Behind the Mask:

Fundamentals of a Surveillance Program and Outbreak Management – Part I

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Meet our Subject Matter Experts

Terry Micheels MSN, RN, CIC, FAPIC

Terry is a Masters-prepared registered nurse with 29 years' experience as an Infection Preventionist in acute care settings. Fourteen of her 29 years involved managing IPC programs for community- and academic multi-hospital systems, including outpatient and ambulatory services. She has been certified in Infection Control since 2009 and is a Fellow in APIC. She is currently an IPC Consultant. She has multiple publications and has presented at National Annual APIC Conferences, national IPC webinars and multiple regional conferences.

Alisha Sheffield BSN, RN CIC

Alisha is an Infection Preventionist and Registered Nurse with 21 years of experience in a variety of healthcare settings including ambulatory, acute care, and surgical areas. Over the past 13 years, she has worked as an Infection Preventionist in outpatient surgery as well as at a large academic medical center. Her recent work has focused on utilizing her IPC expertise to develop infection control tools and resources to assist Infection Preventionists in under-resourced settings.

Lauren Musil BSN, RN

Lauren is an Infection Preventionist with a background as Registered Nurse. She has a wide variety of healthcare experience having worked in neurology, neurosurgery, ambulatory surgery, home health and with the Nebraska Biocontainment unit. As an IP, her primary focus was in critical care, oncology, VAE prevention and as the IP to the Nebraska Biocontainment Unit. Her recent work has been spent in a grant funded role to develop innovative tools to aid IPs in rural and remote settings.

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Disclosure Declaration

- We have no financial disclosures or conflicts related to this presentation.
- This work has been grant funded through the Center for Disease Control and Prevention in support of Project Firstline.
- The views and opinions expressed during this webinar are those of the presenters and do not necessarily reflect those of the University of Nebraska Medical Center, The Nebraska Medical Center or the Centers for Disease Control and Prevention.

Overall Series Objectives

- Analyze the fundamental components of a robust infection prevention and control (IPC) program.
- Interpret guidelines, regulatory requirements, and best practice literature for a successful application to the infection prevention program.
- Utilize identified strategies to incorporate best practice into Infection Prevention programs.
- Integrate Infection Prevention program data to target prevention and improvement strategies.
- Combine acquired knowledge to enhance collaboration and teamwork within the healthcare system.

Fundamentals of Surveillance Objectives

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- Discuss the basic principles, terms, and methodologies used to perform surveillance in healthcare settings.
- Examine an Infection Prevention and Control (IPC) Surveillance program and the use of information technology.
- Explore statistical methods used to analyze surveillance data for performance improvement.
- Summarize how to detect an outbreak while performing IPC surveillance.
- Utilize epidemiological principles and surveillance techniques to identify, investigate and mitigate an outbreak.

Surveillance Webinar Outline

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Surveillance Overview

- Key Concepts
- Basics of Epidemiology
- Infectious Disease Process
- Program Design
- Statistical Analysis

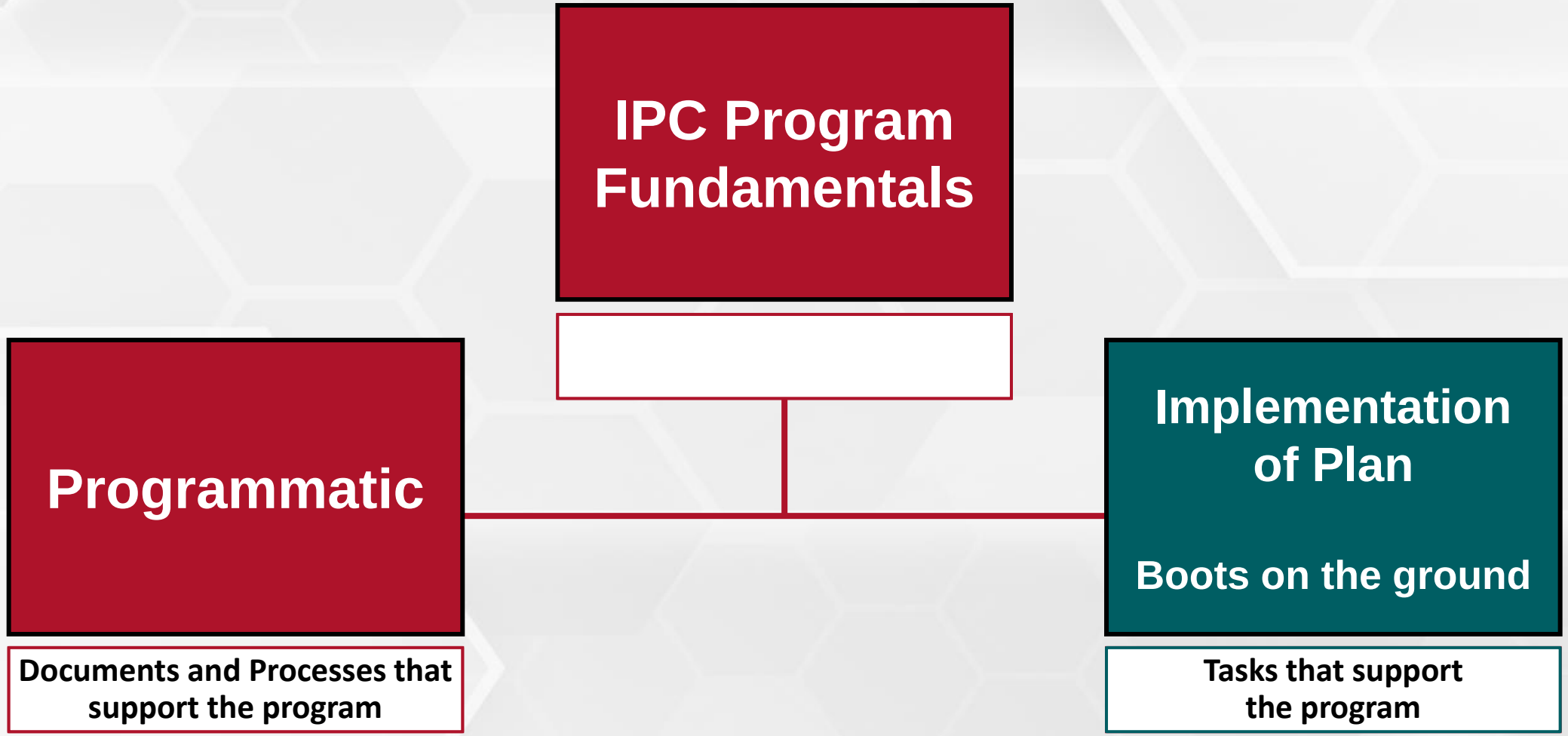
Part I: Surveillance, TAPs, & CADs

- Surveillance
- Tell your hospital's story with data
- TAPs, CADs
- Case Review

Part II: Outbreak Detection & Investigation

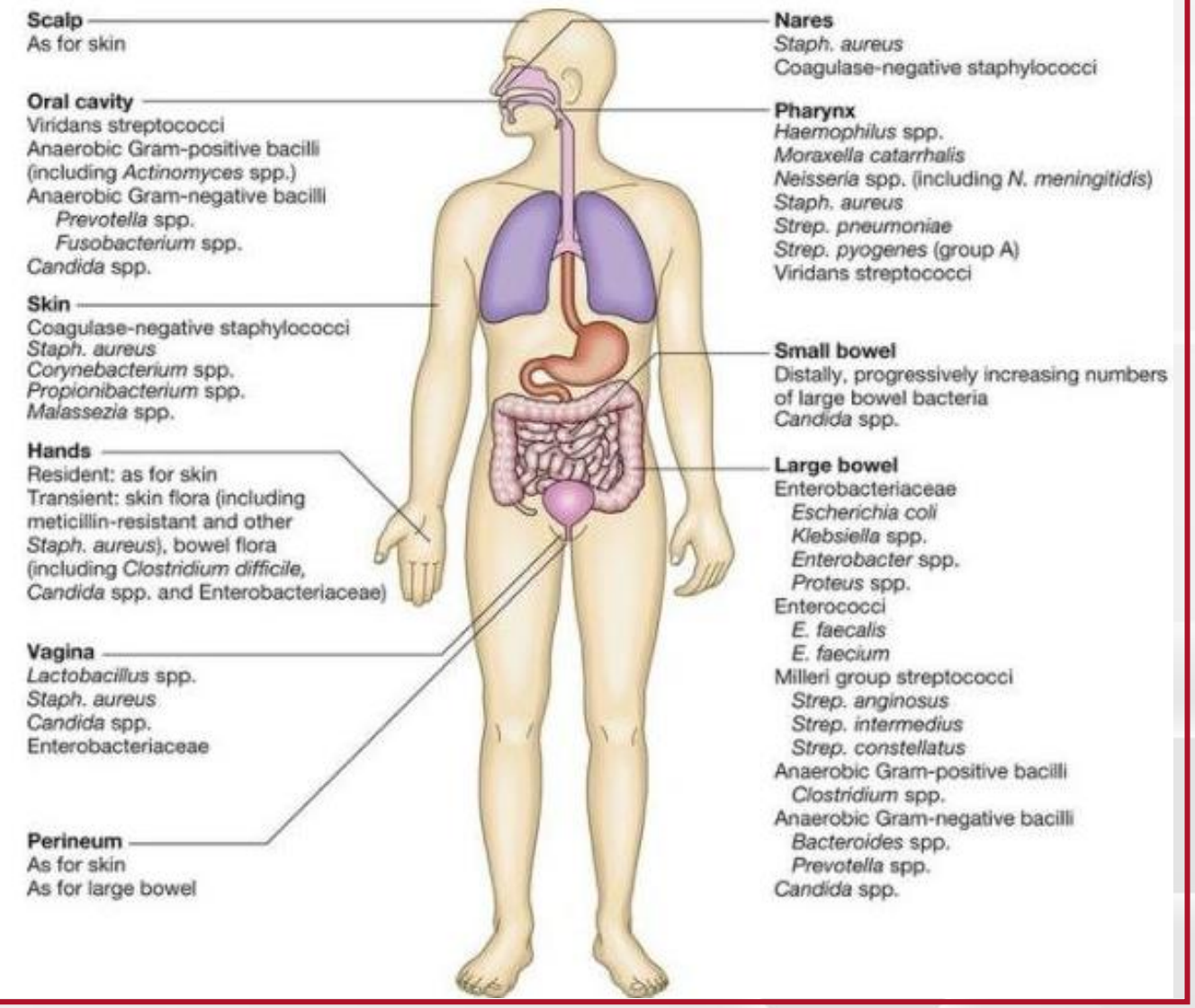
- Active Surveillance Cultures
- Detecting an outbreak
- Outbreak investigation
- Case studies
- Writing an outbreak report

IPC Program


IPC Program Fundamentals
Programmatic
Documents and Processes that support the program
Implementation of Plan
Boots on the ground
Tasks that support the program

The role of Microbiomes[26]

Microbiomes have been defined as the ecological community of commensal, symbiotic, pathogenic microorganisms as well as their genomes that literally share our body space.



