MISSOURI DEPARTMENT OF
HEALTH &
SENIOR SERVICES

ENVIRONMENTAL CONSIDERATIONS

IN SKILLED NURSING AND LONG TERM CARE FACILITIES

Healthcare Associated Infections (HAI) / Antimicrobial Resistance (AR) Program

Objective

This training was created to educate frontline and administrative staff on the importance of considering the environment in reducing the spread of COVID-19 and other harmful microbes within long term care facilities.

Topics Covered

- Safe and Proper Use of Cleaning Chemicals and Supplies
- Environmental Cleaning
- Protecting Against MDROs
- Water Systems
- HVAC Issues

6 Steps for Safe and Effective Disinfectant Use

1. Make sure the product is EPA approved.
2. Read and follow the directions.
3. Wear PPE such as gloves, safety glasses and gowns if necessary.
4. Pre-clean the surface before disinfectant use.
5. Follow contact time and keep surface wet for the directed time.
6. Wash your hands for 20 seconds after removing gloves.

Toxic Chemical Storage

Store in a clean, cool, dry space.

- Some cleaning chemicals can have hazardous reactions when they experience extreme temperature fluctuations or high levels of humidity

Store in well-ventilated areas, away from Heating, Ventilation, and Air Conditioning (HVAC) intake vents.

- This helps prevent any fumes from spreading to other areas of the facility

Store no higher than eye level.

- Never on the top shelf of a storage area

Do not overcrowd shelves.

- Include anti-roll lips to avoid falling containers

Never store cleaning chemicals on the floor.

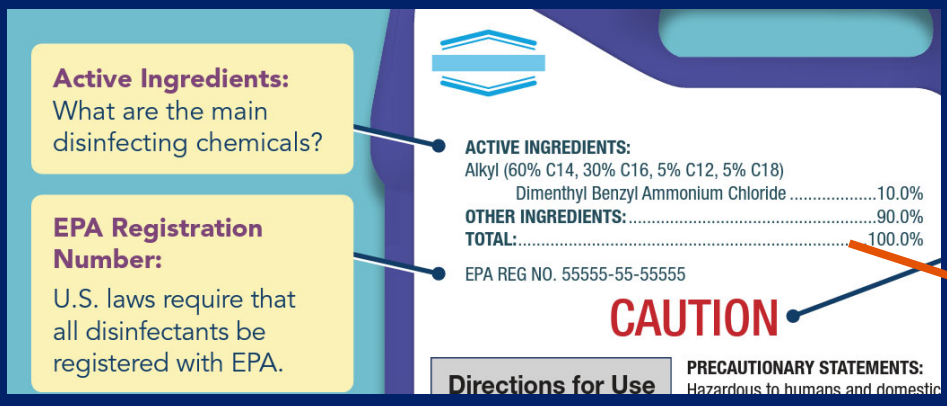
- Even temporarily

Product Labels: 3 Main Categories

How to Read a Disinfectant Label

Active Ingredients:
What are the main disinfecting chemicals?

EPA Registration Number:
U.S. laws require that all disinfectants be registered with EPA.



ENTS:
0% C16, 5% C12, 5% C18)
Benzyl Ammonium Chloride 10.0%
NTS:.....90.0%
.....100.0%

55-55-55555

CAUTION

Signal Words (Caution, Warning, Danger):
How risky is this disinfectant if it is swallowed, inhaled, or absorbed through the skin?

registered with EPA.

Directions for Use (Instructions for Use):
Where should the disinfectant be used?

What germs does the disinfectant kill?

What types of surfaces can the disinfectant be used on?

How do I properly use the disinfectant?

Contact Time:

Directions for Use

INSTRUCTIONS FOR USE:
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

For Disinfection of Healthcare Organisms:
Staphylococcus aureus,
Pseudomonas aeruginosa.

To Disinfect Hard, Nonporous Surfaces:
Pre-wash surface.
Mop or wipe with disinfectant solution.
Allow solution to stay wet on surface for at least 10 minutes.
Rinse well and air dry.

