



Outbreak Investigations, Emerging Pathogens, and the Role of Public Health

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North Carolina Division of Public Health

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Objectives

- Describe legal framework for disease surveillance, investigation, and response
- Review outbreak surveillance data and trends over time
- Discuss emerging infections & specific healthcare-associated pathogens
- Discuss role of Public Health in infection prevention and outbreak response
- Describe the 10 steps of an outbreak investigation



Public Health: Legal Framework

- Public Health Laws and Rules:
 - General Statutes
 - NC Administrative Code rules
- Health Director's Authority (State & Local)
 - Surveillance
 - Investigation
 - Control Measures



Public Health Law

General Statutes §130A-144: Investigation and Control Measures

(a) The **local health director shall investigate...** cases of communicable diseases and communicable conditions reported to the local health director

(b) Physicians, persons in charge of medical facilities or laboratories, and other persons shall... **permit a local health director or the State Health Director to examine, review, and obtain a copy of medical or other records...**

(d) The **attending physician shall give control measures...** to a patient with a communicable disease or communicable condition and to patients reasonably suspected of being infected or exposed to such a disease or condition.

(e) The **local health director shall ensure that control measures...** have been given to **prevent the spread** of all **reportable communicable diseases** or **communicable conditions** and **any other communicable disease or communicable condition that represents a significant threat to the public health.**

(f) All **persons shall comply with control measures**, including submission to examinations and tests...



Public Health Law

10A NCAC 41A .0103: Duties of local health director: report communicable diseases

(a) Upon receipt of a report of a communicable disease or condition... the **local health director** shall:

- (1) immediately **investigate** the circumstances... [to] include the collection and submission for laboratory examination of specimens necessary to assist in the diagnosis and indicate the duration of control measures;
- (2) determine what **control measures** have been given and ensure that proper control measures... have been given and are being complied with;

(c) Whenever an **outbreak of a disease or condition** occurs which is not required to be reported... but **which represents a significant threat to the public health**, the local health director shall give appropriate control measures... and **inform the Division of Public Health**



Public Health Law

10A NCAC 41A .0101: Reportable diseases and conditions

- **80+ reportable diseases and conditions**
 - Timeline of reporting varies between immediately and within 7 days
- **Laboratory** reporting requirements



Public Health Law

- **10A NCAC 41A .0106**
 - Infection Prevention – Reporting of Healthcare Associated Infections
- **10A NCAC 41A .0206**
 - Infection Prevention – Health Care Settings, 1992
- **10A NCAC 41A .0201**
 - General Control Measures
- **10A NCAC 41A .0202 - .0205**
 - Control Measures for HIV, Hepatitis B, STDs, TB



SHARPPS*Surveillance for **H**ealthcare **A**ssociated &
Resistant **P**athogens **P**atient **S**afety Program***Mission**

To work in partnerships to prevent,
detect, and respond to events and
outbreaks of healthcare-associated and
antimicrobial resistant infections in
North Carolina.

SHARPPS

*Surveillance for **H**ealthcare **A**ssociated &
Resistant **P**athogens **P**atient **S**afety Program*

Surveillance, Investigation & Response

HAI reporting to
NHSN

MDRO
surveillance

DHSR Infection
Prevention
Breach reporting

Outbreak &
Exposure
management

Prevention, Education & Training

Antimicrobial
resistance &
stewardship

Infection Control,
Assessment &
Response (ICAR)

Partnerships

Monitoring & Evaluation

Data validation

Communication

HAI data reports

Newsletters

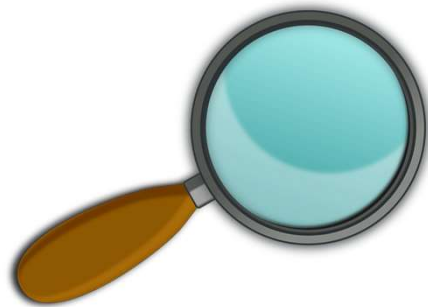
Webinar updates

When Should Public Health Be Called?

- HAI reporting questions (i.e., NHSN)
- Reportable diseases / conditions (10A NCAC 41A .0101)
 - <https://epi.dph.ncdhhs.gov/cd/report.html> (Form 2124)
- When **any** disease is above normal baseline (i.e., an “outbreak”)
- Report suspected infection prevention breach

What Happens When Public Health is Called?

- Data Review
- Clinical Investigation
- Environmental Investigation
- Control Measures
- Communication (Resident/Family/Public)
- Laboratory Support



Outbreak Assistance

We can assist with:

- Determining if it is an outbreak
- Guidance, tools and onsite support
- Facilitating and coordinate calls with partners
- Written recommendations



Examples of Responses

- Multidrug Resistant Acinetobacter (CRAB) in a nursing home
- Scabies in long-term care facilities
- Acute Hepatitis B among shared glucometer patients
- Potential C. auris transmission in dialysis facility
- Post-op endocarditis among patients receiving same surgical device
- Legionellosis associated with healthcare facilities
- National responses:
 - Non-tuberculosis mycobacterium (NTM) and heater-cooler units
 - Resistant Pseudomonas and artificial tears
 - Botulism-like illness following cosmetic surgery