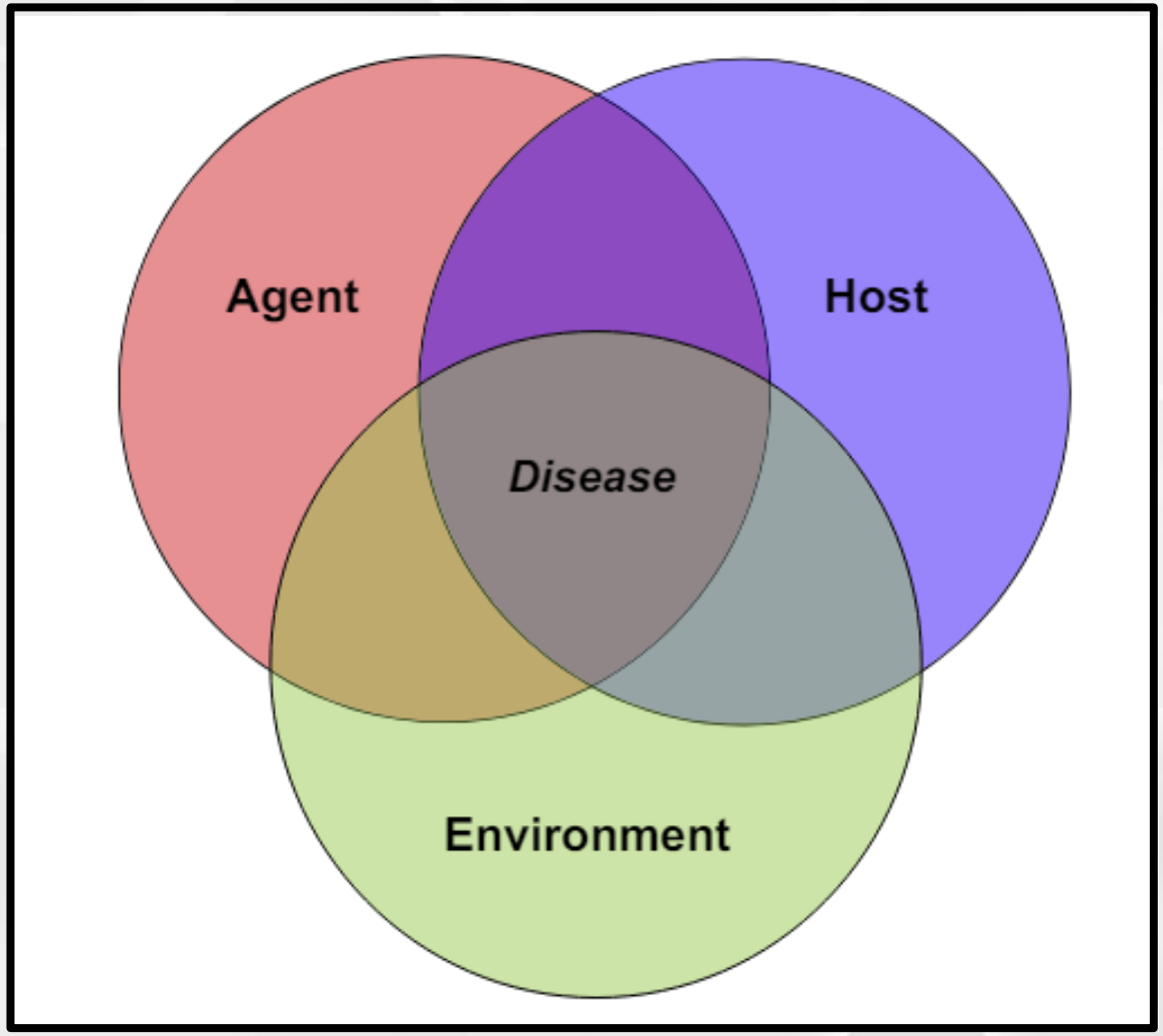
Epidemiology in Infection Control[9]

The primary purpose is to aid in the understanding of the cause of disease		
Distribution	Determining person, place, and time and natural history	Plan and evaluate interventions and prevention efforts

Epidemiological Triad Model [8, 9]

Model of Infectious Disease Causation

Agent – Host - Environment



van Seventer JM, Hochberg NS. Principles of Infectious Diseases: Transmission, Diagnosis, Prevention, and Control. International Encyclopedia of Public Health. 2017:22–39

Infectious Disease Epidemiology[10]

Terminology used in infectious disease epidemiology		
Incidence	Outbreak	Risk Factor
Prevalence	Cluster	Infection
Endemic	Reservoir	Colonization
Epidemic	Fomite	Contamination
Pandemic	Herd Immunity	Disease

Association and Causation[9]

Artificial	Indirect	Causal
• Chance occurrence • Bias or errors in study design	• Non-causal • Confounding variable	• One factor clearly shown to increase probability of disease • Hill's criteria for causality

Hill's Criteria of Causality[9]

Strength of association	Demonstrated disease occurrence among those exposed to the organism
Consistency	Demonstrated consistently in numerous studies by different investigators
Specificity	Association between one factor and one disease is more likely to be causal
Temporality	Exposure to the organism precedes development of the disease and occurs within the correct incubation period
Biological gradient	Larger doses (inoculum) is more likely to result in disease.
Biological plausible	The organism is a biological plausible cause of the disease based on knowledge.
Coherence	Disease caused by the organism is coherent with other facts known about the disease.
Experimental knowledge	Knowledge gained from research studies.
Analogy	Experiments have shown the organism causes the disease and other species of the organism causes similar disease

Infection Control Surveillance[1]

What is surveillance?

A comprehensive method of measuring outcomes and related processes of care, analyzing the data, and providing information to members of the healthcare team to assist in improving those outcomes

This is the foundation of a successful IPC Program

History of Infection Control & NHSN Surveillance[2]

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1946

- The Communicable Disease Center (later changed to the Centers of Disease Control and Prevention) is founded with the primary task of investigation and control of communicable diseases.

1965

- Emergence of hospital Infection Control programs in the 1950's due to emergence of *Staphylococcus aureus*.

1970

- The CDC established the National Nosocomial Infections Surveillance (NNIS) System, now known as NHSN, for research purposes.
- Infection Preventionists used NNIS to perform surveillance and track nosocomial infections.

1991

- Hospital Infection Control Practices Advisory Committee, now known as HICPAC was established. A federal agency chartered to provide advice and guidance regarding the practice of infection control and strategies for surveillance, prevention and control of health-care associated infections (HAIs).
- Infection Preventionists incorporated these guidelines into their role.

2010

- CMS established the first HAI for mandatory reporting.

Key Concepts of IPC Surveillance

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Measure outcomes to provide meaningful data for process improvement

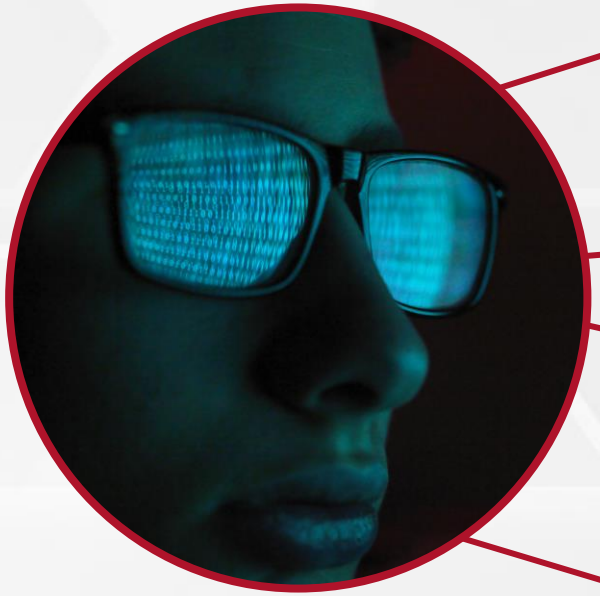
Based on sound epidemiological and statistical principles[1]

