KENTUCKY INFECTION PREVENTION Training Center
KentuckyIPTraining.org

Infection Prevention BOOT CAMP

Presented by KyIP Training Center

2023

Educate • Collaborate • Prevent Infections

KyIP Training Center
224 E Broadway, Suite 300
Louisville, KY 40202

KyIPTraining.org

Connect with KyIP Training Center on Socials

Welcome.

It is with immense pleasure and a deep sense of purpose that I extend a warm welcome to each of you at the 2023 Infection Prevention Boot Camp. As we gather for this transformative event, we unite in our shared commitment to safeguarding patient health and elevating the standards of infection prevention and control.

The journey we embark upon during these days holds the potential to shape not only our professional growth but also the quality of healthcare we provide to our communities. Together, we will explore cutting-edge strategies, engage in robust discussions, and cultivate a network of colleagues dedicated to excellence in infection prevention.

The challenges we face in healthcare are ever-evolving, and it is our collective knowledge, innovation, and resilience that will drive progress. Each of you brings a unique perspective, experience, and passion to this Boot Camp, making it a rich and dynamic learning environment.

I encourage you to immerse yourself fully in the program, to ask questions, to share your insights, and to forge connections with your fellow participants. It is through this collaborative spirit that we can harness the power of collective wisdom to create safer healthcare environments.

As we delve into the latest research, best practices, and practical skills, let us remember the profound impact our work has on the lives of patients and their families. By honing our infection prevention expertise, we play a crucial role in ensuring that every individual receives care that is not only effective but also safe.

I extend my deepest gratitude to you for choosing to be a part of this transformative experience. Your dedication to the field of infection prevention is commendable, and your presence here signifies your unwavering commitment to advancing patient safety.

Throughout our time together, let us embrace the opportunity for growth, collaboration, and inspiration. Together, we will fortify our knowledge, strengthen our resolve, and leave this Boot Camp as even more formidable champions of infection prevention.

Thank you for being here, and I look forward to the remarkable journey ahead.

Dr. Julia Frith, DNP, RN, CIC
Kentucky Infection Prevention Center (KyIP)
Julia.frith@nortonhealthcare.org

Infection Prevention Boot Camp 2023
Presented by the Kentucky Infection Prevention Training Center.

Intended Audience
Day 1 – Tailored to all frontline healthcare workers including, but not limited to EMS, police, fire, food and nutrition services, technicians (pharmacy, radiology, patient care, etc.), guest services, MDS coordinators.
Day 2 – Tailored for, but not limited to Infection Preventionists, Medical Doctors, healthcare leadership, and healthcare administrators.

Format
Live Presentations and Hands-On Simulations

Continuing Education Credits

Nurses

American Nurses Credentialing Center (ANCC)

Norton Healthcare Institute for Education and Development is approved with distinction as a provider of nursing continuing professional development by the South Carolina Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. This continuing professional development activity has been approved for 5.5 contact hours. In order for nursing participants to obtain credits, they must complete the evaluation and claim attendance by attesting to the number of hours in attendance.

For more information related to nursing credits, contact Sally Sturgeon, DNP, RN, SANE-A, AFN-BC at (502) 446-5889 or sally.sturgeon@nortonhealthcare.org.

EMS
This program is approved by the Kentucky Board of Emergency Medical Services for 4 hours of continuing education for EMS professionals, approval number KBEMS-2023-UofLPF-0010

Educational Methods
- Lectures
- Question and Answer Session
- Simulation
- Handout Material

Evaluation
- A questionnaire will address program content and presentation
- Pre and Post-test will assess knowledge and confidence along with intent to change

Learning Objectives
Day - 1: Participants will understand the fundamentals of infectious diseases, hand hygiene, standard precautions, emergency preparedness, as well as device and environmental cleaning and disinfection. Additionally, these individuals will be able to take this knowledge and apply it in real life settings with confidence in the process.
Day - 2: Participants will be able to directly apply newly learned infection prevention and control strategies, driving positive change within their respective healthcare setting, championing infection prevention and control practices.

Faculty and Planner Disclosure

Norton Healthcare adheres to the American Nurses Credentialing Center's guidelines and standards regarding the influence of commercial support for accredited continuing education as well as the Standards for Commercial Support regarding ineligible company support. During the planning process, all individuals in a position to control the content of the educational activity (planners, presenters, simulation instructors and tabletop exercise facilitators) are required to disclose all financial relationships with ineligible companies and the nature of the relationship. This information is

assessed by the Norton Healthcare Center for Medical, Provider & Nursing Education to ensure an acceptable mitigation of any identified conflicts prior to the activity. In addition, all attendees will be asked to evaluate the speakers' content for bias and balance.

Dr. Hudson Garrett, faculty and planner for this education event, is a Speaker for Accredited Clinical Education for Ansell, Aerobiotix, and UVDI.

Missy Travis, faculty and planner for this educational event, is a consultant for Applied Silver, IVizz and Georgia Pacific.

****All of the relevant financial relationships listed for these individuals have been mitigated****

Table of Contents

Presenters

Julia Frith, DNP, RN, CIC Manager of Program Development and Research at Norton Healthcare. Dr. Frith has been with Norton Healthcare since 2004. She started her nursing career in the pediatric intensive care unit at Norton Children's Hospital. In 2008, Julia began her work in infection prevention. During this time, she has worked to implement evidence based practices focused on infection prevention throughout the health system. Julia engaged in the development of plans for new and emerging pathogens including Ebola and COVID-19.
Dr. Frith received her Bachelor of Science in Nursing from the University of Louisville, a Master's in Nursing Administration from Bellarmine University and her Doctorate in Nursing Practice with an emphasis in Executive Leadership from University of Kentucky. Julia has been certified in Infection Control through the Certification Board of Infection Control and Epidemiology since 2011.
Dr. Frith is an active member of Association for Professionals in Infection Control and Epidemiology (APIC). Currently she serves as a member of the Board and is President Elect for the Kentuckiana APIC chapter. Dr. Frith has served on the National APIC Practice Guidance Committee and is currently the Kentuckiana APIC liaison for Kentucky Society of Healthcare Engineers (KSHE).
In 2020, Dr. Frith received the Kentuckiana APIC Ruthie Award, an award developed in honor of Dr. Ruth Carrico intended to recognize leaders in infection prevention.

Janet Glowicz, PhD, MPH, RN, CIC, LTC-CIP Nurse Infection Preventionist with Project Firstline at the CDC Division of Healthcare Quality Promotion. She has practiced infection prevention in outpatient and acute care settings. At the CDC, Janet has served as the subject matter expert for hand hygiene. Janet enjoys being onsite at healthcare facilities and interacting with frontline personnel as they implement infection control actions.

Hudson Garrett, PhD, MSN, MPH, MBA, LTC-CIP, CIC President and Chief Executive Officer for Community Health Associates and a Adjunct Assistant Professor of Medicine in the Division of Infectious Diseases at the University of Louisville School of Medicine. He holds a Graduate Certificate in Infection Prevention and Infection Control from the University of
South Florida. He has completed the Johns Hopkins Fellows Program in Hospital Epidemiology and Infection Control. He is also a Fellow in the Academy of National Associations of Directors of Nursing Administration and was selected as a Lifetime Member in the Association, which is the highest honor bestowed upon a member.
He holds graduate certificates in healthcare leadership from both Cornell and the University of Notre Dame. He has served on expert panels related to disinfection and sterilization with the United States Food and Drug Administration, Centers for
Disease Control and Prevention, and the Environmental Protection Agency, most notably serving on the FDA's Panel and Working Group for Flexible Endoscope Reprocessing and the EPA's Pesticide Program Dialogue Committee.
Dr. Garrett has lectured around the world and provided testimony to government and regulatory agencies on a variety of topics related to infectious diseases, patient safety, and healthcare leadership

Nimalie Stone, MD Medical Epidemiologist for Long-term Care in the Division of Healthcare Quality Promotion at the Centers for Disease Control and Prevention (CDC). She is a Board-certified infectious disease physician who has a research and clinical background in managing infections and antibiotic resistant pathogens in post-acute and long-term care settings. She completed her internal medicine residency at Johns Hopkins University followed by an infectious disease fellowship at Emory University. Prior to joining CDC, she spent several years providing clinical care and advising infection prevention and control programs for a long-term acute care hospital and affiliated nursing home within the Emory Healthcare system. She continues to hold a faculty appointment within in the Emory University Division of Infectious Diseases.
In her role at CDC, Dr. Stone works to address the needs for infection prevention programs in long-term care. She develops guidelines, educational resources and quality improvement programs to reduce healthcare associated infections and promote antibiotic stewardship in nursing homes.
Dr. Stone advocates strongly for the inclusion of long-term care in educational programs and policies focused on infection prevention in healthcare.

Michael J Curran BSN, RN, EMT-P, NHDP-BC Infection Control Nurse / MDRO Prevention Lead -- Healthcare-Associated Infections and Antimicrobial Resistance (HAI/AR) Prevention Program, Kentucky Department for Public Health (DPH)

Michael Curran received a Bachelor's degree in Biology in 1992 from Providence College, a Bachelor's degree in Nursing in 2016 from Indiana Wesleyan University, and is an MPH candidate in Biosecurity and Disaster Preparedness from Saint Louis University. He had joined the HAI/AR Prevention Program in 2018, focusing his efforts on identifying potential outbreaks of multidrug-resistant organisms and coordinating the public health response to identified outbreaks to minimize transmission of these pathogenic organisms.

Prior to joining the HAI/AR Prevention program, Mr. Curran spent six years working as a staff nurse at UK Healthcare. While working at UK Healthcare, he had volunteered to join the hospital's Serious Communicable Disease Response Team after the hospital was designated as an Ebola Assessment Hospital in 2015. One of the roles on that team was as a Steering Committee member focused on developing training programs for the team members.

In addition to his work on the HAI/AR Prevention Program and with UK Healthcare, Mr. Curran has been a Nurse Specialist for the KY-1 Disaster Medical Assistance Team (DMAT) since 2009. KY-1 DMAT is part of the National Disaster Medical System of the U.S. Department of Health and Human Services. He has been deployed multiple times as part of the response to federally declared disasters, including multiple deployments in response to the COVID-19 pandemic. These deployments since February of 2020 contributed to Mr. Curran receiving the United States Public Health Service's COVID-19 Pandemic Civilian Service medal along with approximately 1,500 others in Indianapolis, IN on August 23, 2022.

Carrell Rush, MPH Foodborne and Waterborne Diseases Epidemiologist for the Kentucky Department for Public Health. With a passion for safeguarding public health, Carrell's expertise lies in meticulously tracing and curbing the spread of pathogens through meticulous research and strategic interventions. Armed with advanced analytical skills, Carrell ensures swift responses to outbreaks, minimizes health risks, and informs policy decisions. Their unwavering commitment to community well-being has solidified them as a frontline defender, actively shaping healthier futures for the state's residents.

Emily Anderson, BSN, RN KY TB Program Manager with the Kentucky Department for Public Health since 2013 and appointed TB Controller in August 2018. She is responsible for the overall supervision and management of daily TB Program operations. She serves as the principle investigator of the TB Cooperative Agreement, Annual Performance Reports, Program Evaluation, and budgets. She has over 20 years combined local and state health department experience. Her varied nursing and public health leadership backgrounds have enabled her to lead state and regional public health initiatives and education for programs such as Tuberculosis, Local Health Quality Assurance and Performance Improvement Audit Team, Maternal and Child Health Coordination, and Family Planning.

Alan Junkins, PhD, D(ABMM) Graduated from the University of Wisconsin in 1991 with a PhD in Bacteriology, with an emphasis in food-borne pathogens, especially *E. coli* O157:H7. He then spent 16 years teaching clinical laboratory sciences students at the Medical University of South Carolina and the University of Iowa, before completing a fellowship in medical and public health microbiology at the University of Iowa. Since becoming the Chief of Microbiology for Norton Healthcare in 2009, Dr. Junkins had special interest in promoting clinically relevant testing and reporting of microbiology results and management of laboratory data.

Elena Swingler, PharmD, MBA, BCIDP Clinical pharmacy specialist in infectious diseases at Norton Women's & Children's Hospital. She graduated from Drake University in Des Moines, Iowa, with Doctor of Pharmacy and Master of Business Administration degrees. She then completed both PGY1 and PGY2 residency training at Aurora St. Luke's Medical Center in Milwaukee, Wisconsin. Her main professional areas of interests include implementing and evaluating antimicrobial stewardship interventions, developing system policy and protocols, antimicrobial resistance, and mycobacterial infections.

KyIP Training Center Boot Camp 2023 Agenda

Day One - October 16th, 2023

Topic	Presenter	Time and Time Allotment
Welcome	Julia Frith, DNP, RN, CIC	8:30 – 8:45 am
Understanding Infectious Diseases • What are infectious diseases? • Transmission routes • Common pathogens • Immunity and susceptibility	Julia Frith, DNP, RN, CIC	8:45 – 9:30 am
Understanding Hand Hygiene • Proper technique • When to perform • Use of hand sanitizer	Janet Glowicz, PhD, MPH, RN, CIC, LTC-CIP	9:30 – 10:15 am
10:15 – 10:30 BREAK		
Environmental Cleaning and Disinfection • Technique • Selection • Frequency	Hudson Garrett, PhD, MSN, MPH, MBA, LTC-CIP, CIC	10:30 – 11:00 am
Standard Precautions + PPE • Types of PPE/when to use • Donning/doffing correctly • Ensuring fit for respirator • Cough etiquette • Past and future trends	Nimalie Stone, MD	11:00 – 12:00 pm
BREAK FOR LUNCH: 12:00 – 1:00 pm		
Standard Precautions + Emergency Preparedness • Understanding types • Proper use of rooms • Implementation of additional measures during an outbreak • How to handle high stress situations and continue IP practice (police/EMS focused)	Hudson Garrett, PhD, MSN, MPH, MBA, LTC-CIP, CIC	1:00 – 2:00 pm
Medical Device Cleaning and Disinfection • Spaulding Classification • Device reprocessing best practice • Manufacturers IFUs and human factors	Hudson Garrett, PhD, MSN, MPH, MBA, LTC-CIP, CIC	2:00 – 2:30 pm
2:30 – 2:45 BREAK AND TRANSITION TO SIMULATIONS		
Rotation Schedule		

Rotation	15 Minutes	15 Minutes	15 Minutes	15 Minutes
PPE1	**Group1**	**Group1**	**Group6**	**Group6**
PPE2	**Group2**	**Group2**	**Group7**	**Group7**
PPE3	**Group3**	**Group3**	**Group8**	**Group8**
PPE4	**Group4**	**Group4**	**Group9**	**Group9**
PPE5	**Group5**	**Group5**	**Group10**	**Group10**
Hand Hygiene1	**Group6**	**Group7**	**Group1**	**Group4**
Cleaning1	**Group7**	**Group6**	**Group3**	**Group1**
Hand Hygiene2	**Group8**	**Group9**	**Group2**	**Group3**
Cleaning2	**Group9**	**Group8**	**Group4**	**Group2**
Hand Hygiene3	**Group10**		**Group5**	
Cleaning3		**Group10**		**Group5**

Closing Remarks	Dr. Julia Frith, DNP, RN, CIC	3:45 – 4:00 pm

Day Two - October 17th, 2023

Topic	Presenter	Time
Welcome	Dr. Julia Frith, DNP, RN, CIC	8:30 – 8:45 am
Up and coming Topics in Infection Prevention and Control – What do you need to know right now? • Coming back from COVID-19 • Conservation of PPE • Changing behavior; panic to "pro"-action	Michael Curran, BSN, RN, EMT-P, NHDP-BC	8:45 – 9:30 am
Reportable Diseases • What and how • What you need to know now • Reporting Requirements • Keeping up-to-date with national guidelines • Conducting regular audits	Carrell Rush, MPH	9:30 – 10:00 am
Tuberculosis • Topic to be defined by Emily	Emily Anderson, BSN, RN	10:00 – 10:45 am
Surveillance and Outbreak Management • Recognizing the signs of potential outbreak • Investigation/Response • Collaboration w/ local health depts. • Communicating with your staff Controlling the outbreak after it has started – device contamination	Michael Curran, BSN, RN, EMT-P, NHDP-BC	10:45 – 11:15 am
Microbiology • Clinical micro updates as they apply to IP • Applying clinical aspects of micro for IP • Engaging the IP o From the desk to frontline with patients o Moving around clinical care areas	Alan Junkins, PhD (ABMM)	11:15 – 11:45 pm
BREAK FOR LUNCH: 11:45 – 12:45 pm		
Device selection • Implants • Sterile products • Glucometer	Hudson Garrett, PhD, MSN, MPH, MBA, LTC-CIP, CIC	12:45 – 1:15
Antimicrobial Stewardship • What is the IP role in AMS • What is the administrator role in AMS • How to affect AU	Elena Swingler, PharmD, MBA, BCIDP	1:15 – 1:45
TRANSITION TO SIMULATION		
Simulation: The spread of infectious diseases: Measles • Individual presents to primary care provider with fever rash and runny nose • Sits in waiting area for 30 minutes before being taken to a room o Upon assessment provider determines this individual is high risk of measles • Now what? • Notification • Testing • Exposures • Waiting room needs	Local Expert from KyIP Training Center	2:00 – 2:30

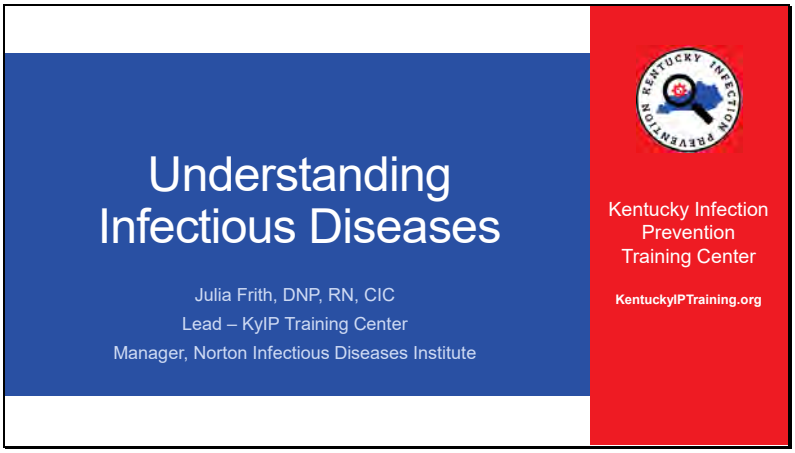
Simulation: Patient admitted to rehab facility after extensive stay in acute care facility secondary to pneumonia
• On admission surveillance testing is done and C. auris is identified
  • What is next?
• Notification
• Notifying the transferring facility
• PPS
  • When do you start
  • What population do you test
  • What if there are positive results
  • What if all are negative
o Exposures
	Local Expert from KyIP Training Center	2:30 – 3:00

Simulation: device cleaning • Scopes • Sterile products • How to select and use cleaning supplies	Local Expert from KyIP Training Center – Hudson Garrett, PhD, MPH	3:00 – 3:30
Putting everything together • Questions from the event attendees • Panel discussion	Panel	3:30 – 4:00

Presentations – Day 1

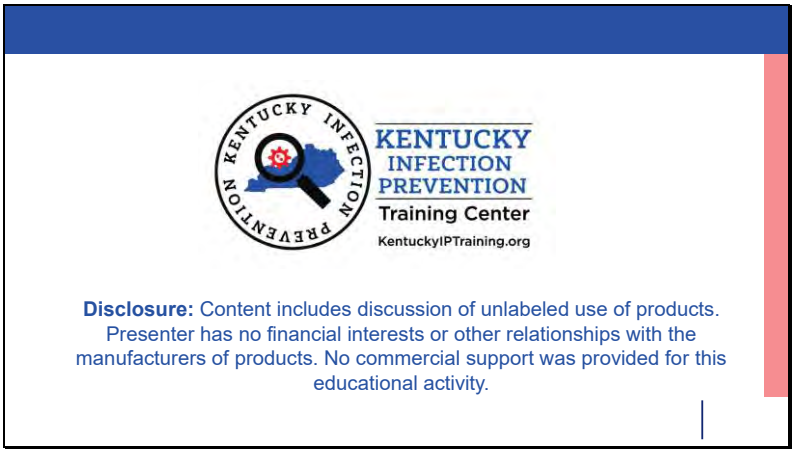
Understanding Infectious Diseases

Slide 1



Slide 2

Slide 3



Slide 4

Objectives

- Be able to describe what is an infectious disease
- Be able to articulate routes of transmission of infectious diseases
- Be able to identify risk for potential spread of infectious diseases
- Be able to identify what puts individuals are risk for infectious diseases

Slide 5

How do we define infectious diseases?

- **Infectious Disease (noun)**
  - *A disease (such as influenza, malaria, meningitis, rabies, or tetanus) caused by the entrance into the body of pathogenic agents or microorganisms (such as bacteria, viruses, protozoans, or fungi) which grow and multiply there*
- **CDC National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)**
  - Infectious diseases
    - *are illnesses caused by germs (such as bacteria, viruses, and fungi) that enter the body, multiply, and can cause an infection.*
    - *Some infectious diseases are contagious (or communicable), meaning they are capable of spreading from one person to another.*
    - *Other infectious diseases can be spread by germs carried in air, water, food, or soil. They can also be spread by vectors (like biting insects) or by animals to humans.*

Infectious disease Definition & Meaning - Merriam-Webster
Who We Are | NCEZID | CDC

Slide 6

What is the global impact?

Widespread Infectious diseases affect people worldwide, regardless of location or socioeconomic status.	**Morbidity and Mortality** Infectious diseases are a leading cause of illness and death globally.	**Economic Burden** They impose a significant economic burden on healthcare systems, businesses, and individuals.	**Vulnerable Populations** Vulnerable populations, such as the elderly, children, and immunocompromised individuals, are at higher risk.
Pandemic Potential Some infectious diseases have pandemic potential, as seen with COVID-19.	**Disruption of Daily Life** Outbreaks can disrupt daily life, including work, travel, and education.	**Global Health Security** Infectious diseases pose a constant threat to global health security.	**Emerging and Re-Emerging** New infectious diseases and resurgences of old ones continually challenge healthcare systems.

Slide 7

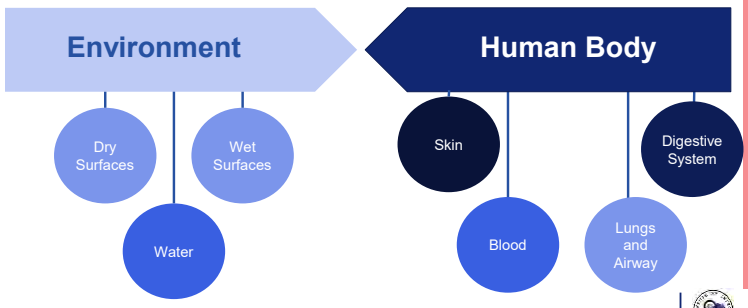
Five Elements of How Germs Spread and Cause Infection

Slide courtesy of CDC: Healthcare Training – Recognizing Risk 508

Kentucky Infection Prevention Training Center

Slide 8

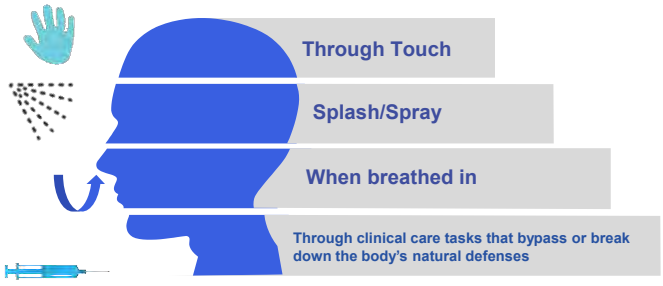
Reservoirs: Where do germs live?



Kentucky Infection Prevention Training Center

Slide 9

Pathways: How do germs spread to people?

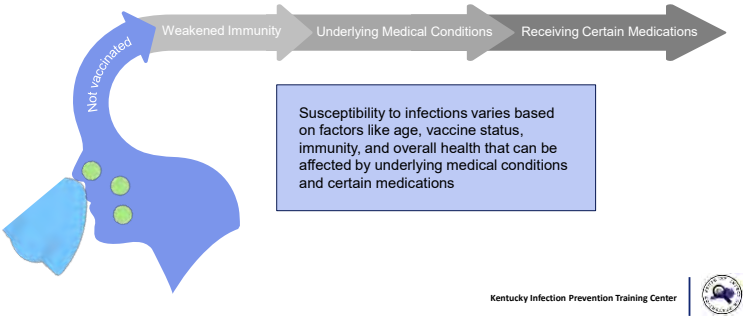


https://www.cdc.gov/infectioncontrol/spread/index.html

Kentucky Infection Prevention Training Center

Slide 10

Susceptibility Factors: Who gets infections easier?



Susceptibility to infections varies based on factors like age, vaccine status, immunity, and overall health that can be affected by underlying medical conditions and certain medications

Slide 11

How does immunity keep us from getting sick?