PRECAUTIONARY STATEMENTS: Hazardous to humans and domestic animals. Wear gloves and eye protection.

CAUSES MODERATE EYE IRRITATION. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Avoid contact with foods.

FIRST AID: IF IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. **IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.

POISON CONTROL: Call a Poison Control Center (1-866-366-5048) or doctor for treatment advice.

Precautionary Statements:
How do I use this disinfectant safely? Do I need PPE?

First Aid:
What should I do if I get the disinfectant in my eyes or mouth, on my skin, or if I breathe it in?

Storage & Disposal:
How should the

the disinfectant?

Allow solution to stay wet on surface for at least 10 minutes.

Rinse well and air dry.

EXP MM-DD-YYYY

5 55555 55555 5

Contact Time:
How long does the surface have to stay wet with the disinfectant to kill germs?

POISON CONTROL: Call a Poison Control Center (1-866-366-5048) or doctor for treatment advice.

STORAGE AND DISPOSAL: Store this product in a cool, dry area away from direct sunlight and heat. When not in use keep center cap of lid closed to prevent moisture loss. Nonrefillable container. Do not reuse or refill this container.

Storage & Disposal: How should the disinfectant be stored? How should I dispose of expired disinfectant? What should I do with the container?

What are the differences in disinfectants?

Kill Claims compared against likely pathogens for that room

Environmental Protection Agency (EPA) hospital grade disinfectant

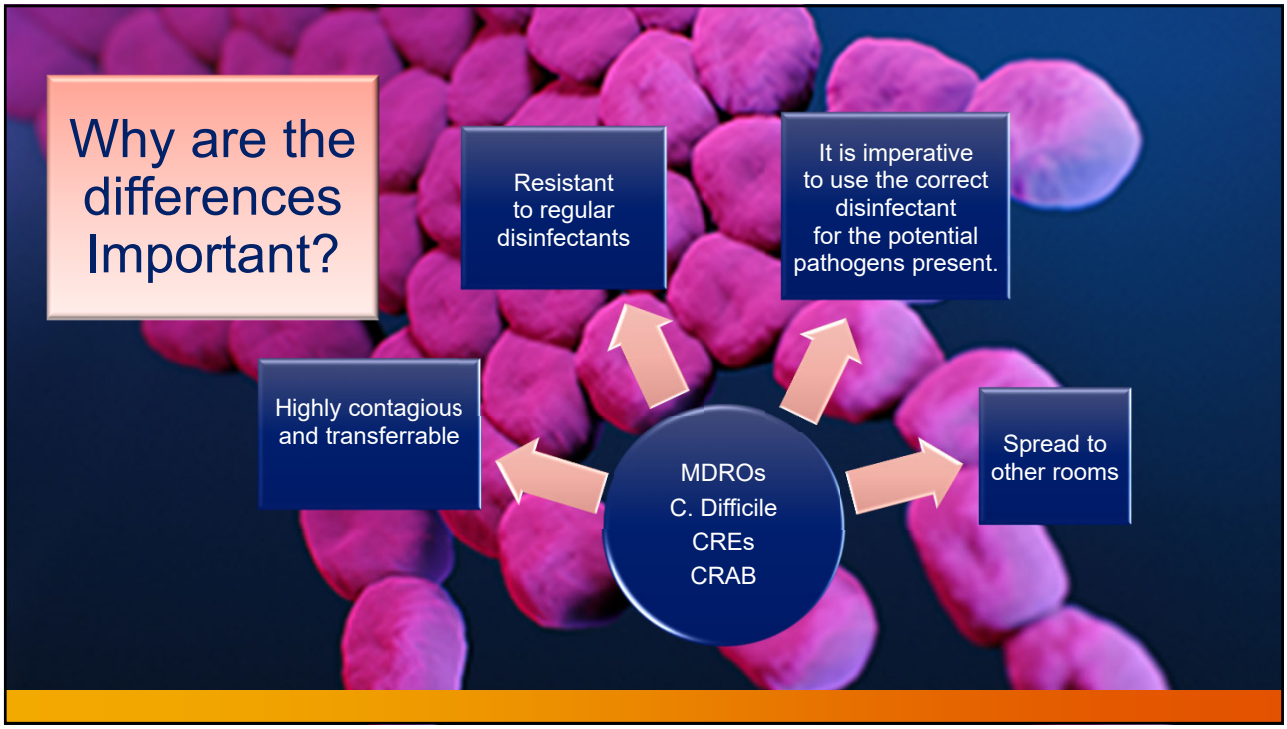
Available as needed

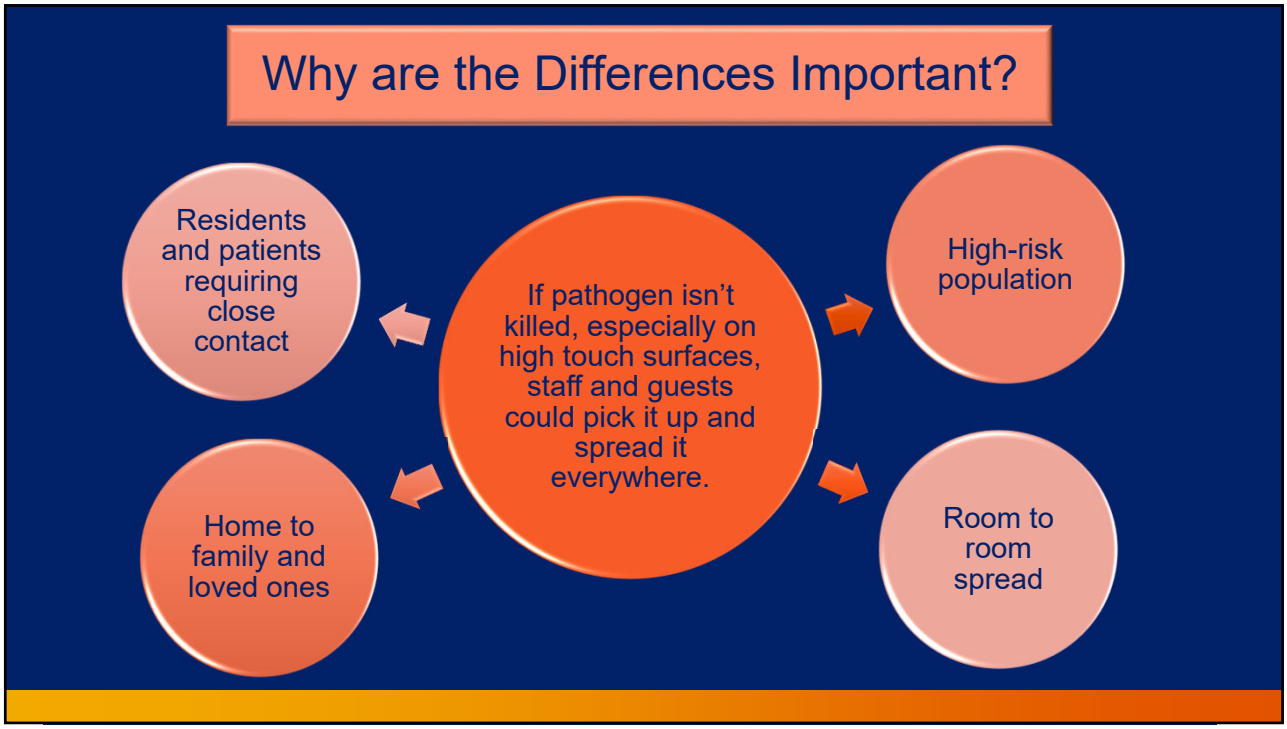
Generally adequate

Kills many bacteria and blood born viruses

List G
Norovirus

List K
C. difficile


Why are the differences Important?
Resistant to regular disinfectants
It is imperative to use the correct disinfectant for the potential pathogens present.
Highly contagious and transferrable
MDROs
C. Difficile
CREs
CRAB
Spread to other rooms

