IP 101

Class 4: Surveillance

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Syllabus

- Basics of surveillance
  - What and why?
  - Vocabulary
  - Surveillance program
- NHSN surveillance
  - Surveillance definitions/criteria and the patient safety component manual
    - IWP, DOE, POA, LOA, RIT, SBAP
    - CAUTI, CLABSI, SSI, LabID
  - Data entry

What is Surveillance?

- The **systematic and ongoing monitoring** of healthcare-associated infections (HAIs) that occur within healthcare facilities
- 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**

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History of Surveillance

- Before germ theory
- **1840s:** Ignaz Semmelweis
- **1850s:** Florence Nightingale
- **1860s:** germ theory
- **1946:** The Communicable Disease Center (aka CDC)

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History of Surveillance

- **1958:** American Hospital Association
- **1960s:** CDC
- **1976:** The Joint Commission
- **1980s:** shift to outpatient services increases surveillance needs
- **1985:** SENIC Project
- **1992-2004:** National Nosocomial Infections Surveillance System
- **Early 2000s:** state legislation

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Why is Surveillance Important?

Identify & track infections

Detect emerging disease

Detect bioterrorist event

Determine baseline/endemic rates of disease

Education

Evaluate effectiveness of IPC

Report notifiable diseases

Risk assessment

Detect outbreaks

Monitor HCP injuries/exposures

Ensure compliance with regulatory agencies

Compare data

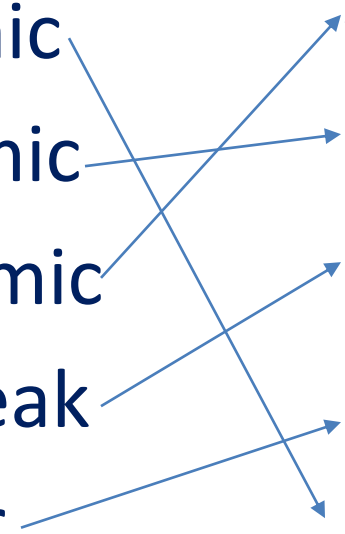
Observe practices (HH, CL insertion…)

Measure efficacy of interventions/performance improvement

Respond to ID emergency/pandemic

Vocabulary

1) Endemic
2) Epidemic
3) Pandemic
4) Outbreak
5) Cluster



A) Epidemic spread over a wide geographical area- countries/continents

B) Excess over expected incidence of disease in a geographical area during a specific time period

C) Excess over expected incidence of disease in a geographical area during a specific time period, but usually preferred when dealing with the public

D) Group of people with a certain disease in the same place/time, but are not epidemiologically linked

E) Usual incidence of a given disease within a geographical area during a specific time period

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Vocabulary

1. Baseline
2. Case
3. Case Definition
4. Rate
5. Ratio

A. Set of uniformly applied criteria for determining who should be identified as having a specific disease/injury/etc
B. An instance of a particular disease/injury/etc that meets selected criteria
C. Expression of the frequency with which an event occurs in a defined population per unit of time
D. Number/value used as basis for comparison
E. The value obtained by dividing one quantity in the numerator by another in the denominator

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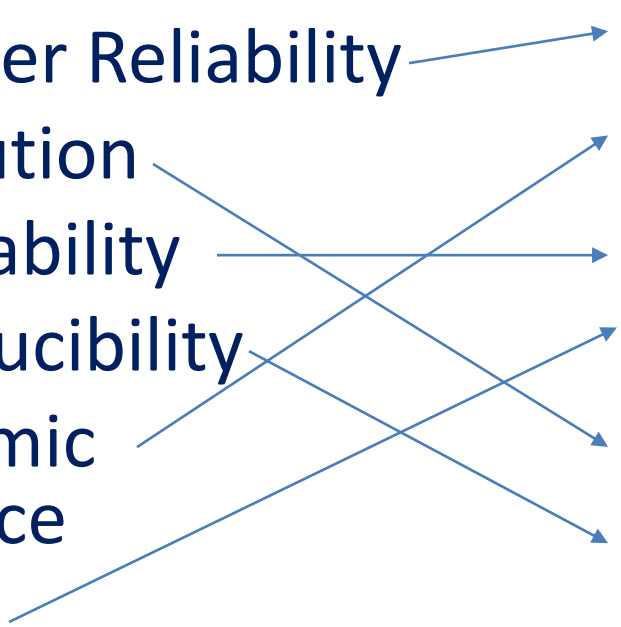
Vocabulary

1. Interrater Reliability
2. Distribution
3. Repeatability
4. Reproducibility
5. Syndromic Surveillance
6. Validity



A. Extent to which 2 or more individuals agree
B. Collecting and analyzing nontraditional data for early detection of an infectious disease disaster
C. The variability of a measurement
D. The degree to which a measurement, test, study, etc measures/detects what it is intended to measure
E. Frequency and pattern of an event in a population
F. Measures the degree of agreement of an experiment/study performed by different people/locations/instruments

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Basics of a Surveillance Program

- Based on sound epidemiological and statistical principles
- Use current recommended practices
- Defined elements
- Facility-based risk assessment
- Include infection prevention and control (IPC), performance improvement, patient safety, emergency preparedness, and public health activities

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Kentucky Reportable Diseases & Conditions

Kentucky Public Health
Prevent. Promote. Protect.

REPORTABLE DISEASES AND CONDITIONS IN KENTUCKY

902 KAR 2:020: Amended Table of Reportable Diseases and Conditions in Kentucky (Effective 12/28/2022)
https://apps.legislature.ky.gov/law/kar/902/002/020.pdf
* Select Any Disease/Condition to be redirected to the CDC Case Definition *
Updated: 1/16/2024

URGENT NOTIFICATION WITHIN 24 HOURS:
BY ELECTRONIC LABORATORY REPORTING AND REQUIRED EPID FORM

- Anthrax
- Botulism
- Brucellosis (multiple cases, temporally or spatially clustered)
- Cronobacter spp. invasive disease in an infant <12 months of age
- Diphtheria
- Hepatitis A, acute
- Measles
- Melioidosis
- Meningococcal infections
- Middle East Respiratory Syndrome associated Coronavirus (MERS-CoV) disease
- Multi-system Inflammatory Syndrome in Children (MIS-C)
- Novel influenza A virus infections
- Orthopox virus infection, including:
  - Monkeypox
  - Smallpox
  - Vaccinia
- Plague
- Poliomyelitis
- Rabies, animal
- Rabies, human
- Rubella
- Severe Acute Respiratory Syndrome Associated Coronavirus (SARS-CoV)
- Severe Acute Respiratory Syndrome Associated Coronavirus 2 (SARS-CoV-2) (The virus that causes COVID-19)
- Tularemia
- Viral hemorrhagic fevers due to:
  - Crimean-Congo Hemorrhagic Fever virus
  - Ebola virus
  - Lassa virus
  - Lujo virus
  - Marburg virus
  - New world arenaviruses including:
    - Guanarito virus
    - Junin virus
    - Machupo virus
    - Sabia virus
- Yellow fever

PRIORITY NOTIFICATION WITHIN ONE (1) DAY:
BY ELECTRONIC LABORATORY REPORTING AND REQUIRED EPID FORM

- Arboviral diseases, neuroinvasive and nonneuroinvasive, including:
  1. California serogroup virus diseases, including diseases caused by:
     - California encephalitis virus
     - Jamestown Canyon virus
     - Keystone virus
     - La Crosse virus
     - Snowshoe hare virus
     - Trivittatus viruses
  2. Chikungunya virus disease
  3. Eastern equine encephalitis virus disease
  4. Powassan virus disease
  5. St. Louis encephalitis virus disease
  6. Venezuelan equine encephalitis disease
  7. West Nile virus disease
  8. Western equine encephalitis virus disease
  9. Zika virus, non-congenital or congenital
- Brucellosis (cases not temporally or spatially clustered)
- Campylobacteriosis
- Carbon monoxide poisoning
- Cholera
- Congenital syphilis
- Cryptosporidiosis
- Cyclosporiasis
- Dengue virus infections
- Escherichia coli O157:H7
- Foodborne disease outbreak
- Giardiasis
- Haemophilus influenzae invasive disease
- Hansen's disease (leprosy)
- Hantavirus infection, non-Hantavirus pulmonary syndrome
- Hantavirus pulmonary syndrome (HPS)
- Hemolytic uremic syndrome (HUS), postdiarrheal
- Hepatitis B, acute
- Hepatitis B infection in a pregnant woman
- Hepatitis B infection in an infant or a child aged five (5) years or less
- Newborns born to Hepatitis B positive mothers at the time of delivery
- Influenza-associated mortality
- Legionellosis
- Leptospirosis
- Listeriosis
- Mumps
- Norovirus outbreak
- Pertussis
- Pesticide-related illness, acute
- Psittacosis
- Q fever
- Rubella, congenital syndrome
- Salmonellosis
- Shiga toxin-producing E. coli (STEC)
- Shigellosis
- Streptococcal toxic-shock syndrome
- Streptococcus pneumoniae, invasive disease
- Syphilis - primary, secondary, or early latent
- Tetanus
- Toxic-shock syndrome (other than Streptococcal)
- Tuberculosis
- Typhoid fever
- Varicella
- Vibriosis
- Waterborne disease outbreak

ROUTINE NOTIFICATION WITHIN FIVE (5) DAYS:
BY ELECTRONIC LABORATORY REPORTING AND REQUIRED EPID FORM

- Acute Flaccid Myelitis
- Anaplasmosis
- Babesiosis
- Chancroid
- Chlamydia trachomatis infection
- Coccidioidomycosis
- Creutzfeldt-Jakob disease
- Ehrlichiosis
- Gonorrhea
- Granuloma inguinale
- Hepatitis C, acute
- Hepatitis C infection in a pregnant woman
- Hepatitis C infection in an infant or a child aged five (5) years or less
- HIV infection or AIDS diagnosis
- Lymphogranuloma venereum
- Newborns born to Hepatitis C positive mothers at the time of delivery
- Histoplasmosis
- Lead poisoning
- Lyme Disease
- Malaria
- Spotted Fever Rickettsiosis (Rocky Mountain Spotted Fever)
- Syphilis - other than primary, secondary, early latent, or congenital
- Toxoplasmosis
- Trichinellosis (Trichinosis)

Nationally notifiable and currently proposed as an addition to KAR
Submission of Clinical Isolates to the Kentucky Department for Public Health Division of Laboratory Services (DLS) Required
Routine Notification made by Electronic Laboratory Reporting and EPID 200
Routine Notification made by Electronic Laboratory Reporting and EPID 250
Routine Notification made by Electronic Laboratory Reporting and EPID 394
Review KDPH HIV/AIDS Section for reporting Requirements

ROUTINE NOTIFICATION WITHIN 24 HOURS:
BY ELECTRONIC LABORATORY REPORTING VIA EPID 250

- Candida auris
- Carbapenem-resistant – Acinetobacter
- Carbapenem-resistant – Enterobacteriaceae (CRE)
- Carbapenem-resistant – Pseudomonas
- Vancomycin-intermediate Staphylococcus aureus (VISA)
- Vancomycin-resistant Staphylococcus aureus (VRSA)

NOTIFICATION WITHIN 3 MONTHS OF DIAGNOSIS:

- Asbestosis
- Coal worker's pneumoconiosis
- Silicosis

ROUTINE NOTIFICATION WITHIN FIVE (5) BUSINESS DAYS:
BY ELECTRONIC LABORATORY REPORTING

- Hepatitis B & Hepatitis C laboratory test results whether reported as positive or negative;
  - Include the serum bilirubin levels taken within ten (10) days of the test of a patient who has tested positive; or
  - Include the serum alanine amino transferase levels taken within ten (10) days of the test of a patient who tested positive
- Varicella laboratory test results reported as positive for:
  - Isolation of varicella virus from a clinical specimen
  - Varicella antigen detected by direct fluorescent antibody test
  - Varicella-specific nucleic acid detected by polymerase chain reaction (PCR)
- Multi-drug Resistant Organisms:
  - Clostridioides (Formerly Clostridium) difficile (C. difficile)
  - Enterobacteriaceae species resistant to ceftazidime, ceftriaxone, or cefotaxime
  - Methicillin-resistant Staphylococcus aureus (MRSA)
  - Vancomycin resistant Enterococcus species (VRE).

Report Immediately by Telephone:

1. A suspected incidence of bioterrorism caused by a biological agent
2. Submission of a specimen to the Kentucky Division of Laboratory Services for select agent identification or select agent confirmation testing
3. An outbreak of a disease or condition that resulted in multiple hospitalizations or death.
4. An unexpected pattern of cases, suspected cases, or deaths which may indicate the following shall be reported immediately by telephone to the local health department in the county where the health professional is practicing or where the facility is located:
   a. A newly-recognized infectious agent
   b. An outbreak
   c. An emerging pathogen which maypose a danger to the health of the public
   d. An epidemic
   e. A non-infectious chemical, biological, or radiological agent.

Basics of a Surveillance Program

- Timely
- Flexible
- Representative
- Sensitive & Specific
- Accurate
- Able to perform data analysis
- Applicable/Practical

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Creating a Surveillance Program

- Facility-wide/targeted/combination
- Active or passive
- Population: patient, employee, newborn, geriatric, services, etc
- Events to monitor
- Time period
- Surveillance criteria/case definitions

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Creating a Surveillance Program

- Data to collect/how you collect
  - Demographics, labs, risk factors, numerator, denominator, etc
- How will you analyze?
- Type of measurement
  - Process measures vs. outcome measures
- Surveillance reports
- Written surveillance plan

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Now What?

- Goal = patient safety
- Enhance performance improvement activities and reduce the risk of adverse outcomes

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Now What?