Surveillance

Designed in Accordance with current guidelines and practice recommendations

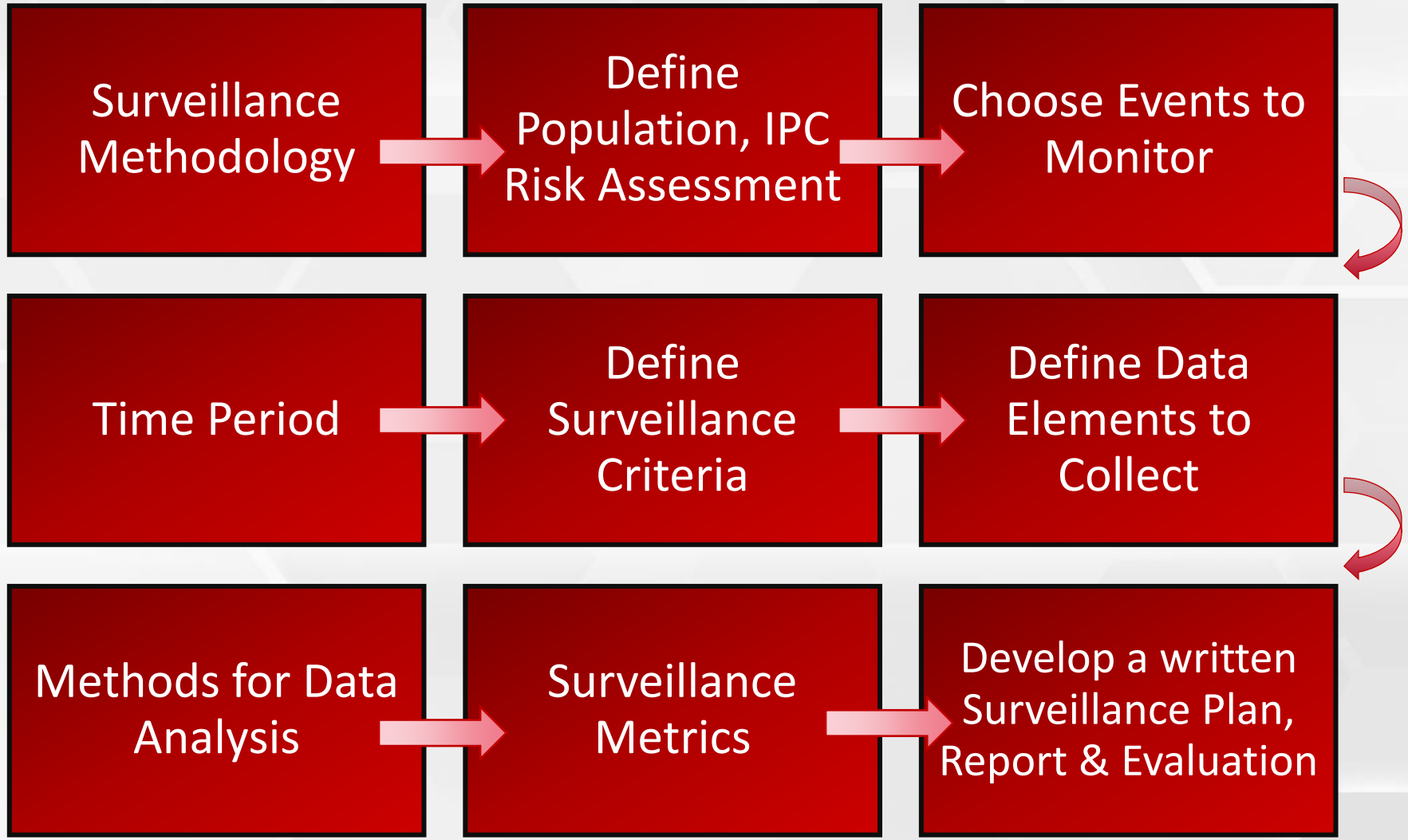
Contributes to meeting program goals[5]

Uses of IPC Surveillance[4]



- **Incidence of Infections**
  - Identify
  - Track
- **Clusters or outbreaks**
  - Detect
  - Investigate
- **Notifiable Diseases**
  - Detect
  - Report
- **Monitor non-infectious events**

Surveillance Program Design[6]



Surveillance Plan

- ✓Population
- ✓Time period
- ✓Process data
- ✓Metrics used and how analyzed
- ✓Any benchmarks

Surveillance Plan

➢ ***All Inpatient Care Units:***

Process Measures	Outcome Measures
1. Hand Hygiene: Hand Hygiene measure: % compliance (# hand hygiene compliance/# observations); monthly, quarterly & annual; Stratify by Unit and Discipline	Surgical Services: Main OR (MOR) 1. Statistical comparison of selected procedures using a Standardized Infection Ratio (SIR) to NHSN/CMS; quarterly & annual: a. Colon Surgery (COLO) b. Abdominal Hysterectomy (HYST) c. Liver Transplant (LTP) d. Kidney Transplant (KTP) e. Heart Transplant (HTP) f. Cardiac (CARD) g. Coronary Bypass with chest & donor site incisions (CBGB) h. Coronary Bypass with chest incision only (CBGC) i. Total Hip (HPRO) j. Total Knee (KPRO) k. Craniotomy (CRAN) Outpatient Surgery (OPS) a. Breast (BREAST)
2. CHG Bathing: Percent compliance with daily CHG bath (#CHG baths/# total baths) by Unit; monthly, quarterly & annual percent	
3. Environmental Hygiene: Environmental Services measure: % surfaces cleaned (# surfaces cleaned/# surfaces tested); monthly, quarterly & annual	
4. Shared Equipment Cleanliness: % equipment cleaned (# equipment cleaned/# equipment tested); monthly, quarterly & annual	2. Annual Surgeon specific rates involving surgical procedures identified in surveillance plan; Comparative peer data per service/procedure category.

Excerpt from 2022 Infection Control Plan, Infection Control & Epidemiology, Nebraska Medicine, Omaha, NE

Reference: 12

Surveillance Definitions & Criteria[4]

Tenants of Surveillance Definitions:

- What is being measured must be important and actionable
- Definitions should reasonably capture what you want to measure
- Definitions are simple and easy to apply
- The events being measured must be well delineated, with objective and reproducible definitions that can be broadly applied

Surveillance definitions are designed to be objective, but many HAI definitions include some element of subjectivity.

Syndromic Surveillance

Methods relying on detection of individual and population health indicators that are discernible before confirmed diagnoses are made [7]

Syndromic Reportable Diseases:

- Lack of a diagnostic test and a case definition
- IPs are frequently responsible for reporting syndromic diseases due to hospitalization
  - e.g., Toxic Shock Syndrome, Necrotizing Fasciitis

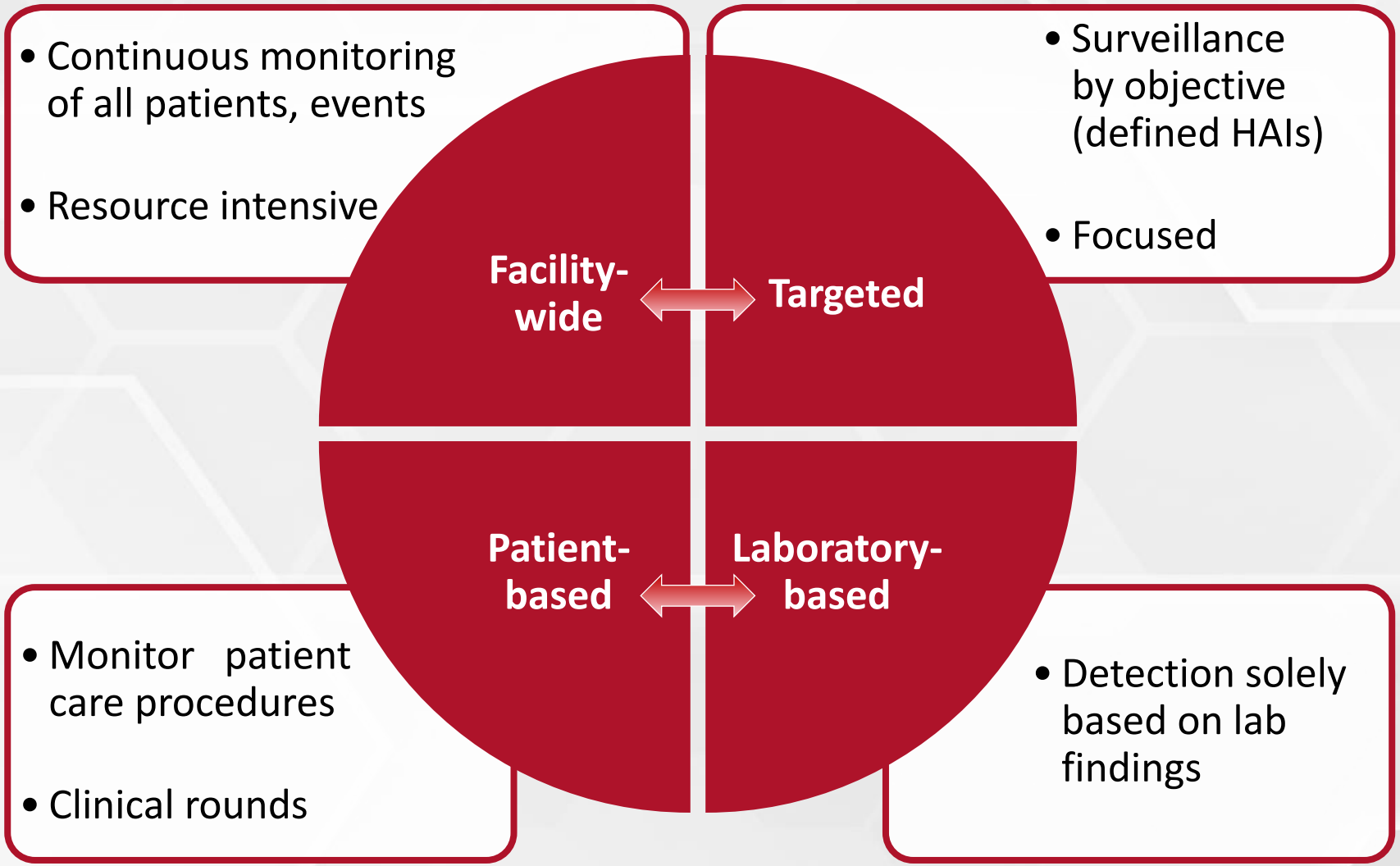
Symptomatic-Based Surveillance:

- Leverage symptomatic data
- Monitor symptoms rather than confirmed diagnoses
- Early symptom clusters may indicate an outbreak

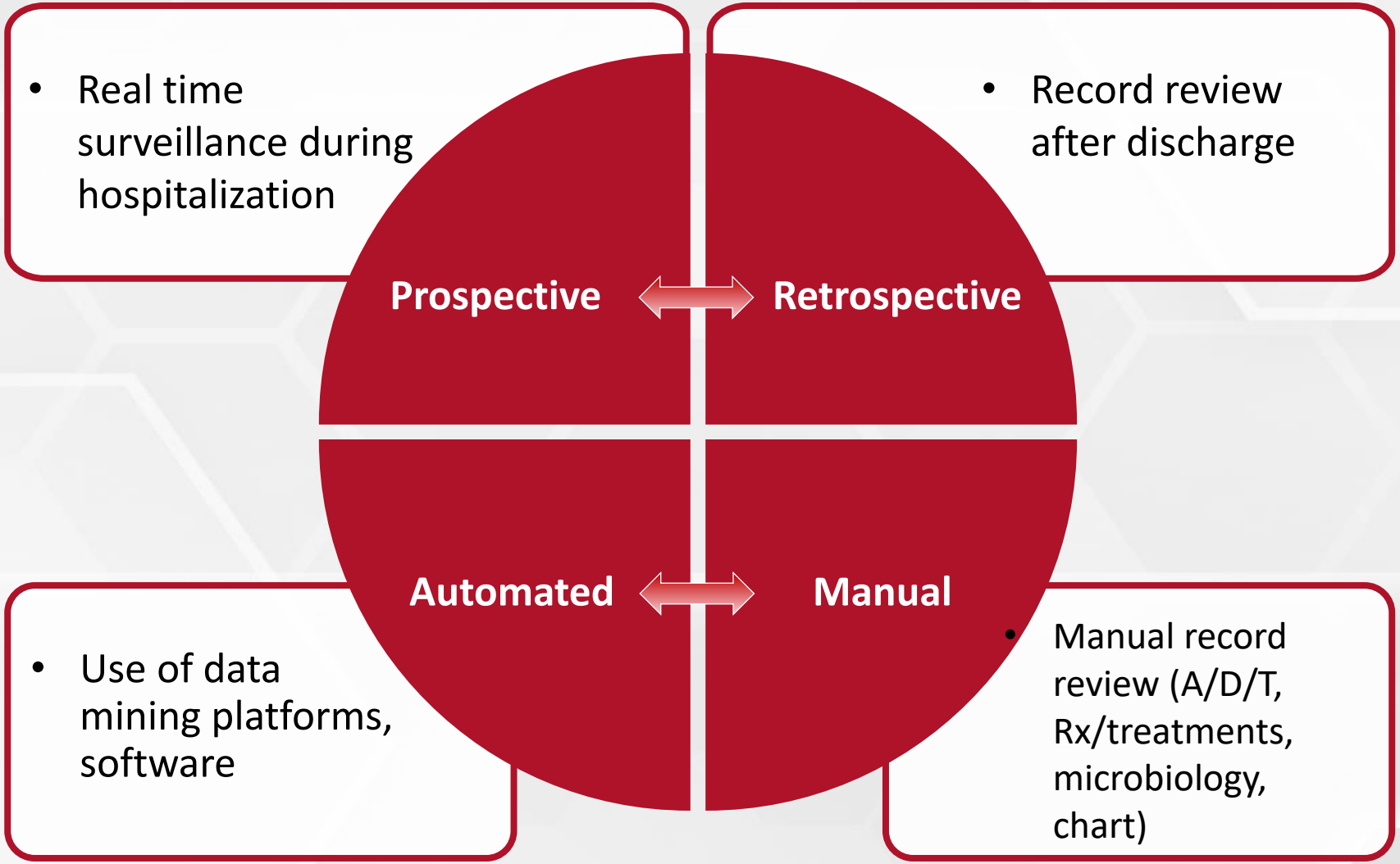
IPC Surveillance Methodologies[6]

Active Surveillance	Passive Surveillance
Primarily by trained IPs	Person's primary role isn't surveillance
Uses a variety of data sources	May be a Nurse or RT collecting data (CLIP, device data)
Actively looking for cases	Useful for identifying patterns or signals, such as a cluster
Clear denominator	
Can establish incidence or prevalence	

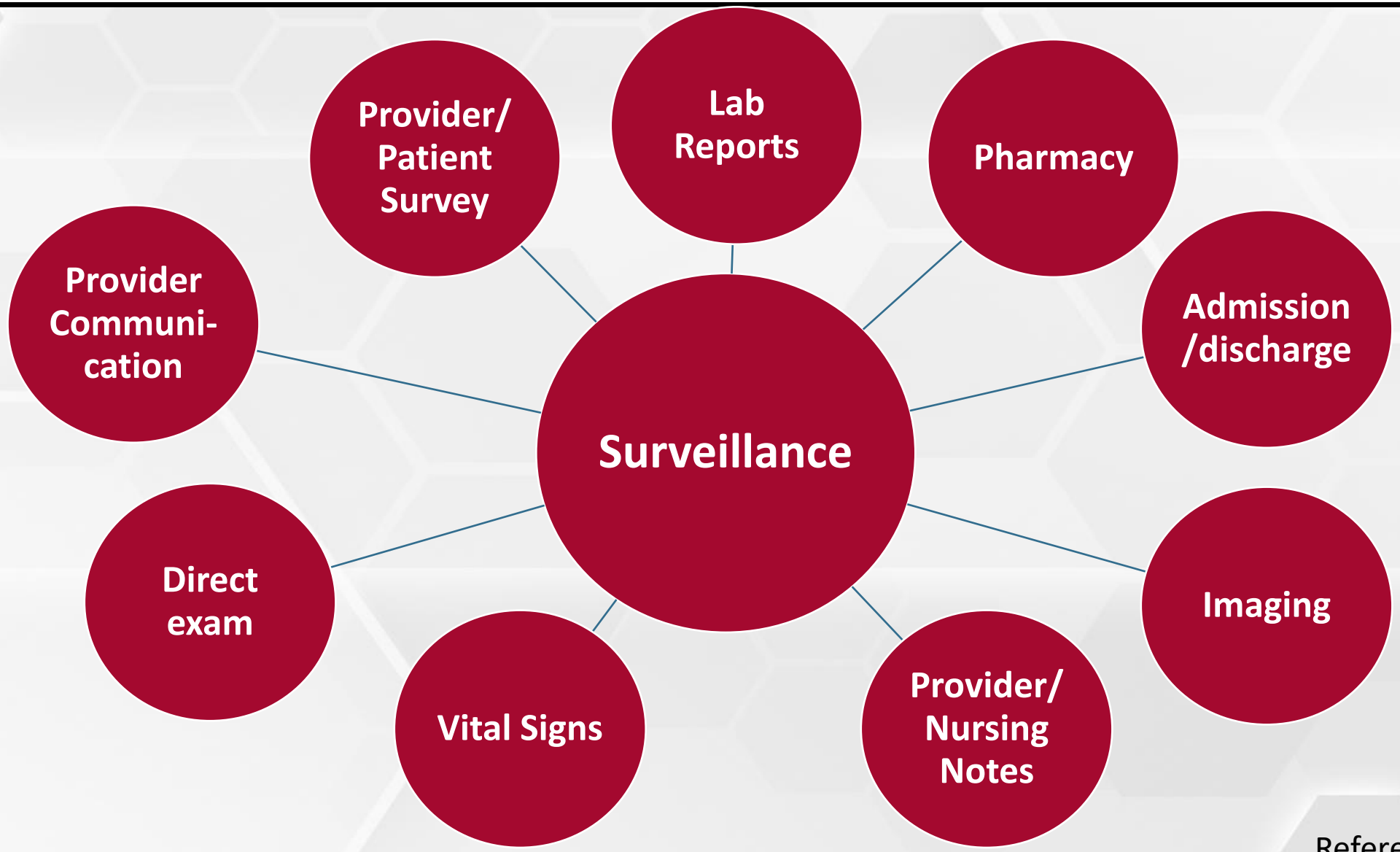
Surveillance Methodologies[6]



Surveillance Methodologies[4]



Surveillance Sources



Reference: 12

Electronic or Automated Surveillance

Pros

- Efficient review of data elements
- Identification of outbreaks & HAIs
- Real time results
- Regulatory Compliance
- Enhanced antimicrobial stewardship

Cons

- Increased need for IT support
- Initial validation requires upfront IP resources
- Updates and changes to HAI definitions require ongoing resources
- Most HAI definitions require manual review
- Some HAI elements have limited automation potential due to how EHR data are organized