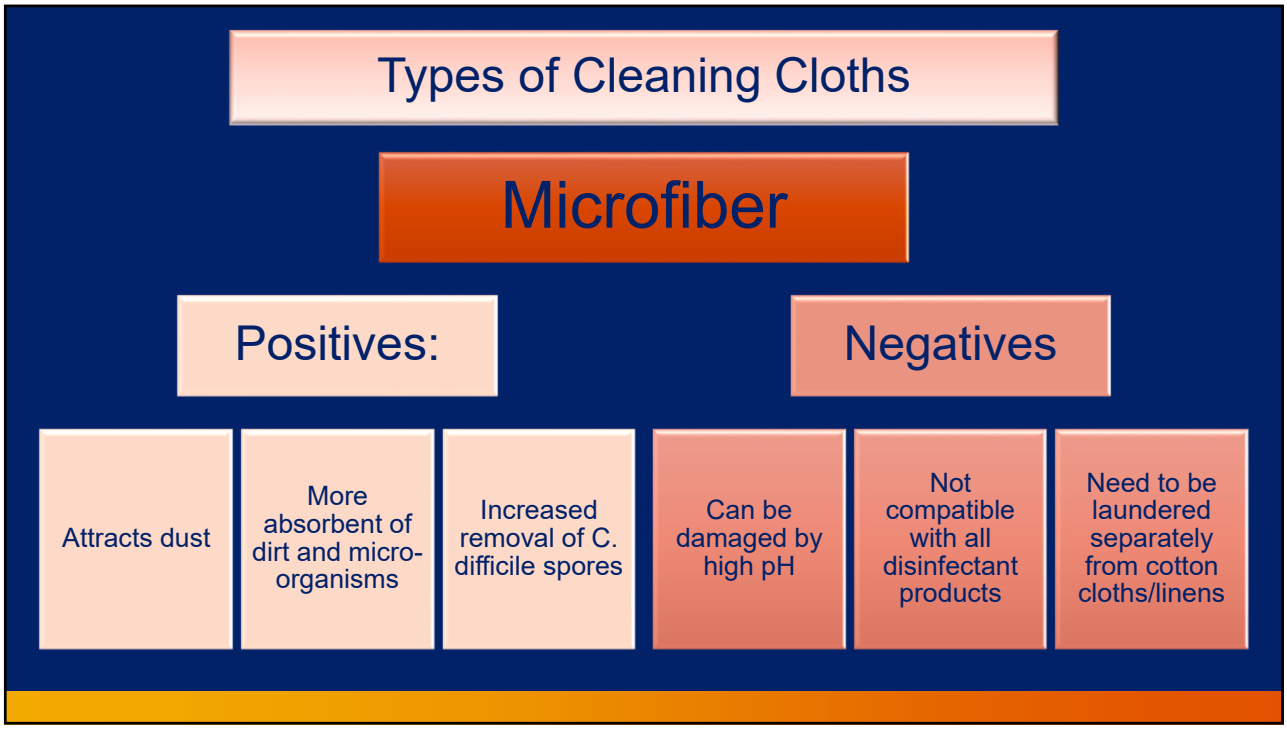

Why are the Differences Important?
Residents and patients requiring close contact
If pathogen isn't killed, especially on high touch surfaces, staff and guests could pick it up and spread it everywhere.
High-risk population
Home to family and loved ones
Room to room spread