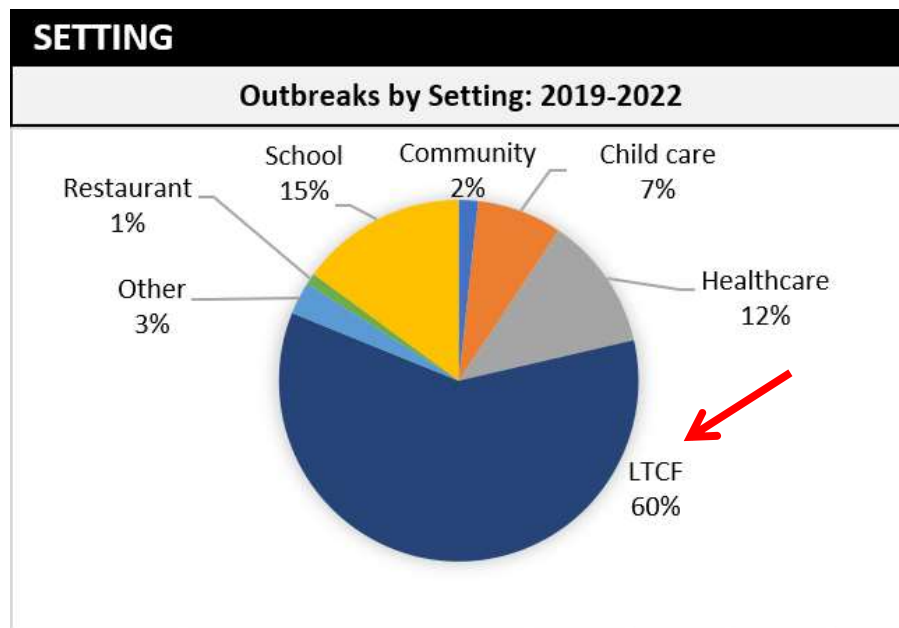
Partnerships



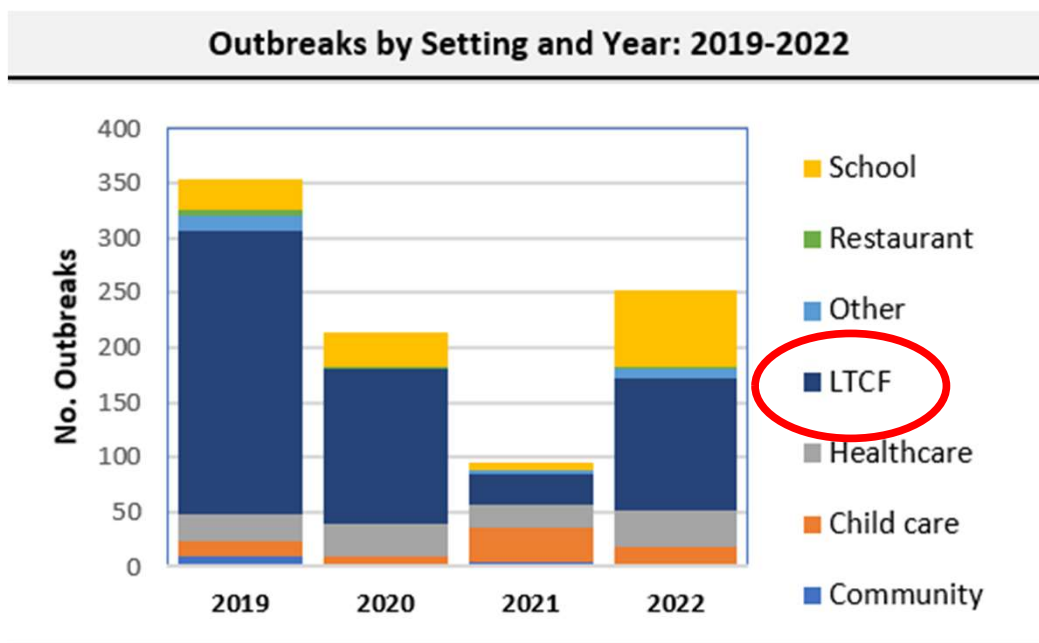
Outbreak Summary



2019-2022 Outbreak Summary



2019-2022 Outbreak Summary



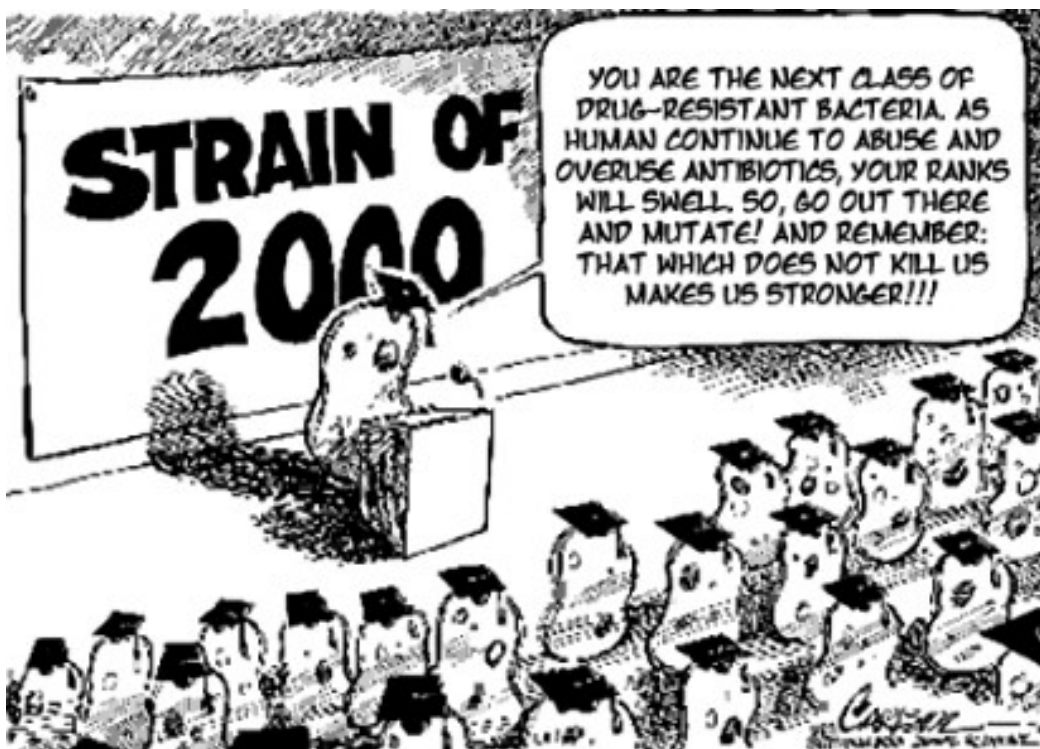
Outbreak Response & Emerging Infections



Multidrug-Resistant Organisms (MDROs)



Multidrug-Resistant Organisms (MDROs)



Significance of MDROs

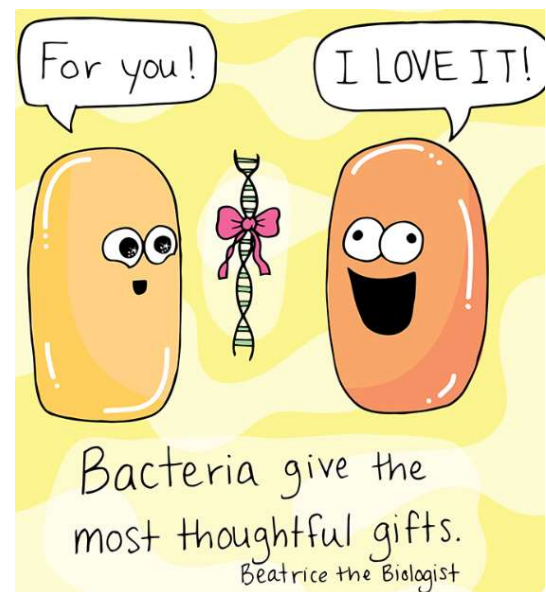
- Affects vulnerable patient populations
- Are easily transmitted in and between healthcare / congregate care settings
- Difficult to treat
 - Require more toxic antimicrobials to treat
- Improper treatment
 - Some organisms may produce another enzyme that makes it easier to transmit resistance
- Cause increase in:
 - Mortality
 - Healthcare costs
 - Length of stays
- Estimates of economic costs vary, up to 20 BILLION dollars in direct healthcare costs



Significance of Carbapenemase-producing Organisms (CPO)

- Carbapenemase-producing organisms
 - Mobile genetic elements, such as plasmids
 - Highly resistant
- **Urgent public health threat**
- Over 9,000 healthcare-associated infections each year
- Up to 50% mortality

TB0



Slide 22

TB0 Update slide content for CPO specific info
Breeyear, Taylor L, 2024-09-17T19:16:36.630