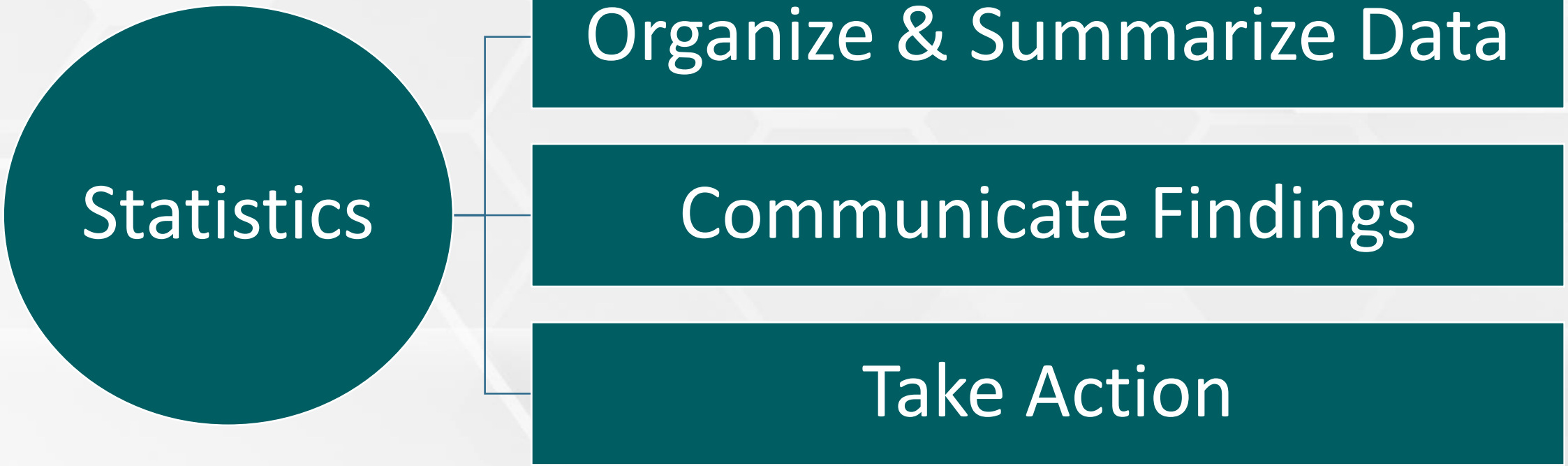
Surveillance Technology

Structured and Unstructured NHSN Data Elements

NHSN Surveillance	Denominator and Risk Adjustment Variables (At-Risk Population Determination)		Numerator (Case Ascertainment)	
	Structured Data Element	Unstructured	Structured Data Elements	Unstructured
CAUTI	Device (indwelling urinary catheter) days	N/A	Vital signs (temperature) Microbiology results	Clinical symptoms (suprapubic tenderness, costovertebral angle pain or tenderness, urinary frequency, urinary urgency, dysuria)
CLABSI	Device (central-line) days	N/A	Vital signs criteria (temperature, hypotension) Microbiology results	Clinical symptoms (chills) Secondary infections Specific exclusion criteria (eg, documentation of patient directly injecting into the line, diagnosis of Munchausen Syndrome by Proxy)
SSI	ICD-10 PSC/CM codes Sex Age BMI Duration of operation	ASA score Wound class with or without diabetes	Microbiology results	Clinician diagnosis of infection Clinical signs and symptoms (eg, purulent drainage, dehiscence) Infection present at the time of surgery Imaging results

Shenoy ES, Branch-Elliman W. Automating surveillance for healthcare-associated infections: Rationale and current realities (Part I/III). *Antimicrobial Stewardship & Healthcare Epidemiology.* 2023;3(1):e25. Table 1.

Data Analysis & Statistics



Basic Statistical Measures[14]

Central Tendency

- Mean, Median, Mode

Distribution

- Variability – Range, Standard Deviation
- Frequency – Frequency tables, Histograms

Ratios, Proportions and Rates

- Ratios, Rates
- Incidence, Prevalence

Measures of Association

- Correlation (scatter plot), 2x2 Table
- Validity – Sensitivity, Specificity

Central Tendency and Distribution

Using measures of central tendency to examine the time of CLABSI onset after catheter placement or pre-existing line access.

- Early onset (insertion practices, extraluminal)
- Late onset (maintenance bundles, intraluminal)

Annual CLABSI Infections					
Infection Onset	**3-7 days**	**>7 days**	**Range**	**Mean**	**Median**
Access to Infect.	1	7	3-34d	15d	12d
Insert to Infect.	3	10	3-81d	19d	14d
Total Count	4	17			

Chopra V. (2020) Central line-associated bloodstream infection (CLABSI): An introduction. Available at: www.cdc.gov/infectioncontrol/pdf/strive/CLABSI101-508.pdf (accessed 26 April 2024)

Ratios, Proportions and Rates[14]

Ratio – Compares any two quantitative values

(420 inpatient beds ÷ 3 IPs) x 1 = 140 beds to 1 IP

Proportion – compares a part to a whole

(14 patients with CLABSI ÷ 50 patients) x 100 = 28% of patients had CLABSI infections

Rate – Ratio includes a unit of time

(4 CLABSIs ÷ 420 central line days) x 1000 = 9.5 CLABSI's per 1000 central line days in 1st Quarter

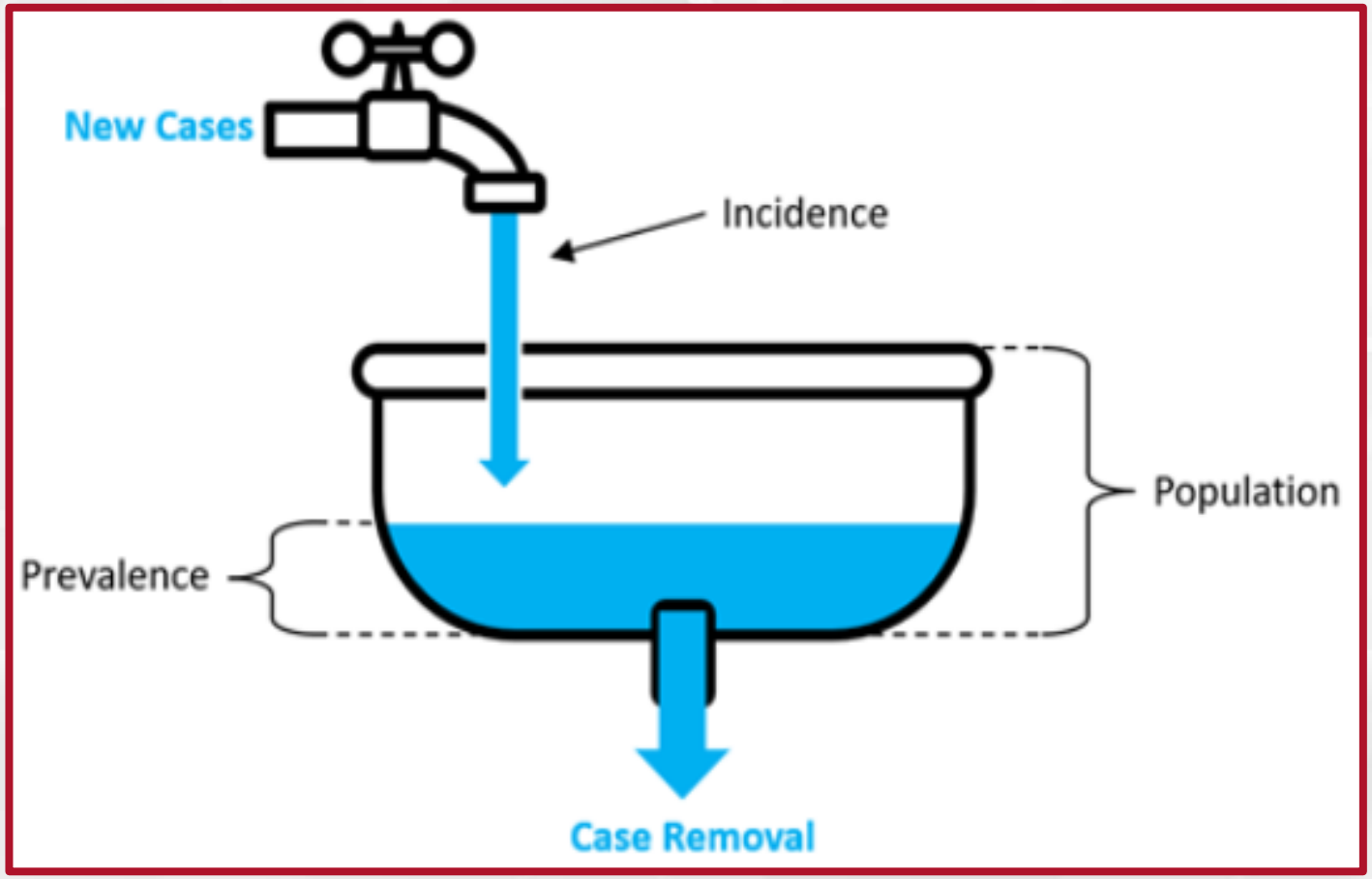
Ratios, Proportions and Rates

Incidence

quantifies the number of new cases that develop in a population of individuals at risk during a specified time period

Prevalence

quantifies the proportion of the population that are cases at a given point in time and the risk that someone will be a case at that point in time



Bronson-Lowe D, Bronson-Lowe C. From data to decisions: incidence versus prevalence. Prevention Strategist. 2017;(4):32-34.