- Early detection & response
- Prevent outbreaks
- Data-driven/Evidence-based decisions
- Quality improvement
- Benchmark/Compare
- Monitor effectiveness & compliance

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Patient Safety Component Manual

- Chapter 2: Identifying Healthcare-associated Infections for NHSN Surveillance
  - Device-associated infections
    - » CLABSI
    - » CAUTI
  - Pneumonia
  - Specific Types of Infections
- **Does not apply to:**
  - SSI
  - VAE
  - PedVAE
  - LabID

NHSN
NATIONAL HEALTHCARE SAFETY NETWORK

January 2024

National Healthcare Safety Network (NHSN)
Patient Safety Component Manual

Table of Contents

Please Note: The NHSN Patient Safety Component Manual is updated annually based on subject matter expert review and user feedback. Over time, certain chapters have been retired or moved to other components. To avoid confusion, the chapters in the PSC manual do not shift to account for these changes; therefore, chapters 8 and 13 are not listed in the Table of Contents or included in this document.

Key Concepts: Identifying HAIs for NHSN Surveillance

https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf

Infection Window Period (IWP)

- The 7-days during which all site-specific infection criteria must be met.

For purposes of defining the IWP the following examples are considered diagnostic tests:

- Laboratory specimen collection
- Imaging test
- Procedure or exam

IMPORTANT: use the **first** diagnostic test that creates an infection window period during which all elements of the criterion can be found.

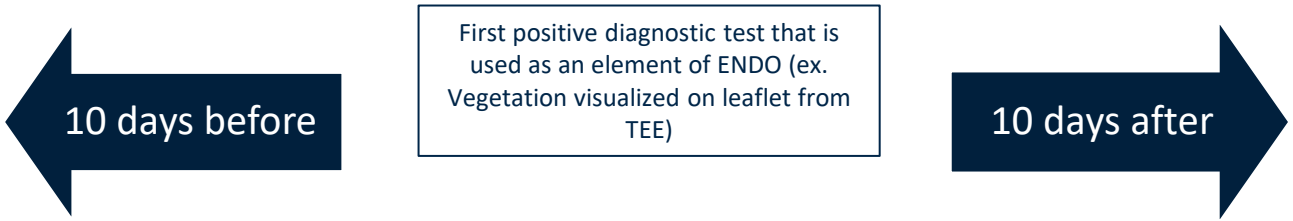
Infection Window Period (IWP)		
	Day 1	3 days before
	Day 2	
	Day 3	
	Date of *FIRST* positive diagnostic test that is used as an element of the site-specific criterion **OR** If no diagnostic test, the date of *FIRST* documented localized sign/symptom that is used as an element of the site-specific criterion	
	Day 5	3 days after
	Day 6	
	Day 7	

IWP Considerations

- For site-specific infection criteria that do not include a diagnostic test, the date of the first documented localized sign or symptom that is used as an element of the site-specific infection criterion is used to define the IWP.
  - Examples Include:
    - » Diarrhea, Site specific pain, or purulent drainage.
- A non-specific sign or symptom such as **fever is not considered localized**, and therefore is not used to define the IWP.

IWP Additional Considerations

- More than one criterion can be met:
  - When more than one criterion of a site-specific infection definition is met, **identify the IWP that results in the <u>earliest</u> date of event**.
- Endocarditis (ENDO) has an extended IWP of **<u>21 days</u>**
  - Accommodates the extended diagnostic timeframe that can occur to reach a clinical determination.



Knowledge Check: IWP

Option 1	
Hospital Day (HD)	**IWP/Criterion**
-2	
-2	
1	
2	Onset of cough
3	**Imaging test: Infiltrates**
4	Fever > 38.0 c
5	Fever > 38.0 c
6	+ BC *A. baumannii*
7	Rales, fever > 38.0 c
8	Cough, Rales
9	
10	

Option 2	
Hospital Day (HD)	**IWP/Criterion**
-2	
-2	
1	
2	Onset of cough
3	Imaging test: Infiltrates
4	Fever > 38.0 c
5	Fever > 38.0 c
6	**+ BC *A. baumannii***
7	Rales, fever > 38.0 c
8	Cough, Rales
9	
10	

Date of Event (DOE)

- Date the **FIRST** element used to meet an NHSN site-specific infection criterion occurs for the **FIRST** time with the IWP.
  - Used to determine
    - Present on admission (POA) or healthcare-associated infection (HAI)
    - Location of Attribution (LOA)
    - Device association (CLABSI/CAUTI)
    - Repeat Infection Timeframe (RIT)

Present on Admission (POA)

- The DOE of the NHSN site specific infection criterion occurs during the POA time period, which is defined as:
  - Day of admission to an inpatient location (calendar day 1)
  - 2 days before admission
  - Calendar day after admission.

Hospital Day (HD)	DOE Assignment for RIT	Classification
-2 days before admission	HD 1 (ED)	POA
-1 day before admission	HD 2 (ED)	
1	HD 3 (MICU)	
2	HD 4 (MICU)	
3	HD 5 (MICU)	
4	HD 6 (MICU)	
5	HD 5 (MICU)	

Day of Admission

- Time spent in any outpatient locations (for example, ED or 24-Hour Observation Unit).
  - **NOT** to be used to set the *date of admission*

Date	Patient Location	Hospital Day (HD)
7/10	ED	-2
7/11	ED **(DOE)**	-1
7/12	MICU	1
7/13	MICU	2
7/14	MICU	3

Healthcare-associated Infection (HAI)

- The DOE of the NHSN site-specific infection criterion occurs on or after the **3rd calendar day of admission** to an inpatient location.

Hospital Day (HD)	DOE Assignment for RIT	Classification
-2 days before admission	HD 1 (ED)	POA
-1 day before admission	HD 2 (ED)	
1	HD 3 (MICU)	
2	HD 4 (MICU)	
3	HD 5 (MICU)	HAI
4	HD 6 (MICU)	
5	HD 5 (MICU)	

DOE Considerations

- Patient reported signs/symptoms accepted within the POA timeframe if:
  - Documents within the facilities EHR by a medical professional.
    - Cannot be communicated verbally or found/viewable in another facility's medical record without documentation
  - Examples include:
    - Patient states measured fever > 38.0° C or >100.4° F occurring in the POA timeframe.
    - Nursing home reports fever > 38.0° C or >100.4° F prior to arrival to the hospital and occurring in the POA timeframe.
    - Patient complains of dysuria
    - Copy of laboratory test result from another facility

DOE Additional Considerations

- Physician diagnosis can be accepted as evidence of an infection **only** when physician diagnosis is an element of the specific infection definition.
  - Examples include:
    - Physician diagnosis **is not** an element of any UTI definition; therefore, physician diagnosis of a UTI may not be used to satisfy the UTI definition.
    - Physician diagnosis **is** an element of EAR definition; therefore, physician diagnosis of otitis interna may be used to satisfy the inner ear infection definition.

Knowledge Check: DOE

- **What diagnostic test or element sets the IWP?**
  - Fever
  - Positive Blood Culture
- **What is the IWP?**
  - 6/8-6/12
  - 6/8-6/14
  - 6/7-6/13
- **What is the DOE?**
  - 6/11
  - 6/10
- **Is this HAI or POA?**
  - HAI
  - POA

Date	Hospital Day (HD)	IWP/Criterion
6/6	-1	
6/7	-2	
6/8	1	
6/9	2	
6/10	3	**+ BC:** *Candida Glabrata*
6/11	4	Fever > 38.0 c
6/12	5	
6/13	6	
6/14	7	
6/15	8	
6/16	9	
6/17	10	

Knowledge Check: DOE

- **What diagnostic test or element sets the IWP?**
  - Fever
  - Positive Blood Culture
- **What is the IWP?**
  - 6/8-6/12
  - 6/8-6/14
  - 6/7-6/13
- **What is the DOE?**
  - 6/10
  - 6/11
  - 6/7
- **Is this HAI or POA?**
  - HAI
  - POA

Date	Hospital Day (HD)	IWP/Criterion
6/6	-1	
6/7	-2	Fever > 38.0 c
6/8	1	
6/9	2	
6/10	3	**+ BC: *Staphylococcus*, coagulase negative**
6/11	4	+ BC: *Staphylococcus*, coagulase negative
6/12	5	
6/13	6	
6/14	7	
6/15	8	
6/16	9	
6/17	10	

Location of Attribution (LOA)

- The inpatient location where the patient was assigned on the DOE.
  - Non-bedded patient locations, for example, Operating Room (OR) or Interventional Radiology (IR) **are not** eligible for assignment of LOA for HAI events.

Transfer Rule

- The inpatient location where the patient was assigned on the DOE.
  - Non-bedded patient locations, for example, Operating Room (OR) or Interventional Radiology (IR) **are not** eligible for assignment of LOA for HAI events.
- LOA Exemption → Transfer Rule:
  - The DOE is on the date of transfer or discharge, or the next day.
    - » Attribute HAI event to the transferring/discharging location or facility.
  - If the patient is in multiple location within the transfer rule time period (date of DOE or next day):
    - » Attribute HAI event to the **FIRST** location in which the patient was admitted to on **the day before the DOE**.

Transfer Rule

- Transfer rule **does not** apply to SSI or LabID events.
  - Important: Facilities should always share information of potential HAI events that may occur before or following transfers between facilities.

Transfer Rule Applied

Example 1.		
Date	Patient Location	Location of Attribution (LOA)
7/11	Unit A	
7/12	Unit A	
7/13	Unit A	
7/14 DOE	Unit A Unit B	
7/15	Unit B	
7/16	Unit B	

Example 2.		
Date	Patient Location	Location of Attribution (LOA)
8/2	MICU	
8/3	MICU	
8/4	IR 2East 3West	
8/5 DOE	3West	
8/6	3West	
8/7	3West	

Transfer Rule Applied

Example 3.		
Date	Patient Location	Location of Attribution (LOA)
7/20	Facility 1	
7/21	Facility 1	
7/22	Facility 1	
7/23	Facility 1 Facility 2	
7/24 DOE	Facility 2	
7/25	Facility 2	

Example 4.		
Date	Patient Location	Location of Attribution (LOA)
8/24	Unit A	
8/25	Unit B	
8/26	Unit A *Discharged*	
8/27 DOE	ED *(Readmit)* Unit B	
8/28	Unit B	
8/29	Unit B	

Repeat Infection Timeframe (RIT)

- 14-day timeframe during which no new infections of the same type are reported.
  - **The RIT applies to both POA and HAI determinations.**
  - The date of event is Day 1 of the 14-day RIT.
  - Negative cultures during the RIT do **NOT** impact the RIT.
- Applies to a patient's single admission.
  - Includes the day of and day after discharge (transfer rule).
  - Does **NOT** carry from one admission to another.

Note: Endocarditis (ENDO) RIT is extended to include the remainder of the patient's current admission.

Repeat Infection Timeframe (RIT)

- If a subsequent **infection of the same type** occurs within this 14-day period:
  - Do not report a new event.
  - Additional eligible pathogens identified from same type of infection are added to the event.
  - Keep the same device association and location of attribution.
  - Original DOE and RIT are maintained.

RIT Applied

Date	Hospital Day (HD)	I17WP/Criterion	RIT
6/6	-1		
6/7	-2		
6/8	1		
6/9	2		
6/10	3	**+ BC:** *Candida Glabrata*	***1***
6/11	4	Fever > 38.0 c	2
6/12	5		3
6/13	6		4
6/14	7		5
6/15	8		6
6/16	9		7
6/17	10		8
6/18	11		9
6/19	12		10
6/20	13		11
6/21	14		12
6/22	15		13
6/23	16		14

DOE

RIT

- DOE is day 1 of RIT
- RIT is 14-day period including DOE.
- RIT: HD 3-16

REMINDER: ⚠

- Do **not** report a new event.
- Additional <u>eligible</u> pathogens identified from same type of infection are added to the event.
- Keep the same device association and location of attribution.
- Original DOE and RIT are maintained.

Secondary Bloodstream Infection (BSI) Attribution Period (SBAP)

- Period in which a positive blood specimen must be collected to be considered a secondary bloodstream infection to a primary site infection when matching a primary site organism.
  - Period includes the IWP combined with the RIT.
  - 14-17 days in length depending on DOE.

Secondary Bloodstream Infection (BSI) Attribution Period (SBAP)

Important Note: There are a few exemptions to the SBAP outlined in chapter 2 page 14-15. These exemptions apply to necrotizing enterocolitis (NEC) and endocarditis (ENDO).

A bloodstream infection can only be determined secondary to another site of infection if the following requirements are met:

1. An NHSN site-specific definition must be met; either one of the CDC/NHSN Surveillance Definitions for Specific Types of Infections (defined in Chapter 17), or UTI, PNEU or SSI definition.

AND

2. One of the following scenarios must be met:

Scenario 1:

- At least one organism from the blood specimen matches an organism identified from the site-specific infection that is used as an element to meet the NHSN site-specific infection criterion.
- Collected in the SBAP.

Scenario 2:

- Organism identified in the blood specimen is an element that is used to meet the NHSN site-specific infection criterion.
- Collected during the site-specific infection window period.

Putting it all together: Knowledge Check

- **1/26** 52 y/o female admitted to hospital secondary to stage III rectal cancer, s/p palliative colostomy complicated by wound infection, recent chemo, large colostomy output and GI bleeding. Patient has an implanted port POA; labs drawn from port. CT A/P showed no acute abnormalities. GI PCR panel negative. Oncology following.
- **1/28** Ostomy output improving. TPN given through implanted port; patient refused peripheral IV and peripheral lab draws.
- **1/29** N/V overnight; new c/o dysuria. WBC 0.42 10^3/mm3, Temperature 39.6°C.
- **1/30** Temperature 39.3°C. Blood cultures are collected. Repeat CT A/P unremarkable. C/O abd pain and N/V. Patient started on anti-pyrectics.
- **1/31** Blood culture collected and identified as *Candida glabrata*. Temperature 38.4°C, WBC 0.67 10^3/mm3. Infectious disease consulted and patient started on Fluconazole and anti-pyrectics continued.
- **2/3** Temperature 37.4 °C., WBC 0.48 10^3/mm3. N/V and abd pain improved.