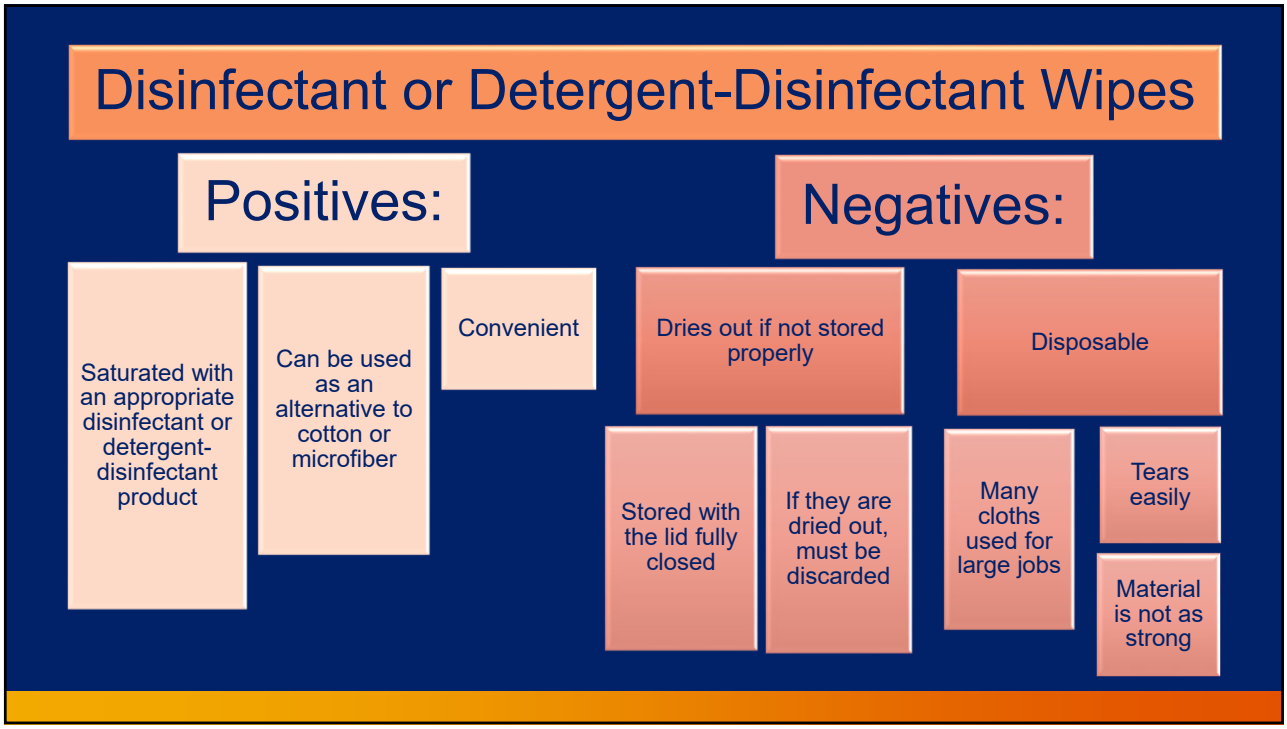
Why Are the Differences Important?

Pathogen	Potential length of survival on dry inanimate objects / surfaces
Campylobacter	1-4 hours[9]
Candida albicans	1-120 days[10]
Cold virus	7+ days[9]
Clostridium difficile (spores)	5 months[10]
E.Coli	1.5 hours-16 months[10]
Flu virus	24 hours[9]
Herpes virus	Up to 7 days[10]
HIV	1+ week[10]
Listeria spp. (which causes listeriosis)	1 day-months[10]
Mycobacterium tuberculosis	1 day-4 months[10]
Staphylococcus aureus (including MRSA)	7 days-7 months[10]
Salmonella typhimurium	10 days-4.2 years[10]

Infection Control - Aesthetics (aestheticsjournal.com)

Contact Time


Types of Cleaning Cloths
Microfiber
Positives:
Negatives
Attracts dust
More absorbent of dirt and micro-organisms
Increased removal of C. difficile spores
Can be damaged by high pH
Not compatible with all disinfectant products
Need to be laundered separately from cotton cloths/linens