Candida auris



Highly
drug-resistant



Patients can
become colonized
and develop
invasive infections

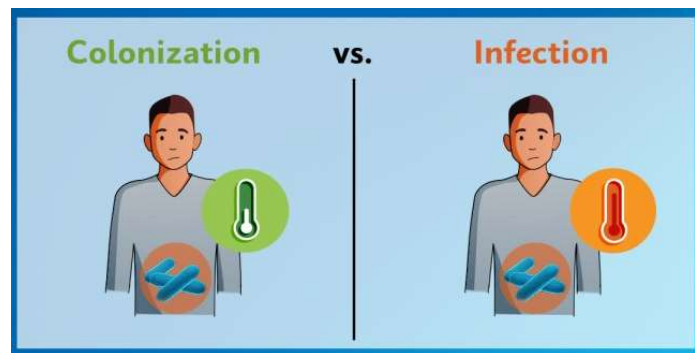


Spreads in healthcare
settings

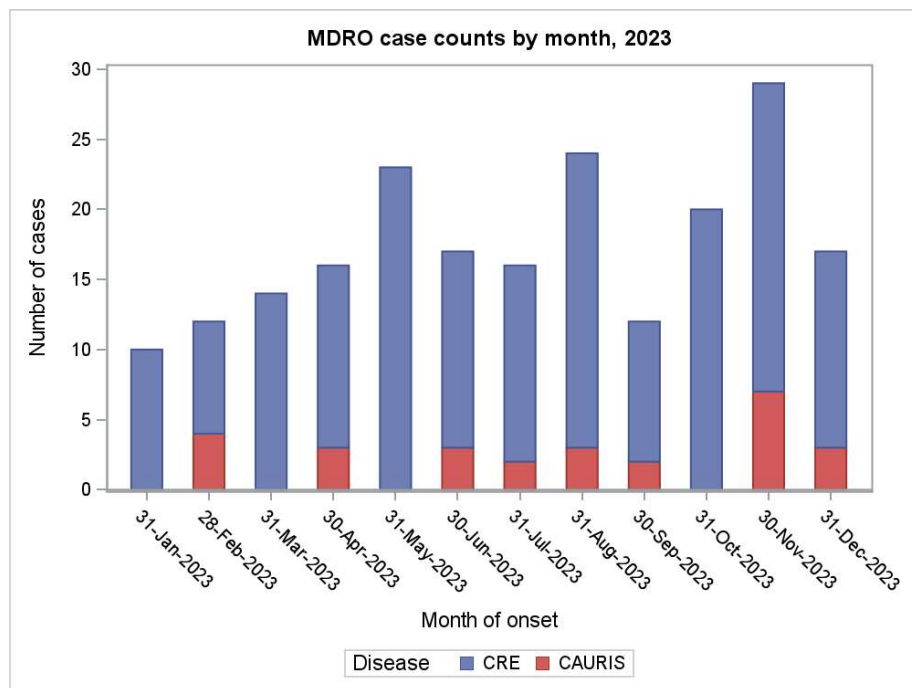


MDRO Colonization

- Colonization means that a person is carrying a MDRO but does not have symptoms of an infection.
- Colonized people play a large role in the spread of MDROs to other people in healthcare settings (require infection control action).



North Carolina



First NC-acquired *C. auris* case identified February 2023.

*preliminary data



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Slide 25

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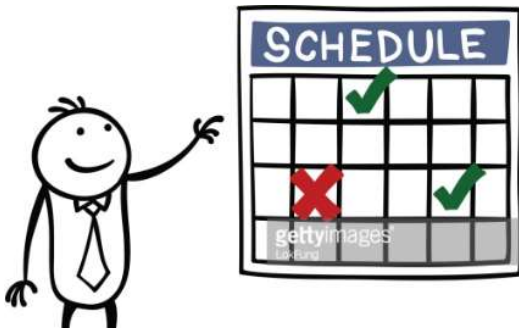
Update

Breeyear, Taylor L, 2024-09-17T19:18:10.873

Initial Control Measures



Gown and gloves



Prevent opportunities for transmission



Hand hygiene



Targeted MDRO Specific Infection Prevention Measures

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- Laboratory Notification
- Private room
 - Indefinite contact precautions for colonized and infected patients.
 - Enhanced barrier precautions in long-term care
 - For *C.auris*, with approval by DPH.
 - If necessary, cohort infected residents.
- Adherence to hand hygiene and transmission-based precautions.
- Clean with [List P](#) disinfectant for *C. auris*.
- Conduct screening.
- Educate staff about organism and reasons for precautions.
 - Including non-clinical staff like EVS
- Review infection prevention policies and procedures.
- Communicate diagnosis with other facilities on transfer or discharge.
- Antimicrobial Stewardship



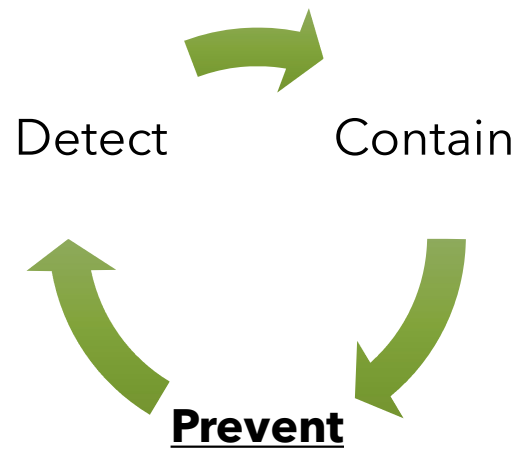
Slide 27

TB0 See comment on Major Findings slide
Breeyear, Taylor L, 2024-09-17T19:35:24.716

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DPH Response to MDROs

- Detect
 - C. auris and CPO: 1 case=outbreak
 - Nationally notifiable
 - Antimicrobial Resistance Laboratory Network (ARLN)
- Contain
 - Ensure rapid response & containment
 - Prevent transmission through:
 - Point-prevalence survey (PPS)
 - Infection control assessment and response (ICAR)
- Prevent
 - Stewardship efforts
 - Antimicrobial resistance workgroup
 - Get Smart Campaign
 - STAR Partners
 - Education
 - Collaborative effort (SPICE, DPH, LHD)



Slide 28

TB0 See comment on Major Findings slide. Talk more about screening collaboration with DPH
Breeyear, Taylor L, 2024-09-17T19:35:51.669

Legionellosis

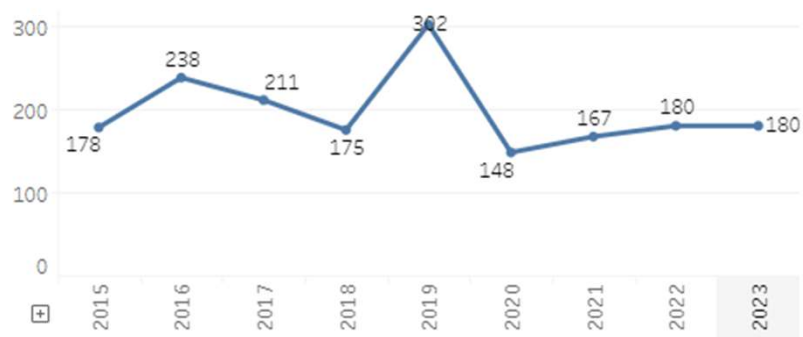
- Caused by inhalation *Legionella pneumophila*
- Transmission: Inhalation of aerosolized water
- Risk factors
 - >50 years old, smokers, compromised immune systems
- Two manifestations:

	Legionnaires' disease	Pontiac Fever
Incubation period	2-14 days	5-72 hours
Symptoms	Non-productive cough and pneumonia	Self-limited febrile illness; no pneumonia
Resolution	Typically requires antibiotics; ~15% case-fatality rate	Spontaneous recovery in 2-5 days



Incidence of Legionellosis in North Carolina

Legionellosis Reported Cases in North Carolina from 2015 - 2023



Slide 30

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Updated numbers?