Knowledge Check 1

- What is the correct infection window period (IWP)?
  - A. 1/26 – 1/30
  - ✓ B. 1/27 – 2/2
  - C. 1/26 – 2/1

Rationale: Positive blood culture on 1/30 defines the IWP. The IWP includes 3 calendar days before and 3 days after the first diagnostic test that is used as an element to meet the site-specific criterion.

Date	Hospital day	Device day	Notes
1/26	1	1	Implanted port accessed; admitted to inpatient unit.
1/27	2	2	
1/28	3	3	
1/29	4	4	Ostomy output improving; WBC 0.42, Temp 39.6
1/30	5	5	Temp 39.3; **Blood cultures - C. glabrata.** CT A/P unremarkable. C/O N/V and abd pain.
1/31	6	6	Temp 38.4; WBC 0.35. ID consulted and antifungals started.
2/1	7	7	
2/2	8	8	
2/3	9	9	Temp. 37.4 ; WBC 0.48
2/4	10	10	
2/5	11	11	
2/6	12	12	
2/7	13	13	
2/8	14	14	
2/9	15	15	
2/10	16	16	
2/11	17	17	
2/12	18	18	

Knowledge Check 2

Patient of any age has a recognized bacterial or fungal pathogen, not included on the NHSN common commensal list:

1. Identified from one or more blood specimens obtained by a culture OR
2. Identified to the genus or species level by non-culture based microbiologic testing (NCT)* methods (for example, T2 Magnetic Resonance [T2MR] or Karius Test).
   Note: *If blood is collected for culture within 2 days before, or 1 day after the NCT, disregard the result of the NCT and use only the result of the CULTURE to make an LCBI surveillance determination. If no blood is collected for culture within this time period, use the result of the NCT for LCBI surveillance determination.*

AND

Organism(s) identified in blood is not related to an infection at another site (See Appendix: Secondary BSI Guide).

Rationale: Patient should be evaluated for LCBI 1 given a recognized organism is identified. LCBI 1 definition does not require any signs/symptoms. Therefore, the DOE is 1/30 when the positive blood culture was collected.

Date	Hospital day	Device day	Notes
1/26	1	1	Implanted port accessed; admitted to inpatient unit.
1/27	2	2	
1/28	3	3	
1/29	4	4	Ostomy output improving; WBC 0.42, Temp 39.6
1/30	5	5	Temp 39.3; **Blood cultures - C. glabrata.** CT A/P unremarkable. C/O N/V and abd pain.
1/31	6	6	Temp 38.4; WBC 0.35. ID consulted and antifungals started.
2/1	7	7	
2/2	8	8	
2/3	9	9	Temp. 37.4 ; WBC 0.48
2/4	10	10	
2/5	11	11	
2/6	12	12	
2/7	13	13	
2/8	14	14	
2/9	15	15	
2/10	16	16	
2/11	17	17	
2/12	18	18	

IWP

Knowledge Check 3

- Is this present on admission (POA) or healthcare-associated infection (HAI) event?

✔ A. HAI

B. POA

C. Not Sure

Rationale: The DOE occurs on or after the 3rd calendar day of admission to an inpatient location.

Date	Hospital day	Device day	Location	Notes
1/26	1	1	ED MICU	Implanted port accessed; admitted to inpatient unit.
1/27	2	2	MICU	
1/28	3	3	MICU ONC-ICU	
1/29	4	4	ONC-ICU	Ostomy output improving; WBC 0.42, Temp 39.6
1/30	5	5	ONC-ICU	Temp 39.3; **Blood cultures - C. glabrata.** CT A/P unremarkable. C/O N/V and abd pain.
1/31	6	6	ONC-ICU	Temp 38.4; WBC 0.35. ID consulted and antifungals started.
2/1	7	7	ONC-ICU	
2/2	8	8	ONC-ICU	
2/3	9	9	ONC-ICU	Temp. 37.4 ; WBC 0.48
2/4	10	10	ONC-ICU	
2/5	11	11	ONC-ICU	
2/6	12	12	ONC-ICU	
2/7	13	13	ONC-ICU	
2/8	14	14	ONC-ICU	
2/9	15	15	ONC-ICU	
2/10	16	16	ONC-ICU	
2/11	17	17	ONC-ICU	
2/12	18	18	ONC-ICU Discharged	

IWP

Knowledge Check 4

- What is the location of attribution (LOA)?
  - ✓ A. ONC-ICU
  - B. ED
  - C. MICU

Rationale: ONC-ICU is the location where the pt was on the DOE. The transfer rule does not apply as the DOE did not occur on the date of transfer or the day after.

Date	Hospital day	Device day	Location	Notes
1/26	1	1	ED MICU	Implanted port accessed; admitted to inpatient unit.
1/27	2	2	MICU	
1/28	3	3	MICU ONC-ICU	
1/29	4	4	ONC-ICU	Ostomy output improving; WBC 0.42, Temp 39.6
1/30	5	5	ONC-ICU	Temp 39.3; **Blood cultures - C. glabrata.** CT A/P unremarkable. C/O N/V and abd pain.
1/31	6	6	ONC-ICU	Temp 38.4; WBC 0.35. ID consulted and antifungals started.
2/1	7	7	ONC-ICU	
2/2	8	8	ONC-ICU	
2/3	9	9	ONC-ICU	Temp. 37.4 ; WBC 0.48
2/4	10	10	ONC-ICU	
2/5	11	11	ONC-ICU	
2/6	12	12	ONC-ICU	
2/7	13	13	ONC-ICU	
2/8	14	14	ONC-ICU	
2/9	15	15	ONC-ICU	
2/10	16	16	ONC-ICU	
2/11	17	17	ONC-ICU	
2/12	18	18	ONC-ICU Discharged	

IWP

Knowledge Check 5

- What is the repeat infection timeframe (RIT)?
  - A. 1/29 – 2/11
  - B. 1/27 – 2/9
  - C. 1/30 – 2/12

Rationale: The RIT is defined by the DOE being day 1 and last for 14 days.

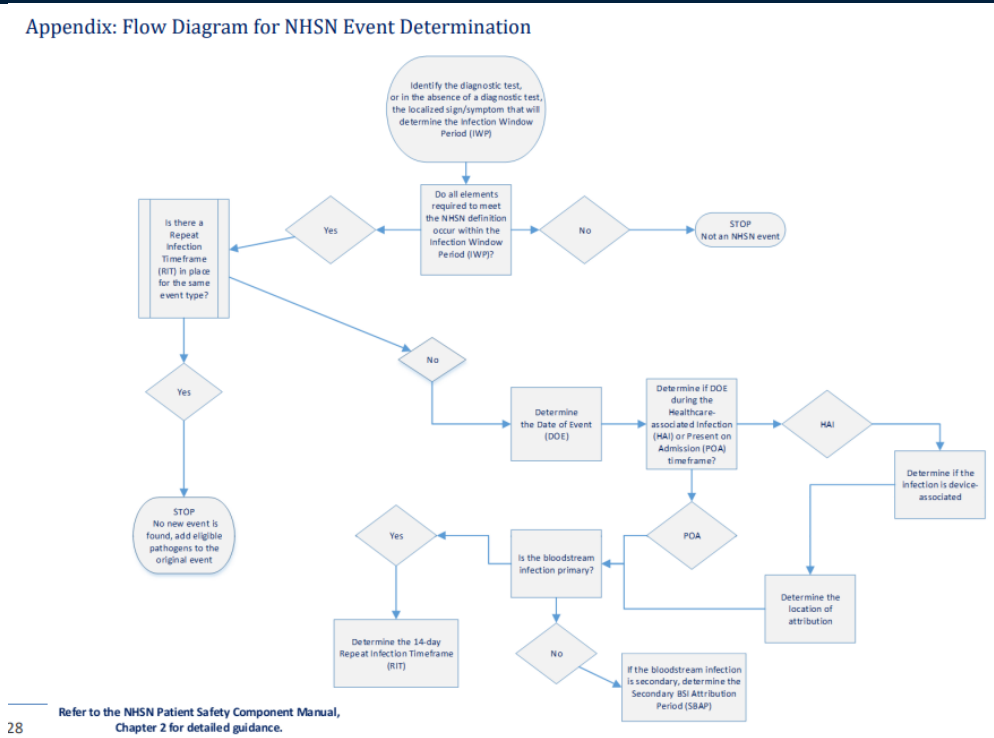
Date	Hospital day	Device day	Location	Notes	RIT
1/26	1	1	ED MICU	Implanted port accessed; admitted to inpatient unit.	
1/27	2	2	MICU		
1/28	3	3	MICU ONC-ICU		
1/29	4	4	ONC-ICU	Ostomy output improving; WBC 0.42, Temp 39.6	
1/30	5	5	ONC-ICU	Temp 39.3; **Blood cultures - C. glabrata.** CT A/P unremarkable. C/O N/V and abd pain.	
1/31	6	6	ONC-ICU	Temp 38.4; WBC 0.35. ID consulted and antifungals started.	
2/1	7	7	ONC-ICU		
2/2	8	8	ONC-ICU		
2/3	9	9	ONC-ICU	Temp. 37.4 ; WBC 0.48	
2/4	10	10	ONC-ICU		
2/5	11	11	ONC-ICU		
2/6	12	12	ONC-ICU		
2/7	13	13	ONC-ICU		
2/8	14	14	ONC-ICU		
2/9	15	15	ONC-ICU		
2/10	16	16	ONC-ICU		
2/11	17	17	ONC-ICU		
2/12	18	18	ONC-ICU Discharged		

IWP

Steps to Case Determination

1. First determine the date of the diagnostic test that is an element of the NHSN site-specific infection criterion that is met.
2. Next determine the infection window period (3 days before the diagnostic test, the day of the test and 3 days after for a total of 7 days).
3. Then determine if all the elements of the criterion are met during the infection window period. If they are, there is an infection event. If they are not, there is no event.
4. If there is an event, next determine the date of event, specifically, the date that the first element used to meet the infection criterion occurs for the first time within the infection window period.
5. Define your repeat infection time frame (14 days where DOE is day 1).
6. Is the date of event in the POA time-period (specifically during the 2 days before admission, the day of admission or the next day)? If yes, the infection is POA, if not, it is an HAI.

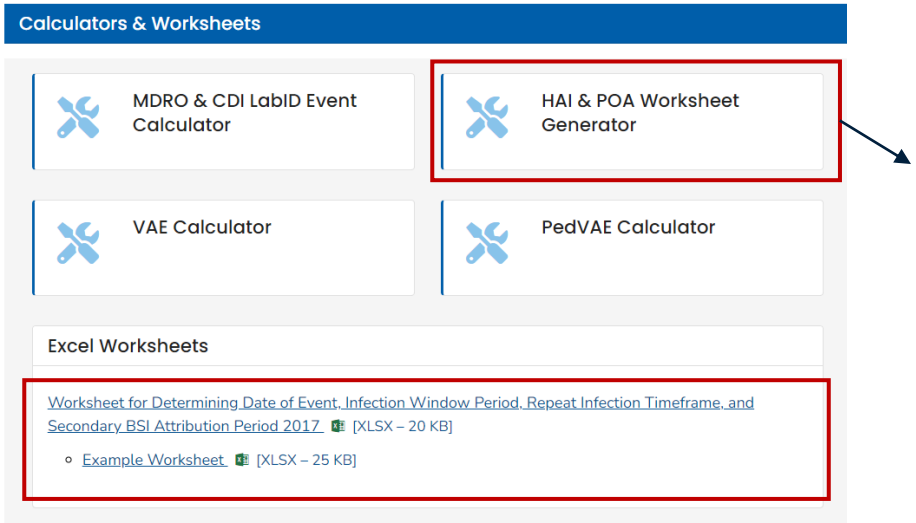
NHSN Event Determination Flow Diagram

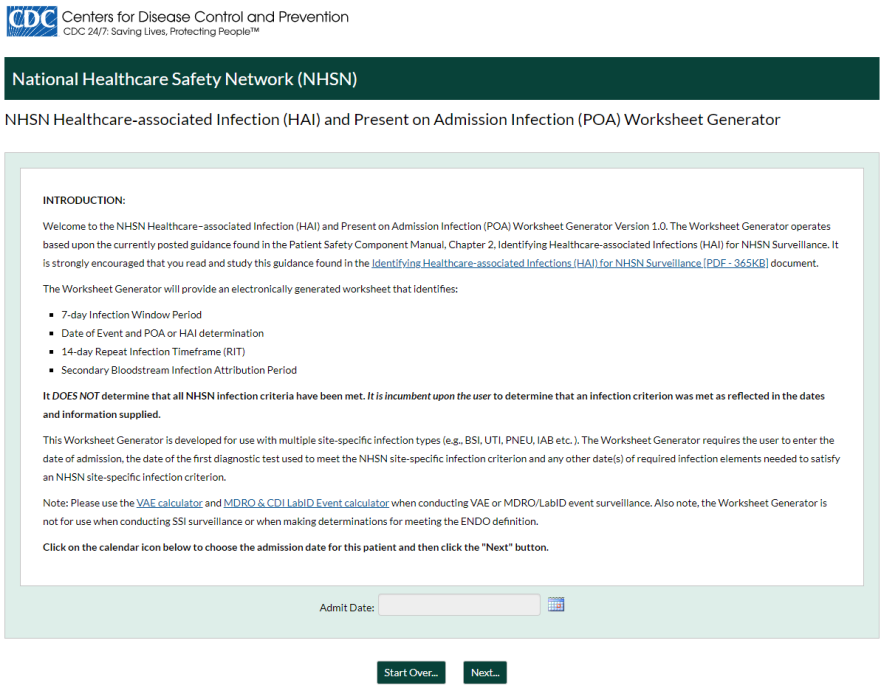


Found in PSC Manual Chapter 2 page 28.