Standardized Infection Ratio

Standardized Infection Ratio = SIR

- Summary measure used by NHSN to track Healthcare-associated Infections (HAIs)
- Adjusts for various facility and/or patient-level factors that contribute to HAI risk within each facility
- Compares the actual number of HAIs reported to predicted, given the standard population (baseline)

$$SIR = \frac{\text{Observed (O) HAIs}}{\text{Expected (E) HAIs}}$$

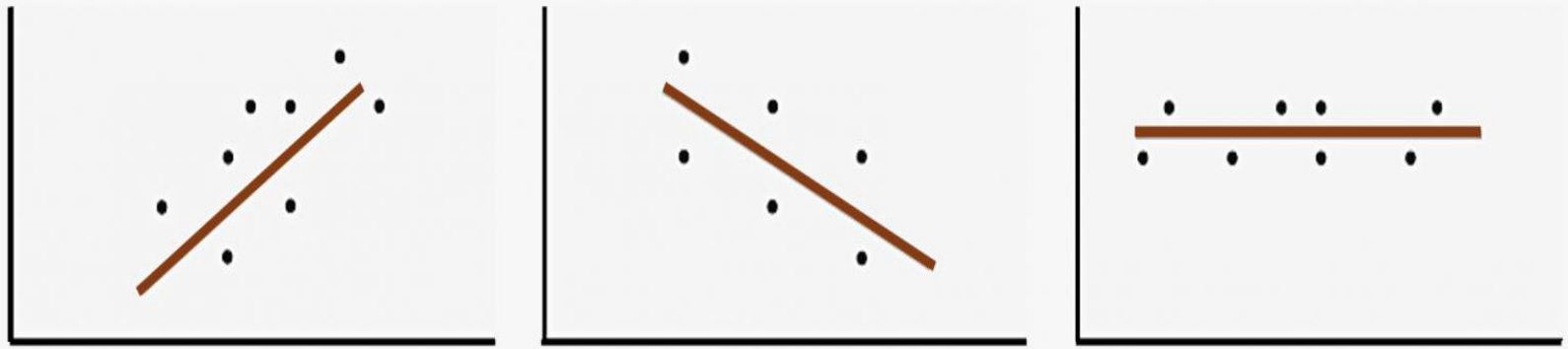
- SIR > 1.0 indicates more HAIs were observed than predicted
  - ✓Accounts for differences in the types of patients
- SIR < 1.0 indicates fewer HAIs were observed than predicted

Why Not Use Rates?

- Strictly pooled mean rates cannot reflect differences in risk between populations
- Rates lose comparability over time or across entities
- NHSN has rate tables and charts are available

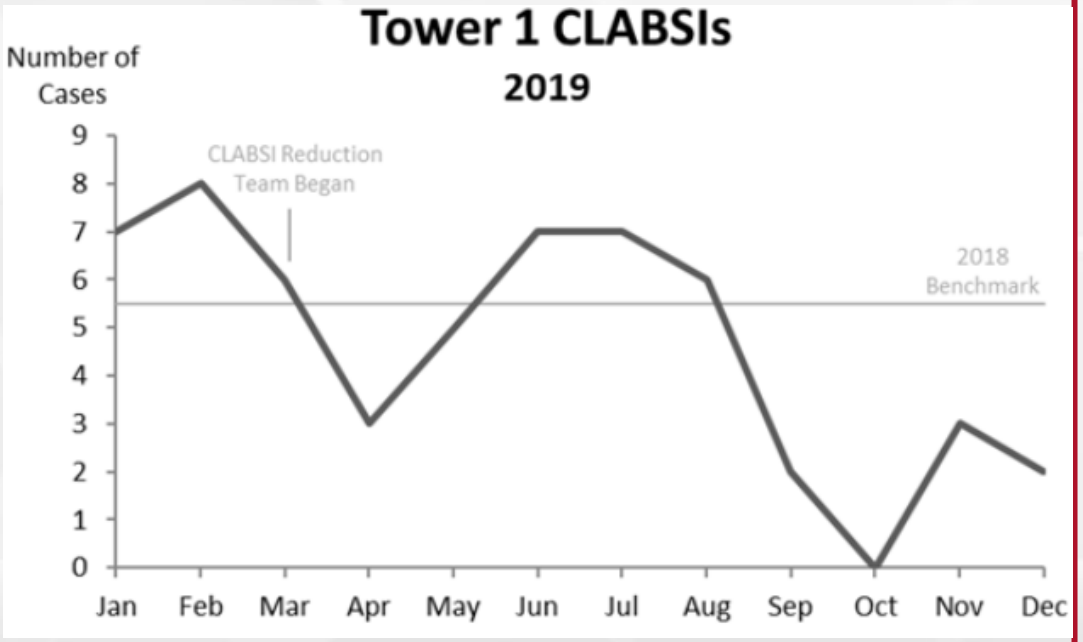
Measures of Association

- Allow to compare data to identify differences, similarities, and relationships
- Easy to confound or imply false association
- Include:
  - Correlation
  - Relative Risk
  - Odds Ratio
  - Validity (sensitivity vs specificity)



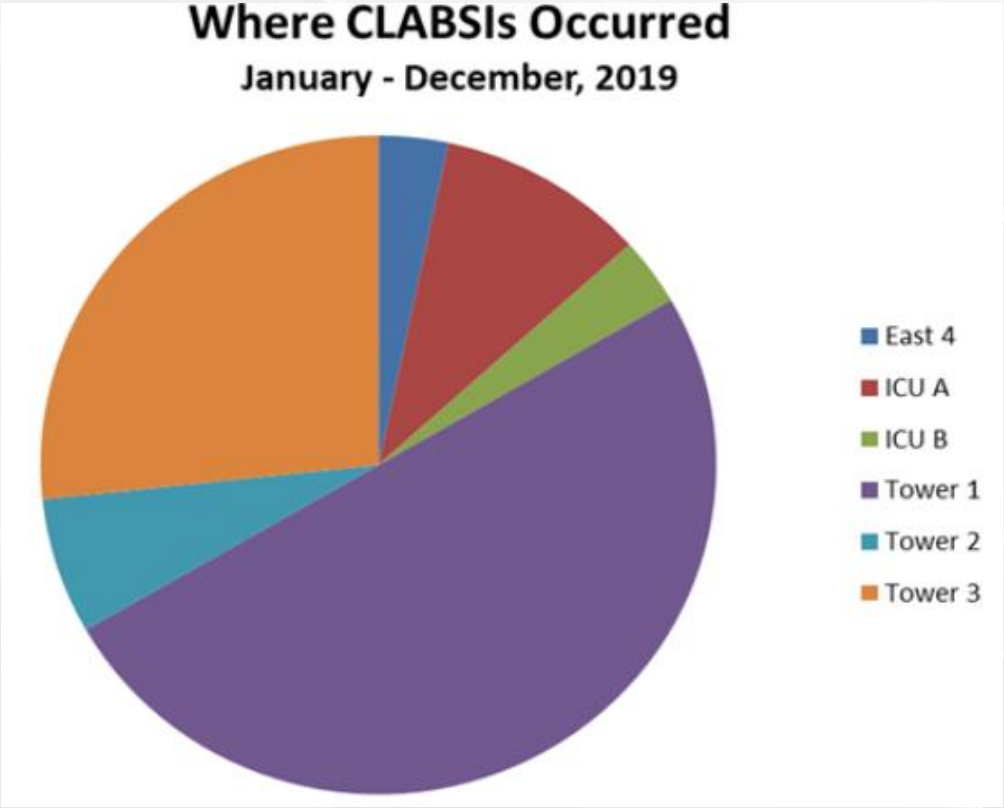
Data Visualization

- **Bar Chart**
  - Compare variables in a graph
- **Histogram**
  - Examine the distribution quantitative variables by splitting into multiple groups
  - Bars represent mutually exclusive groups
- **Line Chart**
  - Links points with a line to emphasize change
  - Can see data over time



Data Visualization

- **Pie Chart**
  - Displays how categories contribute to the whole
- **Table**
  - Display information in a grid of rows and columns
  - 2x2 table (contingency table) examine relationship between two or more categorical values
- **Scatterplot**
  - Uses points to look for correlations between variables



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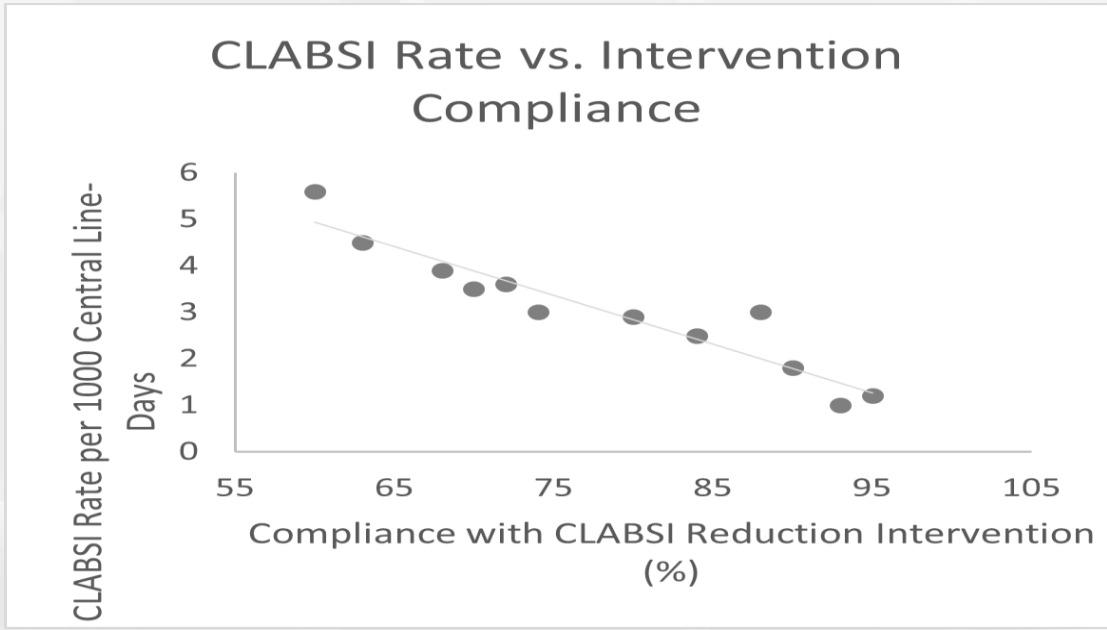


Surveillance Program Reporting

Summary reports

- Infection Control Committee, Quality Committee
- Leadership, Quality and to appropriate departments, units
- Standardized report format

Surveillance Data

- Use standardized metrics
- Provide benchmarks

Improvement Opportunities

- Summarize work in progress
- Assists in identifying educational needs

How to Use Our Data

- Leverage NHSN when able
  - Outcome- *SIR, Cumulative Attributable Difference (CAD)*
  - Process- *SUR, Central-Line Insertion Practices (CLIP) Monitoring, Unit-based SIR*
- Share data with committees and colleagues
- Engage to perform Gap Analysis with available data
  - TAP Assessments

Measuring HAI TAP & CAD Performance

Annual CLABSI Targeted Assessment

CLABSI SIR Goal 0.76 (CMS 2024 Performance Period)

LOCATION	Inf Count	CAD	SIR
Facility Name	13		1.39 (#13/9.34)
CVICU	3	1.92	2.38
MICU	2	1.03	1.8
SICU	2	1.44	**
Med Surg – Unit 1	1	0.77	**
Med Surg – Unit 2	1	0.80	**

*Note: All decimals round up per NHSN.