Breeyear, Taylor L, 2024-09-17T19:19:04.770

Investigation Steps



Lab

- Urine antigen
- Other



Risk

- Travel
- Water exposures
- Healthcare exposures



Clinical

- Symptom
- Onset date
- Radiographic evidence of pneumonia
- Previous hospitalizations

The most important question...

Was the patient in the healthcare facility during the 14 days before symptom onset?

Create a timeline:

- When was the patient admitted to the facility?
- When did symptoms start?
- Where did the patient go during the 14 days before symptom onset?



Healthcare-associated Legionellosis

- Definite healthcare-associated case
 - Confirmed case of legionellosis in a person who has spent ≥ 14 days **continuously** in a healthcare facility before illness onset
- Possible healthcare-associated case
 - Confirmed case of legionellosis in a person who has spent **part but not all** of the 14 days before illness onset in a healthcare facility



Avian Influenza (H5)

- Type A influenza that is widespread in wild birds worldwide but can cause outbreaks in some mammals
- Recent outbreaks in poultry and dairy cows, including NC
- Current public health risk is low but there have been cases in humans in the U.S.
 - Mild symptoms
 - Almost all cases were poultry and dairy farm workers, exposed to animals
- NCDHHS is collaborating with CDC and NCDA&CS
 - Surveillance
 - Infection prevention resources for poultry and dairy farm workers
- Suspected or confirmed novel avian influenza
 - AIIR
 - N95 or higher, gown, gloves, eye protection
 - May require transfer



TB0

Tis the (respiratory virus) season!

- Encourage vaccine uptake
- Provide face masks, tissues and hands-free trash can, hand sanitizer
- Post signs with respiratory hygiene/cough etiquette reminders
- Ensure staff do not work while sick
- Ongoing outbreak?
 - Contact our RIPS team at infectionprevention@dhhs.nc.gov for assistance.



[CDC: Preventing Transmission of Viral Respiratory Pathogens in Healthcare Settings](#)

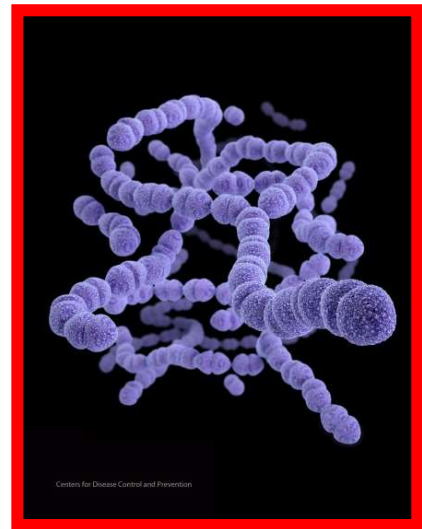


Slide 35

TB0 My thought was to somehow use this as plug for RIPS doing respiratory outbreak visits
Breeyear, Taylor L, 2024-09-17T21:19:03.423

Group A Streptococcus (GAS)

- A group of gram-positive bacteria
- Commonly found in the throat and on the skin
- Illness varies depending on site of infection
- **Invasive GAS (iGAS):** severe infection when **bacteria invade areas of the body that are normally sterile**
 - Invasive GAS is reportable



LTCF residents at higher risk

- Elderly at higher risk
 - ~ 15% of people aged 65 years or older die from their invasive GAS infection¹
- Older adults in LTCFs have a 6x greater risk of disease and 1.5x greater risk of death than older adults in the community²
 - Age, comorbidities, breaks in skin, indwelling devices
 - **Wound care**
 - **Careful attention to IP practices essential to prevent transmission**

1. Centers for Disease Control and Prevention. Active Bacterial Core Surveillance Bact Facts Interactive Data Dashboard, Emerging Infections Program Network, Group A *Streptococcus*. Available at [ABCs Bact Facts Interactive Data Dashboard | CDC](#).

2. [Invasive Group A Streptococcal Infection in Older Adults in Long-term Care Facilities and the Community, United States, 1998–2003 - Volume 13, Number 12—December 2007 - Emerging Infectious Diseases journal - CDC](#)



Public Health Response to iGAS (LTCF, postpartum, postsurgical)

- **LHD and DPH will provide guidance on response steps:**

- | | | |
|--|---|---|
| • Identify additional symptomatic cases | | • Retrospective chart review |
| • Identify potential asymptomatic carriers | ■ | • Survey staff for GAS symptoms |
| • Assess and re-emphasize infection prevention practices | | • Culture residents, possibly epi-linked staff (if an outbreak) |
| | | • Prospective active surveillance |
| | | • Site visit to assess IP, educate staff |



Possible Site Visit Findings: Infection Risk Factors

- Gaps in hand hygiene
- Staff working while sick
- Opportunities for cross-contamination during wound care:
 - Glove use
 - Dedicated wound care supplies
 - Scissor use- in GAS outbreak, dedicate scissors to individual residents
 - Wound care carts- uncluttered, remain outside pt rooms, perform HH before accessing items



Summary: Example GAS Outbreak

Over the course of a year:

- 30+ symptomatic cases, 7 invasive cases
- 30+ asymptomatic carriers
- 8 hospitalizations, 3 deaths
- Epi, laboratory, site assessments:
 - All invasive cases had wounds
 - Whole genome sequencing from 21 positives showed all but 3 were related, many months apart
 - Wound care observations identified opportunities for cross contamination