Helpful tools

- HAI & POA Worksheet Generator





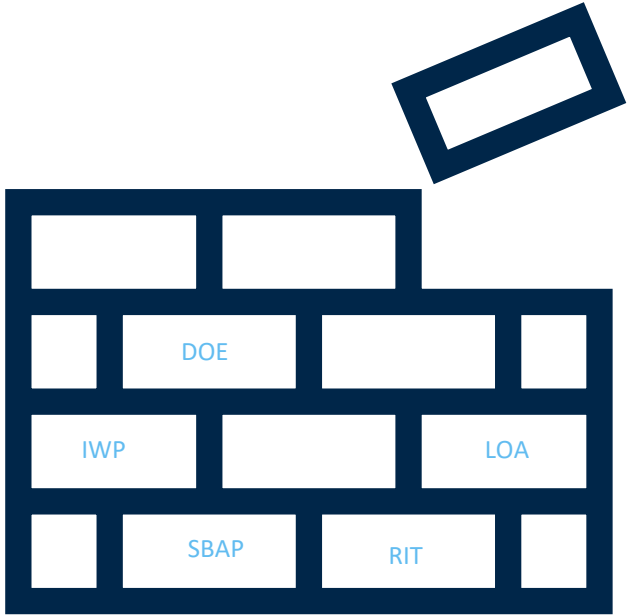
NHSN HAI POA Worksheet Generator (cdc.gov)

Reminder

- Chapter 2: Identifying Healthcare- associated Infections for NHSN Surveillance applies to:
  - Device-associated infections:
    - CLABSI (Chapter 4 PSC Manual)
    - CAUTI (Chapter 7 PSC Manual)
    - Pneumonia (Chapter 6 PSC Manual) *
    - Specific Types of Infections (Chapter 17 PSC Manual)*
- Chapter 2 does not apply to:
  - SSI (Chapter 9 PSC Manual)
  - VAE (Chapter 10 PSC Manual) *
  - PedVAE (Chapter 11 PSC Manual) *
  - LabID Events (Chapter 12 PSC Manual)

*Not discussed in this presentation |https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf

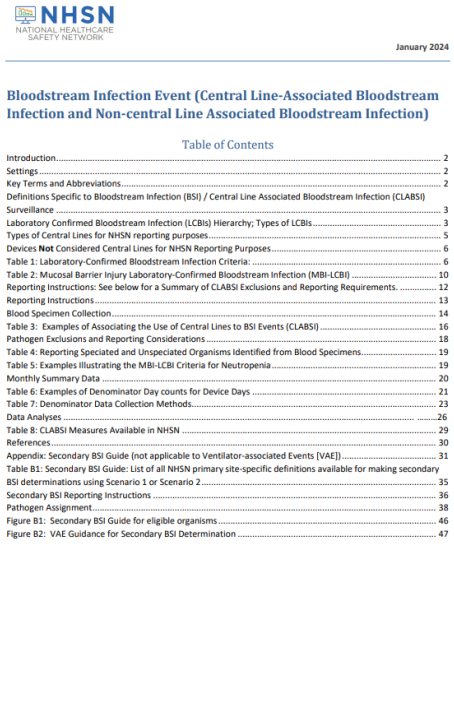
Device-Associated Infections:
Central Line Associated Infection Surveillance



https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

Central Line Associated Infection Surveillance

- Chapter 4 PSC Manual: Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and Non-central Line Associated Bloodstream Infection)
- Chapter 17 PSC Manual: CDC/NHSN Surveillance Definitions for Specific Types of Infections



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Bloodstream Infection Event (Central Line-Associated Bloodstream Infection and Non-central Line Associated Bloodstream Infection)

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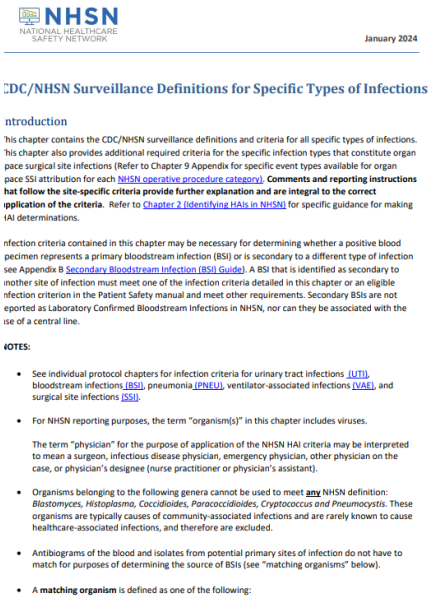

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CDC/NHSN Surveillance Definitions for Specific Types of Infections

ntroduction

his chapter contains the CDC/NHSN surveillance definitions and criteria for all specific types of infections. his chapter also provides additional required criteria for the specific infection types that constitute organ pace surgical site infections (Refer to Chapter 9 Appendix for specific event types available for organ pace SSI attribution for each NHSN operative procedure category). **Comments and reporting instructions hat follow the site-specific criteria provide further explanation and are integral to the correct pplication of the criteria**. Refer to Chapter 2 (Identifying HAIs in NHSN) for specific guidance for making IAI determinations.

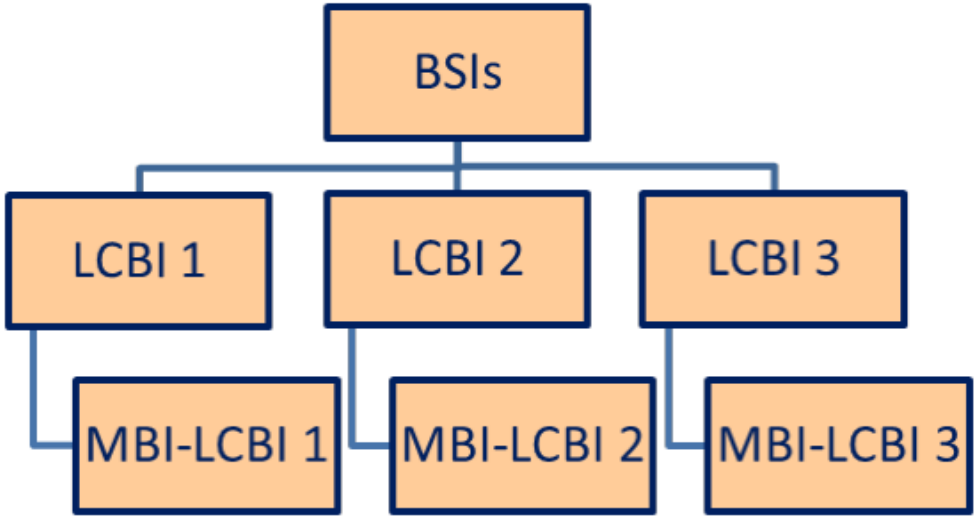
nfection criteria contained in this chapter may be necessary for determining whether a positive blood pecimen represents a primary bloodstream infection (BSI) or is secondary to a different type of infection see Appendix B Secondary Bloodstream Infection (BSI) Guide). A BSI that is identified as secondary to nother site of infection must meet one of the infection criteria detailed in this chapter or an eligible nfection criterion in the Patient Safety manual and meet other requirements. Secondary BSIs are not eported as Laboratory Confirmed Bloodstream Infections in NHSN, nor can they be associated with the se of a central line.

IOTES:

- See individual protocol chapters for infection criteria for urinary tract infections (UTI), bloodstream infections (BSI), pneumonia (PNEU), ventilator-associated infections (VAE), and surgical site infections (SSI).
- For NHSN reporting purposes, the term "organism(s)" in this chapter includes viruses.

  The term "physician" for the purpose of application of the NHSN HAI criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).
- Organisms belonging to the following genera cannot be used to meet **any** NHSN definition: *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis*. These organisms are typically causes of community-associated infections and are rarely known to cause healthcare-associated infections, and therefore are excluded.
- Antibiograms of the blood and isolates from potential primary sites of infection do not have to match for purposes of determining the source of BSIs (see "matching organisms" below).
- A **matching organism** is defined as one of the following:

Laboratory Confirmed Bloodstream Infection (LCBIs) Hierarchy; Types of LCBIs



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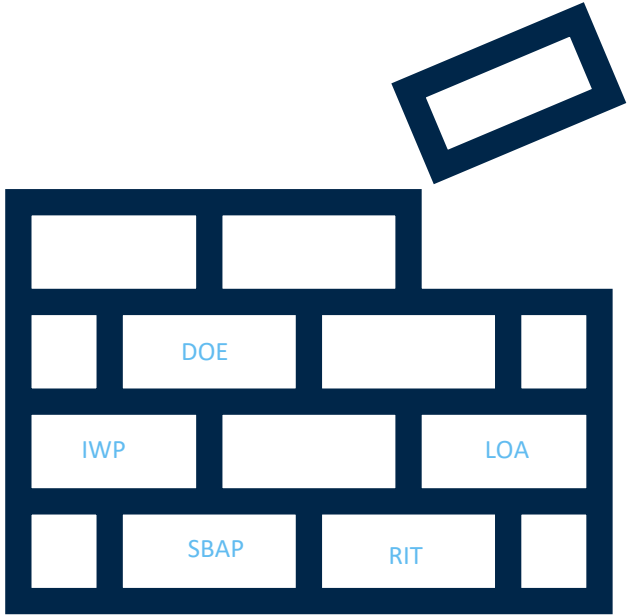
Device-Associated Infections:
Catheter Associated Infection Surveillance



https://www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf

Urinary Tract Infection (UTI) Criteria

- Chapter 7 PSC Manual: Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events

SUTI 1a	SUTI 1b
SUTI 2	ABUTI

Symptomatic UTI (SUTI) | Asymptomatic Bacteremic Urinary Tract Infection (ABUTI)

Resources for Device Associated Infections

- NHSN Organism List
  - https://www.cdc.gov/nhsn/xls/master-organism-com-commensals-lists.xlsx
- LCBI/UTI Checklists
  - https://www.cdc.gov/nhsn/hai-checklists/index.html
- PSC Manual
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf
- FAQs Page
  - https://www.cdc.gov/nhsn/faqs/faq-index.html

Surgical Site Infection (SSI) Surveillance

SSI – Procedure-associated Module

- Chapter terms/definitions are **not** applicable to SSI:
  - Infection Window Period (IWP)
  - Present on Admission (POA)
  - Healthcare-associated infection (HAI)
  - Repeat Infection Timeframe (RIT)
- SSI Protocol uses terms/definitions:
  - Surveillance Period
  - Date of Event (DOE)
  - Secondary BSI Attribution Period (SBAP)

SSI: Surveillance Period

- The timeframe following an NHSN operative procedure for monitoring and identifying an SSI event.
- The surveillance period is determined by the NHSN operative procedure category (PSC Manual Chapter 9: Table 2)
  - Superficial incisional/ Secondary incisional SSIs: 30-day surveillance period for all procedure categories.

Table 2. Surveillance Periods for SSI Following Selected NHSN Operative Procedure Categories. Day 1 = the date of the procedure.

30-day Surveillance			
Category	**Operative Procedure**	**Category**	**Operative Procedure**
AAA	Abdominal aortic aneurysm repair	LAM	Laminectomy
AMP	Limb amputation	LTP	Liver transplant
APPY	Appendix surgery	NECK	Neck surgery
AVSD	Shunt for dialysis	NEPH	Kidney surgery
BILI	Bile duct, liver or pancreatic surgery	OVRY	Ovarian surgery
CEA	Carotid endarterectomy	PRST	Prostate surgery
CHOL	Gallbladder surgery	REC	Rectal surgery
COLO	Colon surgery	SB	Small bowel surgery
CSEC	Cesarean section	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HTP	Heart transplant	THYR	Thyroid and/or parathyroid surgery
HYST	Abdominal hysterectomy	VHYS	Vaginal hysterectomy
KTP	Kidney transplant	XLAP	Exploratory laparotomy
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		

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

SSI: Surveillance Period - Continued

- Each trip to the OR for an NHSN operative procedure sets an SSI surveillance period for the surgical site.
  - Non-NHSN operative procedures do not set an SSI surveillance period.
- If a patient returns to the OR for an NHSN operative procedure and the same surgical site is entered, the surveillance period for the prior NHSN operative procedure ends and a new SSI surveillance period begins at the conclusion of the procedure.
- If within the surveillance period following an NHSN operative procedure a non-NHSN operative procedure is performed, and all three tissue levels are entered, the SSI surveillance period for the NHSN operative procedure ends at the conclusion of the non-NHSN operative procedure.
  - The SSI surveillance period continues for the tissue levels not entered during the non-NHSN operative procedure.

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

SSI: Date of Event (DOE)

- The date when the first element used to meet the SSI infection criterion occurs for the first time during the SSI surveillance period.
- The DOE must occur within the SSI surveillance period to meet SSI criteria.
- The type of SSI (superficial incisional, deep incisional, or organ/space) submitted to NHSN, and the DOE assigned must reflect the **deepest tissue level where SSI criteria are met during the surveillance period**.
- Example:
  - COLO Procedure Performed
    - Meets DIP-SSI on day 18 of 30-day surveillance period
    - Meets Organ/Space-SSI on day 24 of 30-day surveillance period
  - Report Organ/space SSI on day 24 attributed to the COLO procedure

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

SSI: Timeframe for SSI Elements

- SSI guidelines do not offer a strict timeframe for elements of criteria to occur.
  - NHSN's experience, all elements required to meet an SSI criterion usually occur within a 7-10 day timeframe with typically no more than 2-3 days between elements.
- To ensure all elements associate to the SSI, elements must occur in a relatively tight timeframe.