WHAT IS ACTIVE IMMUNITY		WHAT IS PASSIVE IMMUNITY	
NATURALLY ACQUIRED ACTIVE IMMUNITY	**VACCINE-INDUCED ACTIVE IMMUNITY**	**NATURALLY ACQUIRED PASSIVE IMMUNITY**	**MEDICATION-INDUCED PASSIVE IMMUNITY**
• exposure to the disease organism through infection with the actual disease	• Introduction of a killed or weakened form of the disease organism through vaccination	• Passed to baby through the placenta	• Antibody containing blood-products (immune globulin)
Advantage: Protection is immediate **Disadvantage:** Only last a few months or weeks		**Advantage:** Long-lasting **Disadvantage:** Protection takes time	

https://www.cdc.gov/vaccines/vac-gen/immunity-types.htm

Slide 12

Common Types of Pathogens

Bacterial Infections
- *Staphylococcus aureus* (staph)
- *Clostridioides difficile* (C.diff)

Viral Infections
- Influenza
- COVID-19
- HIV

Fungal Infections
- *Candida auris* (C.auirs)

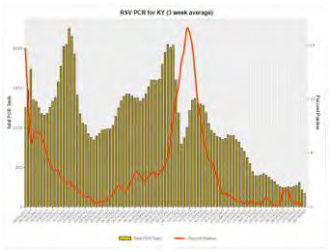
Parasitic Infections
- Malaria
- Tapeworm

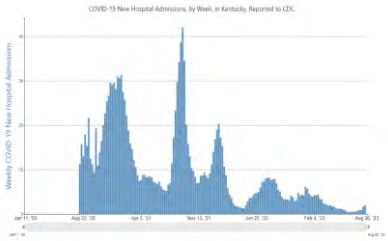
Bacteria → Viruses → Fungi → Parasites

Infectious Diseases | NIH: National Institute of Allergy and Infectious Diseases
Key Facts About Influenza (Flu) | CDC
What is C. diff? | CDC
Healthcare Settings | MRSA | CDC
Workbook: COVID-19 Dashboard (ky.gov)
Tracking Candida auris | Candida auris | Fungal Diseases | CDC
Candida auris: A Drug-resistant Germ That Spreads in Healthcare Facilities | Candida auris | Fungal Diseases | CDC

Slide 13

What about Kentucky? RSV and COVID in KY

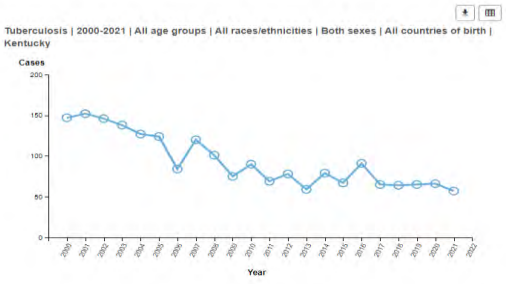




https://www.cdc.gov/surveillance/nrevss/index.html
https://covid.cdc.gov/covid-data-tracker/#datatracker-home

Slide 14

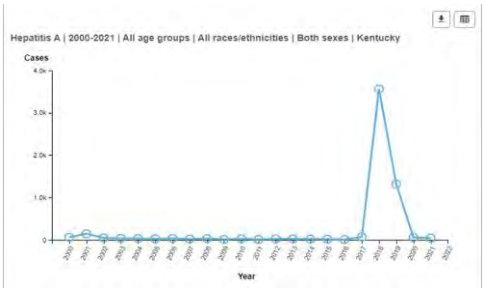
What about Kentucky: TB in KY



https://gis.cdc.gov/grasp/nchhstpatlas/charts.html

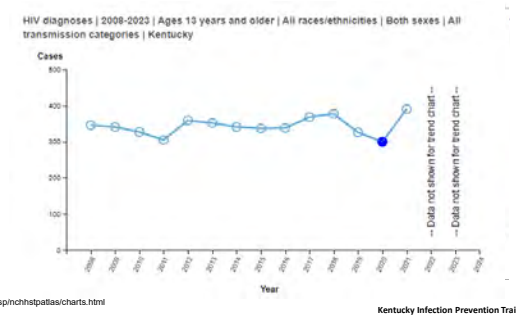
Slide 15

What about Kentucky: Hepatitis A



Slide 16

What about Kentucky: Blood-borne Pathogens



https://gis.cdc.gov/grasp/nchhstpatlas/charts.html

Slide 17

Risk Recognition

- See a potential for a problem to happen
  - Seeing a potential problem doesn't mean the problem will definitely happen!
- Take action to keep something from happening
- How do you recognize risk?
- How does risk recognition change behavior?

Slide 18

Let's Identify the Risks:

What is happening in this photo that could be a risk?

TEXT CODE 99567 to cast your vote

Slide 19

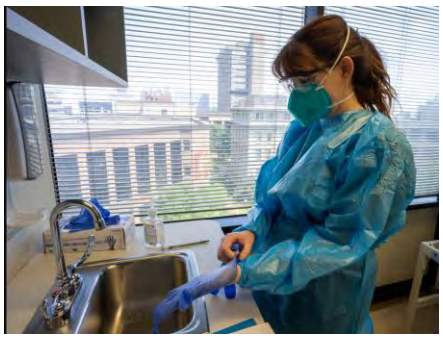
Let's Identify the Risks:

What is happening in this photo that could be a risk?

TEXT CODE 99567 to cast your vote

Kentucky Infection Prevention Training Center

Slide 20



Let's Identify the Risks:

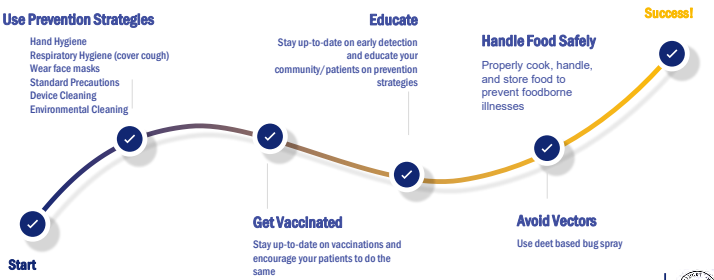
What is happening in this photo that could be a risk?

TEXT CODE 99567 to cast your vote

Kentucky Infection Prevention Training Center

Slide 21

Actions to prevent the spread of infections and why



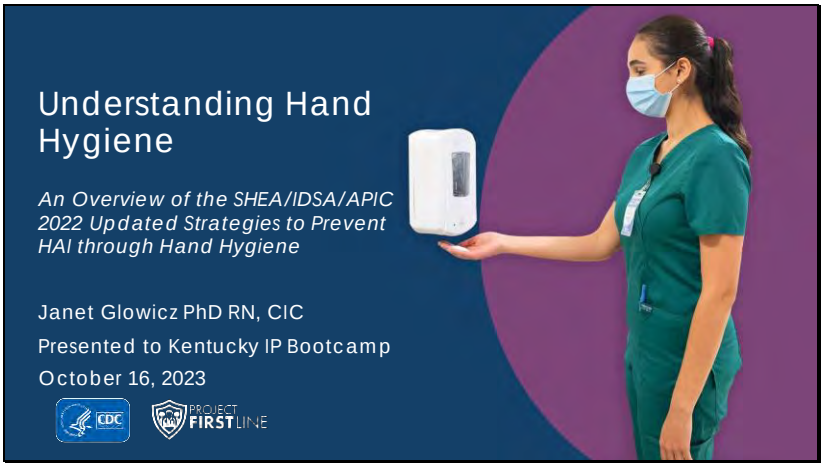
Kentucky Infection Prevention Training Center

Slide 22

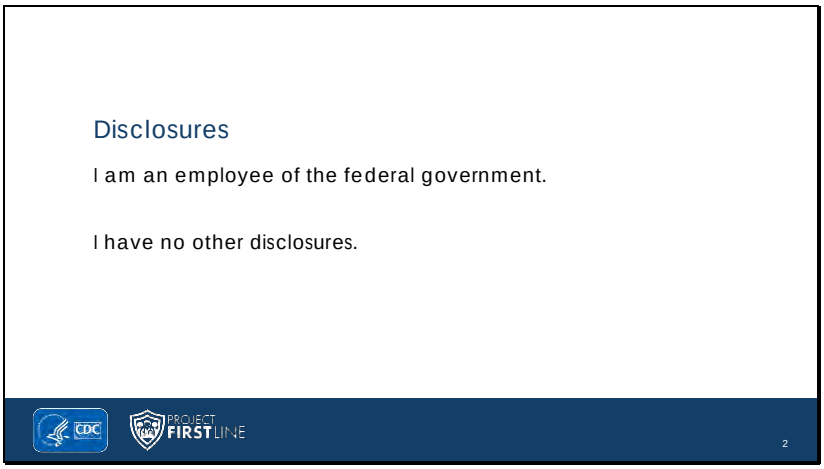

KENTUCKY INFECTION PREVENTION
KENTUCKY
INFECTION
PREVENTION
Training Center
KentuckyIPTraining.org
KentuckyIPTraining.org

Understanding Hand Hygiene

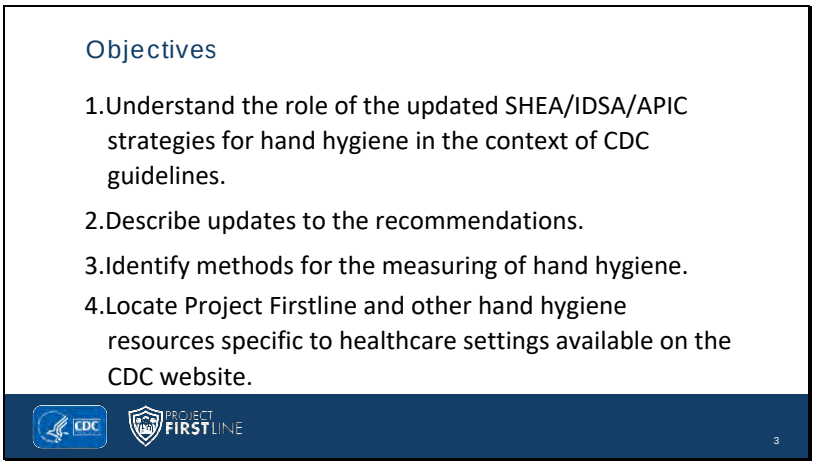
Slide 1



Slide 2



Slide 3



Slide 4

Context for the discussion

CDC Guideline for Hand Hygiene in Healthcare	SHEA/IDSA/APIC Strategies
A thorough evaluation of the current literature	A thorough evaluation of the current literature
Nonregulatory	Nonregulatory
Developed by a federal advising committee	Developed by professionals in the field
Posted to www.regulations.gov and announced in the U.S. *Federal Register* for public comment	Published by a peer-reviewed journal
Enduring, foundational document	Published at regular intervals as updates to the literature

The SHEA *Compendium of Strategies to Prevent Healthcare-Associated Infections* does not replace or supplant CDC Guidelines.

Slide 5

Poll

The frontline personnel at my facility tell me that the skin on their hands has stayed the same or improved since they began working in healthcare.

- Yes
- No

Slide 6

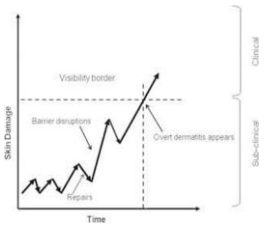
Hand Hygiene begins with healthy hand skin and nails

Slide 7

Healthcare challenges the workers hand health!

Contact Dermatitis
- Common
- Damage may occur before clinical symptoms
  - Chapping, sensory changes

- Irritants:
  - Water, friction, gloves, disinfectants
- Allergens:
  - Rubber accelerators, chlorhexidine gluconate



PROJECT FIRSTLINE

Slide 8

RECOMMENDED

Promote Healthy Hands!
Healthy skin...

Prevent dermatitis through preferential use of alcohol-based hand sanitizer (ABHS)

Engage all healthcare workers in primary prevention of dermatitis

Provide:
- Readily accessible facility-approved hand moisturizers
- Cotton glove liners with education on use if irritation occurs

PROJECT FIRSTLINE

Slide 9

RECOMMENDED

...and
fingernails

- Short and natural
- Not longer than the fingertip

- Scrubbed surgical personnel should not wear nail polish

PROJECT FIRSTLINE

Infection Control & Hospital Epidemiology, 44(3), 355-376. doi:10.1017/ice.2022.304

Slide 10

Clean hands as indicated by CDC and WHO

WHO Moments	CDC Indication
1	Immediately before touching a patient
2	Before performing an aseptic task (eg, placing an indwelling device or handling invasive medical devices)
3	After contact with blood, body fluids, or contaminated surfaces
4	After touching a patient
5	After touching the patient environment
★	Before moving from work on a soiled body site to a clean body site on the same patient
★	Immediately after glove removal
In addition, wash hands when visibly soiled, before eating, and after using the restroom.[a]	

Remove jargon! Instead of "perform hand hygiene" say, "clean your hands"

Slide 11

FDA regulates healthcare antiseptics

Alcohol-based hand sanitizer (ABHS) is regulated as an over-the-counter drug

- Disease specific prevention claims are not allowed

FDA has requested new safety data on 6 active ingredients

Benzalkonium chloride	Ethyl alcohol
Benzethonium chloride	Isopropyl alcohol
Chloroxylenol	Povidone-iodine

Increased use and improved testing methods are in place to reevaluate safety of antiseptics

Slide 12

Select Appropriate Products

- Choose ABHS with at least 60% alcohol in liquid, gel, or foam
- Involve healthcare workers in selection
- Ask manufacturers for organism specific data
- Make sure dispensers provide an adequate dose/volume

Slide 13

Non-alcohol-based hand sanitizer

Benzalkonium chloride (BK)

- Provides persistent activity
- Effectively reduces *S. aureus* and SARS-CoV-2

Concerns:

- Lack of evidence against gram negative organisms
- Risk of contamination with *Burkholderia cepacia*
- Absorption may pose health threats

Non–alcohol-based hand sanitizers should not be used in clinical settings

PROJECT FIRSTLINE

13

Slide 14

Alcohol-based hand sanitizer

Ethanol and Isopropyl Alcohol

Ethanol may be more effective against some nonenveloped viruses than isopropyl alcohol

Inactive ingredients may enhance action

Concerns:

- Absorption – not detectable or like drinking fermented nonalcoholic drinks (apple cider)
- Allowing hands to dry fully before entering an isolette may prevent even very low exposure to alcohol among neonates

PROJECT FIRSTLINE

14

Slide 15

Alcohol-based hand sanitizer

Adverse events have occurred in community Settings

- Pediatric ophthalmologic injury
- Intentional consumption of methanol contaminated ABHS

PROJECT FIRSTLINE

15

Slide 16

Poll

Have you ever had to look around to find alcohol-based hand sanitizer in a patient care area?

- Yes
- No

Slide 17

"If they can't see the hand hygiene station, they won't look for it."

CDC Vessel Sanitation

In a study evaluating where to place ABHS dispensers:

- HCW clean their hands in the hallway more than half the time;
- Once they are inside a room, HCW clean their hands just inside the doorway
- Accessibility to ABHS is difficult to achieve in crowded spaces or when there is no dedicated bed space

Slide 18

The importance of infrastructure

ABHS dispensers must be
- Unambiguous
- Visible
- Accessible within the workflow

Minimum number of ABHS dispensers
- One at entry to the room
- One inside the room

Slide 19

Poll

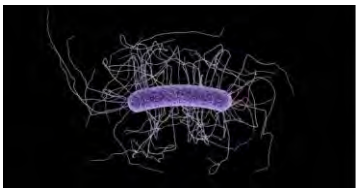
During an outbreak of *C. difficile* ABHS should be removed from clinical areas.

- Yes
- No

19

Slide 20

Difficult to kill organisms



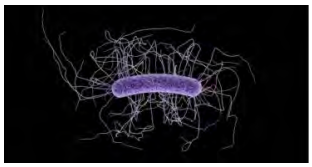
- Non-enveloped viruses
  - Norovirus, Hepatitis A
- Spore forming bacteria
  - *C. difficile*

Effective handwashing is only achieved with thorough technique

20

Slide 21

Difficult to kill organisms



- Non-enveloped viruses
  - Norovirus, Hepatitis A
- Spore forming bacteria
  - *C. difficile*

Effective handwashing is only achieved with thorough technique

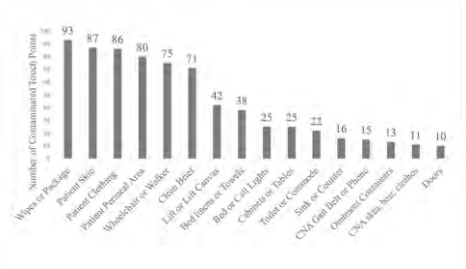
RECOMMENDED

Prevent hand contamination by using gloves

21

Slide 22

Use gloves with care!



Items touched by CNAs in Long-Term Care while wearing contaminated gloves

Slide 23

Double gloving and disinfection of gloves

Double gloving DOES NOT prevent hand contamination when gloves are removed

Disinfection may break down material

Not recommended during routine care

Slide 24

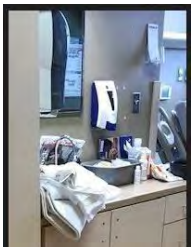
Ensure appropriate glove use

- Use gloves when contact with organisms that are less susceptible to biocides is expected
- Educate about potential for self ad environmental contamination
- Clean hands immediately after glove removal

Slide 25

Sinks and sink drains

In a study using video surveillance, only 5% of activity around sinks was related to hand washing!



Slide 26

Reduce environmental contamination from sinks and sink drains

In this picture:

- Faucet with point-of-use filter
- Splash Guard
- Paper towels are not over sink
- Gloves are outside of splash zone

Slide 27

Poll

Have you experienced conflict or pushback when communicating with other healthcare workers during data collection or when communicating about the need to clean hands?

- Yes
- No

Slide 28

Suboptimal monitoring of adherence

- Biased data
- Skepticism about data
- Failure to improve adherence
- Workplace bullying

Slide 29

Monitor using multiple method

Method	Use	Strength	Weakness	Considerations
Direct overt observation	Gold standard for evaluation of technique	Immediate feedback on lapses	Inherent bias	Do not use to report rates of adherence
Direct covert observation	Establish baseline adherence rate	Barriers and facilitators can be identified	High risk for bias	Take steps to reduce bias
Automated handhygiene systems	Supplements direct observation	More complete data	Unable to evaluate technique	Rigorously evaluate validity
Patient as observer	Outpatient settings	Potential patient satisfier	Limited moments can be observed	Allows for sharing of patient feedback with provider
Audits of supplies	Assess infrastructure	Assures functionality and availability	May not be amenable to change	Can be performed regularly during rounds

Slide 30

Ambiguous or results lower than expected may not be shared with the frontline workers

Green – good
Yellow – ok
Red – bad

The petri dish handprint consisted of small, moderate, or large numbers of bacteria

Feedback was provided to nurse managers with no guidance on how to use the tool

Feedback may not have been shared with the frontline workers

Slide 31

Provide timely, meaningful feedback to the frontline workers

Feedback is most valuable when

- Performance is suboptimal
- Provided by a supervisor or colleague
- Provided more than once
  - Verbally
  - In writing

Slide 32

Engage and Educate workers: bite-sized, ongoing education

Positive messages

"Keeping hands clean is a team effort"

vs.

"Healthcare workers clean their hands less than half the times they should"

4 new animated videos are available on the CDC Hand Hygiene in Healthcare Settings website.

Slide 33

Scenario-based education

Escape rooms

Build your own adventure

Project Firstline "Fidgety Felix"

More in development

Slide 34

How to Get Involved and Feedback

Project Firstline on CDC.gov:
https://www.cdc.gov/infectioncontrol/projectfirstline/index.html

CDC's Project Firstline on Facebook:
https://www.facebook.com/CDCProjectFirstline

CDC's Project Firstline on Twitter:
https://twitter.com/CDC_Firstline

Project Firstline *Inside Infection Control* on YouTube:
https://www.youtube.com/playlist?list=PLvrp9iOILTQZ_QGtDnSDGViKDdRtIc13VX

To sign up for Project Firstline e-mails, click here:
https://tools.cdc.gov/campaignproxyservice/subscriptions.aspx?topic_id=USCDC_2104

- *Healthcare Risk Recognition in Action* video clip: https://www.cdc.gov/infectioncontrol/projectfirstline/videos/RiskRecognitioninAction-LowRes.mp4
- Project Firstline feedback form: https://www.cdc.gov/infectioncontrol/pdf/projectfirstline/TTK-ParticipantFeedback-508.pdf

PROJECT FIRSTLINE

34

Slide 35

Questions?

With appreciation to all who save lives with clean hands!

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention

Cleaning and Disinfection Best Practices

Slide 1

Slide 2

Objectives

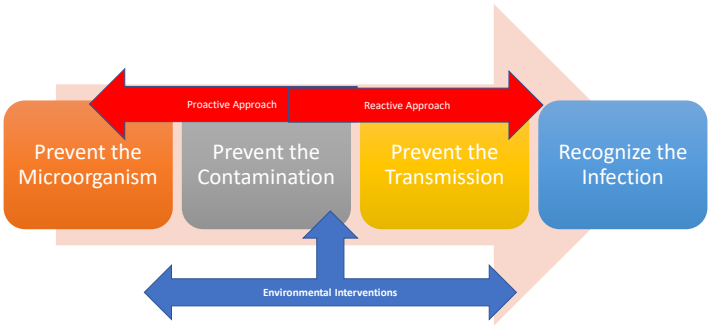
- Review the importance of cleaning and disinfection in reducing HAIs across the healthcare continuum of care
- Discuss the regulatory framework of disinfection in the United States
- Review how to appropriate select germicide agents using an evidence-based framework to ensure efficacy and safety

Slide 3

What is our Strategic Goal with the Environment of Care?

Slide 4

Slide 5



Slide 6

Evolution of Disinfection in the US

Most Commonly Use Disinfectants:

- High-Concentration Alcohol-Based
- Chlorine-Based
- Phenol-Based
- Quaternary amine-based
- Quaternary amine and Low-Concentration Alcohol
- Accelerated Hydrogen Peroxide

Novel Technologies:

- Silver Dihydrogen
- Hypochlorous acid
- Antimicrobial Environmental Surfaces
- UV Disinfection
- Room Fogging
- Electrostatic Spraying

Slide 7

Application to Today's Times

Table 3

Persistence of the two main SARS-CoV-2 surrogates (HCoV 229E and SARS-CoV) on different types of inanimate surfaces. Reference to the studies are available in the original article (Kampf et al. 2020).

Type of surface	Virus strain	Viral Titre	Temperature	Persistence
Aluminium	HCoV 229E and OC43	10^3-$5x10^3$	21 °C	2–8 h
Metal	SARS-CoV P9	10^5	Room Temperature	5 days
Wood	SARS-CoV P9	10^5	Room Temperature	4 days
Paper	SARS-CoV GVU6109 and P9	10^5–10^6	Room Temperature	3 h to 5 days
Glass	SARS-CoV P9	10^5–10^6	Room Temperature	2–5 days
Plastic	SARS-CoV FFM1, HKU39849, and P9	10^5–10^7	20–25 °C	2–5 days
PVC	HCoV 229E	10^3	21 °C	5 days
Silicon rubber	HCoV 229E	10^3	21 °C	5 days
Surgical glove (latex)	HCoV 229E and OC43	5×10^3	21 °C	≤8 h
Disposable gown	SARS-CoV GVU6109	10^3–10^6	Room Temperature	1 h to 2 days
Ceramic	HCoV 229E	10^3	21 °C	5 days
Teflon	HCoV 229E	10^3	21 °C	5 days

Slide 8

Slide 9

What Application Works Best?

Slide 10

Considerations

- Room Turnover
- Operational Efficiencies
- Presence of Patients or Staff
- Environmental Conditions
- Others?

Slide 11

Possibilities

- Manual Cleaning
- Manual Disinfection
- UV Disinfection
- Fogging
- Electrostatic Spraying

Slide 12

Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA)

- Regulates the use of EPA-registered products ranging from hairspray to disinfectants
- Leverages federal penalties for off-label usage
- Not often enforced nationally
- Can be used with competitor disputes about product marketing/labeling
- EPA has a formal complaint process normally thru the regional office where the manufacturer is located

Slide 13

Best Practices for Germicide Selection

- EPA-Registered Disinfectant
- Hospital-Grade
- Broad-Spectrum
- Intermediate Level
- Low Overall Contact Time
- Equipment "Friendly"
- Safe for Residents and HCPs
- Excellent Safety Profile

Slide 14

The "ESC" Phenomenon…..

Efficacy: Does it Work? Is it going to kill the relevant microorganisms in your facility? Use the Antibiogram to guide selection.

Safety: Is it Safe for the Resident, Healthcare Team, and Environment?

Compatibility: Will damage my commonly used environmental surfaces and/or medical devices?

Slide 15

Key Facility-Specific Questions to Consider

What am I going to use it for?

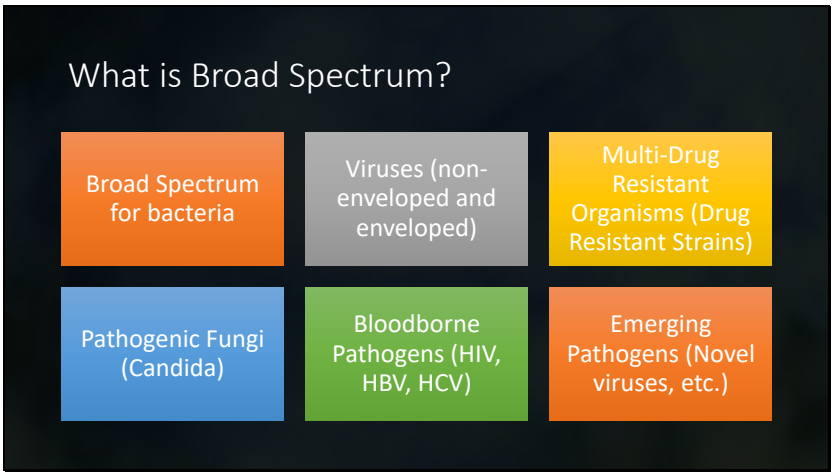
Who will be using it?

Where will they be using it?

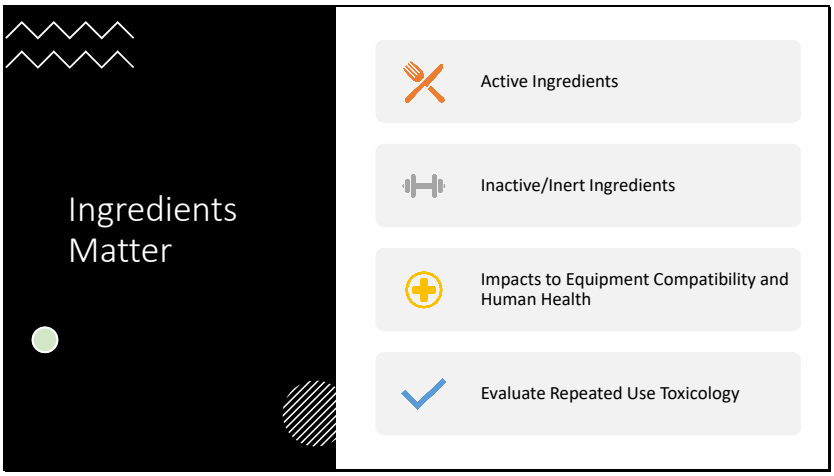
How often will they be using it?

Who else will be around when it is used?

Slide 16



Slide 17



Slide 18

Slide 19

Core vs. Adjunctive Approach to Environmental Hygiene

- **CORE:**
  - Cleaning
  - Disinfection
  - Environmental Monitoring
  - Hand Washing
  - Use of PPE
  - Visitor Restrictions
  - Electrostatic
- **ADJUNCTIVE:**
  - UV
  - Electrostatic
  - Gas/Fogging
  - Cubicle Curtains
  - Novel Technologies
  - Antimicrobial Environmental Surfaces

Slide 20

Combination Approaches to Environmental Disinfection?

Slide 21

Disinfectant Technology Product Selection Questions

01	02	03	04	05
Does it work?	Does it meet your clinical requirements?	Is the contact time reasonable?	Is it safe for patients and staff?	What technologies should be used?

Slide 22

What is the Risk of New Technologies?