10 Steps of an Outbreak Investigation



Reasons to Investigate an Outbreak

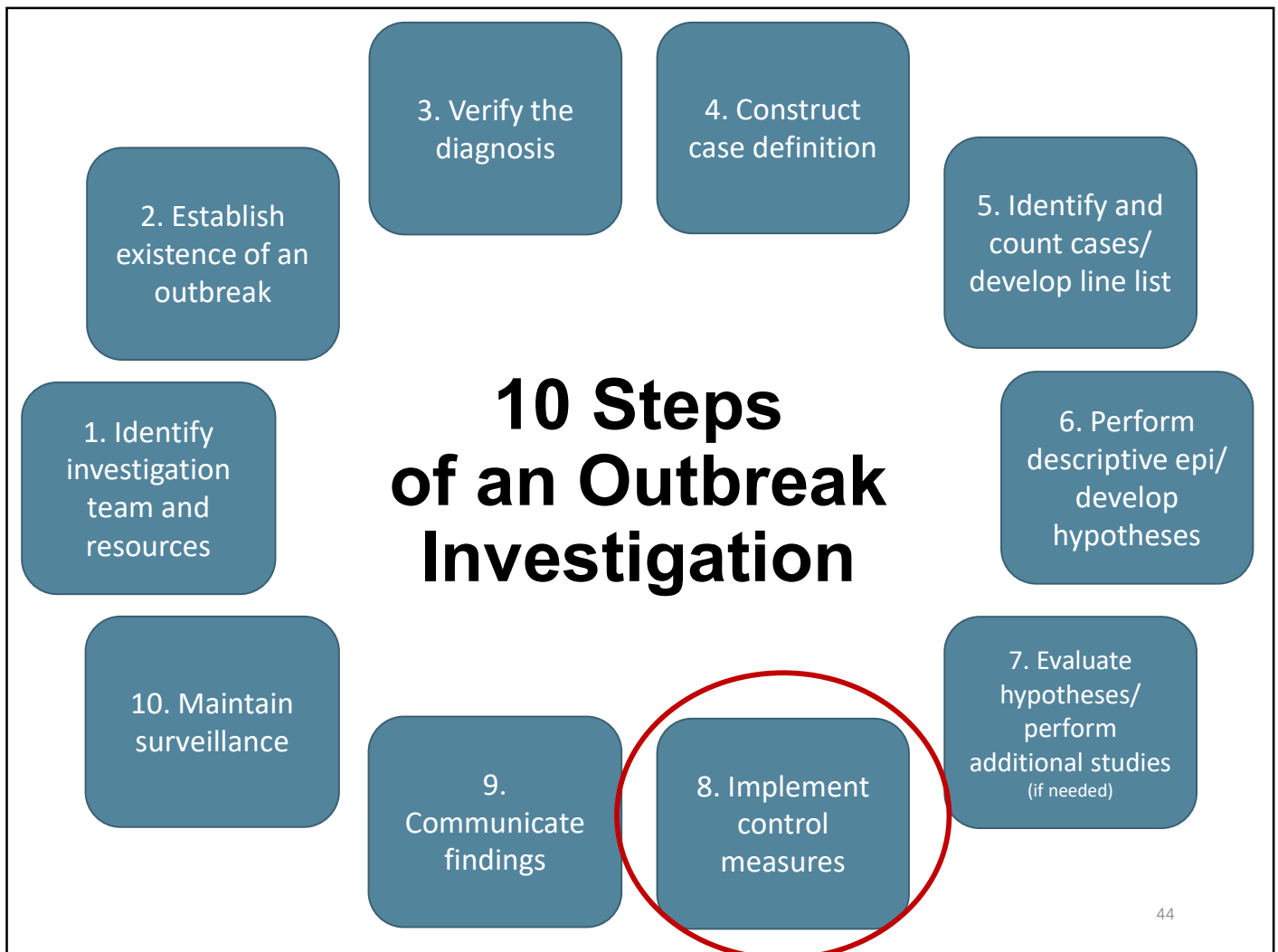
- Identify, describe the source
- Describe new diseases / learn more about known diseases
- Identify populations at risk
- Evaluate existing prevention strategies
 - e.g., immunization requirement
- Opportunity to educate public about disease prevention
- Address public concern
- Develop strategies to prevent future outbreaks
- Fulfill legal obligation and duty to care for the public
- **End the outbreak!**



Principles of Outbreak Investigations

- Be systematic
 - Follow the same steps for every type of outbreak
 - Write down case definitions
 - Ask the same questions of everybody
- Stop often to re-assess what you know
 - Line list and epidemic curve provide valuable information
 - Consider control measures to be applied
- Coordinate with partners





2. Establish existence of outbreak

What is an Outbreak?

- Anything above what is normally seen for any given time period
- If you aren't sure, call us!
- In a facility setting, an outbreak is generally defined as two or more individuals with the same illness
- **Caveat to this rule:**
 - One case of certain diseases = Outbreak
 - **C. auris, MDROs with novel carbapenemases**
 - Disease not normally seen (Avian Flu, SARS, Ebola)



GAS Outbreak Summary

This example outbreak opened with:

- Invasive resident case followed by six resident and staff non-invasive cases
- Two additional invasive cases
- Within one month timeframe



3. Verify the diagnosis

- Review medical records, laboratory reports
- Talk with patients
- Request additional testing if needed
- Consult with local health department, communicable disease branch, state public health lab



4. Construct a case definition

What is a Case Definition?

- Allows a simple, uniform way to identify cases
- “Standardizes” the investigation
- Is specific to the outbreak

3 components:

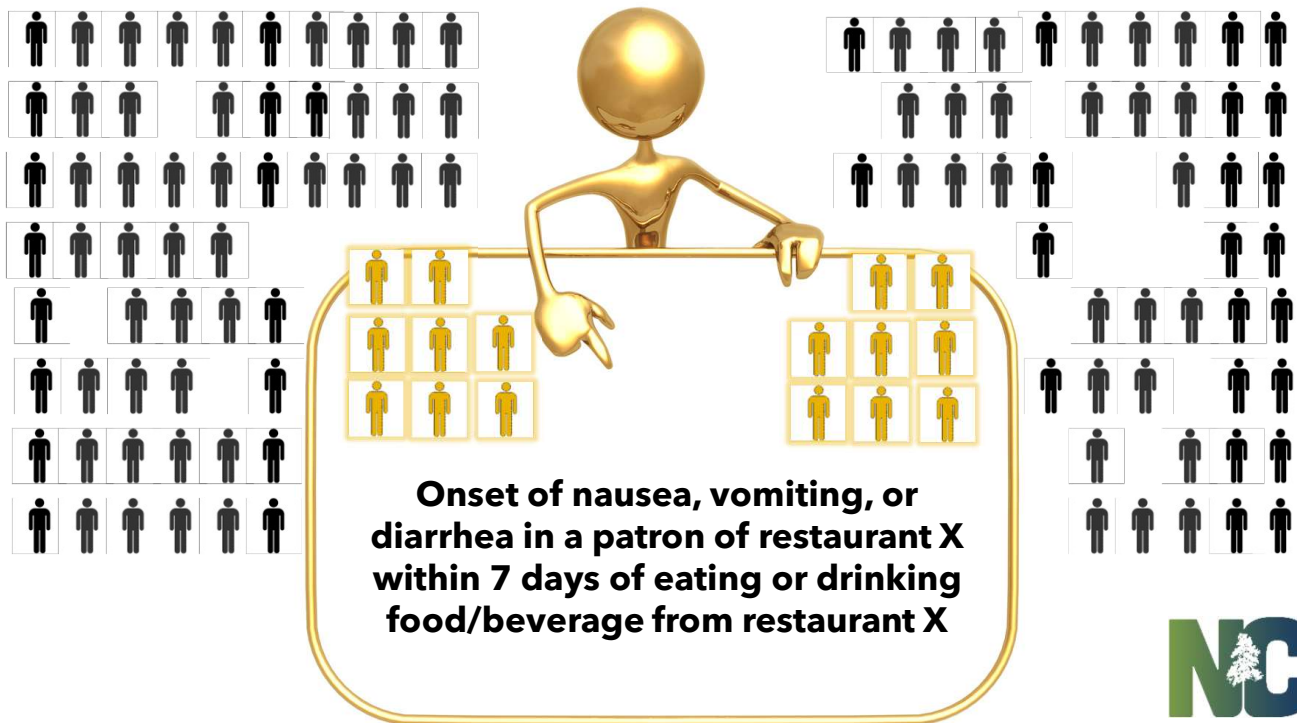
Person..... Type of illness, characteristics
(e.g., “a person with...”)