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

SSI: Secondary BSI

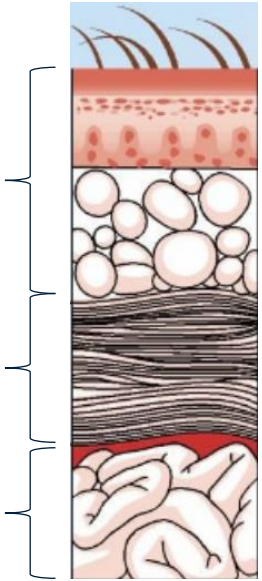
- SSI can be ruled secondary to a BSI given the following scenarios:
  - Scenario 1 (All levels of SSI): At least one organism from the blood specimen matches an organism identified from the SSI specimen used as an element to meet the NHSN SSI criterion AND the blood specimen is collected during the secondary BSI attribution period.
    - The secondary BSI attribution period for SSI is a 17-day period that includes the SSI DOE, 3 days prior, and 13 days after.

    OR
  - Scenario 2 (Organ/Space SSI Only): An organism identified in the blood specimen is an element that is used to meet the NHSN Organ/Space SSI site-specific infection criterion and is collected during the timeframe for SSI elements.

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

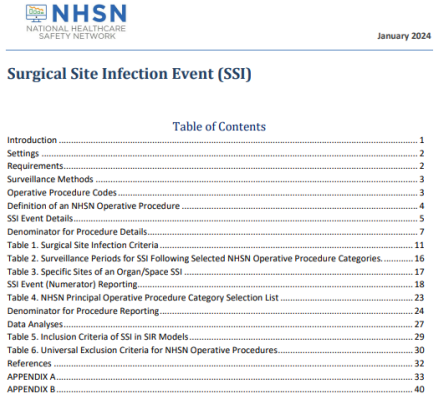
Surgical Site Infection (SSI) Criteria

- SSI: Three Tissue Levels
  - Superficial Incisional
    - Skin and subcutaneous tissues of the incision
  - Deep Incisional
    - Deep soft tissues of the incision (for example fascial/muscle layers)
  - Organ/Space
    - Any part of the body deeper than the fascial/muscle layers



Surgical Site Infection (SSI) Criteria

- Chapter 9 PSC Manual: Surgical Site Infection Event (SSI)
- Chapter 17 PSC Manual: CDC/NHSN Surveillance Definitions for Specific Types of Infections



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Surgical Site Infection Event (SSI)

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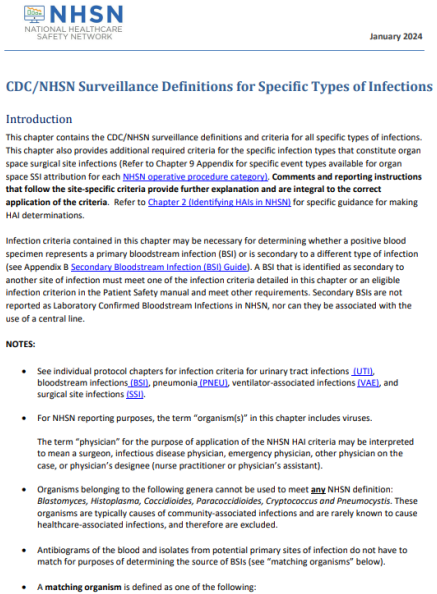
Introduction:

The CDC healthcare-associated infection (HAI) prevalence survey found that there were an estimated 110,800 surgical site infections (SSIs) associated with inpatient surgeries in 2015[1]. Based on the 2022 HAI data results published in the NHSN's HAI Progress Report, about a 4% increase in the SSI standardized infection ratio (SIR) related to all NHSN operative procedure categories combined compared to the previous year[2]. In addition, the 2022 HAI data found a 3% significant increase in SIR related to the Surgical Care Improvement Project (SCIP) NHSN operative procedure categories compared to the previous year[2]. Additional SSI HAI data can be found in the annual HAI Progress Report[2].

While advances have been made in infection control practices, including improved operating room ventilation, sterilization methods, barriers, surgical technique, and availability of



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CDC/NHSN Surveillance Definitions for Specific Types of Infections

Introduction

This chapter contains the CDC/NHSN surveillance definitions and criteria for all specific types of infections. This chapter also provides additional required criteria for the specific infection types that constitute organ space surgical site infections (Refer to Chapter 9 Appendix for specific event types available for organ space SSI attribution for each NHSN operative procedure category). **Comments and reporting instructions that follow the site-specific criteria provide further explanation and are integral to the correct application of the criteria**. Refer to Chapter 2 (Identifying HAIs in NHSN) for specific guidance for making HAI determinations.

Infection criteria contained in this chapter may be necessary for determining whether a positive blood specimen represents a primary bloodstream infection (BSI) or is secondary to a different type of infection (see Appendix B Secondary Bloodstream Infection (BSI) Guide). A BSI that is identified as secondary to another site of infection must meet one of the infection criteria detailed in this chapter or an eligible infection criterion in the Patient Safety manual and meet other requirements. Secondary BSIs are not reported as Laboratory Confirmed Bloodstream Infections in NHSN, nor can they be associated with the use of a central line.

NOTES:

- See individual protocol chapters for infection criteria for urinary tract infections (UTI), bloodstream infections (BSI), pneumonia (PNEU), ventilator-associated infections (VAE), and surgical site infections (SSI).
- For NHSN reporting purposes, the term "organism(s)" in this chapter includes viruses.

  The term "physician" for the purpose of application of the NHSN HAI criteria may be interpreted to mean a surgeon, infectious disease physician, emergency physician, other physician on the case, or physician's designee (nurse practitioner or physician's assistant).
- Organisms belonging to the following genera cannot be used to meet **any** NHSN definition: *Blastomyces, Histoplasma, Coccidioides, Paracoccidioides, Cryptococcus and Pneumocystis*. These organisms are typically causes of community-associated infections and are rarely known to cause healthcare-associated infections, and therefore are excluded.
- Antibiograms of the blood and isolates from potential primary sites of infection do not have to match for purposes of determining the source of BSIs (see "matching organisms" below).
- A **matching organism** is defined as one of the following:

SSI Resources

- PSC Manual
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf
- Surgical Site Procedure Codes
  - https://www.cdc.gov/nhsn/faqs/faq-ssi-proc-codes.html
- FAQs Page
  - https://www.cdc.gov/nhsn/faqs/faq-index.html

NHSN MRSA Bacteremia & CDI LabID Event Surveillance

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

Key Points to LabID Events

- Chapter 2 terms/definitions are **not** applicable to SSI:
  - Infection Window Period (IWP)
  - Date of Event (DOE)
  - Present on Admission (POA)
  - Healthcare-associated infection (HAI)
  - Repeat Infection Timeframe (RIT)
- LabID Event Protocol uses the following:
  - Specimen Collection Date
  - Categorization (Location & Specimen Collection Date)

Key Points to LabID Surveillance

- FacWideIN LabID event reporting is based on patient and location. Include All inpatient units as well as ED/Observation locations in LabID event surveillance with an exception for C. difficile surveillance in baby-based locations.
- NHSN does **NOT** use patient ‘status’ for reporting. An ‘inpatient’ is a patient housed on an inpatient location. An ‘outpatient’ is a patient housed on an outpatient unit such as the ED or a dedicated 24-hour observation unit.

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

Key Points to LabID Surveillance- Continued

- For NHSN reporting purposes, the ‘date admitted to facility’ is the calendar day the patient locates to an inpatient location. Time spent in the ED or on a dedicated 24-hour observation unit is outpatient hours.
- LabID event reporting includes a ‘14-day’ rule which prohibits a ‘new’ LabID event to be submitted for the patient in the **SAME** location until 15 days have passed between positive specimens.
  - The 14-day rule is organism and location specific.
  - Resets each time the patient moves to a ‘new’ location.

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

Key Points to LabID Surveillance- Continued

- LabID Event reporting is based strictly on laboratory testing data without clinical evaluation of the patient.
- Symptoms are **NOT** used in LabID event reporting. No clinical determination is included in LabID event reporting.
- **The first positive specimen for the patient in the location meeting definition is submitted as a LabID event.**

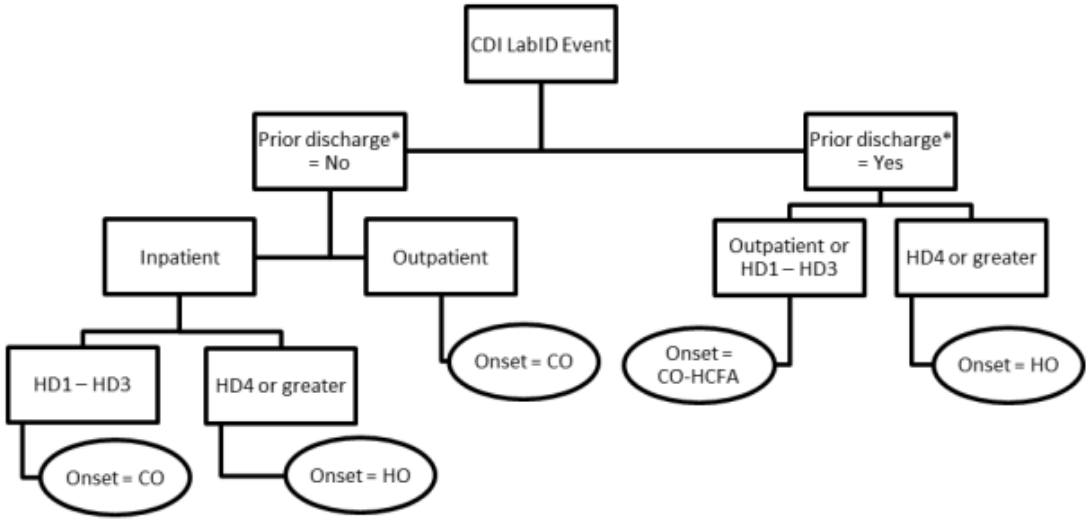
https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

Key Points to LabID Surveillance- Continued

- LabID Event reporting is by single facility; prior positives identified at a different facility will not influence reporting at your facility and are not considered in event categorization.
- The 'Transfer Rule' does **NOT** apply to LabID event reporting.
- LabID Events are attributable to the location where the positive specimen is collected.
  - There is no time requirement for 'how long' the patient must be housed on the unit to be eligible for reporting.

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

NHSN Categorization C. difficile LabID Events



* Patient discharged from inpatient location within the same facility less than or equal to 28 days prior current event
Hospital Day (HD)

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

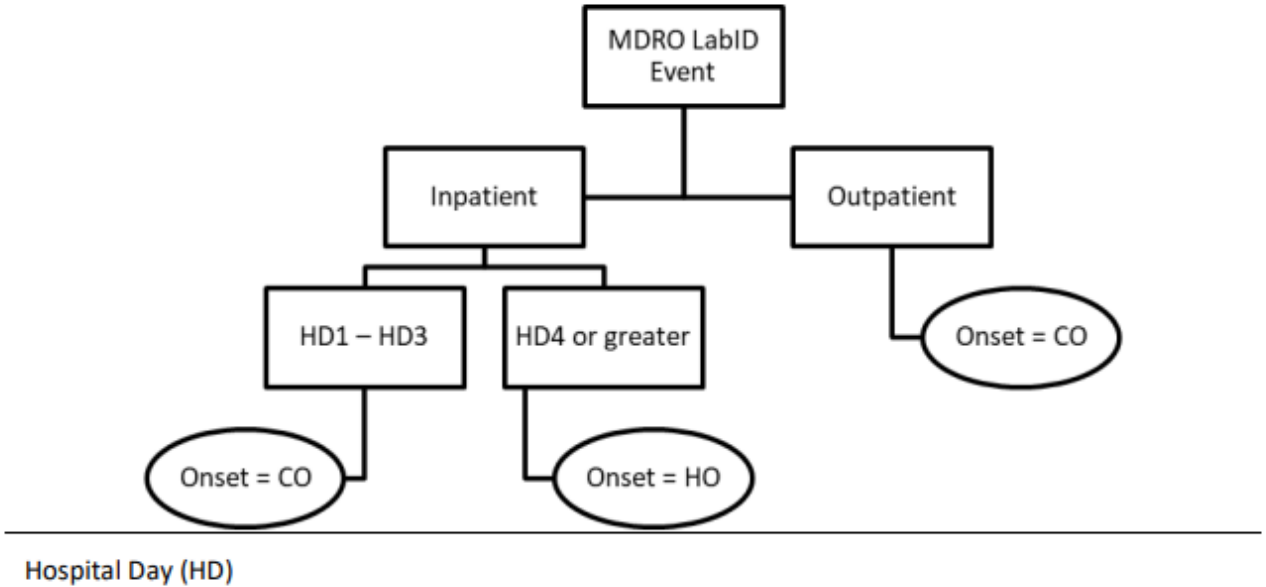
NHSN Categorization C. difficile LabID Events – Cont.

In addition to the onset categorization, CDI LabID Events are further categorized by NHSN as Incident or Recurrent.

- **Incident CDI LabID Event:** Any CDI LabID Event from a specimen obtained more than 56 days after the most recent CDI LabID Event (or with no previous CDI LabID Event documented) for that patient.
  - The date of first specimen collection is considered day 1.
- **Recurrent CDI LabID Event:** Any CDI LabID Event from a specimen obtained more than 14 days and less than or equal to 56 days after the most recent CDI LabID Event for that patient.
  - The date of first specimen collection is considered day 1.

https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

NHSN Categorization MDRO LabID Events



https://www.cdc.gov/nhsn/pdfs/pscmanual/12pscmdro_cdadcurrent.pdf

LabID Surveillance Resources

- PSC Manual
  - https://www.cdc.gov/nhsn/pdfs/pscmanual/pcsmanual_current.pdf
- MDRO & CDI LabID Event Calculator Version 2.0
  - MDRO & CDI LabID Event Calculator | NHSN | CDC
- FAQs Page
  - https://www.cdc.gov/nhsn/faqs/faq-index.html

Questions?