Disinfectant or Detergent-Disinfectant Wipes
Positives:
Negatives:
Saturated with an appropriate disinfectant or detergent-disinfectant product
Can be used as an alternative to cotton or microfiber
Convenient
Dries out if not stored properly
Disposable
Stored with the lid fully closed
If they are dried out, must be discarded
Many cloths used for large jobs
Tears easily
Material is not as strong

Core Components of Environmental Cleaning and Disinfection

- Integrate
- Educate and train
- Select
- Standard-ize
- Monitor
- Provide feedback

Assessment of Current CDI Prevention Activities

Appropriate Cleaning/Disinfection of Equipment and the Environment

December 28, 2016

National Nursing Home QUALITY IMPROVEMENT CAMPAIGN

Background/Rationale:

- *C. difficile* spores, surviving for a long time on objects and surfaces, play a role in the spread of *C.difficile* infections (CDI).
- Appropriate cleaning and disinfection of the environment and equipment is an essential strategy for reducing CDI.
- Spores can be found throughout a room like light switches, door knobs, and bedside tables.
- Nursing homes should have educational programs, policies and procedures that outline schedules and responsibilities for cleaning practices.
- Nursing homes should monitor adherence to procedures, evaluate effectiveness of cleaning, and keep staff informed of the results.

Current survey activities:

SECTION 1. KNOWLEDGE AND COMPETENCY				
		YES	NO	N/A
	General: Do direct care personnel* know			
Q1	Appropriate use of personal protective equipment when handling and disposing of soiled materials according to Standard Precautions?			
Q2	How to clean and disinfect equipment that is shared between residents?			
	Environmental services* personnel know			
Q3	How to use personal protective equipment (e.g., gowns, gloves) when cleaning a room of a resident with known CDI?			
Q4	The difference between cleaning and disinfection?			
Q5	To follow manufacturers' instructions for use of cleaners and disinfectants?			

This material was prepared by Telligen, National Nursing Home Quality Improvement Campaign Special Innovation Project contractor, under contract with the Centers for Medicare & Medicaid Services (CMS), an agency of the U.S. Department of Health and Human Services. The contents presented do not necessarily reflect CMS policy. 11SOW-CO-NNHQIC- 10/16-031

Quality Improvement Organizations | National Nursing Home QUALITY IMPROVEMENT CAMPAIGN

SECTION 2. INFECTION PREVENTION POLICIES AND INFRASTRUCTURE				
		YES	NO	N/A
Q1	Is there a policy for using an EPA-registered disinfectant with a *C.difficile* sporicidal claim when cleaning the room of a resident with known CDI?			
Q2	Is there a process to communicate with environmental services personnel when a resident is suspected or known to have CDI?			
Q3	Are there procedures and schedules in place for daily cleaning and cleaning when a resident with CDI stops occupying a room (e.g., the resident moves, is discharged, or dies)?			
Q4	Are there policies and procedures in place for the cleaning and disinfection of all equipment used by residents with known CDI?			
Q5	Are the responsibilities for cleaning and disinfecting equipment used by residents with CDI well defined between direct care personnel and EVS personnel?			
Q6	If environmental services are provided by a contracting company, are those individuals aware of and following the nursing home's policies for cleaning and disinfecting the room of a resident with CDI?			
Q7	Are environmental services personnel available 24/7? If not, who is trained/ responsible for cleaning during the off hours and do they have access to the appropriate supplies?			
SECTION 3. MONITORING PRACTICES				
		YES	NO	N/A
Q1	Does your nursing home monitor the adequacy of room cleaning by EVS personnel on a regular basis?			
Q2	Is there a method to track room and equipment cleaning/disinfection according to schedule?			
Q3	Does your nursing home monitor that direct care personnel appropriately clean/disinfect equipment before using it for the next resident?			

* **Direct care personnel** – All persons interacting with and/or providing hands-on care for residents; **Environmental services** are also known as housekeeping services.