- Product Registration?
- Instructions for Use?
- Risks to Patients/Staff from Exposure?
- Room Clearance Procedure?

Slide 23

Slide 24

Levels of Disinfectant Par Levels & Pandemic Readiness

Conventional: Normal Product Use, No B/Os, No product substitution, RTU Product Formats

Contingency: Alternate Product Use due to B/O and supply chain issues, Alternate Product Formats

Crisis: Alternate Product Usage and Formats

Slide 25

Available Product Formats

Conventional: RTU Wipes, Sprays, & Liquids

Contingency: Alternate RTU Sprays & Liquids, UV, Electrostatic Spraying

Crisis: Dilutable and Mass Batch Liquids, Tabs, and Other Concentrates, Electrostatic Devices, UV, Electrostatic Spraying

Slide 26

Quick Summary and Next Steps

- Disinfection plays a pivotal role in preventing HAIs but is often indirectly appreciated
- Ensure appropriate training of all product users
- Implement robust product evaluation, training, and monitoring
- Become the internal expert and collaborate with EVS on the journey

Slide 27

References

- Guideline for Disinfection and Sterilization in Healthcare Facilities, Centers for Disease Control and Prevention, 2008.
- **CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings, Centers for Disease Control and Prevention, 2022.**
- **EPA Disinfectant Label Review Manual, 2016.**

Slide 28

Stay Connected

Contact Information: Dr. Garrett

- Email: Hudson.garrett@Louisville.edu
- Twitter: @DrHudsonGarrett
- Facebook: @DrHudsonGarrett
- LinkedIn: @DrHudsonGarrett

Standard Precautions and PPE

Slide 1

National Center for Emerging and Zoonotic Infectious Diseases

Standard, Transmission-Based and Enhanced Barrier Precautions: Concepts and application

Nimalie D. Stone, MD, MS
Division of Healthcare Quality Promotion

KY IP Bootcamp
October 2023

Slide 2

Points for discussion

- Review types of Precautions used to disrupt the spread of pathogens in healthcare settings
- Discuss how post-acute and long-term care settings have unique considerations when addressing emerging multidrug-resistant organisms
- Define Enhanced Barrier Precautions as a strategy for preventing transmission to/from high-risk nursing home residents

Slide 3

Case Presentation

- Larry is a community-dwelling 87-year-old man who is admitted to the skilled nursing facility after a fall with hip fracture with ORIF.

Slide 4

Case Presentation

Which infection prevention precautions should be implemented?

a) Standard Precautions
b) Droplet Precautions
c) Contact Precautions
d) Airborne Precautions
e) Enhanced Barrier Precautions

Slide 5

Case Presentation

Which infection prevention precautions should be implemented?

a) Standard Precautions
b) Droplet Precautions
c) Contact Precautions
d) Airborne Precautions
e) Enhanced Barrier Precautions

Slide 6

Standard Precautions

Slide 7

Personal Protective Equipment (PPE) & Precautions

Standard Precautions

HCP assess their risk of exposure to potentially infectious materials for each activity being performed and implement practices and PPE to prevent possible exposure

Transmission-Based Precautions

Used when the route(s) of transmission are not completely interrupted using Standard Precautions alone. PPE is just one intervention to reduce risk of transmission

Slide 8

Transmission-Based Precautions: Current paradigm

Transmission-Based Precautions
(https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html)

Slide 9

Transmission-Based Precautions: Proposed paradigm

Air

Touch

- Recommendations for Transmission-Based Precautions utilize multiple layers of intervention (i.e., hierarchy of engineering and administrative controls, and personal protective equipment) that exist in healthcare settings to reduce transmission risk

HICPAC, June 2023: Isolation Precautions Guideline Workgroup (cdc.gov)

Slide 10

Considerations for disrupting transmission by air

- Individuals breathing, speaking, coughing generate aerosols of respiratory secretions that can contain infectious organisms
- All pathogens that spread via air, have higher risk over short distances due to greater concentrations of infectious particles in the air near an infectious person
  - Source control: A mask or respirator reduces the amount of secretions released into the environment by the wearer, reducing exposure of people in a shared space to respiratory pathogens
- Spatial separation, respiratory hygiene/cough etiquette, ventilation (air flow/filtration), surface disinfection are all important factors to reduce risk

Slide 11

Case Presentation Continued

- Larry required a multimodal pain regimen that led to acute urinary retention for which an indwelling catheter was placed.
- Two weeks later, he was sent to the hospital and found to have a catheter associated-UTI (CAUTI) due to carbapenem resistant Pseudomonas – the same organisms a neighboring roommate had cultured from a wound down the hall.

Slide 12

Snapshot of Multidrug-Resistant Organism (MDRO) Carriage in Nursing Homes

Facilities with skilled units (n=14)

Median: 58% MDRO carriage

Facilities with ventilator units (n=4)

Median: 76% MDRO carriage

- Frequent pathogens: MRSA (25-60%) and ESBL (~30%)
- Median CRE prevalence: 10% in NHs with vents

McKinnell JA et al. Clin Infect Dis. 2019. 69(9):1566-1573

Slide 13

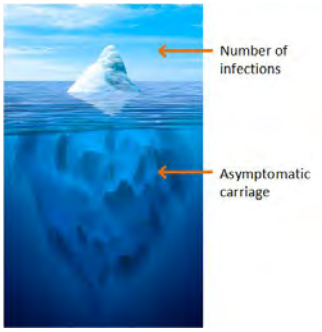
Unrecognized MDRO Carriage in Nursing Homes

McKinnell JA et al. Clin Infect Dis. 2019. 69(9):1566-1573

Slide 14

Challenges with Detection of MDROs

- Clinical cultures underestimate true prevalence of MDROs.
- Most centers are not performing active surveillance to identify asymptomatic, colonized residents.
  - ***Contribute to the reservoir for transmission***
- Inadequate communication about individual MDRO history or risk factors between healthcare facilities during care transitions



Slide 15

Risks for MDRO Colonization and Acquisition

Expanding post-acute population with healthcare exposures including:

- Indwelling medical devices (e.g., urinary catheter, PEG tube, tracheostomy/vents, central line)
- Presence of wounds or decubitus ulcers
- Antibiotic use in prior 3 months, particularly fluoroquinolones
- Recent hospitalization
- Comorbid medical conditions
- Increased functional dependence

Prolonged length of stay also increases opportunities for spread.

Slide 16

Carbapenemase-Producing Organisms (CPOs): Emerging Resistance Threat

- Produce enzymes that breakdown carbapenems
- Carry resistance genes on mobile genetic elements, called plasmids, that can be easily spread
- Cause invasive infections associated with high mortality rates due to few effective antibiotic treatment options
- Emerging throughout the United States and around the globe

Slide 17

Carbapenemases found in CPOs

- Multiple different mechanisms can cause high level resistance.
  - Examples of Carbapenemase-producing genes found in CRE (CP-CRE)
    - **KPC** - *Klebsiella pneumoniae* carbapenemase (most common in U.S.)
    - **NDM** – New Delhi Metallo-β-lactamase
    - **VIM** – Verona Integron-encoded Metallo- β -lactamase
    - **OXA** – Oxacillinase-48-type carbapenemases
    - **IMP** – Imipenemase Metallo- β –lactamase
- These genes have been reported in Enterobacterales, *Pseudomonas aeruginosa* and *Acinetobacter baumannii.*
- Public health laboratories offer carbapenemase testing.

Slide 18

Candida auris

- Emerging fungal pathogen
- Tends to be drug-resistant
- Colonized individuals have risk of invasive infection
  - 5-10% develop *C. auris* bloodstream infection within a year
- Yeast that spreads easily in healthcare settings, similar to resistant bacteria

Slide 19

Containment Strategy

Systematic public health response to slow the spread of emerging AR

Detection

Often responding to a single case

Infection Control

Onsite assessment using standardized tools

Contact Screening

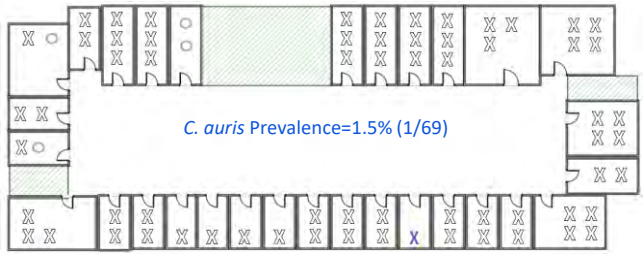
Available through public health labs (ARLN)

Regular infection control assessments and screening (point prevalence surveys) until transmission stops.

ARLABnetwork

Slide 20

Ventilator Floor March 2017 *C. auris* Prevalence



X *C. auris* positive (1)

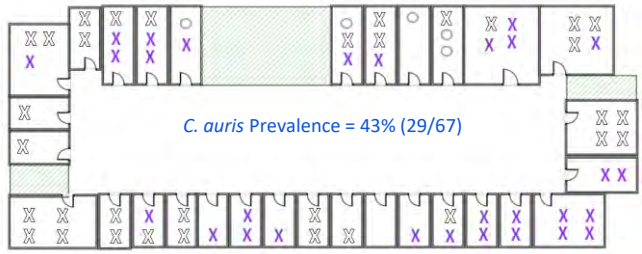
X Screened negative for *C. auris* (64)

○ Not tested for *C. auris* (refused or not in room) (4)

Slide courtesy of Chicago Department of Public Health.

Slide 21

Ventilator Floor January 2018 *C. auris* Prevalence



X *C. auris* positive (29)

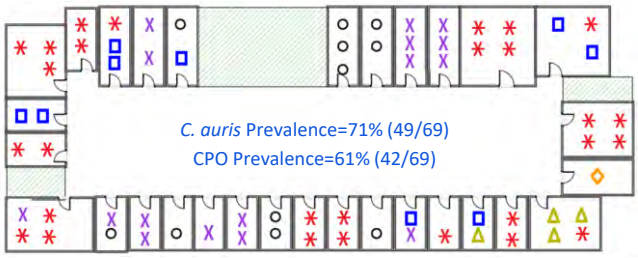
X Screened negative for *C. auris* (33)

○ Not tested for *C. auris* (refused or not in room) (5)

Slide courtesy of Chicago Department of Public Health.

Slide 22

Ventilator Floor October 2018 *C. auris* and CPO Prevalence



- *C. auris* positive (16)
- *C. auris*, and KPC-CPO (28)
- KPC-CPO (9)
- *C. auris*, KPC-CPO, NDM-CPO (1)
- *C. auris*, KPC-CPO, VIM-CPO (4)
- No known CPO or *C. auris* (11)

Slide courtesy of Chicago Department of Public Health.

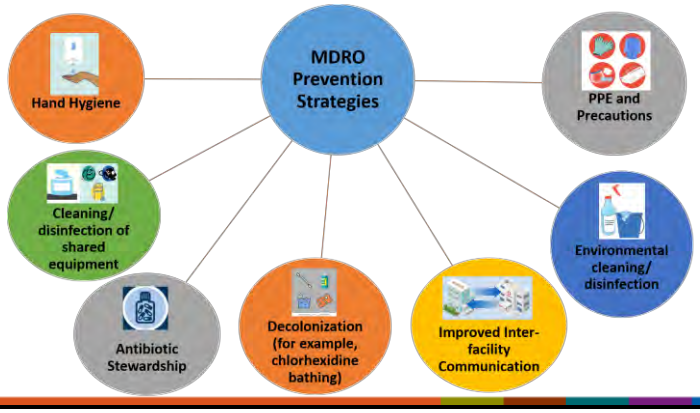
Slide 23

Common Infection Control Challenges Identified During MDRO Outbreak Responses

- Gaps in adherence to hand hygiene, limited access to alcohol-based hand rubs inside and outside of resident rooms
- Limited access to personal protective equipment (PPE) and minimal use of Contact Precautions
- Improper product selection, use and access to reduce environmental surface contamination within shared rooms
- Inadequate cleaning/disinfection of equipment shared between residents
- Incomplete communication of MDRO history or risk factors during inter-facility transfers between acute and post-acute care centers

Slide 24

MDRO Prevention: Novel and Core Strategies



Slide 25

Implementing PPE Use and Enhanced Barrier Precautions in Nursing Homes

Slide 26

Difficulty in Applying Transmission-Based Precautions for MDROs in Nursing Homes

- "Transmission-Based Precautions must be used when a resident develops **signs and symptoms** of a transmissible infection"
- "Facility policies must identify type and **duration** of Transmission-Based Precautions"
- "Transmission-Based Precautions should be the **least restrictive possible** for the resident based on his/her clinical situation and used for the **least amount of time**"
- "Once the resident is **no longer a risk for transmitting the infection**… **removing Transmission-Based Precautions is required**"

Department of Health and Human Services. Centers for Medicare and Medicaid Services. Rev. 173, 11-22-17.
State Operations Manual Appendix PP: Guidance to Surveyors for Long Term Care Facilities [PDF – 749 pages]

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

Slide 27

Difficulty in Applying Transmission-Based Precautions for MDROs in Nursing Homes

- "Transmissior resident develops sign on"
- "Facility policies must identify type and **duration** of Transmission-Based Precautions"
- "Transmission-Based Precautions should be the **least restrictive possible** for the resident based on his/her clinical situation and used for the **least amount of time**"
- "Once the resident is **no longer a risk for transmitting the infection**… **removing Transmission-Based Precautions is required**"

Colonization ≠ Infection

Department of Health and Human Services. Centers for Medicare and Medicaid Services. Rev. 173, 11-22-17.
State Operations Manual Appendix PP: Guidance to Surveyors for Long Term Care Facilities [PDF – 749 pages]

https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

Slide 28

Difficulty in Applying Transmission-Based Precautions for MDROs in Nursing Homes

- "Transmissio[n] resident develops **sign**[ificant] **Colonization ≠ Infection** [infe]ction"
- "Facility policies must identify type and **duration** of Transmission-Based Precautions"
- "Transmis[sion] **Duration of MDRO colonization can be prolonged (>6 months)** [ef]**ve possible** f[or] d used for the **least** [a]
- "Once the resident is **no longer a risk for transmitting the infection**… **removing Transmission-Based Precautions is required**"

Department of Health and Human Services. Centers for Medicare and Medicaid Services. Rev. 173, 11-22-17.
State Operations Manual Appendix PP: Guidance to Surveyors for Long Term Care Facilities [PDF – 749 pages]
https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

Slide 29

Difficulty in Applying Transmission-Based Precautions for MDROs in Nursing Homes

- "Transmissio[n] resident develops **sign**[ificant] **Colonization ≠ Infection** [infe]ction"
- "Facility policies must identify type and **duration** of Transmission-Based Precautions"
- "Transmis[sion] **Duration of MDRO colonization can be prolonged (>6 months)** [ef]**ve possible** f[or] d used for the **least** [a]
- "Once [the resident is **no longer a risk for transmitting the infection**]… **remov**[e] **Resident remains at risk for transmitting the MDRO even when not actively infected**

Department of Health and Human Services. Centers for Medicare and Medicaid Services. Rev. 173, 11-22-17.
State Operations Manual Appendix PP: Guidance to Surveyors for Long Term Care Facilities [PDF – 749 pages]
https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf

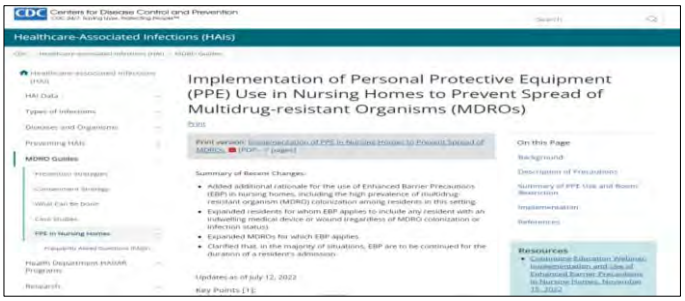
Slide 30

The Need for a New Approach

- Clarification of how and when to use PPE and room restriction to prevent the spread of MDROs
- Balanced approach to managing the prolonged colonization and preventing the silent spread of MDROs
- Addresses care of nursing homes residents at-risk of acquiring colonization

Slide 31

Enhanced Barrier Precautions (EBP): Guidance for Nursing Homes to Prevent MDRO Spread



Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs)
https://www.cdc.gov/hai/containment/PPE-Nursing-Homes.html

Slide 32

"***Enhanced Barrier Precautions*** expand the use of PPE beyond situations in which exposure to blood and body fluids is anticipated

and refer to the **use of gown and gloves during high-contact resident care activities** that provide opportunities for transfer of MDROs to staff hands and clothing."

Slide 33

High-contact Resident Care Activities

Dressing	Bathing/Showering	Transferring	Providing Hygiene
Changing Linens	Changing Briefs or Assisting with Toileting	**Device Care or Use** • Indwelling catheter • Trach/vent • Central line • Feeding tube	**Wound Care** • Generally defined as the care of any skin opening requiring a dressing

Slide 34

Original Article

Transmission of resistant Gram-negative bacteria to healthcare personnel gowns and gloves during care of residents in community-based nursing facilities

ORIGINAL ARTICLE

Transmission of Methicillin-Resistant *Staphylococcus aureus* (MRSA) to Healthcare Worker Gowns and Gloves During Care of Nursing Home Residents

Antimicrobial Agents and Chemotherapy

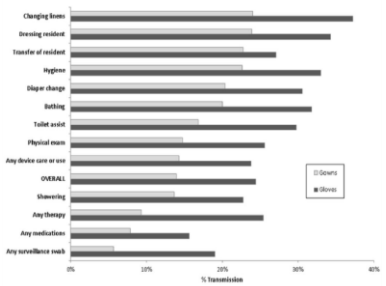
Transmission of Resistant Gram-Negative Bacteria to Health Care Worker Gowns and Gloves during Care of Nursing Home Residents in Veterans Affairs Community Living Centers

American Journal of Infection Control

Transmission of methicillin-resistant Staphylococcus aureus to health care worker gowns and gloves during care of residents in Veterans Affairs nursing homes

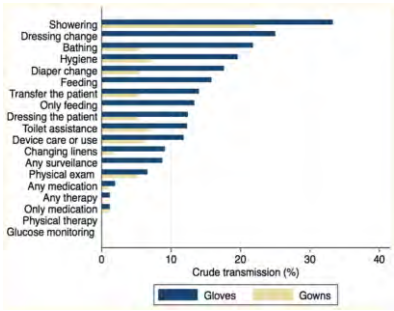
Slide 35

Transmission of MRSA to Gowns and Gloves



MRSA Total: 954 interactions among 113 residents

Transmission of R-Gram Negative Bacteria to Gowns and Gloves



R-GNB Total: 1,489 interactions among 128 residents

Roghmann et al. Infect Control Hosp Epidemiol. 2015 September; 36(9): 1050-1057; Blanco et al. Infect Control Hosp Epidemiol (2018), 39, 1425-1430

Slide 36

Case Presentation Continued

- Upon returning from the hospital, Larry started to improve. He began to ambulate, was without any skin breakdown, and was voiding spontaneously.
- Unfortunately, Larry developed acute diarrhea. He tested positive for *C difficile.*

Slide 37

Case Presentation

Which infection prevention precautions should be implemented?

a) Standard Precautions
b) Droplet Precautions
c) Contact Precautions
d) Airborne Precautions
e) Enhanced Barrier Precautions

Slide 38

Case Presentation

Which infection prevention precautions should be implemented?

a) Standard Precautions
b) Droplet Precautions
c) Contact Precautions
d) Airborne Precautions
e) Enhanced Barrier Precautions

Slide 39

Contact Precautions should be used:

- **All residents infected or colonized with a targeted multidrug-resistant organism in specific situations:**
  - Presence of acute diarrhea
  - Presence of draining wounds or other sites of secretions or excretions that are unable to be kept covered or contained
  - For a limited time period on units or in facilities during an investigation of a suspected or confirmed MDRO outbreak
- **For infections (e.g., C. difficile, norovirus, scabies) and other conditions where Contact Precautions is recommended**
  - Type and duration of Precautions Recommended for Selected Infections and Conditions of the CDC Guideline for Isolation Precautions: Appendix A | Isolation Precautions | Guidelines Library | Infection Control | CDC

Slide 40

Enhanced Barrier Precautions:

Use EBP when performing high-contact resident care activities and for residents who meet criteria for the use of EBP

- Resident does not need a private room
- Resident may participate in communal activities and is not restricted to room
- Intended to be used for the resident's entire length of stay in the facility

MDROs Targeted by CDC:

- Pan-resistant organisms
- Carbapenemase-producing carbapenem-resistant Enterobacterales
- Carbapenemase-producing carbapenem-resistant *Pseudomonas spp.*
- Carbapenemase-producing carbapenem-resistant *Acinetobacter baumannii* (CR-AB)
- *Candida auris*

Slide 41

Resources

Implementation of Personal Protective Equipment (PPE) Use in Nursing Homes to Prevent Spread of Multidrug-resistant Organisms (MDROs)
https://www.cdc.gov/hai/containment/PPE-Nursing-Homes.html

Frequently Asked Questions (FAQs) about Enhanced Barrier Precautions in Nursing Homes
https://www.cdc.gov/hai/containment/faqs.html

Considerations for Use of Enhanced Barrier Precautions in Skilled Nursing Facilities
https://www.cdc.gov/hicpac/workgroup/EnhancedBarrierPrecautions.html?msclkid=39038417aed311ec8c868e1e03c50297

Project Firstline
https://www.cdc.gov/infectioncontrol/projectfirstline/healthcare/videos-graphics.html

CDC Train: Infection Preventionist Training Course
Nursing Home Infection Preventionist Training Course - CDC TRAIN - an affiliate of the TRAIN Learning Network powered by the Public Health Foundation

Infection Prevention and Control Assessment Tool for Long-Term Care Facilities
https://www.cdc.gov/infectioncontrol/pdf/icar/ltcf.pdf

Slide 42

Thank you!

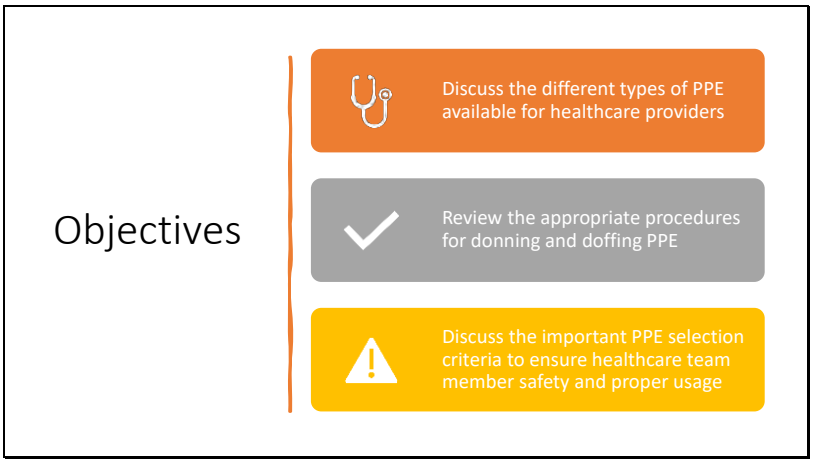
Questions?

Nursing Homes and Assisted Living (Long-term Care Facilities [LTCFs])

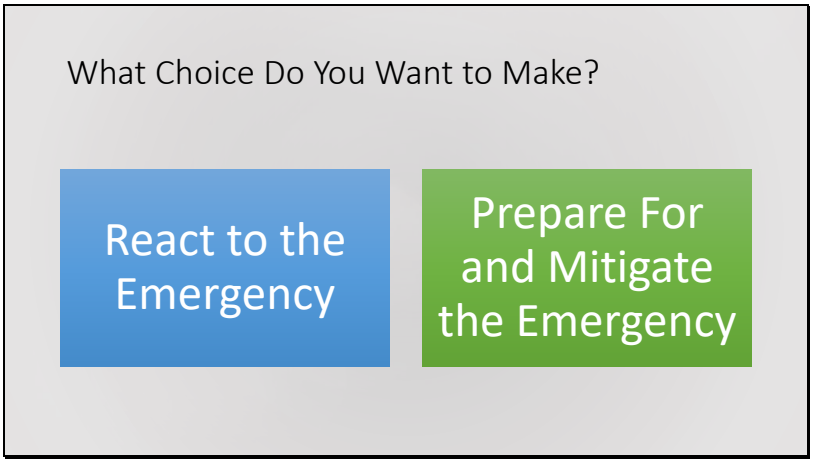
Emergency Preparedness

Slide 1

Slide 2



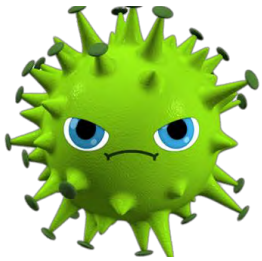
Slide 3



Slide 4

Slide 5

Stop the Transmission of Bad Bugs!



- Contaminated Hands of the HCP or Patient
- Contaminated Clinical Environment of Care
- Contaminated Patient's Skin

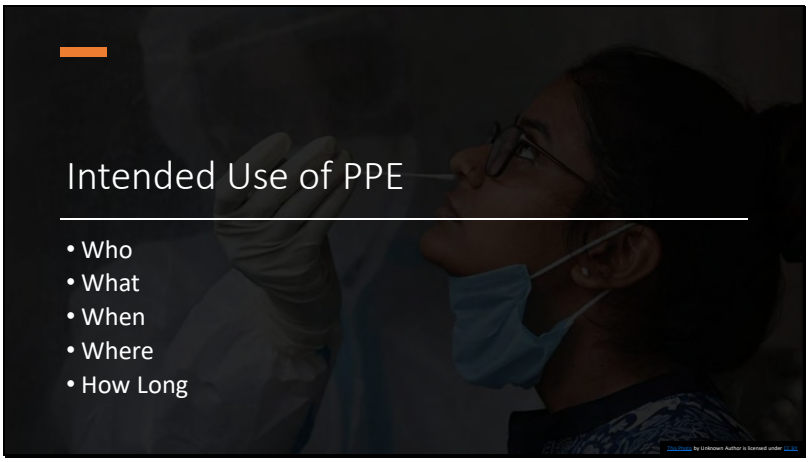
Slide 6

What is PPE?

- "specialized clothing or equipment worn by an employee for protection against infectious materials"

Source: OSHA

Slide 7



Slide 8

Who Regulates PPE Products Used in Healthcare Settings?

FDA
U.S. Food and Drug Administration
Protecting and Promoting *Your* Health

Slide 9

OSHA vs. CDC: Who Rules?