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Assignments

- Watch KHA SSI Webinar and complete quiz (Appendix D)
- Find out what (paid) standards/guidelines your facility has access to: ANSI/AAMI, AORN, etc
- Continue to review NHSN Patient Safety Component Manual
  - 2024 NHSN Patient Safety Component Manual (cdc.gov)

Resources

- Moinuddin, M (2024). Surveillance. In APIC Text. essay, Association for Professionals in Infection Control and Epidemiology (APIC). Retrieved January June 20, 2024, from https://text.apic.org/toc/epidemiology-surveillance-performance-and-patient-safety-measures/surveillance.
- Patient Safety Component (PSC) Training | NHSN | CDC
- EXCELLENT MDRO Webinar from ARC IPC
- Reportable Disease Section - Cabinet for Health and Family Services (ky.gov)

Continuing Care Hospital's Journey with Candida auris

Nicki Shorr RN, BSN, CIC, CPHQ
Manager of Quality and Patient Safety

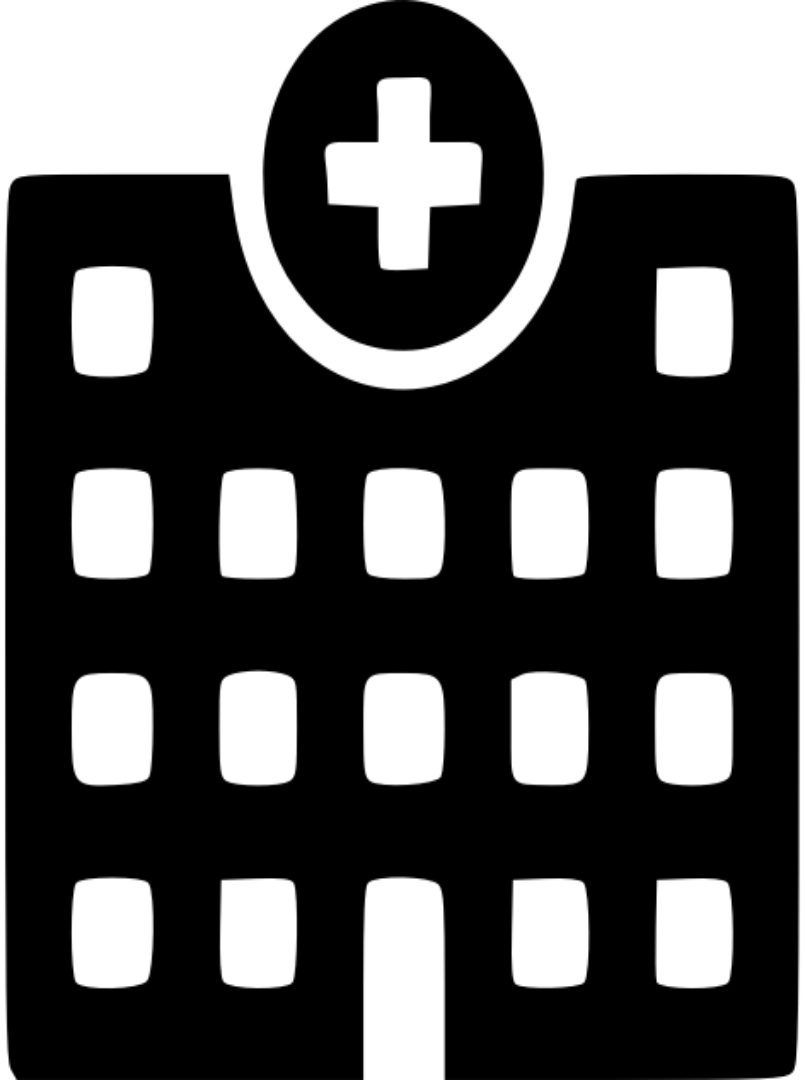
April 25, 2023

A little about CCH

Continuing Care Hospital is a long-term acute care facility with an average stay of around 25 days.

We are housed within a host facility (St. Joseph Hospital)

The length of stay for an LTACH patient creates a unique barrier to eradicating C. auris.



The beginning (Situation)

On June 2, 2022, an hour before I was scheduled to board a plane for the beach, I received a call from SJH's IP who notified me that a patient of ours had tested positive for Candida auris.

The beginning (Background)

Patient admitted on 3/28/2022 from Cincinnati area hospital with respiratory issues and hip ulceration. Went to SJH OR on 4/15/2022 where a swab was sent to lab.

Unfortunately, there was a delay in reporting any results so intervention at CCH was delayed.

The beginning (Background)

4/21/2022 "Culture Final: Light Growth Yeast Sent to reference lab for further identification. Please refer to the Microbiology Reference Order for further identification and/or susceptibility results. Reports will be scanned in and attached to that order as they become available."

4/27/2022 Quest results C. auris via fax
4/29/2022 Image scanned into micro reflex order; original culture not updated
5/23/2022 Per KYDPH HAI, Quest submitted specimen to Kentucky State Lab
6/2/2022 KYDPH HAI received flag from Wisconsin Hygiene Lab of C. auris; and contacted IP at SJH. SJH IP then contacted CCH IP

The patient had been at CCH for 6 weeks without any isolation precautions (no known indication at that time).

The beginning (Assessment)

Immediate interventions:

Strict transmission based isolation: contact containment for patient

Emphasized unit environmental cleaning with purple top wipes

Strict hand hygiene at all times

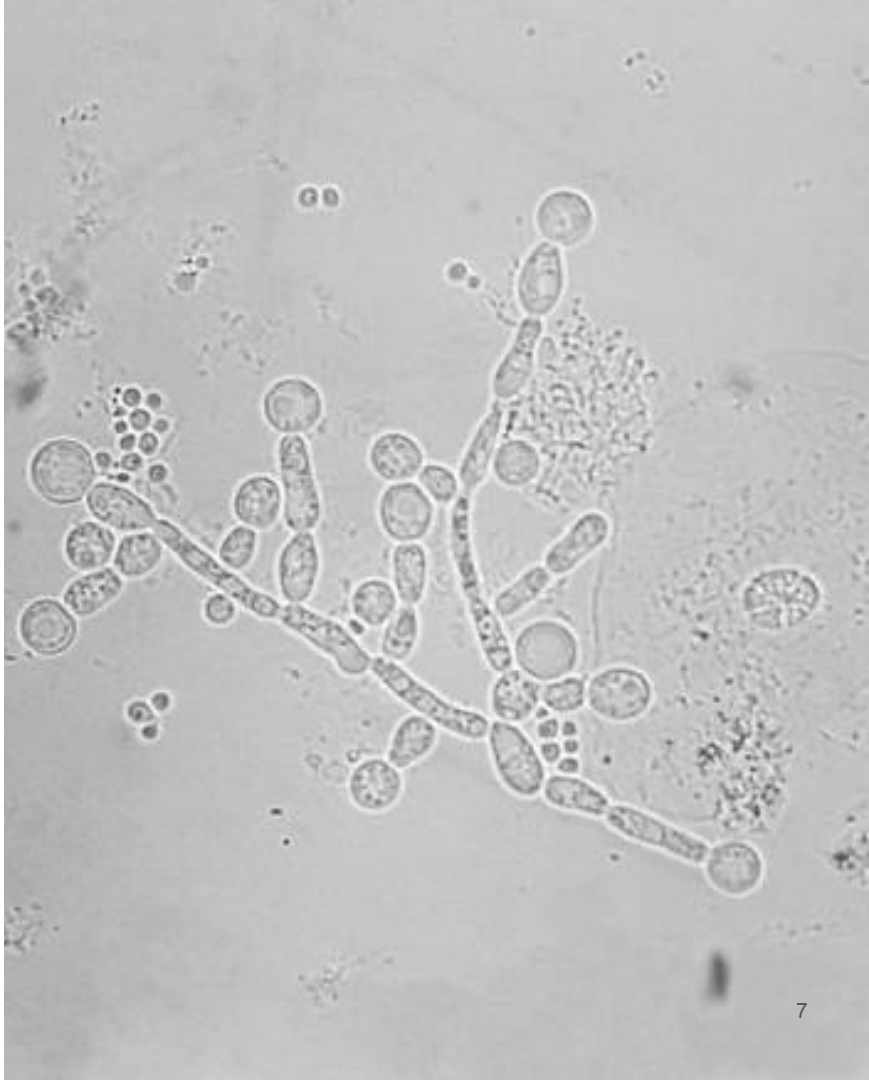
Double clean room patient had moved from

Staff education

Call the Kentucky Department of Public Health!

KDPH Recommendations

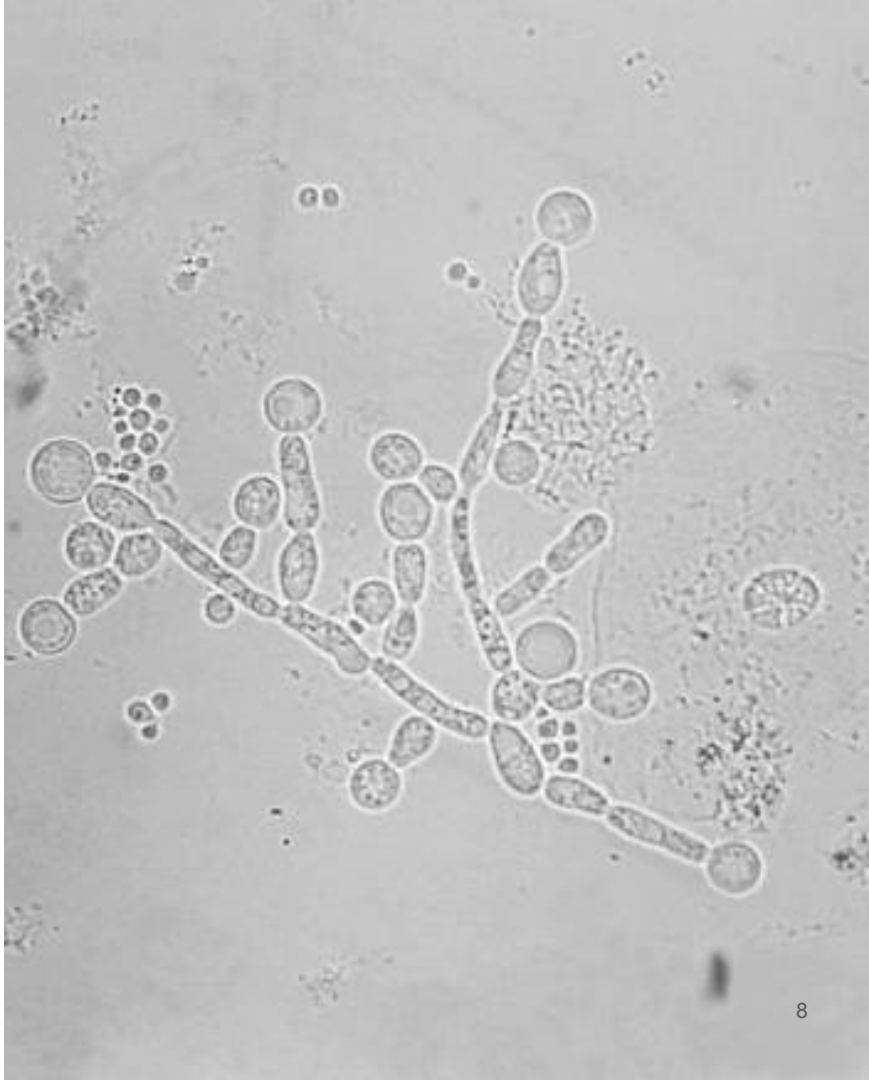
- Point Prevalence Surveys (PPS) every other week until 2 consecutive 100% zero conversions.