**SIR is only calculated if the predicted # is >1.

All other locations had a CAD < 1, Units not listed had no infections

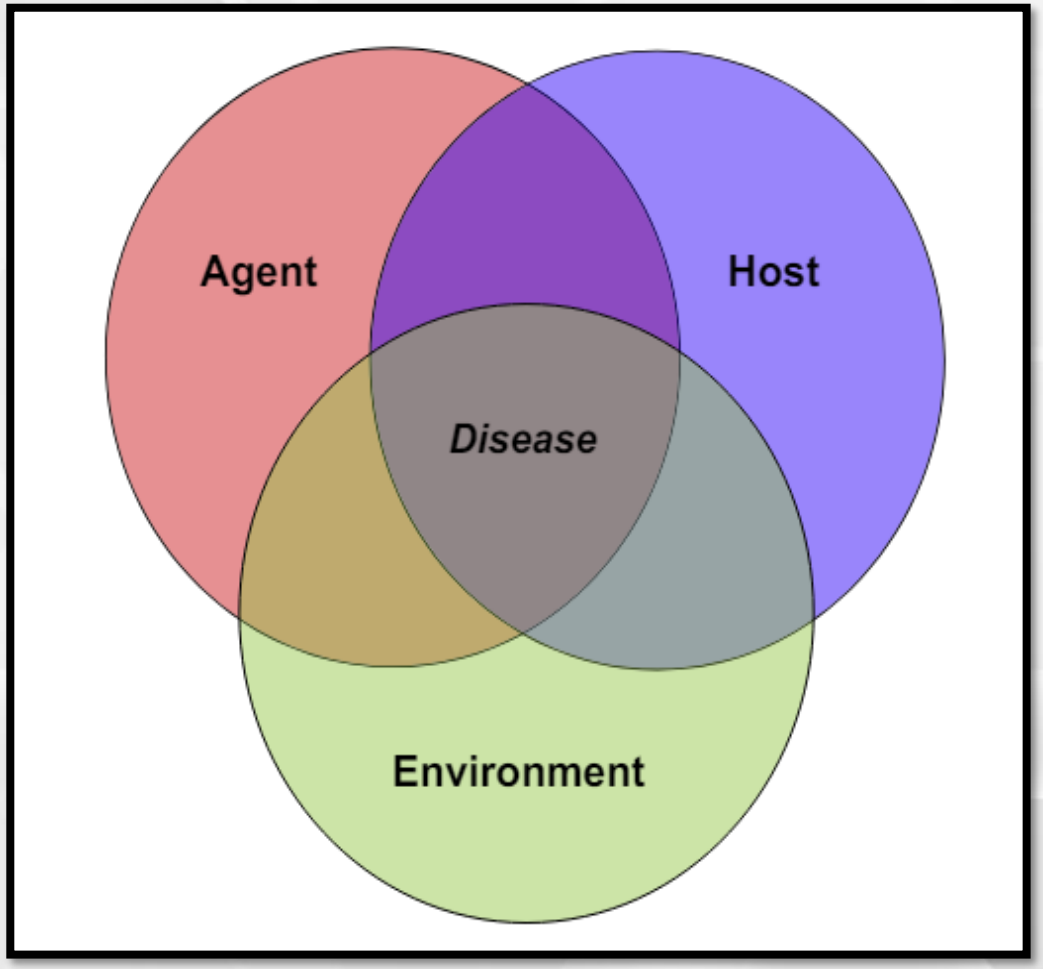
Case Review

IP's Microbiology Findings …

Date	Microbiology	Specimen Source	Patient History
2/9/24	*Staphylococcus aureus, mecA* positive FINAL	Tissue	66 y/o Male Recent hospitalization A-1/8/24, D-1/13/24 Readmit-2/5/24
2/23/24	*Staphylococcus aureus* PRELIM	Aspirate	70 y/o Female Recent hospitalization A-1/8/24 D-1/16/24 Readmit-2/19/24

Case Review

Agent	Host	Environment
Geographic Distribution	Demographics	Physical
Incubation period	Comorbidities	Social
Signs and symptoms	Behaviors	Economic
Mode of transmission, communicability and reservoir	Immune status	Cultural
Susceptibility	Medications	Environmental



Case Review

Variables	Patient A	Patient B
Demographics	66 y/o Male	70 y/o Female
A/D/T	A-1/8/24, D-1/13/24 Readmit-2/5/24	A-1/8/24, D-1/16/24 Readmit-2/19/24
Unit, Room #s 1st admission	ICU 10 5 North, 5226	ICU 4 4 South, 4881
Readmit Dx	Post-op Wound	Wound Drainage
Procedure, date, OR#	1/8/24 CABG OR#2	1/8/24 Mitral Valve OR#2
FINAL Lab results, source, date	2/9/24 Staphylococcus aureus, MRSA I&D tissue culture	2/23/24 Staphylococcus aureus, MRSA Deep wound aspirate
Symptoms	Temperature, chest incision open, wound drainage, pain	Temperature, incision open, redness, tissue induration, pain

NHSN CRBG Surveillance [20, 21]

Coronary Artery Bypass	1/8/2024
No PATOS	No Infection in CABG Note
I&D performed	2/9/2024 90 Day surveillance period
Specimen Source (micro)	“Tissue”
Specimen Source (surgeon note)	tissue culture was taken from the mediastinal tissue “mediastinitis”

NHSN Manual Chapter 9
https://www.cdc.gov/nhsn/pdfs/pscmanual/9pscssicurrent.pdf

90-day Surveillance	
Category	**Operative Procedure**
BRST	Breast surgery
CARD	Cardiac surgery
CBGB	Coronary artery bypass graft with both chest and donor site incisions
CBGC	Coronary artery bypass graft with chest incision only
CRAN	Craniotomy
FUSN	Spinal fusion
FX	Open reduction of fracture
HER	Herniorrhaphy
HPRO	Hip prosthesis
KPRO	Knee prosthesis
PACE	Pacemaker surgery
PVBY	Peripheral vascular bypass surgery
VSHN	Ventricular shunt

NHSN Organ Space Criteria + Specific Type of Infection, [20, 21]

Organ/Space SSI

Must meet the following criteria:

Date of event occurs within 30 or 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

involves any part of the body deeper than the fascial/muscle layers that is opened or manipulated during the operative procedure

AND

patient has at least ***one*** of the following:

a. purulent drainage from a drain placed into the organ/space (for example, closed suction drainage system, open drain, T-tube drain, CT-guided drainage)
b. organism(s) identified from fluid or tissue in the organ/space by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST])
c. an abscess or other evidence of infection involving the organ/space detected on:
   - gross anatomical exam or
   - histopathologic exam or
   - imaging test evidence definitive or equivocal for infection

AND

meets at least ***one*** criterion for a specific organ/space infection site listed in Table 3. These criteria are found in the Surveillance Definitions for Specific Types of Infections (Chapter 17).

DOE occurs within 90 days

Organ Space Infection
Deeper than fascial muscle
Opened during operative procedure

MRSA was cultured from the I&D tissue culture

Mediastinitis is criterion for Organ Space

NHSN Organ Space Criteria + Specific Type of Infection, [20, 21]

Table 3. Specific Sites of an Organ/Space SSI

Category	Specific Site	Category	Specific Site
BONE	Osteomyelitis	MED	Mediastinitis
BRST	Breast abscess or mastitis	MEN	Meningitis or ventriculitis
CARD	Myocarditis or pericarditis	ORAL	Oral cavity infection (mouth, tongue, or gums)
DISC	Disc space infection	OREP	Deep pelvic tissue infection or other infection of the male or female reproductive tract
EAR	Ear, mastoid infection	PJI	Periprosthetic joint infection
EMET	Endometritis	SA	Spinal abscess/infection
ENDO	Endocarditis	SINU	Sinusitis
GIT	Gastrointestinal (GI) tract infection	UR	Upper respiratory tract, pharyngitis, laryngitis, epiglottitis
IAB	Intraabdominal infection, not specified elsewhere	USI	Urinary System Infection
IC	Intracranial infection	VASC	Arterial or venous infection
JNT	Joint or bursa infection	VCUF	Vaginal cuff infection
LUNG	Other infection of the lower respiratory tract		

MED-Mediastinitis

Mediastinitis must meet at least ***one*** of the following criteria:

1. Patient has organism(s) identified from mediastinal tissue or fluid by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment, for example, not Active Surveillance Culture/Testing (ASC/AST).
2. Patient has evidence of mediastinitis on gross anatomic or histopathologic exam.
3. Patient has at least ***one*** of the following signs or symptoms: fever (>38.0°C), chest pain*, or sternal instability. *

   And at least *one* of the following:

   a. purulent drainage from mediastinal area
   b. mediastinal widening on imaging test
4. Patient ≤1 year of age has at least ***one*** of the following signs or symptoms: fever (>38.0°C), hypothermia (<36.0°C), apnea*, bradycardia*, or sternal instability*

   And at least *one* of the following:

   a. purulent drainage from mediastinal area.
   b. mediastinal widening on imaging test.