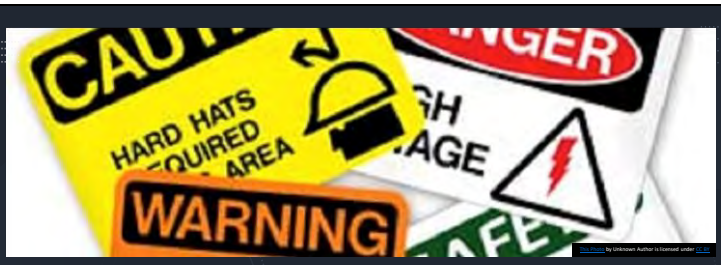
- OSHA issues workplace health and safety regulations. Regarding PPE, employers must:
  - Provide appropriate PPE for employees
  - Ensure that PPE is disposed, or reusable PPE is cleaned, laundered, repaired and stored after use
- OSHA also specifies circumstances for which PPE is indicated
- CDC recommends when, what and how to use PPE

Slide 10

Applicable OSHA Standards to PPE Usage

- Bloodborne Pathogens Standard
- Needlestick Prevention Act
- General Duty Clause

Slide 11



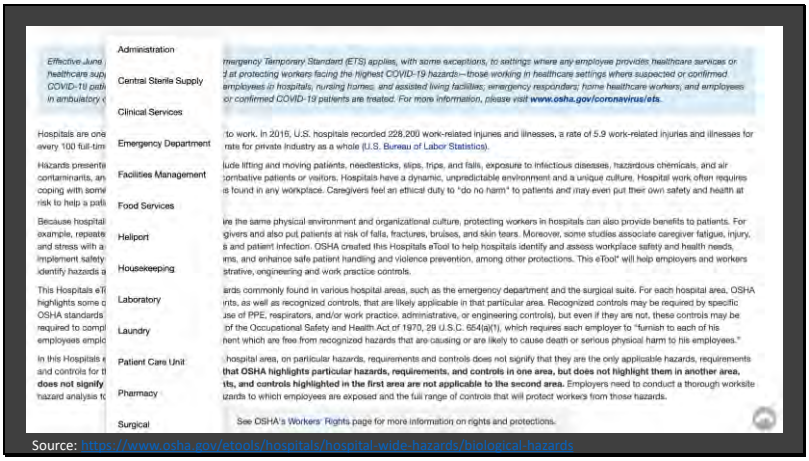
OSHA General Duty Clause

- However, under OSHA's General Duty Clause PPE is required for any potential infectious disease exposure.
- Employers must provide their employees with appropriate PPE and ensure that PPE is disposed or, if reusable, that it is properly cleaned or laundered, repaired and stored after use.

Slide 12

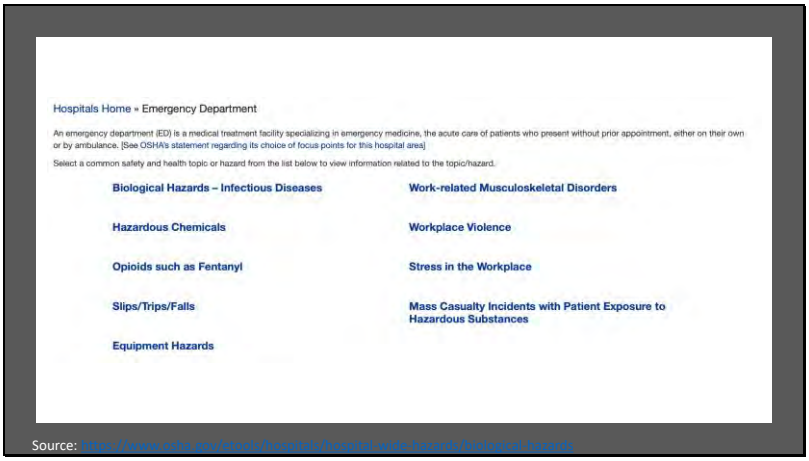
To Access OSHA eTOOL:
https://www.osha.gov/etools/hospitals/hospital-wide-hazards/biological-hazards

Slide 13



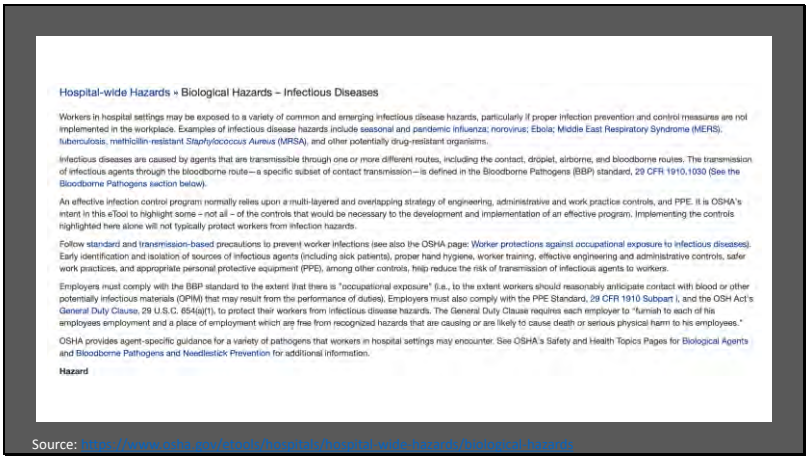
Source: https://www.osha.gov/etools/hospitals/hospital-wide-hazards/biological-hazards

Slide 14



Source: https://www.osha.gov/etools/hospitals/hospital-wide-hazards/biological-hazards

Slide 15



Source: https://www.osha.gov/etools/hospitals/hospital-wide-hazards/biological-hazards

Slide 16

Requirements under OSHA's Bloodborne Pathogens Standard, 29 CFR 1910.1030

- Establish Universal Precautions:
  - Universal Precautions: An approach to infection control that treats all human blood and certain human bodily fluids as if they were infectious for HIV and HBV or other bloodborne pathogens. [29 CFR 1910.1030(b)]
  - The requirement to use Universal Precautions in the Bloodborne Pathogens Standard [29 CFR 1910.1030(d)(1)] means implementing the precautions required by the standard (e.g., engineering and work practice controls, appropriate PPE such as gloves, masks, and gowns) whenever there is exposure to blood or OPIM (or in some cases other body fluids).
  - Alternative concepts in infection control are called Body Substance Isolation and Standard Precautions. These alternatives define all body fluids and substances as infectious, and OSHA permits the implementation of these approaches, as an alternative to universal precautions, provided that facilities utilizing them adhere to all other provisions of the Bloodborne Pathogens Standard.
- All procedures involving blood or other potentially infectious materials shall be performed in such a manner as to minimize splashing, spraying, spattering, and generation of droplets of these substances. [29 CFR 1910.1030(d)(2)(vi)]
- Ensure that employees use appropriate personal protective equipment (PPE), (e.g., gloves, gowns, face masks), as required by the standard, when there is anticipated blood or OPIM exposure. [29 CFR 1910.1030(d)(2)(i), 29 CFR 1910.1030(d)(3)(i)]
- Provide handwashing facilities (see definition in standard) which are readily accessible to employees. Ensure that employees wash their hands immediately or as soon as feasible after removal of gloves or other personal protective equipment, and that employees wash hands and any other skin with soap and water, or flush mucous membranes with water immediately or as soon as feasible following contact of such body areas with blood or other potentially infectious materials. [29 CFR 1910.1030(d)(2)(iii), 29 CFR 1910.1030(d)(2)(v), 29 CFR 1910.1030(d)(2)(vi)]
  - If there has been no occupational exposure to blood or OPIM (as defined in 29 CFR 1910.1030(b)), the use of alcohol-based hand cleansers, as described in the 2002 CDC "Guideline for Hand Hygiene in Health-Care Settings," would be appropriate.

OSHA requires employers to ensure that the biosafety officer or other responsible person conducts an exposure determination to determine the exposure of workers to blood or OPIM throughout the hospital setting. [29 CFR 1910.1030(c)(2)(i)].

Source: https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030

Slide 17

Hierarchy of Controls

- Training and administrative controls
- Engineering controls
- Work practice controls
- Personal protective equipment

Source: Centers for Disease Control and Prevention

Slide 18

Common Types of PPE

- **Gloves:** protect hands
- **Gowns/aprons:** protect skin and/or clothing
- **Masks and respirators**: protect mouth/nose Respirators – protect respiratory tract from airborne infectious agents
- **Goggles:** protect eyes
- **Face shields:** protect face, mouth, nose, and eyes

Source: Centers for Disease Control and Prevention

Slide 19

Important Considerations for PPE Selection

- Type of exposure anticipated:
  - Splash/spray versus touch
  - Category of isolation precautions
- Durability and appropriateness for the task
- Fit

Source: Centers for Disease Control and Prevention

Slide 20

Glove Important Caveats

- Purpose: patient care, environmental services, other
- Glove material: vinyl, latex, nitrile, other
- Sterile or nonsterile
- One or two pair
- Single use or reusable

Source: Centers for Disease Control and Prevention

Slide 21

Important Caveats for Gowns/Aprons

Purpose of use

Material:

- Natural or man-made
- Reusable or disposable
- Resistance to fluid penetration

Clean or sterile

Slide 22

Slide 23

Levels of Gown Protection

Level 1: *Minimal risk*, to be used, for example, during basic care, standard isolation, cover gown for visitors, or in a standard medical unit

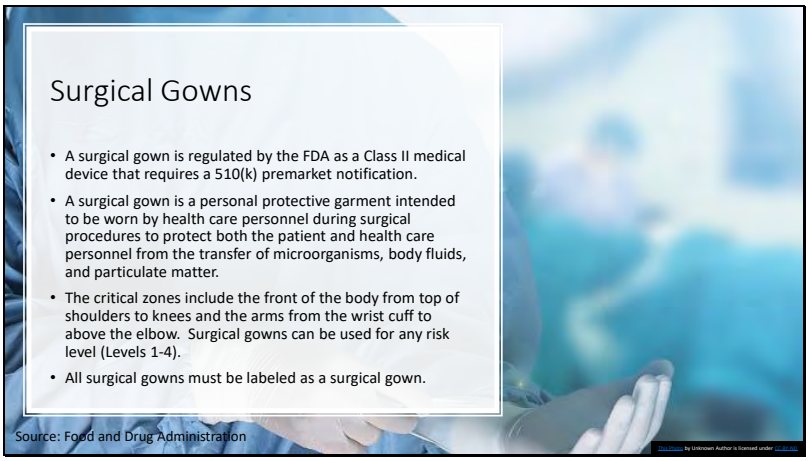
Level 2: *Low risk*, to be used, for example, during blood draw, suturing, in the Intensive Care Unit (ICU), or a pathology lab

Level 3: *Moderate risk*, to be used, for example, during arterial blood draw, inserting an Intravenous (IV) line, in the Emergency Room, or for trauma cases

Level 4: *High risk*, to be used, for example, during long, fluid intense procedures, surgery, when pathogen resistance is needed or infectious diseases are suspected (non-airborne)

Source: Food and Drug Administration

Slide 24

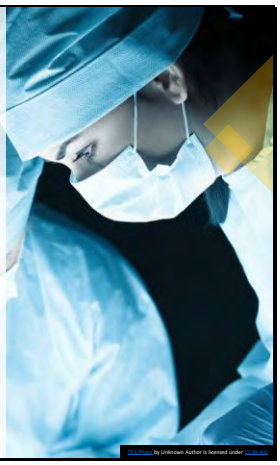


Slide 25

Surgical Isolation Gowns

- Surgical isolation gowns are used when there is a medium to high risk of contamination and a need for larger critical zones than traditional surgical gowns.
- Surgical isolation gowns, like surgical gowns, are regulated by the FDA as a Class II medical device that requires a 510(k) premarket notification.
- All areas of the surgical isolation gown except bindings, cuffs, and hems are considered critical zones of protection and must meet the highest liquid barrier protection level for which the gown is rated.
- All seams must have the same liquid barrier protection as the rest of the gown.
- Additionally, the fabric of the surgical isolation gown should cover as much of the body as is appropriate for the intended use.

Source: Food and Drug Administration



Slide 26

Critical Zones for Surgical Gowns

- The entire front of the gown (areas A, B, and C) is required to have a barrier performance of at least level 1.
- The critical zone compromises at least areas A and B.
- The back of the surgical gown (area D) may be nonprotective.

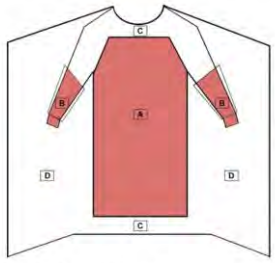


Figure 1 - Critical Zones for Surgical Gowns

Source: Food & Drug Administration

Slide 27

Critical Zones for Surgical Isolation Gowns

- The entire gown (areas A, B, and C), including seams but excluding cuff, hems, and bindings, is required to have a barrier performance of at least Level 1.
- Surgical isolation gowns are used when there is a medium to high risk of contamination and need for larger critical zones than traditional surgical gowns.

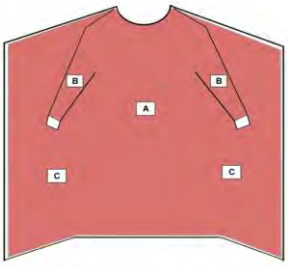


Figure 2 - Critical Zones for Surgical Isolation Gowns and Non-Surgical Gowns

Source: Food & Drug Administration

Slide 28

What is the Standard for Surgical Gowns?

- American Society for Testing and Materials (ASTM) F2407 is an umbrella document which describes testing for surgical gowns:
  - tear resistance
  - seam strength
  - lint generation
  - evaporative resistance
  - water vapor transmission.

Source: Food and Drug Administration

Slide 29

Summary of ASTM F2407 standard

- Tensile Strength: ASTM D5034, ASTM D1682
- Tear resistance: ASTM D5587(woven), ASTM D5587 (nonwoven), ASTM D1424
- Seam Strength: ASTM D751 (stretch woven or knit)
- Lint Generation (ISO 9073 Part 10)
- Water vapor transmission (breathability) ASTM F1868 Part B, ASTM D6701 (nonwoven), ASTM D737-75

Source: Food and Drug Administration

Slide 30

Face/Eye Coverings Important Caveats

- **Masks:** protect nose and mouth
  - Should fully cover nose and mouth and prevent fluid penetration
  - Procedure, Surgical, or Respirator
- **Goggles:** protect eyes
  - Should fit snuggly over and around eyes
  - Personal glasses not a substitute for goggles
  - Antifog feature improves clarity

Source: Centers for Disease Control and Prevention

Slide 31

Levels of ASTM Mask Protection

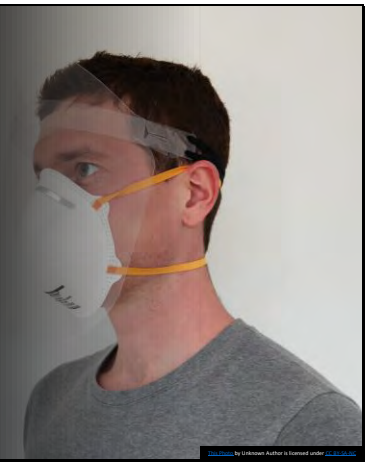
- **Level 1: low barrier protection** for general use for low-risk, nonsurgical procedures and exams that do not involve aerosols, sprays and fluids. An ear loop mask is a level 1 mask. ASTM level 1 masks are the general standard for both surgical and procedural use.
- **Level 2: moderate barrier protection** for low-to-moderate levels of aerosols, sprays and fluids.
- **Level 3: maximum barrier protection** for any situation that has the potential for exposure to heavy levels of aerosols, sprays and fluids.

Source: ASTM Mask Standard

Slide 32

Face Shields

- Face shields: protect face, nose, mouth, and eyes
- Should cover forehead, extend below chin and wrap around side of face



Source: Centers for Disease Control and Prevention

Slide 33

Respiratory Protection

- Purpose: protect from inhalation of infectious aerosols (e.g., Mycobacterium tuberculosis)
- PPE types for respiratory protection
  - Particulate respirators
  - Half-or full-face elastomeric respirators
  - Powered air purifying respirators (PAPR)

Source: Centers for Disease Control and Prevention

Slide 34

Elements of Respiratory Protection Program

- Medical evaluation
- Fit testing
- Training
- Fit checking before use

Source: Centers for Disease Control and Prevention

Slide 35

General PPE Tips of the Trade

- Don before contact with the patient, generally before entering the room
- Use carefully – don't spread contamination
- Remove and discard carefully, either at the doorway or immediately outside patient room; remove respirator outside room
- Immediately perform hand hygiene

Source: Centers for Disease Control and Prevention

Slide 36

Donning PPE: Correct Sequence

1) Hand Hygiene
2) Gown first
3) Mask or respirator
4) Goggles or face shield
5) Gloves

Source: Centers for Disease Control and Prevention

Slide 37

Doffing PPE: Correct Sequence

1) Gloves
2) Face shield or goggles
3) Gown
4) Mask or respirator
5) Hand Hygiene

Source: Centers for Disease Control and Prevention

Slide 38

Product Selection & Evaluation Tips

- Know the intended use
- Evaluate regulatory classification and registration
- Review available clinical data
- Review ease of transition from current product
- Review occupational exposure data to determine previous trends related to PPE
- Evaluate with representative user base

Slide 39

OSHA Required Training

- When it is necessary
- What kind is necessary
- How to properly put it on, adjust, wear and take it off
- The limitations of the equipment
- Proper care, maintenance, useful life, and disposal of the equipment

Source: Occupational Safety and Health Administration

Slide 40

Special Circumstances Call for Special Approaches

Examples of healthcare work tasks associated with exposure risk levels

Lower (caution)	Medium	High	Very High
• Performing administrative duties in non-public areas of healthcare facilities, away from other staff members. Note: For activities in the lower (caution) risk category, OSHA's *Interim Guidance for Workers and Employers of Workers at Lower Risk of Exposure* may be most appropriate.	• Providing care to the general public who are not known or suspected COVID-19 patients. • Working at busy staff work areas within a healthcare facility.	• Entering a known or suspected COVID-19 patient's room. • Providing care for a known or suspected COVID-19 patient not involving aerosol-generating procedures.	• Performing aerosol-generating procedures (e.g., intubation, cough induction procedures, bronchoscopies, some dental procedures and exams, or invasive specimen collection) on known or suspected COVID-19 patients. • Collecting or handling specimens from known or suspected COVID-19 patients.

Source: Occupational Safety & Health Administration

Slide 41

OSHA Safe Workplaces & PPE Enforcement

01

Differentiate clean areas (e.g., where PPE is put on) from potentially contaminated areas (e.g., where PPE is removed);

02

Handle waste and other potentially infectious materials; and

03

Clean, disinfect, and maintain reusable equipment and PPE.

Source: Occupational Safety and Health Administration

Slide 42

Levels of PPE Usage

- Conventional
- Contingency
- Crisis

Source: Centers for Disease Control and Prevention

Slide 43

Homework List

TO DO LIST

- Determine Intended Use
- Simulated Use Training Rules
- Optimize PPE Usage
- Evaluate the Program Effectiveness

Slide 44

Additional Tools & Resources

- http://www.cdc.gov/niosh/npptl/respirators/respsars.html
- http://www.cdc.gov/niosh/99-143.html
- http://www.cdc.gov/niosh/topics/respirators
- https://www.osha.gov/coronavirus/control-prevention/healthcare-workers
- https://www.osha.gov/etools

Slide 45

References

- Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, Centers for Disease Control and Prevention, 2007.
- **CDC's Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings, Centers for Disease Control and Prevention, 2022.**

Slide 46

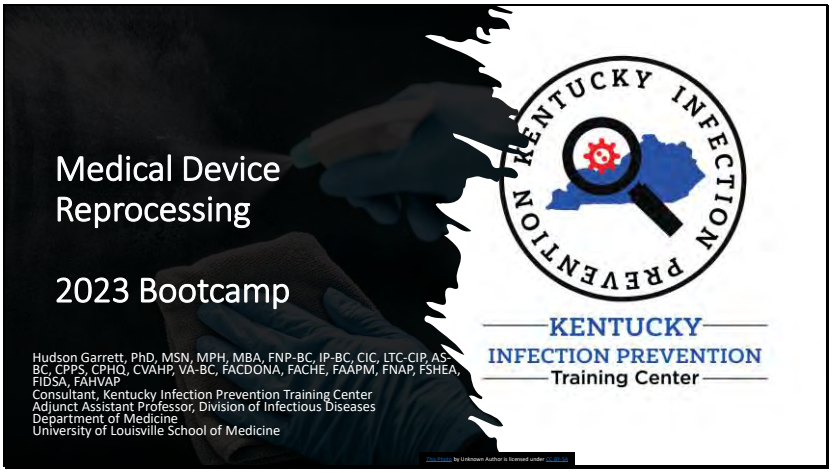
Stay Connected

Contact Information: Dr. Garrett

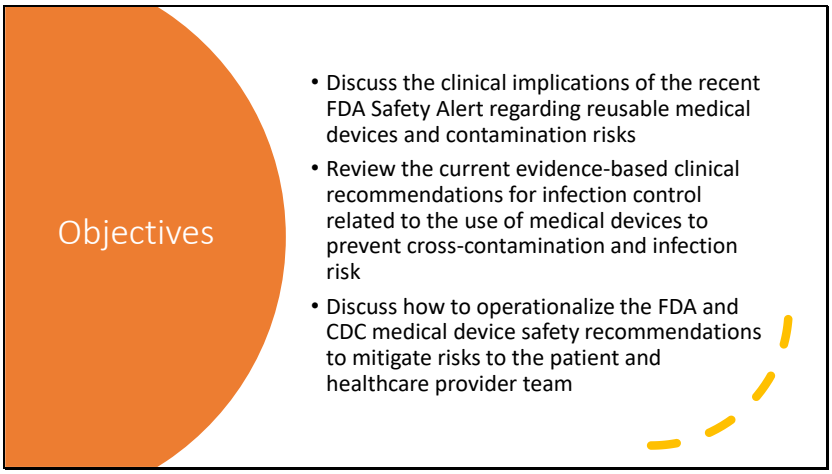
- Email: Hudson.garrett@Louisville.edu
- Twitter: @DrHudsonGarrett
- Facebook: @DrHudsonGarrett
- LinkedIn: @DrHudsonGarrett

Medical Device Reprocessing

Slide 1



Slide 2



Slide 3

Slide 4

What exactly are ”Reusable Medical Devices”?

- All reusable medical devices can be grouped into one of three categories according to the degree of risk of infection associated with the use of the device:
  - Critical devices, such as surgical forceps, come in contact with blood or normally sterile tissue.
  - Semi-critical devices, such as endoscopes, come in contact with mucus membranes.
  - Non-critical devices, such as stethoscopes, come in contact with unbroken skin.

Source: https://www.fda.gov/medical-devices/reprocessing-reusable-medical-devices/what-are-reusable-medical-devices

Slide 5

Outbreaks Associated with Glucometers

- Using fingerstick devices for more than one person
- Using a blood glucose meter for more than one person without cleaning and disinfecting it in between uses
- Using insulin pens for more than one person
- Failing to change gloves and perform hand hygiene between fingerstick procedures

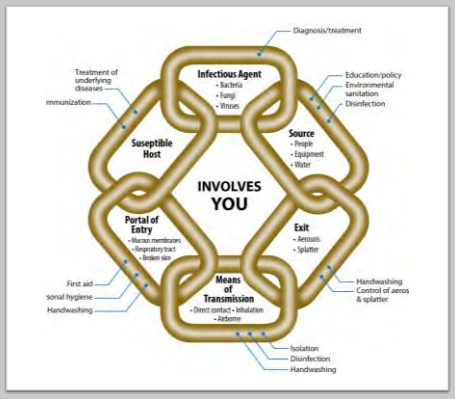
Slide 6

Slide 7

Slide 8

Controllable vs. Non-Controllable Infection Risks

- What does the patient bring to the table at the time of the procedure?
- What risks can we are the HCP mitigate or engineer out of the process?
- What risks are there to perioperative and reprocessing personnel?
- How have things changed with the ongoing COVID-19 pandemic and its impacts?



Slide 9

FDA 522 Study: Game Changer

Focused on Duodenoscopes

- Implications to other Reusable Semi-Critical Medical Devices
- Mandatory FDA-ordered post-market surveillance study

Evaluated Two Core Concepts:

- Human Factors Engineering of Reprocessing Reusable Flexible Endoscopes
- Microbial Contamination Post-Reprocessing following Manufacturer's IFUs

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 10

Actionable growth for low- or moderate-concern organisms	National and professional guidelines
>10 CFU	United States, Australia
>20 CFU	Europe, Canada

How is Success Defined?

- **High-concern**: organisms more often associated with human disease
- **Low- and moderate concern:** organisms that do not normally cause "dangerous" infections, but suggest reprocessing failures
- **Actionable growth limits in FDA post-market surveillance studies:**
  - Any growth of high-concern organisms
  - >100 CFU of low- or moderate-concern organisms

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 11

FDA 522 Results for Duodenoscopes:
Implications for the Healthcare Risk Managers?

Manufacturer and model	Final analysis of properly collected samples		
	Subtotal	Any high-concern organisms	>100 CFU low/moderate concern organisms
Olympus (all models)	1488	**75 (5.0%)**	**9 (0.6%)**
Pentax ED-3490TK	653	**32 (4.9%)**	**29 (4.4%)**
Fujifilm ED-530XT*	104	**2 (1.9%)**	**1 (1.0%)**

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 12

What are the Key Findings from the FDA 522 Study?

- Automated Endoscope Reprocessor (AER) Use and Maintenance
  - Validation
  - Monitoring
- Environmental Contamination during Endoscope Sampling and Storage
  - Variable Collection Technique
  - Laboratory Analysis Issues
- Reprocessing Personnel Training and Turnover
  - Role-specific competency
  - Routine monitoring
  - Remediation
- Endoscope Sampling Personnel Training and Technique
  - Culture environment
  - Aseptic technique
  - Costs and difficulty in interpretation of results

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 13

Identified Endoscope Reprocessing Challenges

- Automated Endoscope Reprocessors
- Use of non-approved supplies to reprocess and clean
- Improper storage of reusable devices
- Environmental contamination
- Reprocessing personnel inconsistency
- Environmental controls vary (temp, humidity, etc.)
- Unseen Damage to the Reprocessing Personnel

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 14

Time for Action

Slide 15

What has Triggered these FDA Safety Alerts?

- Suspected Infections or Device Contaminations Issues
- Reprocessing Methods
- Reprocessing Instructions in the Device Labeling
- Endoscope Design

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 16

Breaking News from FDA: Updates from 522 Post-Market Culturing and Sampling Clinical Study

FDA NEWS RELEASE

FDA recommends health care facilities and manufacturers begin transitioning to duodenoscopes with disposable components to reduce risk of patient infection

In continued efforts to protect patient safety, FDA orders new postmarket studies for manufacturers, requests real-world contamination rates in duodenoscope labeling and warns about certain test strips illegally marketed to assess duodenoscope cleanliness

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 17

FDA Additional Safety Recommendations

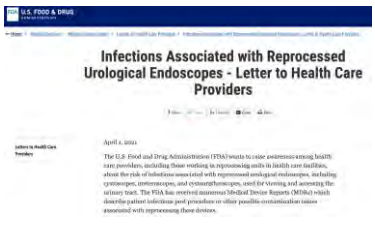
"The FDA believes the best solution to reducing the risk of disease transmission by duodenoscopes is through innovative device designs that make reprocessing easier, more effective, or unnecessary."