And so began the PPS loop

Point Prevalence Surveys

- 6/7/2022- 21 swabs, 5 conversions, 1 “equivocal”
- 6/21/2022- 12 swabs, 2 conversions
- 7/5/2022- 12 swabs, 2 conversions
- 7/19/2022- 16 swabs, 1 conversion
- 8/9/2022- 18 swabs, zero conversion
- 8/23/2022- 21 swabs, 2 conversions
- 9/6/2022- 16 swabs, 1 conversion
- 9/20/2022- 16 swabs, 2 conversions
- 10/4/2022- 15 swabs, 1 conversion
- 10/18/2022- 17 swabs, 1 conversion, 1 equivocal
- 11/1/2022- 15 swabs, 2 conversions



After the 7/5/2022 PPS

- Extensive staff education via electronic communication, staff meeting, in-person, one-to-one education
- Disposable items where possible (stethoscopes, thermometers)
- Made sure gloves were worn in every patient room, regardless of isolation status
- Group patients under same care providers where possible; barrier- shared ancillary services like PT/OT
- We did ask everyone to bundle patient activities to limit entry into room
- Notified EVS when patients are in other areas of hospital
- Culture-based screening for all patients upon admission; patient placed into contact containment until screening results provide more guidance
- Vigilant daily focus of invasive line removal and ensuring careful/proper wound care
- Wrap glucometers in plastic and clean between use
- Cohort patient equipment where possible
- Paper food trays for all CCH patients
- Decolonization study design in progress
- KYDPH site visit

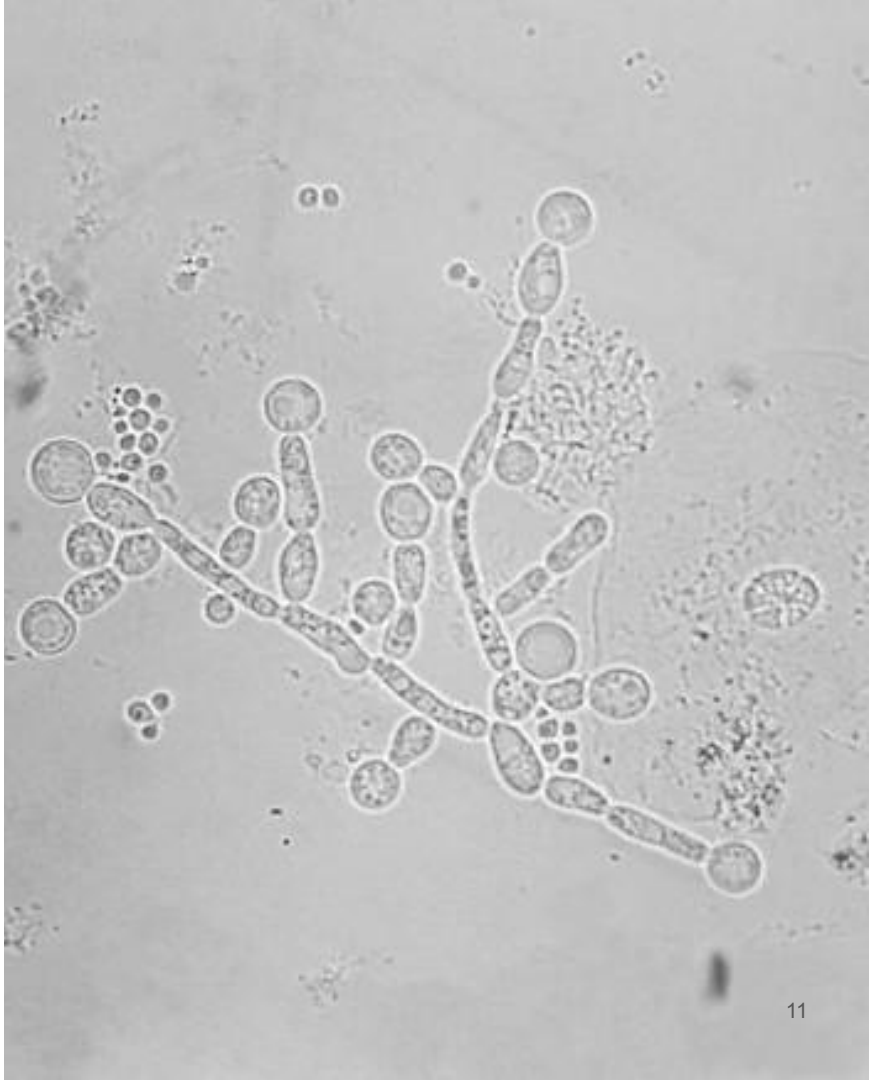
After the 7/5/2022 PPS

- Partnership with EVS
  - Room cleaning audits
  - After 7/5 PPS- All rooms double terminal cleaned (including those with patients).
  - Ensure all double cleans performed by 2 different staff members
  - Remove all disposable items from room (including gloves and caddy items)
  - UV-C treatment on all discharges

- Partnership with laboratory services
  - In-house screening on all admits
  - New policy and procedure on reporting C. auris
  - Added to critical results
  - Researching methodology with faster turnaround time on admits.
    - PCR is recommended/preferred

Candida auris (C. auris)

- **The increased surveillance of HH and PPE revealed opportunities in ancillary and physician staff. Education from CCH alone was a barrier, but partnership with SJH IP was very helpful**
- **We utilized our hospital epidemiology, chief medical officer, and other infectious disease physician partner to educate several physicians.**
- **Teach, remind, and empower CCH and contracted staff. Say something if you see noncompliance!**



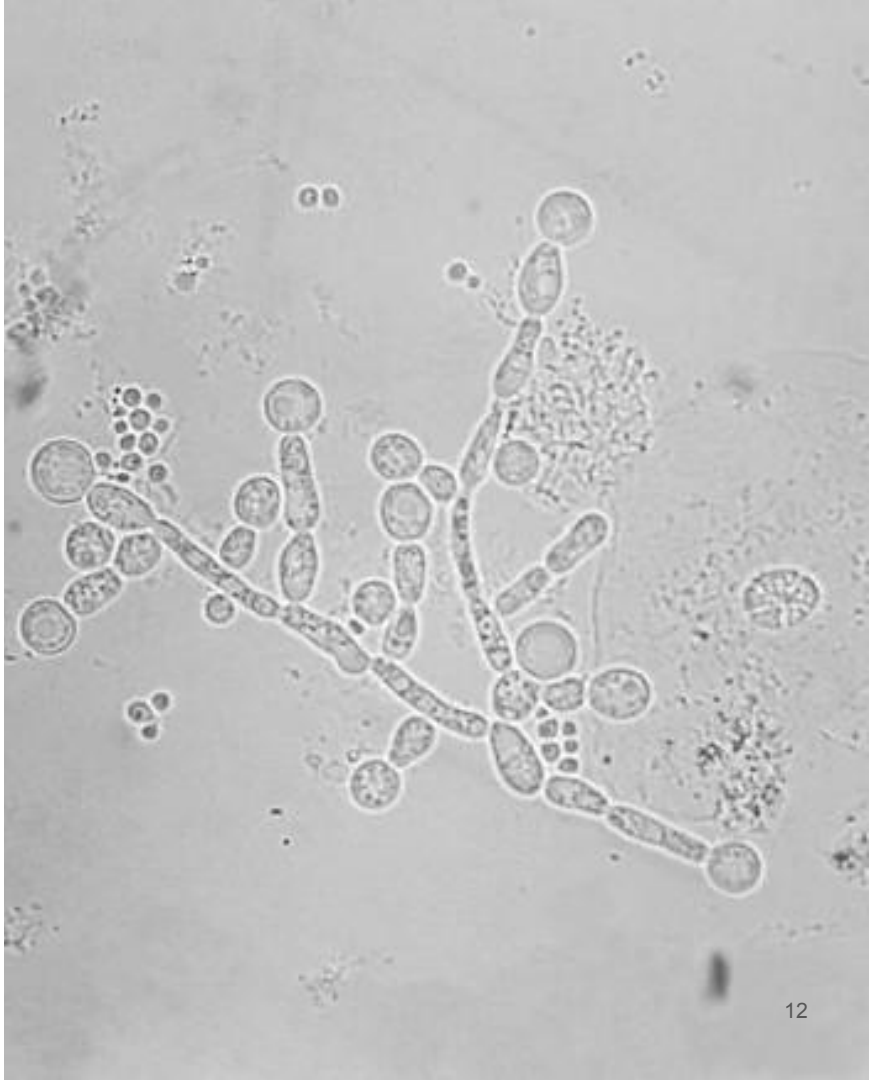
Candida auris (C. auris)

CADE-TOP study and CITTO bath-

CCH implemented a topical decolonization wash based on available literature regarding *C. auris*.
Protocol: send swabs to our lab at two different points during the patient's participation in the study.

1st bath implemented 10/14/2022

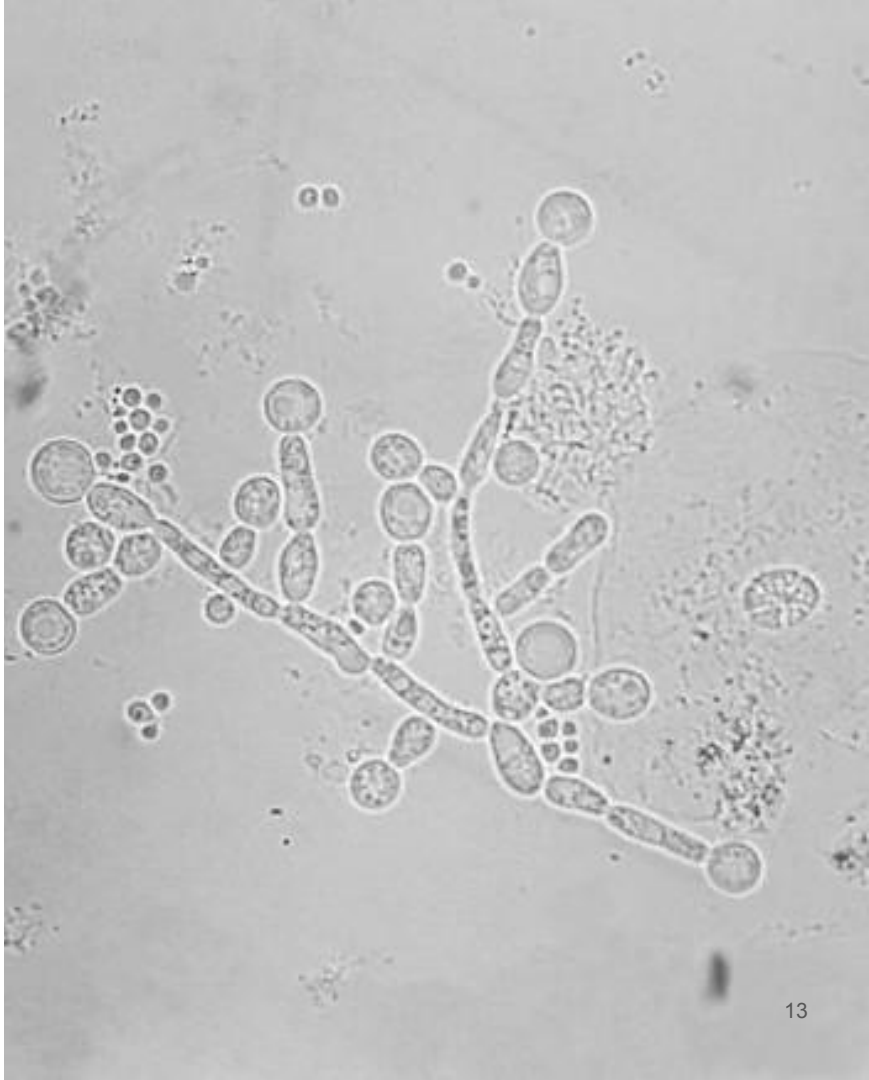
Unfortunately CCH could not obtain PCR access to look at the more sensitive effects of the wash but instead utilized culture based testing.



Epidemiological reviews

Could not find a consistent link: the first few conversions were linked to environment, a few conversions linked to providers, one linked to a bladder scanner.

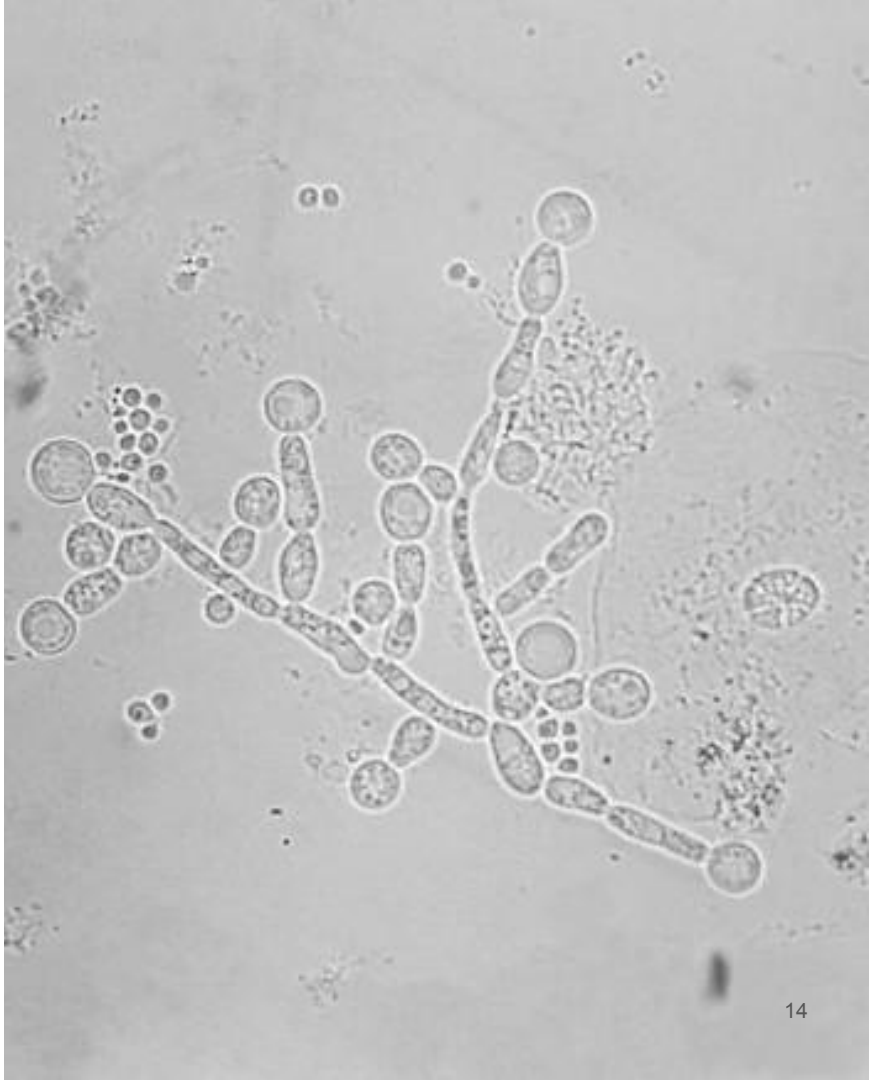
Thus, a bundled approach was best.