Place..... Location of suspected exposure

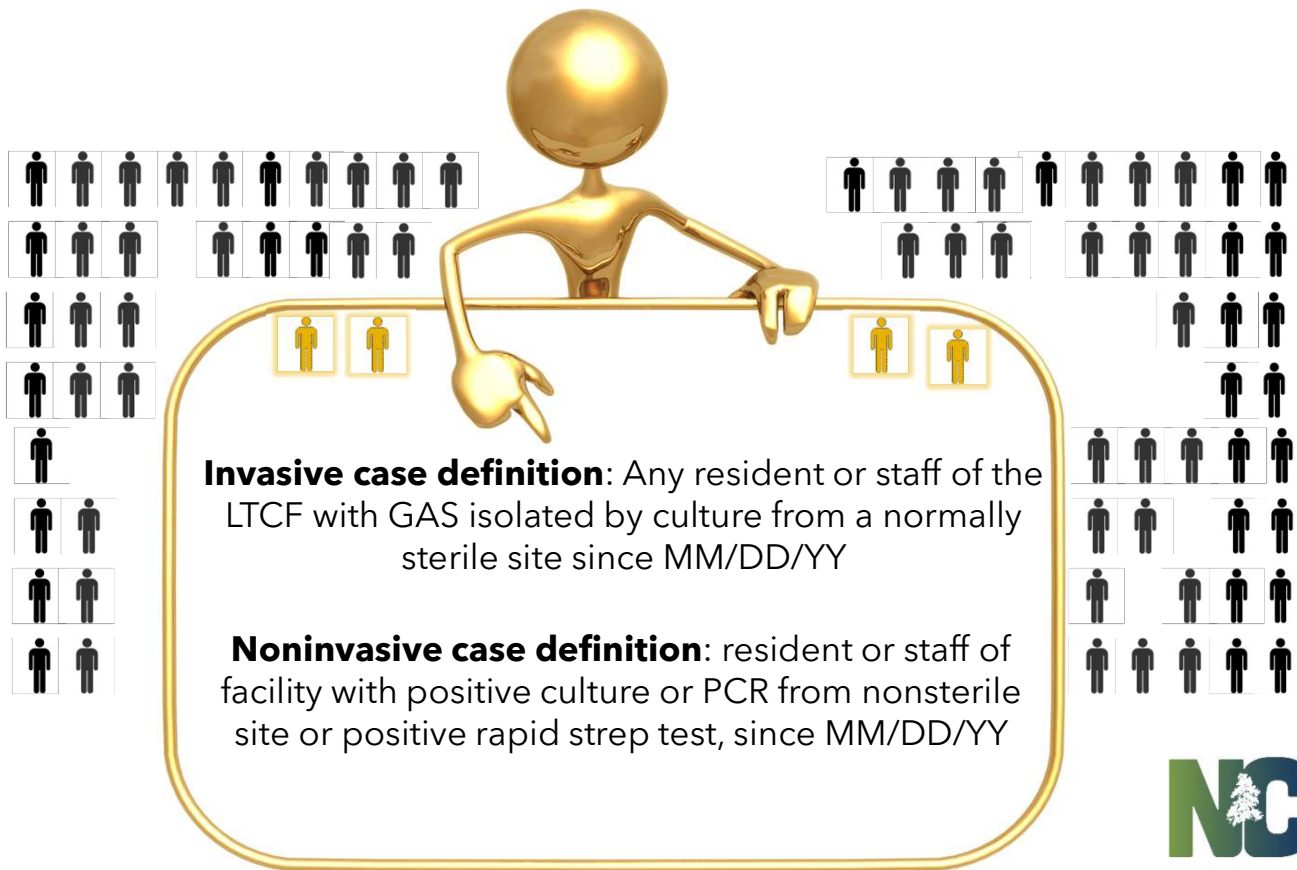
Time..... When exposure or illness occurred



4. Construct a case definition



GAS Outbreak Case Definition



5. Identify and count cases/develop line list

6. Perform descriptive epi and hypothesize

- **Identify additional cases through data and records**
- **Descriptive Epidemiology**
 - Provides systematic method
 - Characterize, or describe what has occurred
 - **Person, place, time**
- Components
 - Line list
 - Epi curve



Descriptive Epidemiology

- Person
- Place

} Line List

- Time

} Epidemic curve ('Epi curve')



Line List

- Method to systematically record information
- Simple to review, update, summarize
- Each row represents data for a single 'case'
- Information to include:
 - Identifying information
 - Demographics
 - Clinical- symptoms, specimen date and source, outcome
 - Exposure/risk factor



Example - GAS template line list

DEMOGRAPHICS						SYMPTOMOLOGY				LABORATORY INFORMATION			
First name	Last name	Date of Birth (MM/DD/YYYY)	Age	Unit	Rm #	Onset Date (MM/DD/YYYY)	Wound?	Sore Throat?	Rash?	Symptomatic? Y/N	Type of Specimen	Date of Collection (MM/DD/YYYY)	Name of Testing Lab
1													
2													
3													
4													
5													
6													
7													
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Template also includes-

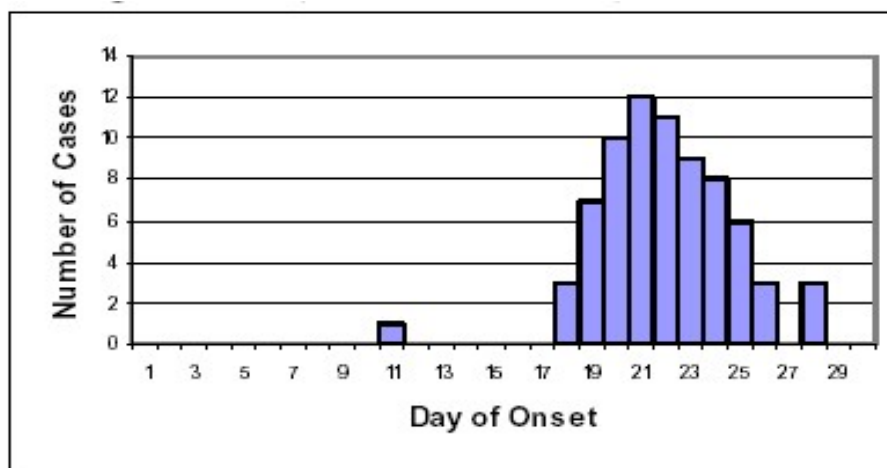
- Hospitalization
- Outcome
- Treatment

Epidemic 'Epi' Curve

- A graphical representation of the number of outbreak cases by date of illness onset
- Visual representation of
 - Ill persons (cases) over time
 - Magnitude of outbreak
 - Number of cases on the vertical (y) axis
 - Time period (or date of illness onset) on the horizontal (x) axis
 - Type of outbreak
 - Point source
 - Propagated (person-to-person)