"Hospitals and endoscopy facilities should transition to innovative duodenoscope designs that include disposable components such as disposable endcaps, or to fully disposable duodenoscopes when they become available."

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 18

FDA Issues New National Safety Alert


U.S. FOOD & DRUG

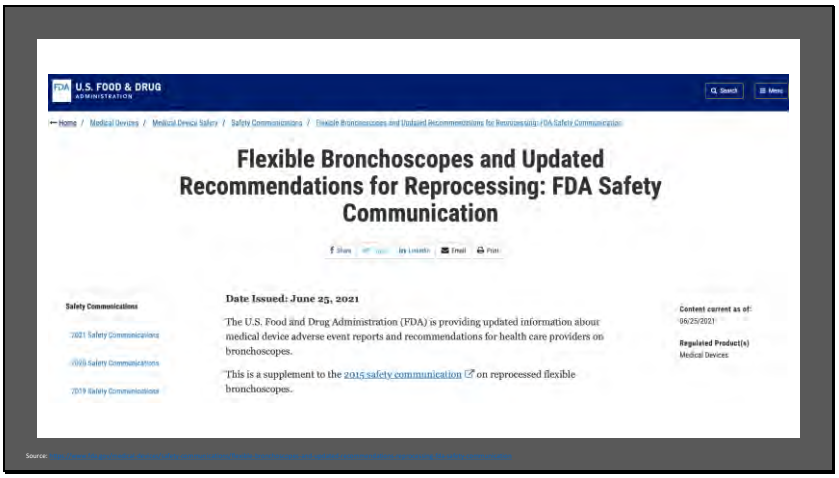
Infections Associated with Reprocessed Urological Endoscopes - Letter to Health Care Providers

April 1, 2021

The U.S. Food and Drug Administration (FDA) wants to raise awareness among health care providers, including those working in reprocessing units in health care facilities, about the risk of infections associated with reprocessed urological endoscopes, including cystoscopes, ureteroscopes, and cystourethroscopes, used for viewing and accessing the urinary tract. The FDA has received numerous Medical Device Reports (MDRs) which describe patient infections post procedure or other possible contamination issues associated with reprocessing these devices.

Source: https://www.fda.gov/medical-devices/letters-health-care-providers/infections-associated-reprocessed-urological-endoscopes-letter-health-care-providers

Slide 19



Slide 20

Make a List and Check it Twice

- We CAN Control:
  - Device Reprocessing
  - Personnel Training
  - Competency Management
  - Quality Improvement
  - Device Monitoring
- We CANNOT Control:
  - Patient Comorbidities
  - Previous Usage of Loaner Devices
  - Patient Pre-existing Colonization

Slide 21

Multi-Faceted Challenges Create Dynamic Risks

- Post-market design changes that do not account for how they impact the ability to properly clean and disinfect the device
- Lack of communication between manufacturers and/or between manufacturers and device users when medical devices/equipment used for reprocessing are modified and instructions are revised
- Third party servicing and accessories that are not validated by OEM manufacturer or inspected by the FDA
- Lack of standardized Clinical Value Analysis processes and procedures within healthcare facilities

Slide 22

Additional Challenges at Play

- **Human Factors: Reprocessing Instruction Manual Format and Content**
  - Reliability of reprocessing instructions and user's ability to access and follow them
  - Element of time creates inherent risks
- **Alteration of the Design and Componentry by Third Party Repair**
  - Adulterated devices
  - Non-validated repair parts and lack of inspection capability and quality
- **Use of Non-OEM-Validated Cleaning Brushes**
  - Damage to device
  - Inability to properly clean and remove debris
- **Use of Materially Incompatible Detergents and Disinfectants**
  - Potential residues
  - Damage to device, especially glues and rubber components

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 23

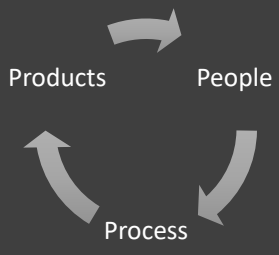
FDA Identified Reusable Device Risks

- Long, narrow interior channels (lumens), including those with internal surfaces that are not smooth, have ridges or sharp angles, or are too small to permit a brush to pass through
- Hinges
- Sleeves surrounding rods, blades, activators, inserters, etc.
- **Adjacent device surfaces between which debris can be forced or caught during use**
- O-rings
- Valves that regulate the flow of fluid through a device (stopcocks)
- **Devices with these or other design features that cannot be disassembled for reprocessing**

Source: https://www.fda.gov/medical-devices/safety-communications/fda-recommending-transition-duodenoscopes-innovative-designs-enhance-safety-fda-safety-communication

Slide 24

The 3 P's Approach



Slide 25

People

- Do I have the right team members performing the role for which they are most qualified?
- How do I ensure the competency of my reprocessing personnel in reprocessing medical devices?
- Are my personnel able to meet the demands of our clinical practice with reprocessing?
- Do I have total confidence in my reprocessing process?

Slide 26

Process

- How is my reprocessing process validated and how often?
- How often does the device vendor validate our reprocessing capability?
- What other devices does our facility use that may contribute to reprocessing failures?
- How would I know if I have a reprocessing failure and how many patients would be impacted?

Slide 27

Products

- Do I want to continue to take the known risks associated with reprocessing a reusable medical device?
- How old is my fleet of reusable devices and how often are they inspected, serviced, and assessed by the actual OEM device manufacturer?
- What other third-party devices might be used through the medical device that could result in damage to the device and create a pathway for potential device contamination?

Slide 28

Available Options

- **Single-use (disposable) medical devices** are only intended to be used for one patient and do not require reprocessing.
- **Reusable medical devices** can be used on multiple patients. These devices must undergo reprocessing in between uses, to clean the devices of soil and contaminants, and to inactivate microorganisms by sterilization or disinfection.

Slide 29

Hierarchy of Disinfection Matters: Where should we Evolve to Protect Patients?

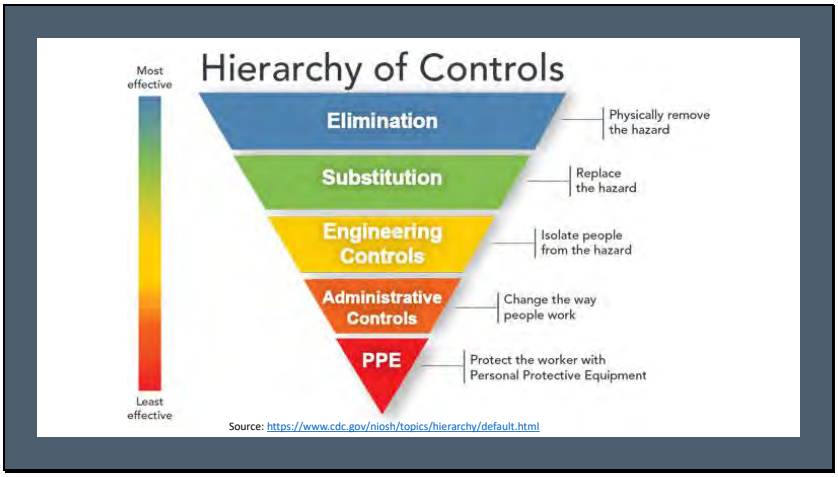
- Sterilization
- High Level Disinfection
- Intermediate Level Disinfection
- Low Level Disinfection
- Cleaning

Slide 30

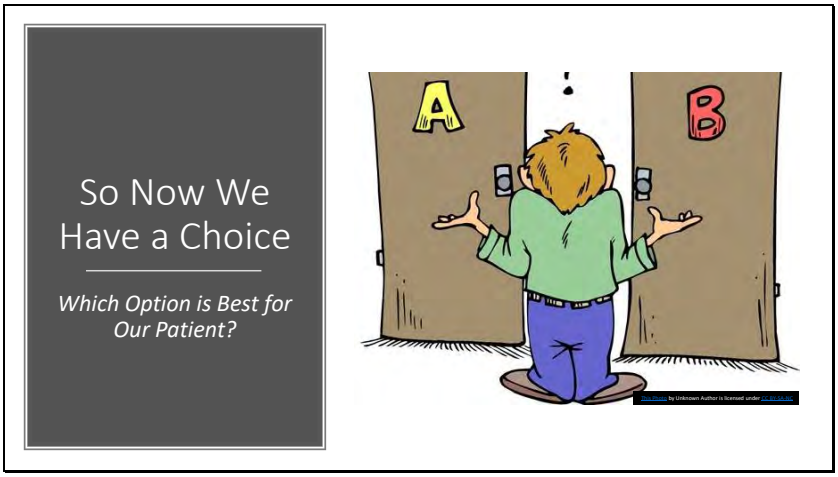
Key Question

Are device-related infections from contaminated reusable medical devices completely preventable?

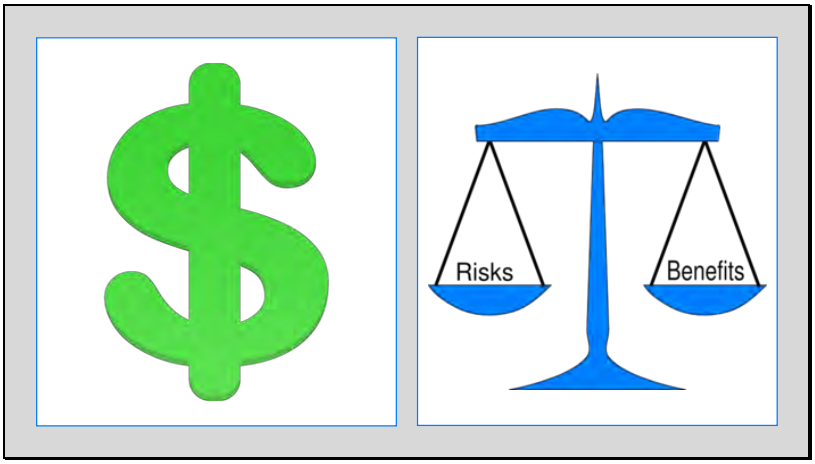
Slide 31



Slide 32



Slide 33



Slide 34

Risk vs. Benefits

- **Reusable Devices**
  - Maintenance
  - Wear and Tear
  - Damage
  - Multi-Patient Use
  - Reprocessing Failure Potential
  - Variable Performance depending upon maintenance condition of device
  - Inherent risk for infection
- **Disposable, Sterile Devices**
  - Sterile Devices
  - Single-Patient Use
  - No Maintenance
  - No Wear and Tear
  - Consistent Clinical Performance for each procedure

Slide 35

Stepping Up the Reprocessing Game

- Consider using sterilization instead of high-level disinfection when feasible, because sterilization has a greater safety margin than high-level disinfection. Steps should include precleaning, leak testing, cleaning, and sterilization.
  - If sterilization is not available, then high-level disinfection steps should include precleaning, leak testing, cleaning, high-level disinfecting, rinsing with tap or utility water followed by alcohol flushing or with critical (filtered or sterile) water, and drying.
  - Use only manufacturer-specified cleaning accessories, high-level disinfectants, enzymatic cleaning agents, and detergents.

Source: https://www.fda.gov/medical-devices/safety-communications/flexible-bronchoscopes-and-updated-recommendations-reprocessing-fda-safety-communication

Slide 36

Next Generation Medical Devices

- Smooth surfaces, including smooth inner surfaces of the long, narrow interior channels (lumens)
- The ability to disassemble devices with multiple components
- Non-interchangeable connectors for critical connections (For example, tubes used with endoscopes for direct patient connection that cannot be interchanged with tubing used for waste drainage)
- Clear identification of connecting accessories, such as drainage tubing
- Clear indication and identification of components that must be discarded after patient use and cannot be reprocessed or reused
- Disposable components for the hardest to clean areas
- Designs that address how fluid flows through the device, and areas of debris build-up within devices

Source: https://www.fda.gov/medical-devices/reprocessing-reusable-medical-devices/working-together-improve-reusable-medical-device-reprocessing

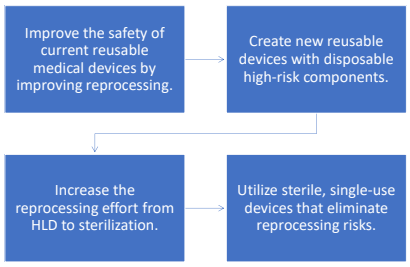
Slide 37

Safely Maintaining Clinical Operations

- Eliminating reprocessing saves time, money, and risk
- Single-use devices can ensure the availability of a device for all patients regardless of time of the day or day of the week (i.e., weekends & after hours)
- Facilities should still have a backup plan in place to use reusable devices should single-use devices be on backorder
- Single-Use allows bedside flexible endoscopy without the need for transport to SPD and subsequent reprocessing
- Regular, ongoing competency training is necessary for reprocessing personnel

Slide 38

Progressive Approach to Improving Medical Device Safety



Slide 39

What Choice Does our Patient Expect?

Slide 40

Putting it All Together

- Know what is expected of us by the Patients: Total Infection Mitigation
- Invest in assessing your institutional level of risk across the use of all reusable medical devices
- Utilize the highest level of risk mitigation available: Elimination when at all possible
- Continue to advance patient safety through innovations in People, Processes, and Products across the continuum of care

Slide 41

KENTUCKY INFECTION PREVENTION
Training Center

LET'S TALK

Stay Connected

Contact Information:
Dr. Garrett

Email:
Hudson.garrett@Louisville.edu

Twitter:
@DrHudsonGarrett

Facebook:
@DrHudsonGarrett

LinkedIn:
@DrHudsonGarrett

Presentations - Day 2

Up and coming Topics in Infection Prevention and Control – What do you need to know right now?

Slide 1

Up and Coming Topics in Infection Control
What Do You Need to Know Now?

Michael J. Curran BSN, RN, CIC, NHDP-BC
Infection Control Nurse / MDRO Prevention Lead
HAI/AR Prevention Program

October 17, 2023

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing Public Health Performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 2

Objectives

- At the end of this presentation, participants will be able to
  - Recount the highlights of the containment and prevention guidance documents recently released by the CDC
  - Recognize the increased focus placed upon transmission prevention versus MDRO identification response
  - State the benefits of effective infection control communication with all key stakeholders

Slide 3

CDC's Containment Guide -2022 Update

- https://www.cdc.gov/hai/pdfs/mdro-guides/Health-Response-Contain-MDRO-H.pdf

Slide 4

CDC's Prevention Guide – March 2023

- https://www.cdc.gov/hai/pdfs/mdro-guides/Health-Response-Prevent-MDRO-508.pdf

Slide 5

2023 Prevention Guide Overview

- **Overarching principles for prevention activities**
  - Starting MDRO prevention activities early
  - Impact of prevention activities may vary
  - Intended to slow the rate of transmission

Slide 6

Strategy 1: Conduct Education

- Well-directed education can increase participation and adherence to recommended interventions by key stakeholders
- Education can be conducted using different approaches
  - webinars, in-person workshops, onsite visits, or email
- Content and audience can be tailored for focus organism
- Participation should be incorporated into offerings
- Educational activities should be prioritized for facilities with greatest regional impact

Slide 7

Facility Categories for Risk Stratification

Facility categories	Characteristics	Examples of facility types
Influential	• Longer lengths of stay • High-acuity patients/residents • Disproportionately influence regional MDRO prevalence	• Long-term acute care hospitals (LTACHs) • Ventilator-capable skilled nursing facilities (vSNFs)
Highly connected	• Most frequently receive transfers from influential facilities • May play a role in MDRO spread through dispersal and concentration	• Acute care hospitals (ACHs) • Critical access hospitals (CAHs) • Skilled nursing facilities that don't care for ventilated residents (SNFs)
Other	• Facilities that do not fit into above categories • Can care for patients with MDROs and experience outbreaks	• ACHs, CAHs, SNFs • Inpatient rehabilitation facilities • Wound care clinics, dialysis, or home health

Slide 8

Strategy 2: Improve Infection Prevention and Control (IPC) Practices

- Core IPC practices are designed to reduce pathogen transmission and infections
- Good adherence to these practices is predicted to limit transmission overall, not just the focus MDROs
- Health departments can improve facility IPC through prevention-driven assessment of IPC practices
  - Conducted independently of identification of new targeted MDRO colonization or infection or infection control concerns
  - Coupled with recommendations and coaching to mitigate identified gaps

Slide 9

Prevention-driven IPC Assessments

- Prioritize **recurring IPC assessments** for influential facilities
  - Perform at least yearly, regardless of the presence or absence of targeted MDRO(s)
    - » Provides opportunity for ongoing conversation between the facility and health department
  - At highly connected facility types, select these facilities based on identified need or characteristics
    - » Prior MDRO outbreaks, prior IPC gaps, regulatory survey findings, health equity considerations, or *ad hoc* assessment results

Slide 10

Prevention-driven IPC Assessment (cont.)

- ***Ad hoc* or as-needed IPC assessments**
  - One-time IPC assessments for prevention
    - Not had a recent assessment
    - Have a suspected high MDRO prevalence
- Priority given to facilities with substantial IPC gaps identified
- In skilled nursing facilities, include implementation of Enhanced Barrier Precautions (EBP)

Slide 11

Strategy 3: Detect Colonized Individuals

- Clinical MDRO infections represent only a small fraction of total
  - Many more are colonized
- Colonized individuals can be a source of transmission to others
  - If their colonization status is unknown, recommended IPC interventions may not be applied
- Combining colonization screening with good adherence to core IPC practices will have a larger impact on limiting transmission
  - More so than either strategy alone

Slide 12

Prevention-driven PPSs

- Screenings performed unit- or facility-wide based on the healthcare facility (or unit-level) risk for MDRO importation and transmission
  - Pre-planned – thus distinct from response-driven PPSs
- Goals
  - Identify colonized individuals so recommended interventions can be applied
  - Regularly assess facility MDRO epidemiology

Slide 13

Prevention-driven PPSs (cont.)

- **Prevention-driven, recurring PPSs** are performed at a predetermined frequency
  - Possibly every four to six months
  - Resource-intensive
  - Prioritized for influential facilities (or units) where they may have the greatest impact on regional MDRO prevalence
    - LTACHs
    - vSNFs

Slide 14

Prevention-driven PPSs (cont.)

- Implementation Considerations
  - In facilities that care for patients/residents with a wide range of risk levels for MDRO acquisition
    - Limited to high-risk patients/residents or units
      - Unless there is concern for high colonization pressure among other patients/residents
  - In a facility where all patients/residents are at high-risk for MDROs (e.g., LTACH), the PPS should generally be performed facility-wide

Slide 15

Prevention-driven PPSs (cont.)

- Maximizing Efficacy
  - Increasing the frequency of PPS from twice yearly to quarterly is predicted to have greater benefits in regions with higher prevalence compared to those with limited spread of the MDRO
    - Less frequently only predicted to be impactful pre-introduction
  - In areas that are pre-introduction or have limited spread of the targeted MDRO, the decreased impact of less frequent PPSs may be moderated by other activities
    - Admission screening
    - Enhanced laboratory surveillance of clinical cultures

Slide 16

Prevention-driven PPSs (cont.)

- Maximizing Efficacy (cont.)
  - The frequency of prevention-driven, recurring PPSs may change over time based on local epidemiology
    - In some areas, an increase in PPS frequency may be necessary due to increasing prevalence
  - Reductions in regional MDRO prevalence are not predicted to result from prevention-driven, recurring PPSs performed at non-influential facility types
- **Prevention-driven, *ad hoc* PPSs** are performed once or intermittently to help define the regional epidemiology

Slide 17

Prevention-driven PPSs (cont.)

- Recommended actions when cases are identified
  - If the number of cases identified is at or below the facility's baseline (i.e., prevalence is the same or lower than on previous PPS), then performing screening or IPC assessments beyond those already scheduled is not indicated
  - If the number of cases detected is above the baseline established by prior PPS
    - Assess infection control practices
    - Perform one additional PPS approximately 2-4 weeks after the prevention PPS

Slide 18

Admission Screening

- Use of colonization screening to identify an MDRO at the time of admission to a healthcare facility or unit within the same facility
  - Ensures timely implementation of recommended interventions
    - Contact precautions
    - Placement in a cohort unit
  - Can be useful to measure IPC effectiveness at a facility
  - Can also identify other facilities within the region with a high MDRO prevalence
  - Requires procedures to ensure prompt collection for all intended patients/residents

Slide 19

Admission Screening (cont.)

- Implementation considerations
  - May perform universal or targeted screening
  - May be based on patient MDRO acquisition risk factors
    - Bedbound
    - Requires high levels of care
    - Receiving antibiotics
    - Current mechanical ventilation
  - Transfers from certain facilities
    - Influential facilities
    - Facilities with outbreaks
  - Admission into certain units (e.g., intensive care units)

Slide 20

Admission Screening (cont.)

- Maximizing efficacy
  - Predicated on good adherence to IPC practices in the facility
  - Depends on facility risk category and epidemiologic stage of an MDRO
    - Early epidemiological stages
      - Implementing admission screening in influential facilities (e.g., LTACH, vSNF) where focus MDRO has not been identified or are low prevalence
    - Later epidemiological stages
      - Implementing admission screening in highly connected facilities that discharge to many different facilities (e.g., ACH)
  - Implement admission screening only after conducting a baseline PPS

Slide 21

Strategy 4: Facilitate Communication

- Communication between healthcare facilities and public health is critical
- Communication between public health and healthcare facilities ensures situational awareness of MDRO epidemiology in the region
- Effective communication whenever a patient/resident infected or colonized with an MDRO is transferred within or between healthcare facilities
  - Increases the likelihood appropriate IPC actions will be implemented continuously through transitions of care
  - Decreases the likelihood of MDROs spreading to others

Slide 22

Strategy 4: Facilitate Communication (cont.)

- https://www.cdc.gov/hai/mdro-guides/index.html
- https://www.cdc.gov/hai/pdfs/toolkits/Interfacility-IC-Transfer-Form-508.pdf

CDC Inter-facility Infection Control Transfer Form

Slide 23

Acknowledgements

- Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP)
- Members of the DPH HAI/AR Prevention Program

Slide 24

Thank you.

Michael J. Curran BSN, RN, CIC, NHDP-BC
Infection Control Nurse / MDRO Prevention Lead
michael.curran@ky.gov
502-234-8359

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing Public Health Performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 25

Kentucky Department for Public Health

About Us

Kentucky Public Health
Prevent. Promote. Protect.

The Kentucky Department for Public Health (KDPH) is dedicated to improving the health and safety of Kentuckians through *prevention*, *promotion*, and *protection*.

As a major part of the Cabinet for Health and Family Services, KDPH provides guidance and support for health departments in all 120 counties.

Serving as Kentucky's dedicated public health resource, KDPH is responsible for identifying and allocating resources to communities and public health institutions to prevent and protect against diseases, outbreaks, and hazards statewide.

Reportable Diseases

Slide 1

Reportable Diseases in Kentucky

Carrell Rush, MPH

IP Bootcamp 2023

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing public health performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 2

Kentucky Department for Public Health

Mission and Vision in Action

Healthier People,
Healthier Communities.

Our mission is to improve the health and safety of people in Kentucky through prevention, promotion and protection.

Prevention	Promotion	Protection
Diabetes Prevention	Immunizations	Prescription Assistance
Disease Surveillance	KEIS	Public Health and Disaster Preparedness
Environmental Inspections	Mobile Harm Reduction	Smoking Cessation
HANDS	Newborn Screening	WIC

Kentucky Department for Public Health 2

Slide 3

Objectives

- Understand reporting requirements for:
  - Reportable Conditions
  - Outbreaks
- Learn what information to give your local health department (LHD) and/or Kentucky Department for Public Health (KDPH)
  - Why, what, who, when, how
- Understand what you can do to help with public health surveillance and reporting

Kentucky Department for Public Health 3

Slide 4

Kentucky Reportable Disease Regulation
902 KAR 2:020

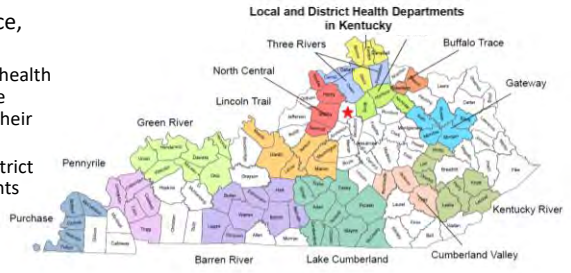
- Mandates the reporting of communicable diseases and health hazards by providers to local and state public health authorities
- Specifies which diseases and hazards are reportable
- Specifies the urgency with which diseases and hazards must be reported
- Mandates the submission of isolates and clinical specimens to the KDPH Division of Laboratory Services for certain conditions
- Mandates the reporting of outbreaks of any communicable disease

- https://apps.legislature.ky.gov/law/kar/titles/902/002/020/

Slide 5

Case Investigation

- Shared governance, home-rule state
  - Local and district health departments have jurisdiction over their counties
  - 61 county and district health departments



Slide 6

Case Investigation

- Regional Epidemiologists are responsible for coordinating case investigations in their regions
  - May or may not perform the investigation
  - Communicable disease public health nurses and local epis provide critical support
- Centralized interviewing of cases
  - Enteric and tick-borne disease case investigations being conducted by undergraduate and graduate students employed by KDPH
    - Epi Technical Assistants

Slide 7

Why Report?