Candida auris (C. auris)

Point Prevalence Surveys

- 11/15/2022- 14 swabs, 1 conversion
- 11/29/2022- 14 swabs, 1 conversion
- 12/13/2022- 18 swabs, 3 conversions
- 1/3/2023- 15 swabs, 4 conversions
- 1/17/2023- 11 swabs, 0 conversions
- 1/31/2023- 11 swabs 1 conversion

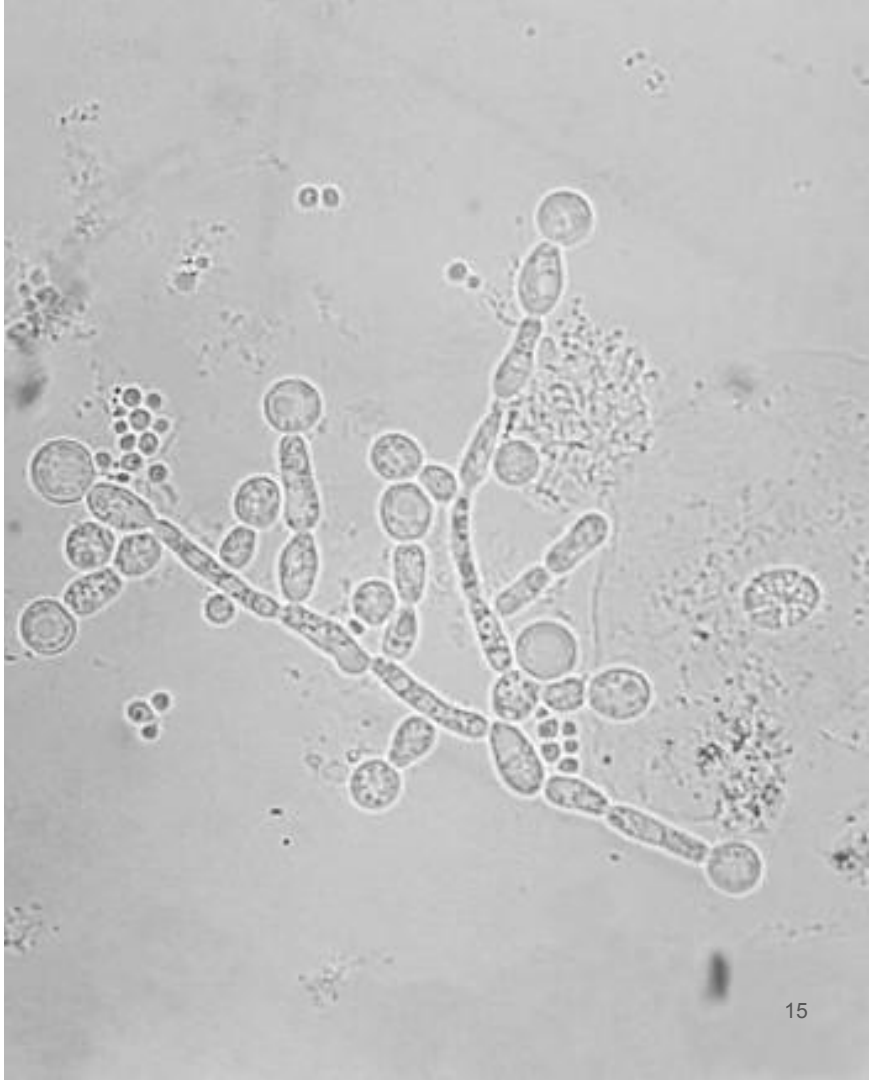


Candida auris (C. auris)

After the 4 conversions on 1/3/2023, we halted admissions to 4th floor, implemented universal containment precautions with near 24 hour surveillance.

1/23/2023- Contracted with outside cleaning company to start *intensive* unit cleaning

2/1/2023- CCH partnered with Wisconsin Lab to implement admit PCR swabs instead of culture based swabs.

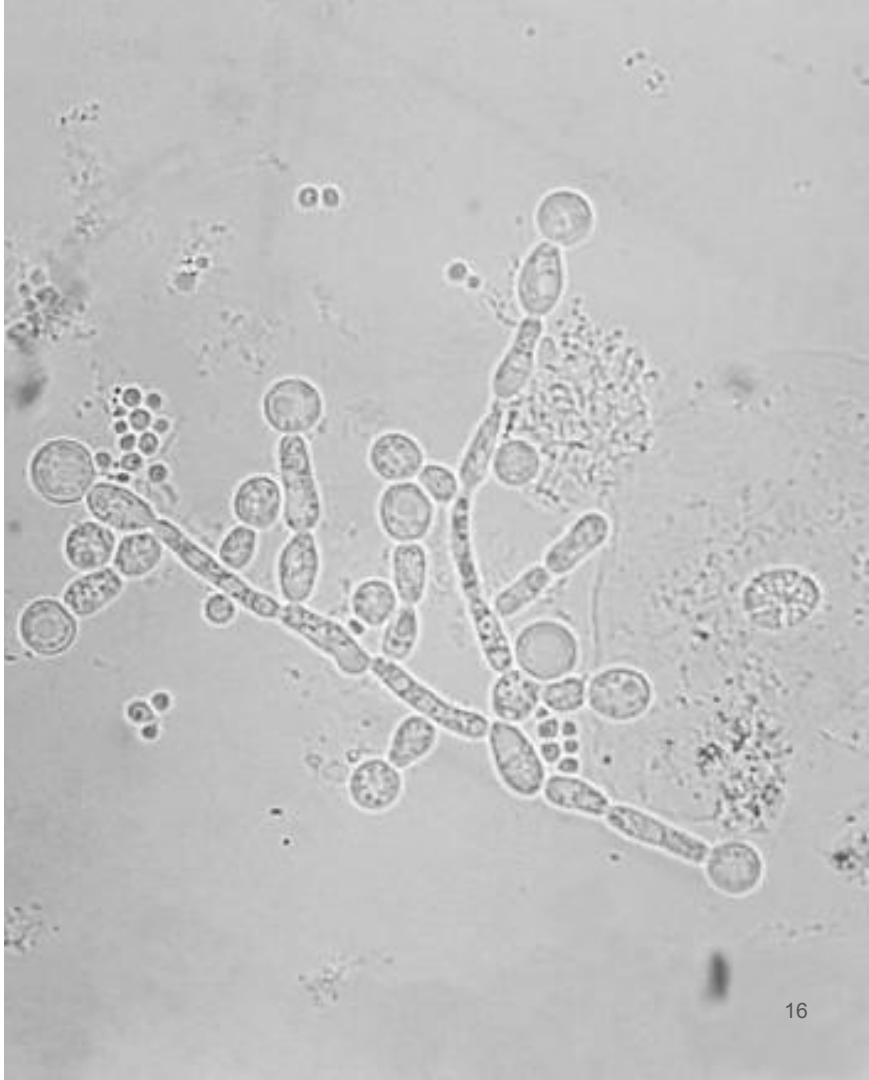


Candida auris (C. auris)

Point Prevalence Surveys

- **2/14/2023- 14 swabs, 0 conversions**
  - **concluded 4th floor**
- **2/28/2023- 7 swabs, 0 conversions**
  - **concluded 3rd floor**
- **3/14/2023- 4S follow up- 7 swabs, 0 conversions**
- **3/28/2023- 3S follow up- 7 swabs, 0 conversions**

Point Prevalence Surveys concluded at this point.

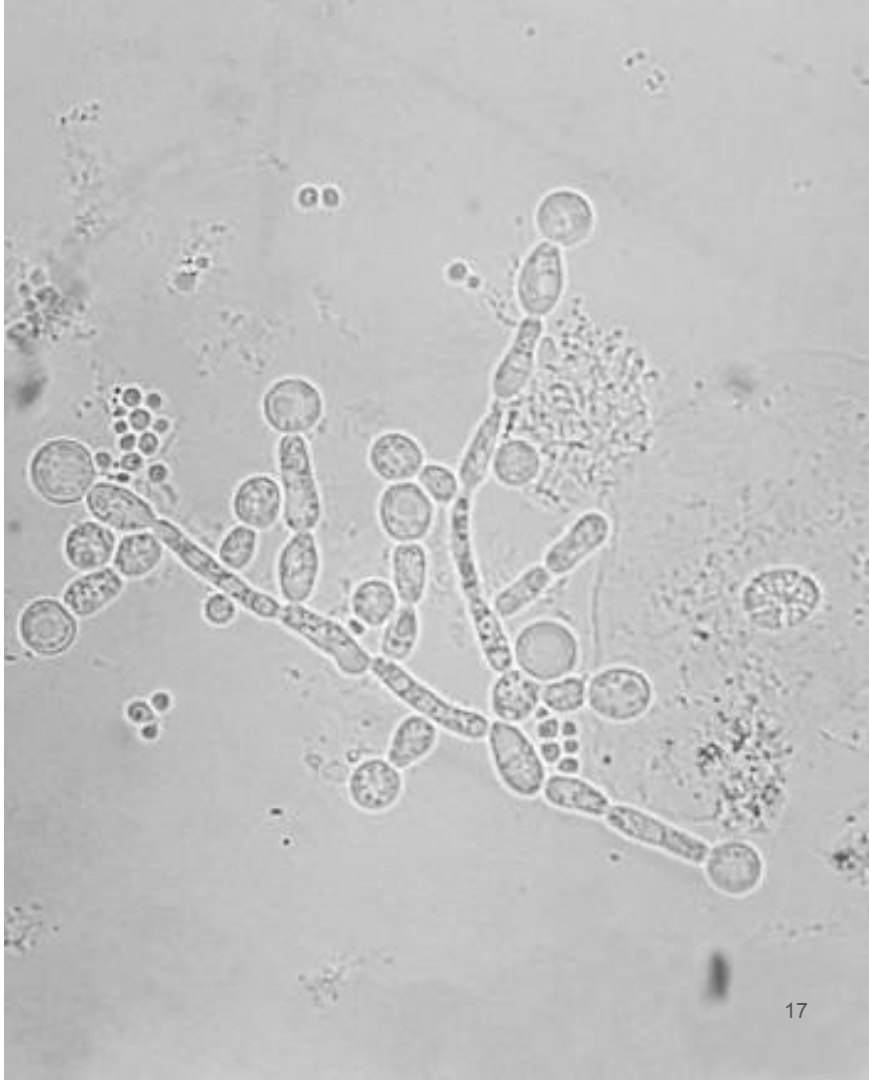


Recommendations/Learning

There's not a lot of guidance on Candida auris.

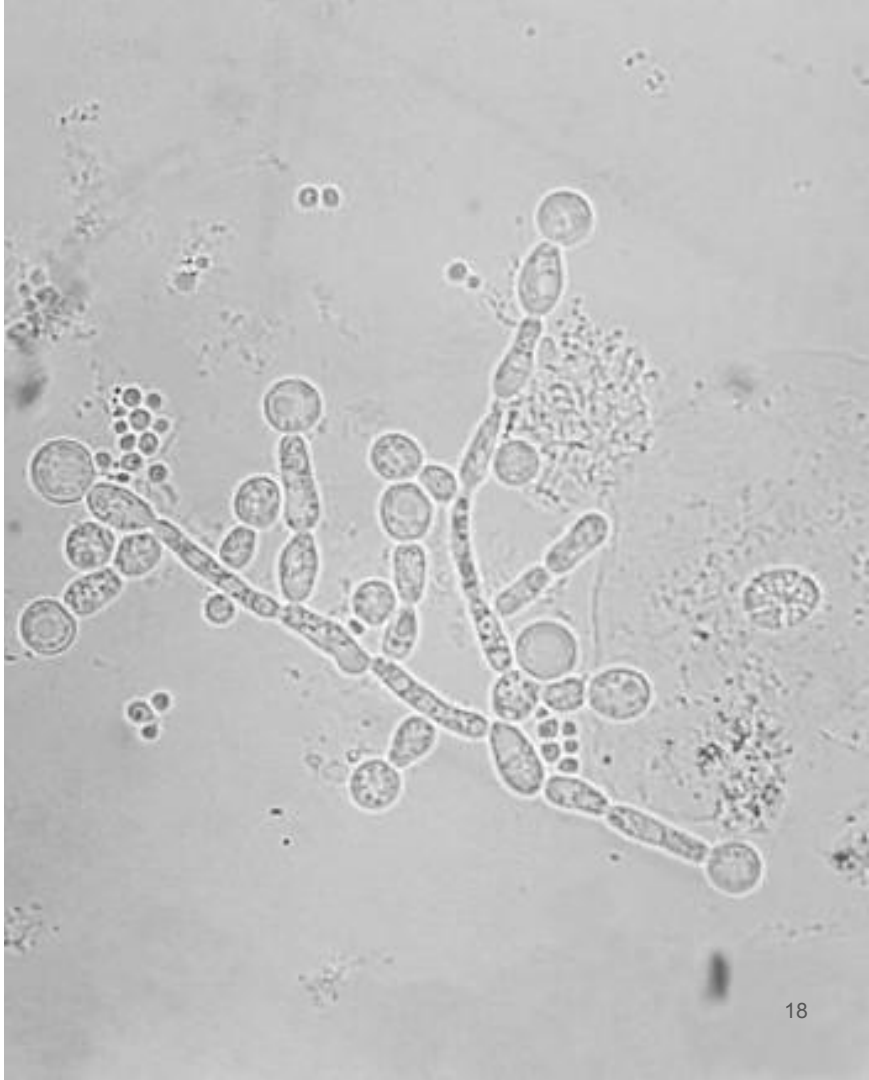
The most important interventions were:

- **intensive education and intense hand hygiene/PPE monitoring**
- **When that didn't cover it, universal containment**
- **Near 24-hour surveillance of adherence to HH/PPE; hospital epidemiology and CMO conversations**
- **Environmental cleaning- 3 pronged: partnership with EVS regarding UV on discharge, daily environmental cleaning, contracted outside cleaning service**



More takeaways

- **Ensure you are screening high risk patients on admission and placing them into isolation precautions pending results.**
  - **Use PCR if available**
- **Educate staff now! Ensure anyone who interacts with your patients is aware.**
- **Engage your lab services; C. auris needs to be a critical result. You also need to know if you have a swab that has been sent for further testing so you can isolate that patient pending results.**



THANK YOU!