Epi Curves

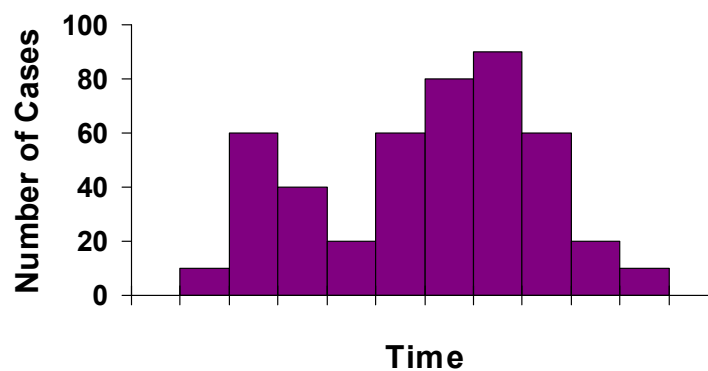
- Point source
 - Common source outbreak
 - Sharp upward slope and a gradual downward slope
 - Period of exposure is brief
 - Cases occur within one incubation period



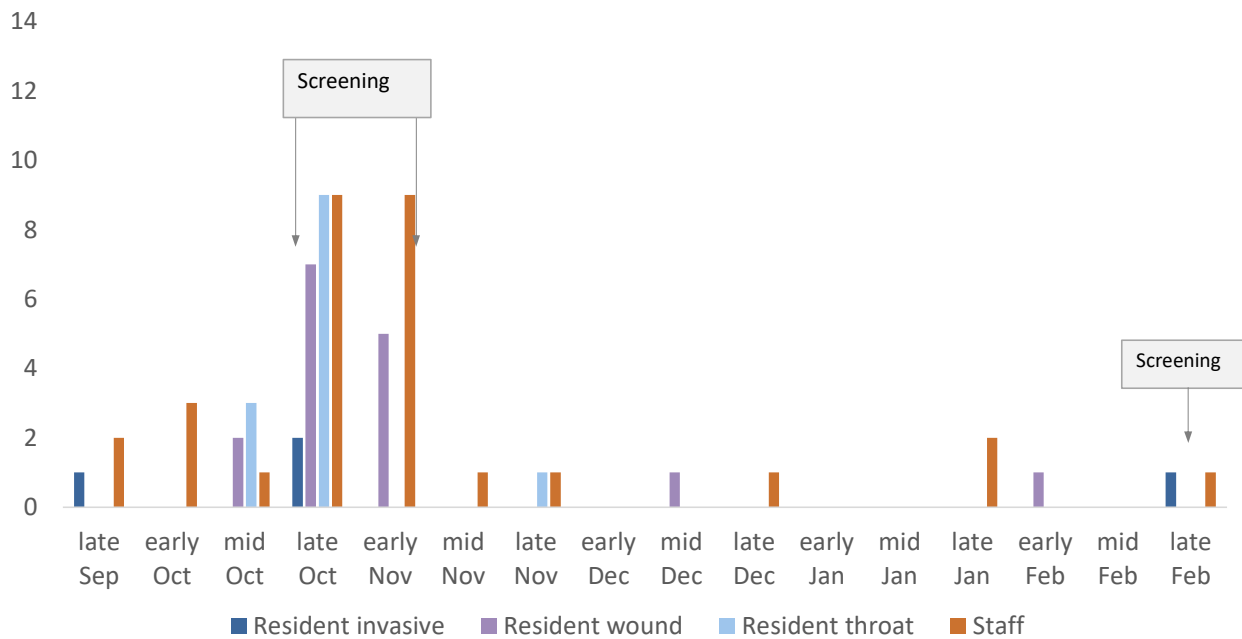
Epi Curves

- Propagated (person-to-person)
 - Progressively taller peaks, an incubation period apart
 - Person to person transmission
 - May last a long time
 - May have multiple waves

Epi Curve...Person to Person



Example Epi Curve: GAS Outbreak Positive Results



- All invasive cases had wounds
- All isolates but three were related
- Opportunities for cross-contamination during wound care observations



6. Develop hypotheses

- Statements which help us describe why and how the outbreak occurred (i.e., educated guess)
- How do you generate hypotheses?
 - Review the existing body of knowledge
 - Examine line list, epi-curve
 - Conduct open-ended interviews with few case-patients



7. Evaluating the Hypotheses

- Two methods:
 - Compare hypothesis with established facts
 - Perform additional studies (e.g., analytic)
 - Cohort or case-control
 - Assess exposures equally among ill and non-ill persons



8. Control Measures

- When should control measures be implemented *immediately*
 - Source is known
 - Continued risk of either exposing others or being exposed (e.g., HCW diverting injectable drugs)
- Control measures:
 - Are applied as soon as possible
 - May change during investigation
- Example GAS outbreak control measures
 - Screen residents and staff via cultures, treat all positives
 - Ill staff stay home from work
 - Appropriate precautions for ill residents
 - Refresher education for staff
 - IP observations and support
 - Masking during wound care; universal masking at onset
 - Halted admissions with wounds for ltd time period (d/t transmission not controlled)



9. Communicate Findings

- Oral
 - Internally with team
 - Externally to public, media, health care providers
- Written
 - Daily updates (e.g., Situation Reports)
 - Final outbreak report



10. Maintain Surveillance

- Evaluate / document effectiveness of control measures
- To ensure outbreak is over
- To ensure secondary outbreak is not occurring
- For many outbreaks, maintain surveillance for 2 average incubation periods following the last date of illness onset
- GAS outbreak surveillance- continues for 4 months following the last date of illness onset



Conclusions

- Epidemiologic investigations essential component of public health, present opportunities to:
 - Characterize diseases
 - Identify populations at risk
 - Evaluate programs, policies, or existing prevention strategies
 - Train public health staff
 - Educate the public
 - Fulfill legal obligations and duty of care for the public
- 10 steps provide systematic framework necessary to investigate any outbreak

Resources

- **MDROs**

- CDC Strategies to Prevent and Contain MDROs
<https://www.cdc.gov/healthcare-associated-infections/php/preventing-mdros/index.html>
- NCDHHS Healthcare-Associated Infections (HAIs)
<https://epi.dph.ncdhhs.gov/cd/diseases/hai.html>

- **Injection Safety**

- CDC Preventing Unsafe Inject Practices <https://www.cdc.gov/injection-safety/hcp/infection-control/index.html>
- CDC Project Firstline <https://www.cdc.gov/project-firstline/index.html>

- **Antimicrobial Stewardship**

- Be Antibiotics Aware Campaign
<https://epi.publichealth.nc.gov/cd/antibiotics/campaign.html>
- NC DPH Antimicrobial Stewardship
<https://epi.publichealth.nc.gov/cd/antibiotics/stewardship.html>
- NC DPH STAR Partners
https://epi.publichealth.nc.gov/cd/antibiotics/star_partners.html

- **Group A Strep in LTC (CDC resources)**

- <https://www.cdc.gov/group-a-strep/php/ltof-toolkit/increased-risk.html>
- <https://www.cdc.gov/group-a-strep/php/ltof-toolkit/transmission.html>



Thank you!

infectionprevention@dhhs.nc.gov


919-733-3419 (24/7 Epidemiologist On-Call)






***C. auris* – Comprehensive Infection Prevention Response**

***C. auris* Case Study**
Fall 2024



Infection Control and Response (ICAR)