* *With no other recognized cause*

https://www.cdc.gov/nhsn/pdfs/pscmanual/17pscnosinfdef_current.pdf

NHSN Surveillance Patient B
Mitral Valve Replacement [20, 21]

Mitral Valve Replacement	1/8/2024
No PATOS	No Infection in CARD Note
I&D performed	2/9/2024 90 Day surveillance period
Specimen Source (micro)	“deep wound aspirate”
Surgeon Note	Incision is open and tissue is red with induration

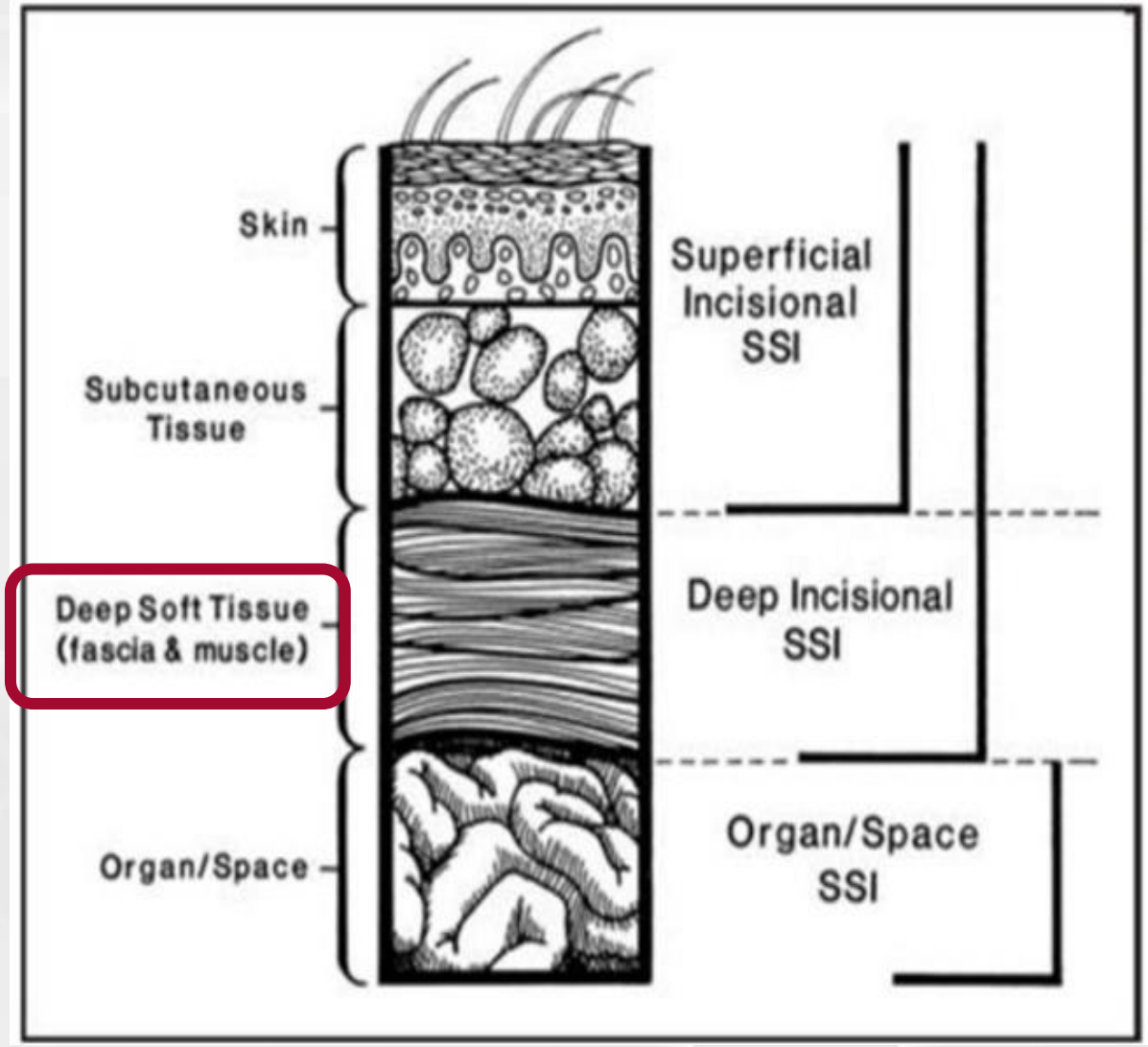
90-day Surveillance	
Category	**Operative Procedure**
BRST	Breast surgery
CARD	Cardiac surgery
CBGB	Coronary artery bypass graft with both chest and donor site incisions
CBGC	Coronary artery bypass graft with chest incision only
CRAN	Craniotomy
FUSN	Spinal fusion
FX	Open reduction of fracture
HER	Herniorrhaphy
HPRO	Hip prosthesis
KPRO	Knee prosthesis
PACE	Pacemaker surgery
PVBY	Peripheral vascular bypass surgery
VSHN	Ventricular shunt

NHSN SSI Deep Incisional Criteria, [20, 21]

Deep incisional SSI

There are two specific types of deep incisional SSIs:

1. Deep Incisional Primary (DIP) – a deep incisional SSI that is identified in a primary incision in a patient that has had an operation with one or more incisions (for example, C-section incision or chest incision for CBGB)
2. Deep Incisional Secondary (DIS) – a deep incisional SSI that is identified in the secondary incision in a patient that has had an operation with more than one incision (for example, donor site incision for CBGB)



NHSN SSI Deep Incisional Criteria, [20, 21]

- ✓ DOE occurs within 90 days
- ✓ Deep soft tissues of the incision
- ✗ No purulence noted
- ✓ Deep incision aspirated by a surgeon AND MRSA was identified from deep soft tissue AND patient has pain and fever

Deep Incisional Primary SSI

Deep incisional SSI

Must meet the following criteria:

Date of event occurs within 30 90 days following the NHSN operative procedure (where day 1 = the procedure date) according to the list in Table 2

AND

Involves deep and soft tissue incision (for example, fascial and muscle layers)

AND

patient has at least ***one*** of the following:

a. purulent drainage from the deep incision

b. A deep incision that is deliberately opened or aspirated by a surgeon physician* or physician designee or spontaneously dehisces

AND

Organisms identified from deep soft tissues of the incision by a culture or non-culture based microbiologic testing method which is performed for purposes of clinical diagnosis or treatment (for example, not Active Surveillance Culture/Testing [ASC/AST]) or culture or non-culture based microbiologic testing method is not performed. A culture or non-culture based test from the deep soft tissues of the incision that has a negative finding does not meet this criterion.

AND

patient has at least ***one*** of the following signs or symptoms: fever (>38°C); localized pain or tenderness

c. an abscess or other evidence of infection involving the deep incision detected on gross anatomical exam, histopathologic exam, or imaging test

Finalizing our SSI Case Findings

Variables	Patient A	Patient B
Demographics	66 y/o Male	70 y/o Female Diabetic
A/D/T	A-1/8/24, D-1/13/24 Readmit - Post-op Wound	A-1/8/24, D-1/16/24 Readmit - Wound Drainage
Date, Procedure	1/8/24 CBGB	1/8/24 CARD
Surveillance Criteria Met	SSI Organ space infection – MED (Mediastinitis)	SSI Deep Incisional Primary (DIP)
Date of Event (DOE)	2/5/24 (Readmission date, first retrievable S/S)	2/19/24 (Readmission date, first retrievable S/S)
FINAL Lab results, source, date	2/9/24 Staphylococcus aureus, MRSA tissue culture	2/23/24 Staphylococcus aureus, MRSA wound aspirate
Patient MDRO colonization status	History MRSA	No history MRSA

Surgical Site Infections

2024 Q1	Procedure Count	Inf Count	Expected	SIR	Proc not in SIR
CARD	43	2	<1	---	2
CBGB	57	2	<1	---	

Includes all wound depths (Superficial, Deep and Organ Space infections)

SIR is only calculated if the number predicted is ≥ 1.0

Note:

Case review in process to examine Cardiovascular SSIs due to MRSA. Unusual patterns trigger an investigation.

Determine methods

Assess & Define Population

Select Process & Outcome Metrics

(HAI, Procedures, MDROs, Bundle compliance, etc.)

Collect data from various sources

Analyze/ Calculate Data

(Ratios, Rates, Central Tendency, etc.)

Share findings

- Committee
- Leadership
- Frontline Staff

PROJECT FIRSTLINE

UNMC Nebraska Medicine

Join us next month for Surveillance Part II: Outbreak Detection & Investigation

June 20, 2024

Self-Led Infection Control Evaluation SLICE

SLICE Domains	
Infection Prevention & Control Program	Transmission-based & Standard Precautions
Hand Hygiene	PPE
Surveillance	CAUTI
Injection Safety	CLABSI
Environment of Care	VAE
Environmental Cleaning	Non-Ventilator Associated Pneumonia
Non-Critical Device Reprocessing	SSI
Semi-Critical Device Reprocessing	Clostridioides difficile
Critical Device Reprocessing	

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Questions

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