> EMR - ELECTRONIC M...	0000000492	00

Svc From	Svc To	DP	Prv Cls	Ins Cls	Procedure	M1	M2	M3	M4
03/30/2010	03/30/2010	123			99214				

# Where Do We Find Data?

- Medical records (paper, electronic)
- Daily list of admissions & readmissions
- Monthly census & patient-days by unit
- Interviews (caregivers)
- Isolation precautions list



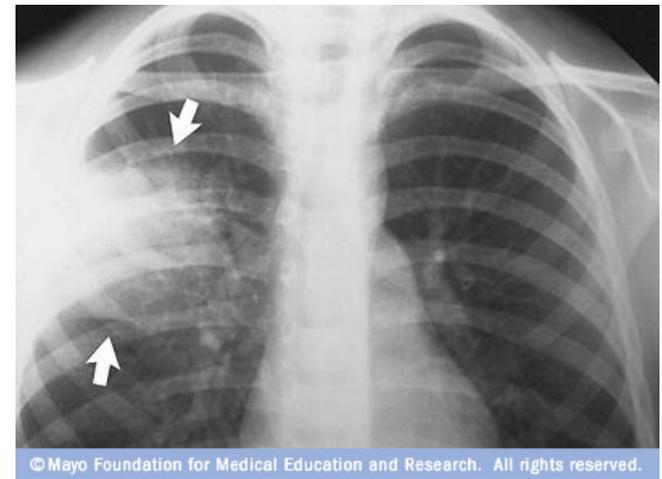
# Where Do We Find Data?

- Microbiology lab results
  - smear, stain results (gram stain, AFB smear)
  - bacterial culture and sensitivity, parasitology
  - AFB culture and sensitivity
- Virology/Serology lab results
  - immunology/ titer results (hepatitis, HIV, chickenpox, measles)
  - rapid tests (influenza, RSV, etc.)
  - viral cultures
- Special Testing Results
  - PCR



# Where Do We Find Data?

- Medication list from Pharmacy
- Radiology test results
- Incident reports
- Employee Health reports
- Rounds
- Reports from others
- Care units
- Pathology reports





# Data Collection Forms

- Should Include Information on:
  - Demographics
  - Dates - based on type of surveillance
    - Admit / discharge, cut times, device start/stop
  - Event dates / Onset dates
  - Clinical: signs & symptoms
  - Lab & radiology results
  - Risk factors for infection or other event



# Data Collection Form Examples

- HAI: UTI, BSI, VAP, VAE
- Surgical site infections
- Sharps injuries
- Reportable diseases
- Communicable disease exposures
- Disease-specific line list: MRSA, RSV, VRE, C.diff, Rotavirus



# Data Collection Form Examples

- HAI list per month/quarter (computer)
- Device-days (central line, ventilator, urinary)
- Environment of Care rounds
- Monthly/quarterly surveillance report
- Observation of hand hygiene or other processes



# Line-Listing

## MRSA Cases

Name	Record #	Age	Room/Unit	Date Admit	Date culture	Specimen	CA	HA



# Commonly Used Terms

- **Endemic:** usual presence of a disease or condition in a specific population or geographic area
- **Epidemic:** occurrence of more cases of a disease than expected in a given area or population during a specified time period
- **Pandemic:** epidemic occurring over a very wide area (several countries or continents)



# Calculating and Analyzing Surveillance Rates

- Ratios, Proportions, Rates
  - All are generically called rates.
- It is **essential** that appropriate calculations be performed and reported with a consistency of methodology over time for interpretation.



# Calculating and Analyzing Surveillance Rates

- Identify types of rates prior to data collection
- Recognize that rates are fractions:
  - Numerator = event
  - Denominator = population at risk
- Present rate in understandable manner



# Calculating and Analyzing Surveillance Rates

- Be Aware! Rate can be accurate and consistent but still not useful if:
  - numerator or denominator is too small
- Example:
  - Surgeon with 1 of 2 cases infected – significant?
- Use statistical probability methods to determine if rates are meaningful.



# Reporting and Using Surveillance Information

- Sharing findings = Power of Surveillance!
- Personnel who are made aware of results of process and outcome monitoring = significant improvement in performance!



# Determine Methods for Reporting

- Identify who will receive reports
- Use tables, graphs and charts
- Always provide written report
  - interpret findings
  - explain their significance
- Use data presentation tools
  - word processor, graphics program



# Summary

- Recommended Practices for Surveillance
- These are necessary for success
- Well-implemented surveillance plan serves a pivotal role in high-quality care initiatives



# Summary

“Good surveillance does not necessarily ensure the making of the right decisions, but it reduces the chances of wrong ones.”

*Alexander Langmuir*

# Any Questions?