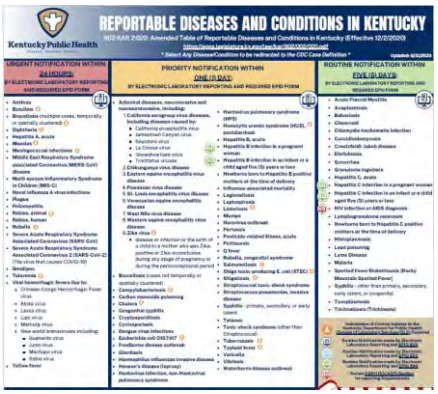
- Understand the presence and quantify the burden of communicable diseases in the state
- Public health surveillance of communicable diseases
- Detect clusters and outbreaks of communicable diseases
- Identify sources/vectors/vehicles of communicable diseases
- Implement control measures to stop the spread of communicable diseases
- Implement prevention measures to lower the burden of communicable diseases

Slide 8

What to Report: Reportable Conditions

- Foodborne, waterborne, enteric diseases
- Zoonotic and vector-borne diseases
- Viral hepatitis
- Emerging infectious diseases
- STDs and HIV/AIDs
- Healthcare-Associated Infections/Antimicrobial Resistant organisms
- Tuberculosis
- Vaccine-preventable diseases

Slide 9



https://www.chfs.ky.gov/agencies/dph/dehp/idb/Documents/KYEPID200A.pdf

Slide 10

What to Report: Data Elements

- Name and DOB
- Gender, Race, Ethnicity
- Patient address, county of residence, phone number
- Name, address, and phone number of the reporting medical provider or facility
- Name of the condition being reported
- Signs/symptoms

Slide 11

Who to Report to

- LHD of the patient's county of residence AND/OR KDPH
- The Division of Epidemiology and Health Planning (DEHP)
  - Environmental Public Health Tracking
  - Kentucky Immunization Branch (Vaccine-Preventable Diseases)
  - Infectious Diseases Branch
    - TB Program
    - STD Prevention and Control
    - HIV/AIDs Section
    - Viral Hepatitis Section
    - Healthcare-Associated Infections/Antimicrobial Resistance Program (HAI/AR)
    - Reportable Diseases Section (RDS)

Slide 12

How to Report

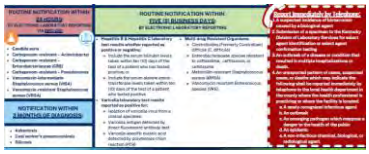
- Multiple mechanisms for reporting
- Kentucky is a dual reporting state
  - Providers submit a case report (and lab report)
    - Electronically through the Kentucky Health Information Exchange (KHIE) ★
    - Direct data entry eCR (under development for all conditions)
    - Fax reports to the LHD (preferred) OR to KDPH via secure fax: 502-396-3803
  - Laboratories submit lab reports
    - Electronically through KHIE ★
    - Direct data entry ELR (under development for all conditions)
    - Fax reports to the LHD (preferred) OR to KDPH via secure fax: 502-396-3803

Slide 13

How to Report: EPID Forms

- EPID 250- Healthcare-Associated Infections and Multidrug Resistant Organisms
- EPID 394- Perinatal Hepatitis B and C
- EPID 399- Perinatal Hepatitis B Prevention Form for Infants
- Adult HIV Report Form
- Pediatric HIV Report Form
- EPID 200- all other reportable conditions

Slide 14



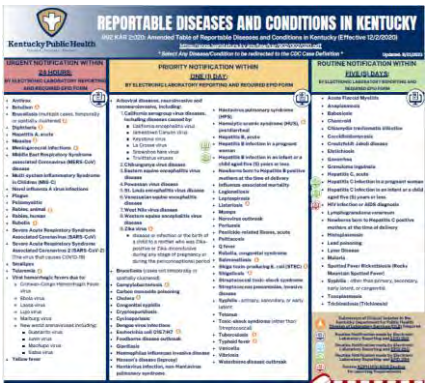
https://www.chfs.ky.gov/agencies/dph/dehp/idb/Documents/KYEPID200A.pdf

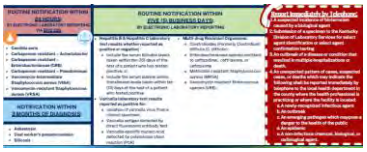
Slide 15

When to Report

- Urgent Notification (within 24 hours)
  - Special agents and sentinel event pathogens
- Priority Notification (within 1 business day)
  - Pathogens that could signal an outbreak and require public health action
- Routine Notification (within 5 business days)
  - Pathogens less likely to signal an outbreak and where limited public health action may be taken

Slide 16





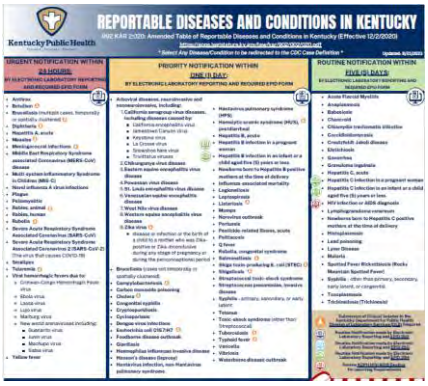
https://www.chfs.ky.gov/agencies/dph/dehp/idb/Documents/KYEPID200A.pdf

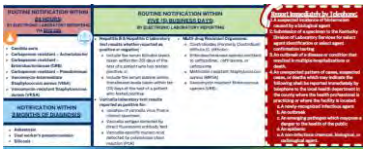
Slide 17

Submit isolates and clinical specimens to DLS

- Why?
  - DLS and/or CDC performs additional testing
    - Specialized identification testing (Botulism)
    - Confirmatory Testing
    - Additional Testing (Speciation, Serotyping, Strain Typing, Whole Genome Sequencing, etc.)
  - This is critical to link cases across the state and nation to identify outbreaks (example: foodborne, waterborne, and enteric disease outbreaks)
  - PulseNet: https://www.cdc.gov/pulsenet/index.html

Slide 18





https://www.chfs.ky.gov/agencies/dph/dehp/idb/Documents/KYEPID200A.pdf

Slide 19

Public Health Response to Reported Conditions

- Investigation:
  - Review medical records
  - Interview the case patient with a standardized questionnaire
  - Conduct follow up investigations as needed
  - Educate the case patient to prevent re-infection and spread
  - Implement control measures as needed
- Reporting
  - Report findings to LHD and/or KDPH
  - Enter all case patient information into

Slide 20

Barriers to Timely Investigations

- Cases are frequently reported with insufficient information to begin a public health investigation
  - Contact information
  - Missing lab report
  - Illegible information

- LHD and KDPH staff must contact the provider/laboratory to obtain necessary documentation
  - Frequently must contact multiple times before the documents are sent
  - Lack of awareness of the reportable disease regulation and misinterpretation of HIPAA by facility staff

Slide 21

Impact of Delayed Investigations

- Case patient recall decreases rapidly over time
- Delayed provision of transmission education
- Delayed implementation of control measures
- Delayed identification of outbreaks
- Single cases may grow to outbreaks; small outbreaks grown to large outbreaks
- End result: more people may become infected, hospitalized, and die
  - Negative impacts to lives, livelihoods, and businesses
  - Cost of treatment, hospitalization, lost income

Slide 22

What you can do

- Report cases following the regulation
  - Include all required data elements
  - Make sure report is legible
  - EPID Form/eCR
  - Lab Report/ELR
  - Follow reporting timelines
- Submit additional information promptly if requested to HD that requested
- Educate staff on the reportable disease regulation and HIPAA so that they understand their role in assisting public health with timely investigations and reporting

Slide 23

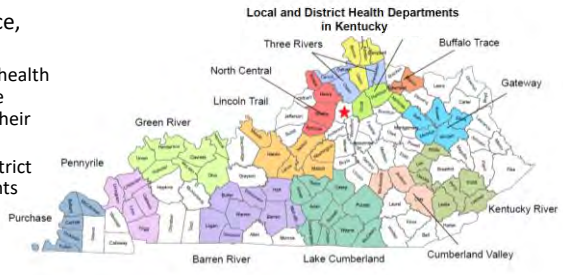
Outbreak Reporting

- 902 KAR 2:020 also mandates the reporting of all outbreaks
  - Includes suspected outbreaks without confirmed etiologies
  - Includes outbreaks caused by pathogens where single cases are not reportable (Example: norovirus)
- Outbreak:
  - ≥2 cases of a similar illness, including healthcare-associated infections (HAIs), that are epidemiologically linked or connected by person, place, or time; or
  - A single case of an HAI not commonly diagnosed

Slide 24

Case Investigation

- Shared governance, home-rule state
  - Local and district health departments have jurisdiction over their counties
  - 61 county and district health departments

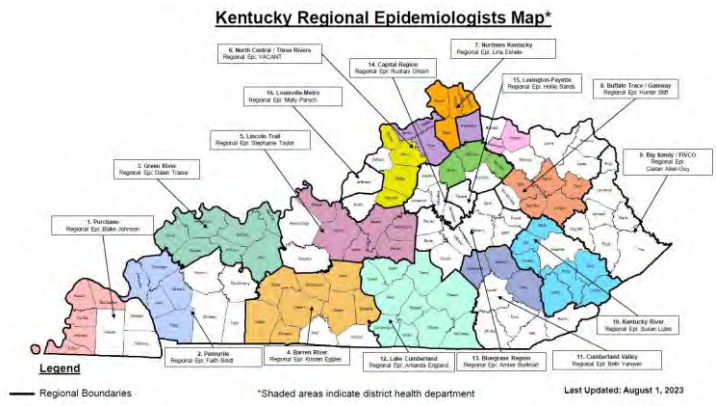


Slide 25

Outbreak Investigation

- Regional Epidemiologists are responsible for coordinating outbreak investigations in their regions
  - Communicable disease public health nurses and local epis provide additional critical support
- Centralized interviewing of cases
  - Enteric disease case investigations being conducted by graduate-level students employed by DPH
  - If a potential outbreak is identified, the ETAs refer it to the LHD/Regional Epi
- Outbreak investigations are led by LHDs, with assistance and guidance from DPH staff

Slide 26



Slide 27

Outbreak Investigation

1. Confirm the Existence of an Outbreak
2. Epidemiologic Investigation
3. Laboratory Investigation
4. Environmental Investigation
5. Implement Control and Prevention Measures
6. Communication
7. Submit Final Report

Slide 28

1. Confirm the Outbreak

- **Remember:**
  - General outbreak definition: ≥2 persons experiencing a similar illness with a common exposure
- Is this above baseline?
  - Number ill
  - Symptoms
  - Timing
- Report to the LHD

Slide 29

2. Epidemiologic Investigation

- Establish a case definition
- Collect clinical information
- Collect exposure/risk factor information
- Find additional cases
- Create a line list
- Create an Epi Curve
- Map Cases (if applicable)

Slide 30

3. Laboratory Investigation

- Collect specimens
  - Minimum of 2 positive specimens to confirm the outbreak
- Follow all collection, storage, packaging and shipping instructions
- If shipping to DLS:
  - Notify DEHP and DLS: number and type of specimens, shipping date/time, etc.
  - Request collection kits if needed
  - Obtain DLS FedEx Account number to ship priority overnight
  - Order test in Outreach (preferred)
  - Complete a submission form for **EACH** specimen
  - Label container with patient name and date collected
  - Document as much demographic information as possible

Slide 31

4. Environmental Investigation

- Conduct a site visit with appropriate team members
  - Request facility map, menu, etc.
  - Conduct an environmental assessment (if indicated)
  - Interview facility staff, employees, managers for similar illness
- Review outbreak documentation requirements
- Provide LHD/KDPH resources
- Provide specimen collection, packaging, and shipping guidance
- Recommend control/prevention measures
- Goal: prevent further transmission and stop the outbreak

Slide 32

5. Implement Control and Prevention Measures

- Recommended measures will vary depending on pathogen/outbreak
  - Minimize Contact
  - Precautions (Standard, airborne, droplet)
  - Cleaning
  - Food Safety
  - Communication

Slide 33

6. Communication

- Provide open and continuous communication with all investigation partners ensuring that facility/staff understand and implement:
  - Reporting requirements
  - Prevention/control measures
  - Notify visitors and vendors of outbreak using signage
  - When transferring residents, notify **EMS and receiving facility** of the ongoing outbreak in advance

Slide 34

7. Reporting

- Requirements vary by pathogen and outbreak
- Provide routine updates to LHD/DEHP investigators
- Submit final outbreak documents and reports once the outbreak is declared over
  - Final line list, epi curve, control measures, etc.

Slide 35

After the Investigation

- Hot wash or After Action Report
  - Identify what went well
  - Identify what could have gone better
  - Lessons learned to prevent future outbreaks
  - Lessons learned to improve future response

Slide 36

Conclusion

- YOU are critical public health partners in the prevention and control of communicable diseases and outbreaks
  - Surveillance
  - Investigation
  - Reporting
- Public Health needs YOU

Slide 37

Contact Information

Carrell Rush, MPH

Reportable Diseases Section Manager

Division of Epidemiology and Health Planning, KDPH

Phone: 502-564-3261 x. 4240

carrell.rush@ky.gov

Tuberculosis Program Update

Slide 1

KY Infection Prevention Training Center Boot Camp Tuberculosis Program Update

Emily Anderson, BSN, RN

October 17, 2023

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing public health performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 2

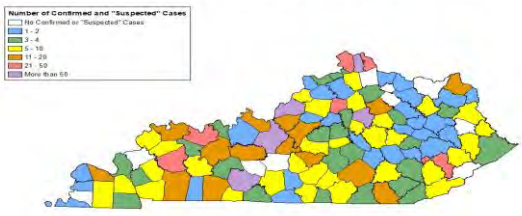
Objectives

- Review the current epidemiology of *Mycobacterium tuberculosis* (TB) in KY and the U.S.
- Review the current Kentucky regulations regarding reporting, treatment, employee testing, and prevention of TB in Kentucky.
- Identify improvements and future directions important in continuing reduction of TB cases and resultant transmission in communities across Kentucky.

Slide 3

TB Distribution by County

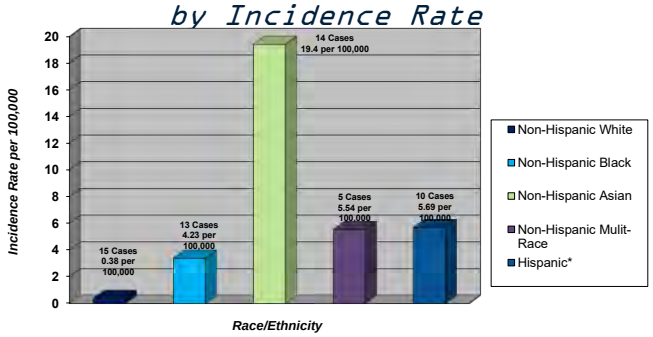
Confirmed and "Suspected" Cases of Tuberculosis in Kentucky, Five-Year Totals (2017-2021)



Number of Confirmed Cases = 320 | Number of "Suspected" Cases = 1,282

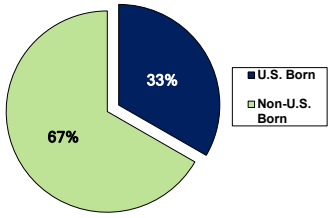
Slide 4

TB Case Data - Race/Ethnicity, FINAL 2021
by Incidence Rate

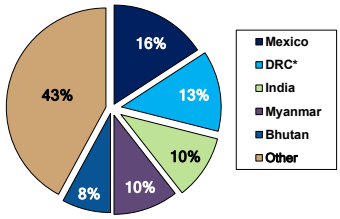


Slide 5

TB Case Data - Non-U.S. Born, FINAL 2021



Percentage is based on total case count (n = 57)



Percentage is based on total number of non-U.S. born cases counted (n = 38)

Slide 6

Resource: TB Regulation Toolkit

Available on the DPH Website, TB Prevention and Control Webpage

https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/tbregs.aspx


Kentucky Tuberculosis Laws and Regulations

Kentucky Tuberculosis Control Law Book

Regulation Toolkit for TB Testing in Long-Term Care Facilities and among Healthcare Workers

Slide 7

Reporting Regulations

- **902 KAR 2:020 Reportable Disease Surveillance (RDS)**
- **902 KAR 20: 205 TB Testing in Healthcare Workers (HCW)**

https://www.chfs.ky.gov/agencies/dph/dehp/idb/Pages/tbregs.aspx

Slide 8

Reporting Regulations: 902 KAR 2:020 Reportable Disease Surveillance (RDS)

Section 6

Notifiable Infectious Conditions and Notifiable non-Infectious Conditions: Tuberculosis

- Considered priority and shall be made within **ONE (1) Business Day**
  - Examples:
    - Positive Acid Fast Bacilli (AFB) sputum smear
    - TB signs and symptoms
    - Positive Polymerase Chain Reaction (PCR) for TB (GeneXpert)
    - Positive Culture

Slide 9

Reporting Regulations: 902 KAR 2:020 RDS Continued

Section 2(5)(b)

Notification Standards

The reporting health professional shall furnish: clinical, epidemiologic, and laboratory information pertinent to the disease including sources of specimens submitted for laboratory testing.

Slide 10

Reporting Regulations: 902 KAR 2:020 RDS Continued

Section 12

Healthcare-Associated Infections (HAI) Surveillance and Health Insurance Portability and Accountability Act (HIPAA)

CMS authorizes CDC to allow DPH to access healthcare-associated infection data reported to the National Healthcare Safety Network (NHSN).

DPH shall

- Preserve patient confidentiality
- Issue reports directly to CDC
- Evaluate HAI data for accuracy and completeness

Slide 11

Reporting Regulations: 902 KAR 2:020

Pharmacy Reporting
Section 15

Tuberculosis

*A pharmacist shall give notice if **two (2) or more** of the following medications used for the initial treatment of active tuberculosis are dispensed to an inpatient in a health facility or to an ambulatory patient in a health facility or a pharmacy: (a) Rifampin, (b) Isoniazid, (c) Pyrazinamide, and (d) Ethambutol*

- Submit EPI-200 form when reporting 2 or more drugs
- Communication with local health department (LHD) of treatment regimen

Slide 12

Reporting Regulations: 902 KAR 20:205 TB Testing for Healthcare Workers (HCW)

Section 10(1)

- Report to LHD or state within **1 business day:**
  - Employee exposure with TST or BAMT conversion; *OR* identified from a contact investigation after TB exposure
  - Chest X-ray (CXR) suspicious for TB disease
  - Positive sputum smear for AFB

Slide 13

Reporting Regulations: 902 KAR 20:205 HCW Continued

Section 10(1) *continued*

- Report to LHD or state within **1 business day:**
  - Positive PCR for TB (DNA or RNA)
    - NAA, GeneXpert, HAINS
  - Positive culture for TB
  - Initiation of multi-drug anti-tuberculosis treatment for active TB disease

**Collaborate with local health department prior to initiating facility contact investigations.*

Slide 14

Reporting Regulations: 902 KAR 20:205 HCW Continued

Section 10(2)

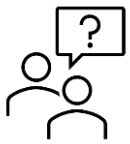
- Report to LHD or state within **5 business days:**
  - **(a)** TST of 10mm or more at time of initial employment
  - **(b)** TST of 5mm or more at time of initial employment who has a medical risk factor
  - **(c)** Positive BAMT at time of initial employment

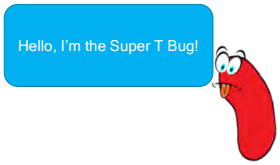
Slide 15

Frequently Asked Questions

902 KAR 20:205

TB Testing For Healthcare Worker (HCW)





Slide 16

FAQS: Section 2 - Infection Prevention Control Plan and TB

What is it?

Section 2 Describes
- New employee testing
- Annual testing plan
- Testing on exposure

Slide 17

FAQS: Section 2 - Infection Prevention Control Plan and TB

Is a facility risk assessment required?

- HCW regulation does NOT require a facility risk assessment for TB
- Cannot declare a healthcare facility at low-risk and only test on hire or exposure
- Must have annual baseline testing for high risk

Slide 18

FAQS: Section 2 - Infection Prevention Control Plan and TB

Is annual testing required?

HCW regulation <u>does</u> require new hire and annual testing of employees included in Infection Control plan

Slide 19

FAQS: Section 2 - Infection Prevention Control Plan and TB

What is included in the Infection Control Plan?

- Identification of employee job series that are at greatest risk for TB exposure.
- Those employees in the plan will be required to have annual TB testing. (See annual testing Section 5)

Slide 20

FAQS: Section 3 - TB Testing Requirements for Tuberculin Skin Testing (TST)

Is two-step TST testing done for both initial hire and annual testing?

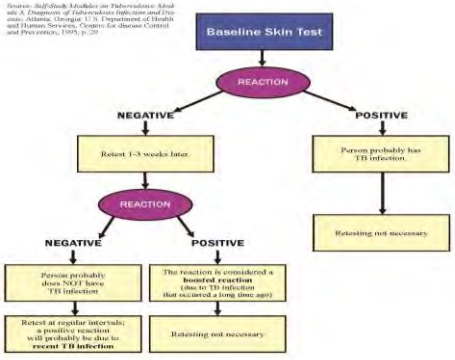
Two-step testing is useful only for the initial skin testing of adults who are going to be retested periodically, such as health care workers or nursing home residents.

Slide 21

FAQS: Section 3 - TB Testing Requirements for Tuberculin Skin Testing (TST)

Two-step testing is useful only for the **initial skin testing** of adults who are going to be retested periodically, such as health care workers or nursing home residents. This two-step approach can reduce the likelihood that a boosted reaction to a subsequent TST will be misinterpreted as a recent infection.

http://www.cdc.gov/tb/publications/factsheets/testing/skintesting.htm



Slide 22

FAQS: Section 3 - TB Testing Requirements for Tuberculin Skin Testing (TST)

How should I determine when to begin staggered testing for each employee?

- Staggered screening of HCWs (e.g., on the anniversary of their employment or on their birthdays) increases opportunities for early recognition of infection-control problems that can lead to conversions in test results for M. tuberculosis infection. http://www.cdc.gov/mmwr/pdf/rr/rr5417.pdf [page 30]
- Facilities may stagger testing at their discretion (i.e. monthly, quarterly, or semi-annually). For your facility to meet this requirement, it may require testing some employees early (i.e. twice within a calendar year). Testing for each individual should not go beyond 12 months from the last test done.

Slide 23

FAQS: Section3(2)(h)

When is a new hire exempt from a TST two-step testing?

A TST or BAMT result within three (3) months prior to initial employment at the facility and previous participation in a serial testing program at another medical facility or health care setting.

Slide 24

Expanding Diagnostics FAQs – Chest X-Rays

When a CXR is necessary:

- Reactive TST
- Positive BAMT
- Indicated by risk assessment
- Exhibits signs and symptoms of TB disease

When NOT to perform a CXR:

- In lieu of TST or BAMT

Slide 25

FAQS: Sections 4 - Initial Employment Testing

What must be documented for your control plan?

- Past Previous positive TST or Blood Assay for M.TB (BAMT)
- Initial and annual TST or BAMT testing
- Individual TB risk assessment

Kentucky Department for Public Health 25

Slide 26

FAQS: Sections 4 - Initial Employment Testing

How far back can I accept a previous TST or BAMT result?

Section 4:
Situations vary based on the individual's risk and if they have been in serial testing

- Previous test <3 mos = NO new test
- Previous test >3 and <11 mos. = only one TST or BAMT needed
- >11 mos. Two-step TST or one BAMT needed

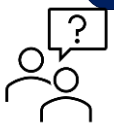
Kentucky Department for Public Health 26

Slide 27

FAQS: Section 4(5)(b)3

Can you accept a TST result from another facility as part of the initial two-step testing?

The initial TST shall count as the second-step TST if the health care worker aged fourteen (14) years and older provided medical documentation that he or she has had a one-step TST interpreted as negative within one (1) year prior to initial testing at the time of initial employment.



Kentucky Department for Public Health 27

Slide 28

FAQS: Sections 5-Annual Testing

Are all healthcare workers required to have annual testing?

- No, not all healthcare workers are required to have annual TB testing.
- However, all healthcare workers are required to have an annual risk assessment

Kentucky Department for Public Health 28

Slide 29

FAQS: Sections 5-Annual Testing

Which healthcare workers are required to have annual testing?

Annual TB Testing is required for:

- Healthcare workers whose job series are identified in the facility Infection Control Plan as having a high risk for TB exposure
  (i.e. Bronchoscopy, ED, etc.)
- Any individual who has a newly identified risk (Exposure, travel, etc.)

Kentucky Department for Public Health 29

Slide 30

Contact Investigation (CI) Guidance

- **Must** be performed on all employees who had exposure to TB suspect/case
- **Must** test initially, then **repeat** in 8-10 weeks
- Communication with LHD:
  - Mandated reporting of line-list of all contacts, initial and f/u test results
  - CDC reports real-time
  - HIPPA compliant
- LHD will dictate need for expansion of CI

Kentucky Department for Public Health 30

Slide 31

Release of Patients from Airborne Infection Isolation (AII)

When can a patient be released from AII?

Slide 32

Release from AII

https://www.cdc.gov/mmwr/pdf/rr/rr5412.pdf

While in hospital for any reason, patients with pulmonary TB should remain in airborne infection isolation (AII) until they are:

1) Receiving standard multidrug anti-TB therapy
2) Have demonstrated clinical improvement
3) Have had **three** consecutive AFB-negative smear results of sputum specimens collected 8–24 hours apart with at least one being an early morning specimen.

Please check with the local health department prior to releasing patients to home isolation!

Slide 33

Releasing from AII

Hospitalized patients returning to a congregate setting (e.g., a homeless shelter or detention facility) should have **three** consecutive AFB-negative smear results of sputum specimens collected >8-24 hours apart before being considered noninfectious.

Slide 34

Release from AII Cont.

Remember:

Two negative PCR GeneXpert results are accepted in lieu of three AFB-negative sputum results.

Slide 35

TB Awareness

New **Monthly TB Newsletter "The DOT"**

- Targeted to all TB and Infection Control staff at local health departments, hospital and long-term care facilities

New **KY TB Program Office Hours**

- Coordinated with the Southeastern National TB Center
- Target audience: all TB partners (Physicians, Nurses, local health departments, and Infection Control personnel)
- Updates include: TB Epidemiology, regulations, protocols, emerging treatments, and TB case studies.

Slide 36

Summary

- Always **ISOLATE** patient and **COLLECT 3 SPUTUM** before giving anti-tuberculosis medications ***"Get the Bugs before You Give the Drugs"***
- Assure laboratories are sending an isolate or direct specimen to the state lab (Division of Laboratory Services)
- Assure in-house pharmacists are compliant with reporting when dispensing two (2) or more anti-tuberculosis medications
- Report any suspected or confirmed active TB case to the local health department within one (1) business day
- Comply with annual TB testing and screening requirements
- Avoid unnecessary chest x-rays

Slide 37

Summary

- Review and/or update Facility Infection Control Plan to assure identification for annual TB testing of healthcare workers with the highest risk for TB exposure
- For patients who have symptoms or signs of active TB disease, all tests and examinations for TB diagnosis should be pursued without delay, regardless of any additional vaccinations (i.e. COVID, MPX, etc.)

Slide 38

Thank You!