MENU

Search EPA.gov



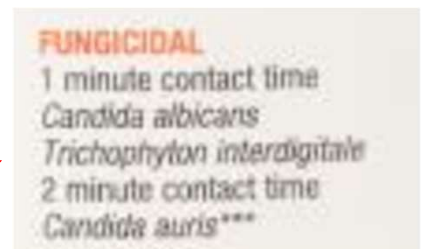
Pesticide Registration

CONTACT US

List P: Antimicrobial Products Registered with EPA for Claims Against Candida Auris



EPA Reg. No. 37549-1



HOSPITAL DISINFECTION

1. Always use personal protective equipment.*
2. Open Micro-Kill Bleach Germicidal Bleach Wipes canister.
3. Remove pre-saturated 7 in x 8 in wipe.
4. Apply pre-saturated towelette and wipe desired surface to be disinfected.
5. Gross soil must be removed prior to disinfecting. A 30 second contact time is required to kill the bacteria and viruses** on the label except 1 minute contact time is required to kill *Candida albicans* and *Trichophyton interdigitale*, a 2 minute contact time is required to kill *Candida auris****, and a 3 minutes contact time is required to kill *Clostridium difficile* spores*. Reapply as necessary to ensure that the surface remains visibly wet for the entire contact time.
6. Allow surface to air dry and discard used wipe and empty canister (see STORAGE AND DISPOSAL).

TO OPEN CANISTER:

1. Always use personal protective equipment.*
2. Remove lid from canister.
3. Remove seal from mouth of canister.
4. Lift flap on canister lid.
5. Pull up corner of canister wipe and snap off and discard. Take the next wipe, twist to a point and thread through dispenser hole in lid.
6. DO NOT PUSH FINGER THROUGH OPENING.
7. Replace lid. Pull out exposed wipe and snap off. The next wipe pops up automatically.
8. Strip center flap down when finished to retain moisture.
9. Do not flush wipe down the toilet.

*** KILLS HIV-1, HBV AND HCV ON PRECLEANED ENVIRONMENTAL SURFACES/OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS**

In health care settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood/body fluids and in which the surfaces/objects likely to be soiled with blood/body fluids can be associated with the potential for transmission of HIV-1 (associated with AIDS), HBV and HCV.

SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HIV-1, HBV, AND HCV ON SURFACES/OBJECTS SOILED WITH BLOOD/BODY FLUIDS.

- **PERSONAL PROTECTION:** When handling items soiled with blood or body fluids, use disposable gloves, gown, masks and eye protection.
- **CLEANING PROCEDURE:** Blood/body fluids must be thoroughly removed from surfaces/objects before application of Micro-Kill Bleach Germicidal Bleach Wipes.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

HOSPITAL DISINFECTION

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3. Remove pre-saturated 7 in x 8 in wipe.
4. Apply pre-saturated towelette and wipe desired surface to be disinfected.
5. Gross soil must be removed prior to disinfecting. A 30 second contact time is required to kill the bacteria and viruses** on the label except 1 minute contact time is required to kill *Candida albicans* and *Trichophyton interdigitale*, a 2 minute contact time is required to kill *Candida auris****, and a 3 minutes contact time is required to kill *Clostridium difficile* spores*. Reapply as necessary to ensure that the surface remains visibly wet for the entire contact time.
6. Allow surface to air dry and discard used wipe and empty canister (see STORAGE AND DISPOSAL).

TO OPEN CANISTER:

1. Always use personal protective equipment.*
2. Remove lid from canister.
3. Remove seal from mouth of canister.
4. Lift flap on canister lid.
5. Pull up corner of canister wipe and snap off and discard. Take the next wipe, twist to a point and thread through dispenser hole in lid.
6. DO NOT PUSH FINGER THROUGH OPENING.
7. Replace lid. Pull out exposed wipe and snap off. The next wipe pops up automatically.
8. Strip center flap down when finished to retain moisture.
9. Do not flush wipe down the toilet.

*** KILLS HIV-1, HBV AND HCV ON PRECLEANED ENVIRONMENTAL SURFACES/OBJECTS PREVIOUSLY SOILED WITH BLOOD/BODY FLUIDS**

In health care settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood/body fluids and in which the surfaces/objects likely to be soiled with blood/body fluids can be associated with the potential for transmission of HIV-1 (associated with AIDS), HBV and HCV.

SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HIV-1, HBV, AND HCV ON SURFACES/OBJECTS SOILED WITH BLOOD/BODY FLUIDS.

- **PERSONAL PROTECTION:** When handling items soiled with blood or body fluids, use disposable gloves, gown, masks and eye protection.
- **CLEANING PROCEDURE:** Blood/body fluids must be thoroughly removed from surfaces/objects before application of Micro-Kill Bleach Germicidal Bleach Wipes.

CONTACT TIME: Allow surface(s) to remain visibly wet for 30 seconds to kill the bacteria and viruses** on the label except a 1 minute contact time is required to kill *Candida albicans* and *Trichophyton interdigitale*, a 2 minute contact time is required to kill *Candida auris****, and a 3 minute contact time is required to kill *Clostridium difficile* spores*.

DISPOSAL OF INFECTIOUS MATERIAL: Blood/body fluids must be autoclaved and disposed of according to local regulations for infectious waste disposal.

SPECIAL INSTRUCTIONS FOR CLEANING PRIOR TO DISINFECTING AGAINST *Clostridium difficile* SPORES.

PERSONAL PROTECTION: Wear appropriate barrier protection such as gloves, gown, mask, or eye covering.

CLEANING PROCEDURE: Fecal matter/waste must be thoroughly cleaned from surfaces/objects before disinfection by application with Micro-Kill Bleach Germicidal Bleach Wipes. Cleaning is to include vigorous wiping and/or scrubbing, until all visible soil is removed. Special attention is needed for high-touch surfaces. Surfaces in patient rooms are to be cleaned in an appropriate manner, such as from right to left or left to right, on horizontal surfaces, and top to bottom, on vertical surfaces, to minimize spreading of the spores. Restrooms are to be cleaned last. Do not reuse soiled wipes.


INFECTIOUS MATERIAL DISPOSAL: Materials used in the cleaning process that may contain feces/wastes are to be disposed of immediately in accordance with local regulations for infectious materials disposal.

*****SPECIAL INSTRUCTIONS FOR CLEANING PRIOR TO DISINFECTING AGAINST *Candida auris*:**

PERSONAL PROTECTION: Wear appropriate barrier protection such as gloves, gowns, masks, or eye covering.

CLEANING PROCEDURE: Fecal matter/waste must be thoroughly cleaned from surfaces/objects before disinfection by application with a clean cloth, mop, and/or sponge saturated with the product. Pre-cleaning is to include vigorous wiping and/or scrubbing and all visible soil is removed. Surfaces in patient rooms are to be cleaned in an appropriate manner, such as from right to left or left to right, on horizontal surfaces, and top to bottom, on vertical surfaces, to minimize spreading of the organism. Restrooms are to be cleaned last. Do not reuse soiled cloths.

INFECTIOUS MATERIAL DISPOSAL: Materials used in the cleaning process that may contain feces/wastes are to be disposed of immediately in accordance with local regulations for infectious materials disposal.



Mrs. Smith's Room