Slide 39

Contact Us

Emily Anderson, BSN, RN
TB Controller/Program Manager
502-564-6377
EmilyA.Anderson@ky.gov

Delaney Bonds, MPH
Epidemiologist I
502-564-6874
Delaney.Bonds@ky.gov

Ashley Hill, BSN, RN
TB Nurse Case Management Coordination
502-564-7089
Ashley.Hill@ky.gov

Tim Raymer, MBA
Education, Training, & Outreach Coordination
502-564-2803
Tim.Raymer@ky.gov

502-564-4276

https://chfs.ky.gov/agencies/dph/dehp/idb/Pages/tuberculosis.aspx

Surveillance and Outbreak Management

Slide 1

Surveillance and Outbreak Management

Michael J. Curran BSN, RN, CIC, NHDP-BC
Infection Control Nurse / MDRO Prevention Lead
HAI/AR Prevention Program

October 17, 2023

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing Public Health Performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 2

Objectives

- Participants will be able to identify the goals of the initial multidrug-resistant organism (MDRO) containment response
- Participants will recognize the tiered response approach recommended by the CDC
- Participants will be able specify the important ongoing prevention activities that will be supplemented by the response activities

Slide 3

December 2022 Update to CDC's Response Guidance

- https://www.cdc.gov/hai/pdfs/mdro-guides/Health-Response-Contain-MDRO-H.pdf

Slide 4

Goals of Initial Containment Response

- Identify affected patients
- Ensure appropriate control measures are promptly implemented
- Determine if transmission within a healthcare facility AND dissemination to other facilities are occurring
- Characterize novel organisms or mechanisms to guide further response actions
- Coordinate response with ongoing prevention activities

Slide 5

Response Tiers

- Tier 1 Organisms
  - Organisms or resistance mechanisms that have never (or very rarely) been identified in the United States
- Tier 2 Organisms
  - Carbapenem-resistant Enterobacterales (CRE) with OXA-48 or
  - Carbapenem-resistant Enterobacterales (CRE) with metallo-β-lactamase carbapenemases
    - New Delhi Metallo-β-lactamase (NDM)
    - Verona-integron-mediated carbapenemase (VIM)
    - Imipemenemase (IMP)

Slide 6

Response Tiers (cont.)

- Tier 2 Organisms (cont.)
  - Carbapenemase-producing *Pseudomonas* spp.
  - Pan non-susceptable organisms
  - *Candida auris* (*C. auris*)
- Tier 3 Organisms
  - *Klebsiella pneumoniae* carbapenemase (KPC-CRE)
  - *Acinetobacter baumannii* with plasmid-mediated oxacillinases with carbapenemase activity
    - OXA-23-like
    - OXA-24/40-like

Slide 7

Response Tiers (cont.)

- Endemic (Tier 4) Organisms
  - These MDROs are endemic in a region and have been targeted by public health for their clinical significance and potential to spread rapidly (e.g., to other regions where they are less common or from healthcare settings into the community)
  - **Kentucky Department of Public Health HAI/AR Prevention Program has not classified any organism for designation in this tier**
    - Will not be covered in this presentation

Slide 8

Tier 1 Organisms

- Upon identification of the organism or mechanism in a laboratory, the laboratory or healthcare facility should promptly notify
  - Patient's primary healthcare provider
  - Healthcare personnel caring for the patient
  - Infection control department
  - Other healthcare staff per facility policies
- Healthcare facilities (or clinical laboratories) should notify the Kentucky Department for Public Health (DPH) within one (1) business day
  - Priority reporting by EPID 250 and Electronic Laboratory Reporting through the Kentucky Health Information Exchange (KHIE)

Slide 9

Tier 1 Organisms (cont.)

- If the patient is currently admitted to a healthcare facility
  - Implement Contact Precautions for the index patient
  - Prioritize the facility where the index patient is currently admitted for a rapid infection control assessment to identify and address any potential gaps in infection prevention and control (IPC)
- Notify the patient and family about the results and infection control measures being implemented
- If the MDRO was present on admission, notify the transferring facility so appropriate investigation can occur at that facility

Slide 10

Tier 1 Organisms (cont.)

- Collaborate and consult with the DPH HAI/AR Prevention Program
- Conduct healthcare investigation
- Conduct a contact investigation
  - Patient screening to assess for transmission
    - » If the index patient had an overnight stay in a healthcare facility, screen epidemiologically linked patients regardless of whether the index patient was being managed with transmission-based precautions

Slide 11

Tier 1 Organisms (cont.)

- Who to screen?
  - Patients who shared a room or bathroom with the index patient
    - » Even if they have been discharged to another facility
  - Patients currently admitted to rooms where the index patient stay at least one night
  - Patients who were on the same ward or who shared healthcare personnel
  - Perform point prevalence surveys (PPS) in units where the patient was admitted
    - » Consider flagging charts of contacts who have been discharged, to facilitate preemptive Contact Precautions and admission screening if they are readmitted in the next six months
- **Perform additional, wider point prevalence surveys if there is evidence or suspicion of ongoing transmission, such as clinical isolates from multiple patients or if screening identifies new cases**

Slide 12

Tier 1 Organisms (cont.)

- **Rescreening patients known to have the novel or targeted MDRO that is the focus of the investigation is not recommended**
- **Admission screening can help to distinguish importation from ongoing transmission**
- Conduct clinical laboratory prospective and retrospective surveillance

Slide 13

Tier 1 Organisms (cont.)

- Implement a system to ensure adherence to infection control measures
  - Educate and inform the HCP and visitors for the index patient about the organism and precautions indicated
  - Ensure that adequate supplies are available to implement precautions
  - Conduct ongoing adherence monitoring of infection control practices and provide feedback to HCP
  - Flag affected patients' medical records to initiate appropriate infection control precautions upon readmission
  - Make plans for how receiving facilities will be notified of affected patients' MDRO status if the patient is transferred

Slide 14

Tier 2 Organisms

- Similar response features to Tier 1 Organisms
  - Prompt notification of primary care provider, healthcare team providing care, infection control department, and other healthcare staff per facility policies
  - Ensure implementation of appropriate infection control measures
    - » Contact Precautions
  - Prompt notification within one (1) business day to DPH HAI/AR Prevention Program by EPID-250 and electronic reporting through KHIE
  - Notify the patient and family about the results and the infection control measures
  - If detected upon admission, notify the transferring facility so appropriate review can occur

Slide 15

Tier 2 Organisms (cont.)

- Conduct a healthcare investigation
  - Review healthcare exposures from approximately 30 days prior to initial positive culture up to the present
- Conduct a contact investigation
  - Patient screening to assess for transmission
    - » Screening should occur even if the index patient was being managed with Contact or Enhanced Barrier Precautions
    - » Roommates and patients who shared a bathroom
    - » Screen the patient *currently* admitted to room(s) and bed spaces where the index patient stayed at least one night in healthcare facilities identified during the healthcare investigation, due to the risk of persistent environmental contamination for some organisms

Slide 16

Tier 2 Organisms (cont.)

- Options
  - Broader screening using point prevalence surveys is preferred
  - Broader screening may initially target contacts who are at higher risk due to overlap on the same ward as the index patient and presence of a risk factor for MDRO acquisition (e.g., bedbound, high levels of care, receipt of antimicrobials, or mechanical ventilation), and who are still admitted
- Considerations
  - When deciding whether to use a risk-factor-based approach, PPS, or both strategies in combination, consider individual facility characteristics, local epidemiology, characteristics of index patient, feasibility of identifying contacts, and laboratory capacity
    - **If it will take several days to identify higher risk contacts, perform a unit-wide point prevalence survey promptly**
    - Flag charts of contacts who have been discharged, to facilitate preemptive Contact Precautions and admission screening if they are readmitted in the next six months

Slide 17

Tier 2 Organisms (cont.)

- Patient screening when transmission is suspected or ongoing
  - Wider PPS is indicated
    - Periodic (every two weeks) PPS are recommended until transmission is controlled
      - Two consecutive point prevalence surveys with no new MDRO cases identified
  - Admission screening can help to distinguish importation from ongoing transmission
- Rescreening patients known to have the targeted MDRO is not recommended

Slide 18

Tier 2 Organisms (cont.)

- Conduct clinical laboratory prospective and retrospective surveillance
- Implement a system to ensure adherence to infection control measures
  - Educate and inform the HCP and visitors for the index patient about the organism and precautions indicated
  - Ensure that adequate supplies are available to implement precautions
  - Conduct ongoing adherence monitoring of infection control practices and provide feedback to HCP
  - Flag affected patients' medical records to initiate appropriate infection control precautions upon readmission
  - Make plans for how receiving facilities will be notified of affected patients' MDRO status if the patient is transferred
- On-site IPC assessments at all healthcare facilities identified in the healthcare investigation and any outpatient facilities where patients or HCP may have had extensive contact with the index patient, such as wound care clinics, are recommended

Slide 19

Tier 3 Organisms

- The initial response measures are the same as those for Tier 1 and Tier 2 Organisms
- The healthcare investigation is generally limited to the current admission unless the previous admission was within 30 days of specimen collection
- The focus of contact investigation is narrower than for Tier 2 Organisms unless
  - Strong indication that the index patient acquired the MDRO within the facility
  - Evidence or suspicion of transmission on the impacted unit
  - Case was on a unit with a long average length of stay

Slide 20

Tier 3 Organisms (cont.)

- If new cases are identified on screening, broader screening is advised
  - Consult with DPH HAI/AR Prevention Program
- Rescreening of patients known to have the targeted MDRO is not recommended
- Implement a system to ensure adherence to infection control measures
  - Educate and inform the HCP and visitors for the index patient about the organism and precautions indicated
  - Ensure that adequate supplies are available to implement precautions

Slide 21

Tier 3 Organisms (cont.)

- Conduct ongoing adherence monitoring of infection control practices and provide feedback to HCP
- Flag affected patients' medical records to initiate appropriate infection control precautions upon readmission
- Make plans for how receiving facilities will be notified of affected patients' MDRO status if the patient is transferred

Slide 22

Summary of Tiered Response

- The focus of surveillance activity, in response to identified cases, is very broad with Tier 1 Organisms and very narrow with Tier 3 Organisms
- **Timely and clear communication is consistent through all tiers!**
- All this activity is in collaboration with the DPH HAI/AR Prevention Program
- Pages 23-24 of the guidance document summarizes the response priorities
- https://www.cdc.gov/hai/mdro-guides/containment-strategy.html

Slide 23

Acknowledgements

- Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP)
- Members of the DPH HAI/AR Prevention Program

Slide 24

Thank you.

Michael J. Curran BSN, RN, CIC, NHDP-BC
Infection Control Nurse / MDRO Prevention Lead
michael.curran@ky.gov
502-234-8359

Kentucky Public Health
Prevent. Promote. Protect.

PHAB
Advancing Public Health Performance

TEAM KENTUCKY
CABINET FOR HEALTH AND FAMILY SERVICES

Slide 25

Kentucky Department for Public Health

About Us

Kentucky Public Health
Prevent. Promote. Protect.

The Kentucky Department for Public Health (KDPH) is dedicated to improving the health and safety of Kentuckians through *prevention*, *promotion*, and *protection*.

As a major part of the Cabinet for Health and Family Services, KDPH provides guidance and support for health departments in all 120 counties.

Serving as Kentucky's dedicated public health resource, KDPH is responsible for identifying and allocating resources to communities and public health institutions to prevent and protect against diseases, outbreaks, and hazards statewide.

Getting to know your micro lab

Slide 1

Slide 2

We don't skimp on Quality

Our product is data.

We take great pride in delivering the highest possible level of accuracy, to the point of being really annoying about it.

Slide 3

We live and breathe procedures. Everything we do is detailed in a procedure.

We are legally required to follow our procedures.

We like to follow the Rules

Slide 4

WHAT'S IN A LAB PROCEDURE?

- Principle/purpose
- Acceptable specimens/patients
- Specimen collection and transport
- Acceptable storage requirements
- Step-by-step technical steps
- How to interpret results
- How to report results
- Safety considerations
- Limitations of the test
- Performance specifications – accuracy, precision, limit of detection, etc.

Your laboratory should be able and willing to provide you with a copy of their procedure for a given test.

Should also be willing to share validation/verification data.

Slide 5

Microbiology

is a little different

Slide 6

We don't skimp on Quality

We like to follow the Rules

Slide 7

We don't skimp on Quality

You can't "procedure" every situation that arises in a culture. Judgment is required – from technical staff & directorial staff.

We like to follow the Rules

Our product is not data. It's our interpretation of the data.

Much of what we do is more important for the community (or the next patient) than it is for the actual patient.

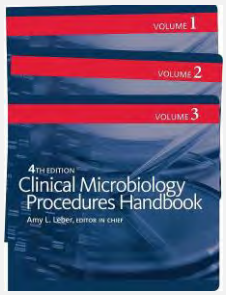
Slide 8

MICROBIOLOGY CULTURE PROCEDURES MUST ADDRESS

- Are these culture results indicative of an infection?
- What organisms growing in this culture are clinically significant?
  - These should be reported by name.
- What organisms are normal flora?
  - These should not be reported by name.
- Which organisms should have susceptibility testing performed?
- What type of susceptibility testing should be performed? What antibiotics should be reported?
- Are there organisms here that have infection control significance?
- Should we include any interpretive comments or guidance?

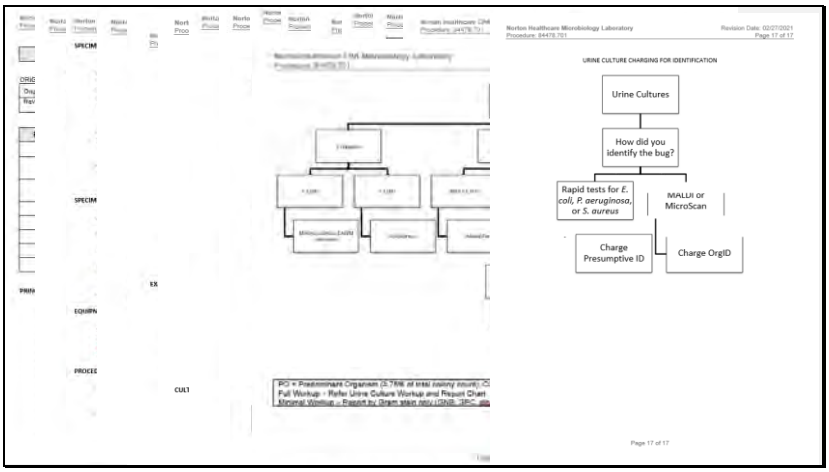
Slide 9

WHERE DO THESE PROCEDURES COME FROM?



- Professional resources
  - ASM Clinical Microbiology Procedures Handbook
- "This is the way we've always done it."
- Colleagues at other facilities
- Must be modified to fit local priorities & practices
- Must be approved by laboratory medical director

Slide 10



Slide 11

WHY ARE YOU TELLING US ALL THIS?

- Culture workup & interpretation procedures will differ from one lab to another
- Your lab's procedures will have an effect on infection rates, including CAUTI, CLABSI, and HCAP rates.
- Your lab's procedures will have an effect on rates of multidrug resistant organisms.
- Having an understanding of how your lab works up and reports culture results will help infection preventionists understand the limitations, what a result means and what it doesn't.

Slide 12

BLOOD CULTURE

- This is what we grew
  - *Kocuria rosea*, aerobic bottle only, grew at 26 hours incubation
  - Another blood culture collected two hours later no growth to date (after three days incubation)

What's the clinical significance of this result?

What should be reported?

- What would we report?
  - *Kocuria rosea* from aerobic bottle
  - Call Micro if further workup indicated
- Should we do susceptibility testing?
- Okay, exact same scenario, but this time it's *Staphylococcus epidermidis* and the patient has a central line in place.
  - We'd report Coagulase-negative *Staphylococcus* from aerobic bottle, Call Micro if further workup indicated
- Okay, what if it's the same scenario but this time it's *Streptococcus intermedius* or *Staphylococcus lugdunensis*?
- What if only one blood culture was collected?

Slide 13

SPUTUM CULTURE

- This is what we grew
  - Heavy growth viridans *Streptococcus*
  - Moderate growth *Corynebacterium striatum*
  - Light growth *Staphylococcus epidermidis*
  - Light growth *Neisseria meningitidis*
  - Light growth *Staphylococcus aureus*
  - Light growth yeast
  - Scant growth *Klebsiella pneumoniae*

Should the physician be concerned from a clinical perspective?

Are you concerned from an infection control perspective?

- What would we report?
  - Heavy growth normal respiratory flora
- What susceptibility testing would we do?
  - None
- What else would we do?
  - Identify the yeast but don't report by name unless…
- What if the Gram stain performed on the specimen showed moderate squamous epithelial cells?

Slide 14

URINE CULTURE

- This is what we grew (1 µl loop streak)
  - >100 colonies *Escherichia coli*
  - 3 colonies *Morganella morganii*
  - 2 colonies *Staphylococcus capitis*

Is this indicative of a urinary tract infection?

How should it be reported?

Would it be considered a CAUTI?

- What would we report?
  - >100,000 CFU/ml *Escherichia coli*
  - <10,000 CFU/ml mixed flora
  - Susceptibility on the *E. coli*
  - Comment - Colonization of the urinary tract without infection is common. Treatment is discouraged unless the patient is symptomatic, pregnant, <2 years of age, or undergoing an invasive urologic procedure.
- What would change if we reported this?
  - >100,000 CFU/ml *Escherichia coli*
  - 3,000 CFU/ml *Morganella morganii*
  - 2,000 CFU/ml *Staphylococcus capitis*
  - Which bug(s) get susceptibility testing?

Slide 15

WOUND CULTURE

- This is what we grew
  - Heavy growth *Staphylococcus epidermidis*
  - Light growth *Corynebacterium striatum*
  - Scant growth *Staphylococcus aureus*
  - Scant growth Group A *Streptococcus*

What's the clinical significance of this result?

Do you have infection control concerns?

- Which of these four organisms do you think should be reported by name?
- Which should get susceptibility testing?
- What actually happens will vary between labs
- What would we report?
  - Heavy growth skin flora
  - Scant growth Group A *Streptococcus*
  - No susceptibility testing

Slide 16

MORAL OF THE STORY

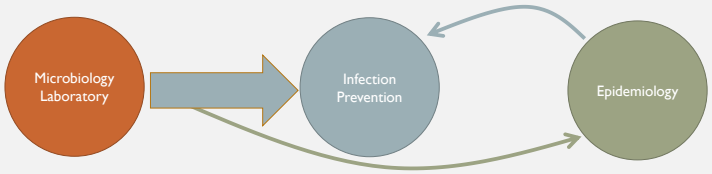
Get to know your micro lab.

Specifically, get to know their procedures for major types of cultures.

How do they decide what organisms get identified by name?
How do they decide what organisms get susceptibility testing?
How might this affect HAI rates and MDRO rates?

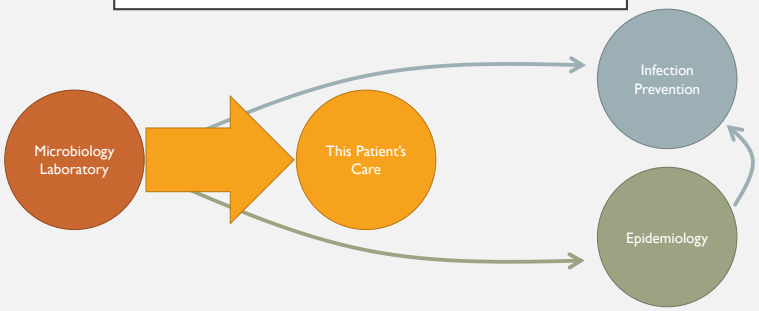
Slide 17

THIS IS HOW WE FEEL ABOUT EACH OTHER



Slide 18

BUT WE'RE NOT GOING STEADY



Slide 19

Thanks for your attention.

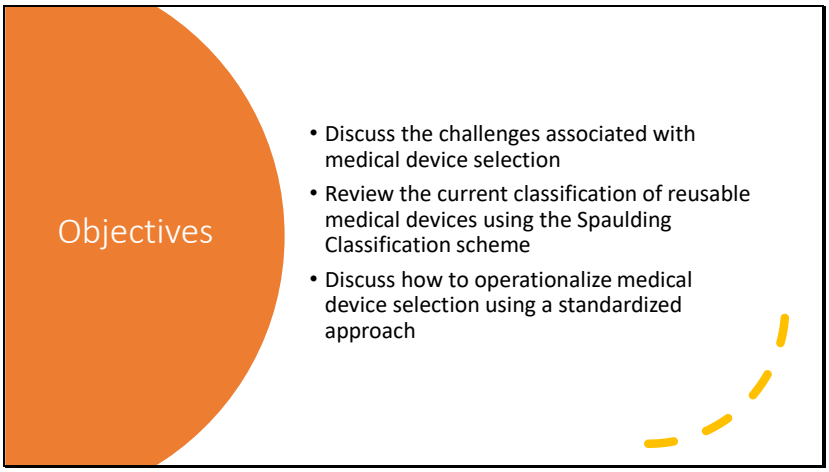
Alan D. Junkins, PhD, D(ABMM)
alan.junkins@nortonhealthcare.org
502-736-4460

CPA Lab | Norton Healthcare

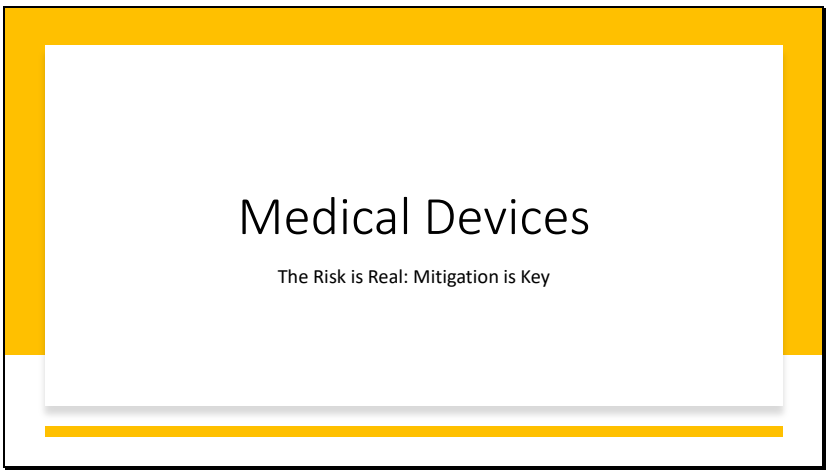
Device Selection

Slide 1

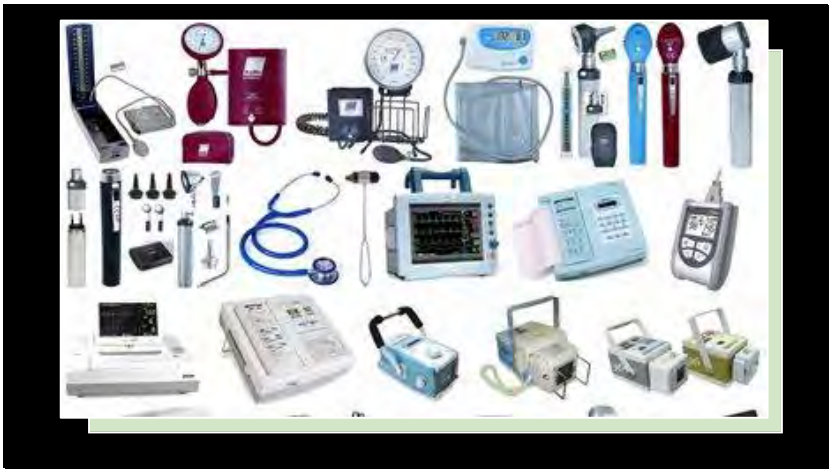
Slide 2



Slide 3



Slide 4



Slide 5

Overview of Spaulding Classification

- Non-critical Devices
- Semi-critical Devices
- Critical Devices

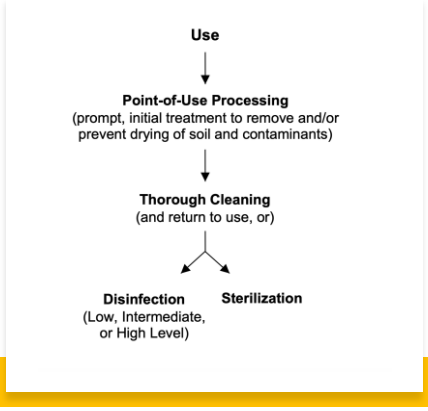
Slide 6

PATIENT CONTACT	DEVICE CLASSIFICATION	DECONTAMINATION METHOD
Intact skin	Non-critical	Low or intermediate-level disinfection
Mucous membranes or non-intact skin	Semi-critical	High-level disinfection
Sterile areas of the body including blood contact	Critical	Sterilisation

Slide 7

How is the Determination Made?

- Source: Food and Drug Administration



Slide 8

Levels of Disinfection for Medical Devices

- Cleaning
- Low Level Disinfection
- Intermediate Level Disinfection
- High Level Disinfection
- Sterilization

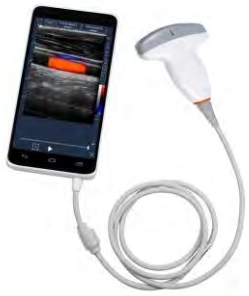
Slide 9

Communication is Key with Medical Device Safety

Slide 10

Case Example #1: Ultrasound Probes

- Used Point-of-Care
- Currently have Sterile Probe Cover used
- Current level of Reprocessing: Low/Intermediate Level disinfection via ready-to-use wipes
- Accessories such as US Gel



Slide 11

Key Questions to Consider

- Who are the users of the device?
- Where is the device housed when not in use?
- What level of disinfection is currently being performed?
- What level of disinfection should be performed?
- What do the IFUs for reprocessing state?
- Have patients of HCPs been harmed?
- Who do I need to report this to?

Slide 12

Case Example #2: Glucometer

- Used Point-of-Care
- Used between patients with disposable lancets but also is used in outpatient settings with "lancing device" with disposable lancets
- Current level of Reprocessing: Low/Intermediate Level disinfection via ready-to-use bleach wipes

Slide 13

Case Example #3: Flexible Endoscopes

- Used Point-of-Care
- Used between patients regularly in both inpatient and outpatient settings
- Current level of Reprocessing: High Level Disinfection via SPD inpatient but onsite via unknown "soaking HLD" at offsite ambulatory sites

Slide 14

Medical Device Competencies

Driven by Manufacturer's IFUs

Training and Competency assessed performed:

- At Time of Implementation
- At Time of Employee Hire
- Annually
- Anytime anything with the device or process changes

Who is qualified to assess medical device reprocessing competency?

Slide 15

Question #1

- Is the device FDA cleared or registered?
  a. Yes
  b. No, reconsider if use is appropriate.

Slide 16

Question #2

- Will the device be used on more than one-patient ?
  - Yes
  - No

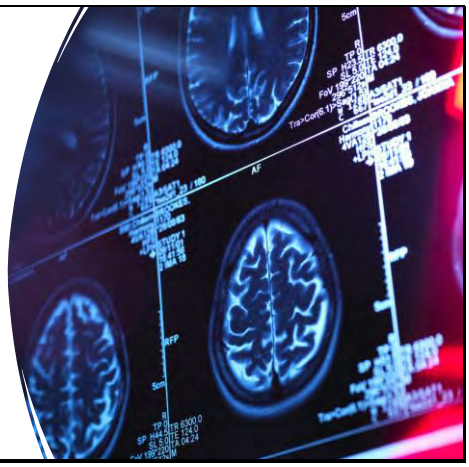
Slide 17

What Unique Risks Must be Considered?

Slide 18

Question #3

- What is the FDA classification of the medical device ?
  - Class I
  - Class II
  - Class III



Slide 19

Question #4

- Does the medical device require reprocessing if it is reusable ?
  - Yes
  - No

Slide 20

Slide 21

Potential Reprocessing Evaluation Options

- REVIEW OF REPROCESSING IFUS
- HUMAN FACTORS ENGINEERING STUDY WHEN POSSIBLE
- TIME-IN-MOTION STUDY
- SIMULATION MODEL USE

Slide 22

Question #5

- If the answer to Question #4 is YES, then are reprocessing instructions available?
  - Yes
  - No

Slide 23

Question #6

- Has the device ever been recalled?
  - Yes
  - No

Slide 24

Question #7

- If the answer to Question #6 is YES, then why has the device been recalled?

Slide 25

Potential Causes of Recall

- Administrative (Paperwork)
- 483 Warning Letter
- Product Malfunction
- Reported Patient Harm and/or Death
- Confirmed Causal Link to Patient Harm and/or Death

Slide 26

Question #8

- Are their MAUDE reports related to the device ?
  - Yes
  - No

Slide 27

Question #9

- If the answer to Question #8 is YES, then describe the trends associated with the MAUDE reports.

Slide 28

Question #10

- What type of reprocessing does the device require according to the Spaulding Classification?
  - Low/Intermediate-Level Disinfection
  - High Level Disinfection
  - Sterilization

Slide 29

Question #11

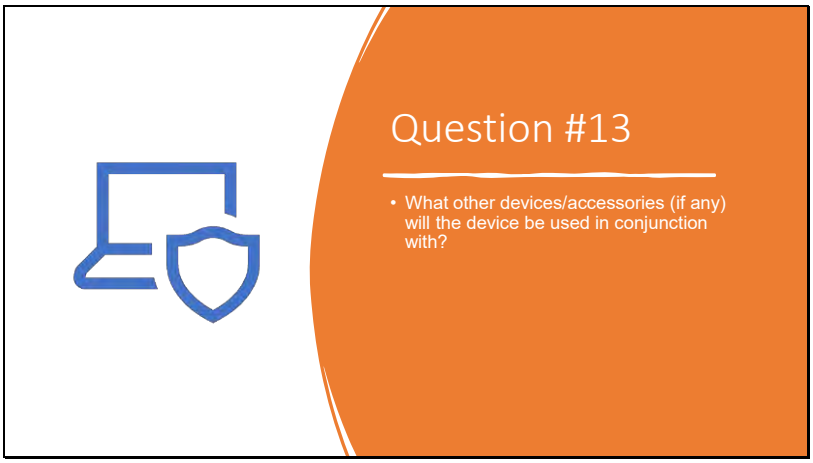
- What is the device's intended use as specified in the FDA approval?

Slide 30

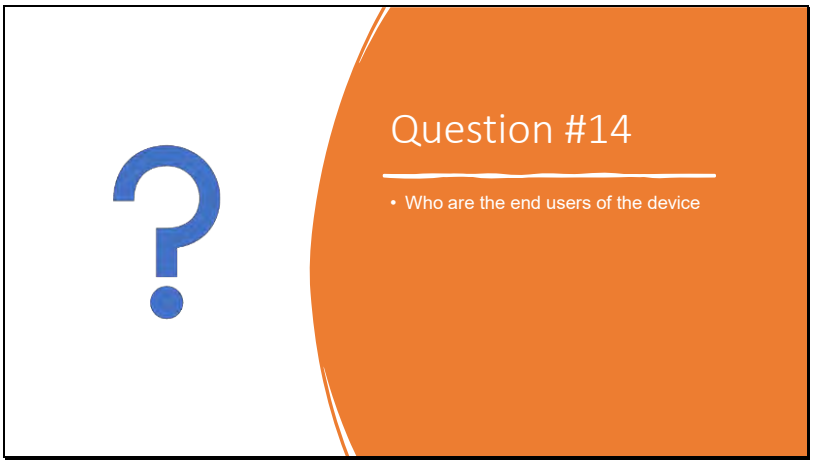
Question #12

- How is the device packaged between uses (if reusable)?

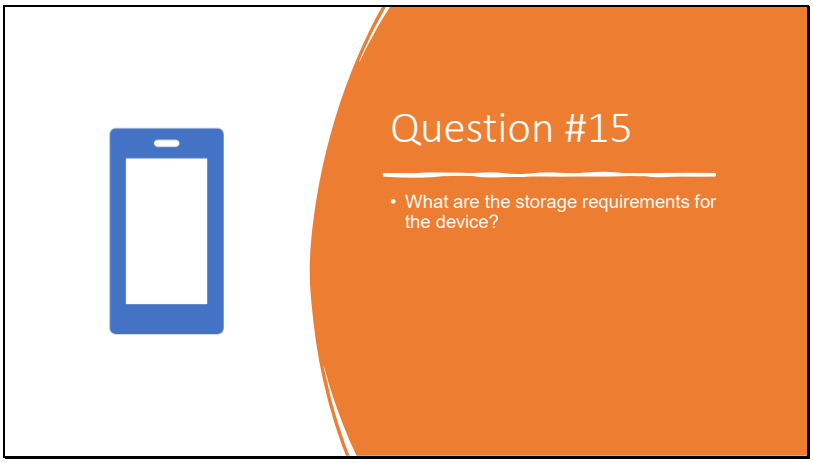
Slide 31



Slide 32



Slide 33



Slide 34

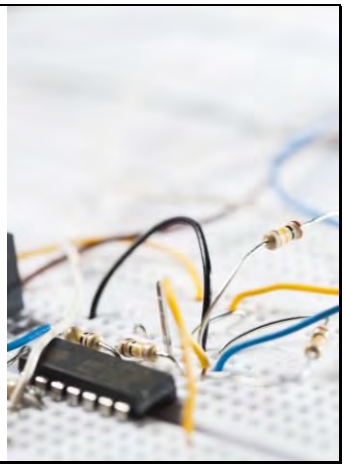
Question #16

- What maintenance is required to keep the device functioning safely ?

Slide 35

Question #17

- Does the device meet the criteria set forth by the FDA's Next Generation Medical Devices?
  - Smooth surfaces, including smooth inner surfaces of the long, narrow interior channels (lumens)
  - The ability to disassemble devices with multiple components
  - Non-interchangeable connectors for critical connections (For example, tubes used with endoscopes for direct patient connection that cannot be interchanged with tubing used for waste drainage)
  - Clear identification of connecting accessories, such as drainage tubing
  - Clear indication and identification of components that must be discarded after patient use and cannot be reprocessed or reused
  - Disposable components for the hardest to clean areas
  - Designs that address how fluid flows through the device, and areas of debris build-up within devices



Slide 36

Medical Device Selection Key Stakeholders

- Infection Prevention & Control
- Risk Management
- Central Sterile Processing
- Environmental Services
- Perioperative Services
- Reprocessing Personnel
- Biomedical Engineering

Slide 37

Make a List and Check it Twice

- We CAN Control:
  - Device Reprocessing
  - Personnel Training
  - Competency Management
  - Quality Improvement
  - Device Monitoring
- We CANNOT Control:
  - Patient Comorbidities
  - Previous Usage of Loaner Devices
  - Patient Pre-existing Colonization

Slide 38

Putting it All Together

- Mitigate medical device risk BEFORE the device is introduced within your health system
- Invest in a comprehensive value analysis process rooted in risk mitigation and infection control
- Determine all potential uses of medical devices and incorporate into infection control risk assessment

Slide 39

Additional Training Opportunities

- AHVAP Medical Device Safety Micro-Certification
- FDA Webinar Programs
- Review FDA Regulations in the CFR

Slide 40

References

- A Process for Assessing Products for Infection Prevention in Healthcare Settings: a framework from HICPAC, Centers for Disease Control and Prevention.
- Medical Device Safety Evaluation Checklist, Association of Healthcare Value Analysis Professionals.
- Reprocessing Medical Devices in Health Care Settings: Validation Methods and Labeling, Food and Drug Administration

Slide 41

KENTUCKY INFECTION PREVENTION
Training Center

LET'S TALK

Stay Connected

Contact Information:
Dr. Garrett

Email:
Hudson.garrett@Louisville.edu

Twitter:
@DrHudsonGarrett

Facebook:
@DrHudsonGarrett

LinkedIn:
@DrHudsonGarrett

Antimicrobial Stewardship for the Infection Preventionist

Slide 1

Antimicrobial Stewardship for the Infection Preventionist

Elena Swingler, PharmD, MBA, BCIDP
Clinical Pharmacy Specialist in Infectious Diseases
Norton Healthcare Infectious Diseases Institute

Slide 2

KASIC

KENTUCKY INFECTION PREVENTION
BEST PRACTICES BEST OUTCOMES
www.kyiptraining.org

Disclosure: Content includes discussion of unlabeled use of products. Presenter has no financial interests or other relationships with the manufacturers of products. No commercial support was provided for this educational activity.

Slide 3

Objectives

1. Describe the role of infection prevention in antimicrobial stewardship
2. Recall the CDC core elements of antimicrobial stewardship and opportunities for nurse application of stewardship principles

Slide 4

Antimicrobials – the double edged sword

- Curative
- Modern medicine depends on them
  - Sepsis
  - Surgery
  - Transplantation
  - Oncology

- Toxicity
- Allergies
- Line infections
- *C. difficile* infection
- Resistance

Slide 5

Antimicrobial resistance

- Top 10 global public health threat facing humanity
- New drugs are not being developed fast enough
  - Low innovation among new drugs (i.e. within existing classes)
- Worsened by the COVID-19 pandemic:

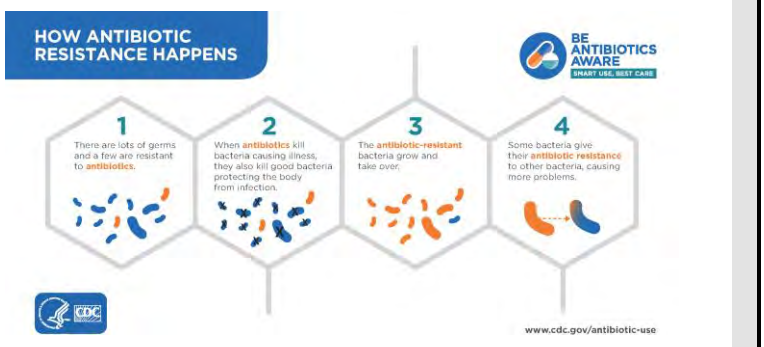
Main drivers: Misuse and overuse of antimicrobials

Available data show an alarming increase in resistant infections starting during hospitalization, growing at least 15% from 2019 to 2020.

- Carbapenem-resistant *Acinetobacter* (↑78%)
- Antifungal-resistant *Candida auris* (↑60%)*
- Carbapenem-resistant Enterobacterales (↑35%)
- Antifungal-resistant *Candida* (↑26%)
- ESBL-producing Enterobacterales (↑32%)
- Vancomycin-resistant Enterococcus (↑14%)
- Multidrug-resistant *P. aeruginosa* (↑32%)
- Methicillin-resistant *Staphylococcus aureus* (↑13%)

World Health Organization. 10 global health issues to track in 2021.
CDC. COVID-19 U.S. Impact on Antimicrobial Resistance, Special Report 2022.

Slide 6



Slide 7

Inappropriate antibiotic use is prevalent

- Studies estimate antibiotic use is unsupported in:
  - 56% of hospitalized patients
  - Up to 75% of long-term care patients
- Unsupported use scenarios
  - Excessive duration
  - Antibiotic not recommended by guidelines
  - Lack of documented symptoms (e.g. UTI)
  - Viral respiratory infections
  - Using antibiotic to which organism is not susceptible

Community Antibiotic Prescriptions, 2020

KY has 5th highest outpatient antibiotic use

Magill SS, et al. *JAMA Netw Open*. 2021;4(3):e212007.
Morrill HJ, et al. *Am Med Dir Assoc*. 2016;17(2):183.e1-16.
CDC. Outpatient antibiotic prescriptions – United States, 2020.

Slide 8

Antimicrobial stewardship (AMS) in a nut shell

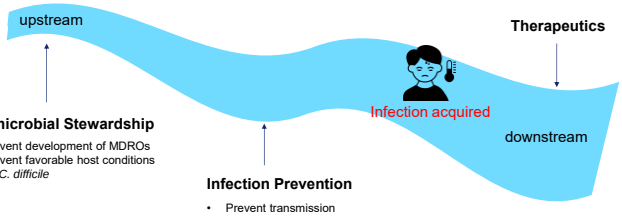
- Coordinated interventions designed to improve and measure the appropriate use of antimicrobials
- Major objectives
  - Achieve best clinical outcomes
  - Minimize adverse events
  - **Limit selective pressure on bacterial and fungal populations that drive resistance**

SHEA, IDSA, PIDS. *Infect Control Hosp Epidemiol*. 2012;33(4):322-7.

Slide 9

Antimicrobial Stewardship and Infection Prevention Common goal:

Protecting patients from morbidity and mortality associated with MDROs and *C. difficile* infections



Antimicrobial Stewardship
- Prevent development of MDROs
- Prevent favorable host conditions for *C. difficile*

Infection Prevention
- Prevent transmission

Manning ML, et al. *Am J Infect Control*. 2018; 46(4):364-8.

Slide 10

CDC Core Elements of Antimicrobial Stewardship

- Outlines the core elements of successful antimicrobial stewardship in:
  - Hospitals
  - Nursing homes
  - Outpatient settings
  - Resource-limited settings
- No “one size fits all”
- Adopted by accrediting bodies and regulators
  - Joint Commission
  - DNV
  - Centers for Medicare and Medicaid Services

Infection Prevention can help facilities meet core elements of antimicrobial stewardship

CDC. Core Elements of Antibiotic Stewardship. https://www.cdc.gov/antibiotic-use/core-elements/index.html. Accessed Sept 2023.

Slide 11

CDC Core Elements of Antimicrobial Stewardship

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019.

Slide 12

Hospital Leadership

- Senior leadership support is critical for success of an Antimicrobial Stewardship Program
  - IP can help advocate for expanding AMS services
- MDRO and *C. difficile* facility metrics as motivators
- IP and AMS should align programs for efficiency

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019.

Slide 13

Action

- IP can influence and facilitate nursing support of AMS activities:
  - Improving culture technique
  - Diagnostic stewardship
  - Improving documentation of allergies
  - Antibiotic reconciliation at transitions of care
  - Antibiotic timeouts
  - IV to PO switch facilitation
  - Standardize nursing communication regarding patient status changes to providers

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019.

Slide 14

AMS Opportunity: *Asymptomatic Bacteriuria (ASB)*

- ASB = bacteria in the urine WITHOUT symptoms attributable to a UTI
  - UTI symptoms: painful urination, increased urinary frequency/urgency, flank pain, fever
- Antibiotics NOT required in most patients with ASB
  - Statement supported by many reputable national and international organizations
- ASB is very common
  - High prevalence populations: urinary catheters, spinal cord injury, elderly, females, diabetes

45% of patients get antibiotics for ASB when they are not indicated

Magill SS, et al. *JAMA Netw Open.* 2021;4(3):e212007.
Nicolle LE, et al. *Clin Infect Dis.* 2019;68(10):e83-e110.

Slide 15

AMS Opportunity: *Asymptomatic Bacteriuria (ASB)*

Common misconceptions:

- Positive **urine culture** = UTI
- Positive **urinalysis** is a good predictor of true infection
- Cloudy or malodorous **urine** is indicative of a UTI
- Elderly with falls or confusion need a **urine culture** to rule out UTI
- Repeat **urine culture** is needed after finishing antibiotics for a UTI
- If we don't treat ASB, it will progress to UTI

CDC Core Elements:

Action

Education

Nurses can help with AMS:

- **STOP unnecessary urine tests**
- **EDUCATE patients on true signs of UTI**
- **COLLECT urine with good technique when indicated**

Schulz L, et al. *J Emerg Med.* 2016;51(1):25-30.

Slide 16

AMS Opportunity: Allergy Histories

Penicillins are the #1 reported antibiotic allergy

10-15% of patients report a penicillin allergy

95% of patients with penicillin allergy label are NOT truly allergic

- Cross-reactivity between penicillins and cephalosporins is ~2%
- Misconception: cephalosporins should not be given if penicillin allergy
  - Many cephalosporins may be given safely to patients with true penicillin allergy
  - TYPE of cephalosporin matters

Alternative antibiotics:
- Less effective
- More toxic
- Unnecessarily broad
- More expensive

Patients with documented penicillin allergy:
- ↑ *C. difficile* rates
- ↑ MRSA and VRE rates
- ↑ Surgical site infections

Khan DA, et al. *J Allergy Clin Immunol.* 2022;150(6):1333-93. Bennet JE, et al. Mandell. 9th ed. 2020. | Blumenthal KG, et al. *Lancet.* 2019;393(10167):183-98.

Slide 17

AMS Opportunity: Allergy Histories

~ Clinical Vignette ~

- TJ is a 65 year old male who presents to his primary office with shortness of breath, productive cough, chills
  - Past medical history: heart failure, diabetes, kidney disease
  - Vitals: fever, otherwise stable
  - CXR: right lung infiltrate
- He is diagnosed with community-acquired pneumonia and the provider decides to start antibiotics
- TJ's chart lists a **penicillin allergy without specific reaction listed**. Instead of provider's go-to amoxicillin-clavulanate and azithromycin for pneumonia, he prescribes **levofloxacin** 750 mg by mouth daily for 5 days.

- Reaction should be clarified
- Cephalosporins should be considered, even if patient had true hypersensitivity reaction

- FDA boxed warnings for adverse effects
- High risk for *C. difficile*
- Unnecessarily broad (*Pseudomonas* spp coverage)

Slide 18

AMS Opportunity: Allergy Histories

Allergy questions

- What was the reaction?
  - Elicit **details** e.g. if rash, was it itching? Where?
- Did reaction occur after the first dose or after several doses?
- Did you require medical treatment for the reaction?
- How long ago did the reaction occur?
- Have you taken this antibiotic since?
  - If penicillin allergy, also ask if taken any of the following: amoxicillin, amoxicillin-clavulanate, cephalexin
- Have you had allergy skin testing since?

Providers and pharmacists can use this information to "de-label" patients after additional evaluation

CDC Core Elements:

Action

Education

Nurses can help with AMS:
- **CLARIFY documentation of allergic reactions in medical record**
- **EDUCATE patients on signs of true allergy**

Covington EQ, et al. *Pharmacy (Basel).* 2019;7(2): 69.

Slide 19

Tracking

- Antibiotic use tracking via National Healthcare Safety Network (NHSN) Antimicrobial Use (AU) Option
  - Electronic reporting integrated with electronic medical record
  - Benchmarks use compared to similar hospitals/units
  - **IP expertise in accurate data submission needed**
  - CMS Hospital Conditions of Participation will require reporting starting in 2024
- MDRO and *C. difficile* rates tracking
  - Important metrics for Antimicrobial Stewardship Programs

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019.

Slide 20

NHSN Antibiotic Use Option

CDC Core Element:

Tracking

- Purpose
  - Provide inpatient facilities with risk-adjusted inter- and intra-facility antimicrobial use benchmarking
  - Trend antibiotic use over time
- Hospitals must submit antibiotic use data electronically
- Result: Standardized Antimicrobial Administration Ratio (SAAR)
  - Days of therapy per 1,000 patient days
  - Adjusted for patient care location and facility level data

$$SAAR = \frac{\textbf{Observed}\ antimicrobial\ days\ of\ therapy}{\textbf{Predicted}\ antimicrobial\ days\ of\ therapy}$$

	Observed antibiotic use is…
SAAR < 1	Lower than predicted
SAAR = 1	Equal to predicted
SAAR > 1	Higher than predicted

CDC. NHSN Antimicrobial Use and Resistance (AUR) Module. Jan 2023.
CDC. NHSN A Guide to the SAAR. Mar 2023.

Slide 21

NHSN Antibiotic Use Option

CDC Core Element:

Tracking

- SAAR categories
  - Facility level (all antimicrobial for all eligible locations within one facility)
  - Unit level (e.g. ICU)
  - Antimicrobial grouping (e.g. broad-spectrum)
- Limitations
  - **Inaccurate data if improper unit mapping**
  - Not adjusted for illness severity or case-mix
  - Peer comparison is not in "real-time" – most recent baseline SAAR model is 2017
  - Seasonality?
- SAAR alone is NOT a definitive measure of appropriateness of antimicrobial use
  - SAAR is intended to prompt investigation into appropriateness

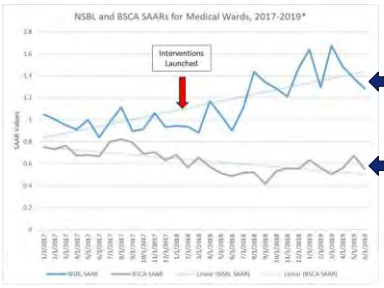
CDC. NHSN A Guide to the SAAR. Mar 2023.
O'Leary EN, et al. *Clin Infect Dis*. 2020;71(10):e702-e709.

Slide 22

SAAR in action at large academic medical center

AMS interventions:

1. Promote use of narrow oral β-lactam as step-down for pneumonia (instead of status quo fluoroquinolone)
2. Promote use of cefazolin for UTIs based on local susceptibilities (instead of status quo ceftriaxone)



High SAAR is not ALWAYS a bad thing

SAAR for **narrow** spectrum β-lactams **increased**

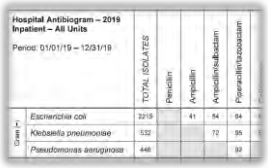
SAAR for **broad** spectrum β-lactams **decreased**

CDC. Using the SAAR to Track Impact of Multiple Concurrent Antimicrobial Stewardship Interventions. https://www.cdc.gov/nhsn/au-case-examples/multiple-interventions.html. Accessed Sept 2023.

Slide 23

Reporting

- Process and outcome measures should be reported to:
  - Prescribers, pharmacists, nurses, leadership
- Information to report
  - Antibiotic use
  - Antibiogram
  - *C. difficile* rates
  - Results of quality improvement interventions
  - Local/state health department epidemiology and resistance threats updates



Hospital Antibiogram – 2019 Inpatient – All Units Period: 01/01/19 – 12/31/19	TOTAL ISOLATES	Penicillin	Ampicillin	Ampicillin/sulbactam	Piperacillin/tazobactam
Gram (-) Escherichia coli	3215		41	64	84
Klebsiella pneumoniae	532			72	85
Pseudomonas aeruginosa	448				89

Truong WT, et al. *JAC Antimicrob Resist.* 2021;3(2):dlab060.
CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019.

Slide 24

Education

- Education is most effective when paired with specific interventions and tailored to audience
- IP can help educate bedside nurses on AMS principles
- MANY educational resources for AMS targeted toward various audiences
  - Flyers, toolkits, patient resources, clinical education, and more

KASIC

AHRQ Agency for Healthcare Research and Quality

CDC

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Slide 25

Thank You

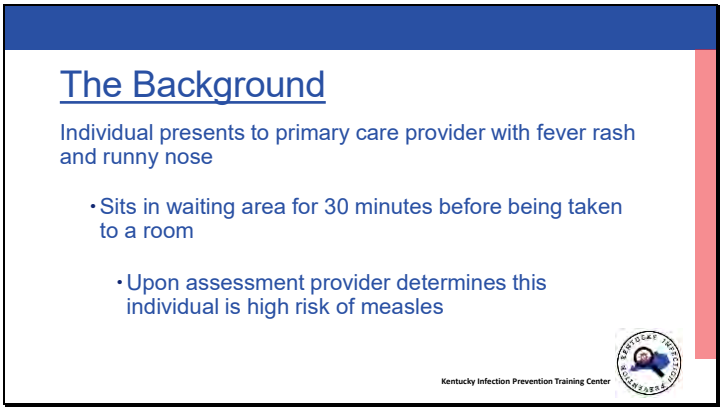
Elena Swingler, PharmD, MBA, BCIDP
Clinical Pharmacy Specialist in Infectious Diseases
Norton Healthcare Infectious Diseases Institute
elena.swingler@nortonhealthcare.org

www.kymdro.org/kasic
@KASIC_MDRO

Table top simulations

Slide 1

Slide 2



Slide 3

Slide 4

TABLE TOP Measles

The Background :

- Individual presents to primary care provider with fever rash and runny nose
  - Sits in waiting area for 30 minutes before being taken to a room
    - Upon assessment provider determines this individual is high risk of measles

Kentucky Infection Prevention Training Center

Slide 5

Now what happens?

- Notification
- Testing
- Exposures
- Waiting room needs
- What is process to assess staff immunity to vaccine preventable diseases such as Measles
- Documentation for resident immunity status
- What is process for visitors
  - Residents may have a variety of visitors, including small children.

Kentucky Infection Prevention Training Center

Slide 6

C. auris Exercise

Kentucky Infection Prevention Training Center

KentuckyIPTraining.org

Slide 7

TABLE TOP C. auris

The Background:

- Patient admitted to rehab facility after extensive stay in acute care facility secondary to pneumonia
  - On admission surveillance testing is done and C. auris is identified

Kentucky Infection Prevention Training Center

Slide 8

Now what happens?

- Notification
- Notifying the transferring facility
- PPS
  - When do you start
  - What population do you test
  - What if there are positive results
  - What if all are negative
- Exposures
- Cleaning and disinfection
- Sharing rooms and bathroom

Kentucky Infection Prevention Training Center

Notes:

Use the follow pages to take notes from today's events and simulations.

Notes:

Use the follow pages to take notes from today's events and simulations.

Notes:

Use the follow pages to take notes from today's events and simulations.

KENTUCKY INFECTION PREVENTION Training Center
KentuckyIPTraining.org

Infection Prevention BOOT CAMP

Presented by KyIP Training Center

2023

Educate • Collaborate • Prevent Infections

KyIP Training Center
224 E Broadway, Suite 300
Louisville, KY 40202

KyIPTraining.org

Connect with KyIP Training Center on Socials