Quality Improvement Organizations | National Nursing Home QUALITY IMPROVEMENT CAMPAIGN

Cleaning Order

- Contact precautions
- Checklist
- Standardized process
- Cleanest to dirtiest
- Top to bottom
- Prevent recontamination
- Use cleaning equipment appropriately
- No carts in room
- New towels and mop heads in each room
- Bring in only necessary supplies

Cleaning Order

Contact precautions

- When cleaning in rooms with highly infectious pathogens, consider appropriate PPE to protect your clothing, shoes, face, etc. from contamination that could be spread to yourself or other people and places.

Cleaning Order

Checklists

- Ensure all surfaces, objects, and areas are cleaned
- Show the proper order to work in
- Are specific to type of area being cleaned
- Can be flagged for special pathogen precautions and chemicals

Cleaning Order

Cleanest to dirtiest	• This reduces contamination spread to other areas of the room.
Remove visible	• Dirt, spillage, blood, fluids, etc. and clean the surface.
Disinfect	• Visible contamination must be removed completely before proper and adequate disinfection can be achieved even if directions specify one step.

Cleaning Order

Top to Bottom:

- Lower surfaces are almost always dirtier.
- Debris from above can fall down.

Cleaning Order

Recontamination Prevention

Carts outside	• Easily Contaminated • Spread from room to room
Contact Precautions	• Appropriate PPE (All staff entering rooms) • Changed between rooms
Storage	• Designated space • Separated rooms or areas
Replacement	• Frequent • In between rooms
Separation	• Clean and dirty • Best if in separate rooms

General Process for Cleaning of blood or body fluids:

Wear appropriate PPE. (Gloves, Goggles, Apron) → Confine the spill → Wipe it up immediately

Clean thoroughly → Disinfect → Send reusable supplies and equipment for reprocessing

Cleaning Tools

For an effective environmental cleaning program, the facility needs:

Supply Storage	• Designated physical space • Separated sluice rooms
Replacement	• Towels, mop heads, cleaning solution • Frequently and between rooms
Separation	• Clean and dirty well away from each other • Mark the floor or hang signage to visually show clean and dirty areas

CLEANING AND DISINFECTING

Best Practices During the COVID-19 Pandemic

Good Idea

Follow CDC, State, and Local Public Health Guidelines

According to the Centers for Disease Control and Prevention (CDC), COVID-19 is mainly spread through the air. The risk of getting the virus by touching a contaminated surface is thought to be low.

6 FEET

Clean Surfaces with Soap and Water

Normal routine cleaning with soap and water lowers the risk of spreading COVID-19 by removing germs and dirt from surfaces. In most situations, cleaning is enough to reduce risk.

Use EPA-Registered Disinfectants According to Label Directions

Disinfectants further lower the risk of spreading COVID-19 by using chemicals to kill germs. Use disinfectants on high-touch surfaces when you know or suspect someone around you is sick with COVID-19.

Be Careful

Be Careful Using Disinfectants Around People with Asthma

Disinfectants can trigger an asthma attack. If you have asthma, you may need to take extra precautions like avoiding areas where people are cleaning and disinfecting or making sure the space is well ventilated.

Be Careful with Fogging, Fumigating, and Wide-Area or Electrostatic Spraying

Make sure your product's label includes directions for the application method. Follow all directions, including precautions. If a product isn't labeled for these application methods, using it that way might be risky or ineffective.

Be Careful With UV Lights or Ozone Generators

UV lights or ozone generators may be risky or ineffective. EPA cannot verify if or when it is appropriate to use these devices. Check out the guidance at: go.usa.gov/xHckJ

Don't Do It

Don't Ask Children or Students to Apply Disinfectants

Disinfectants are powerful tools for controlling the spread of disease, and they can harm kid's health if used or stored incorrectly. Children and students should not apply disinfectants, and they should be kept out of children's reach.

Don't Ignore the Label Directions

If you don't follow the label directions, disinfectant products may be ineffective or unsafe. Do not apply disinfectants to skin, pets or food. Do not dilute disinfectants or mix them with other chemicals unless the label tells you to. Don't think that twice the amount will do twice the job.

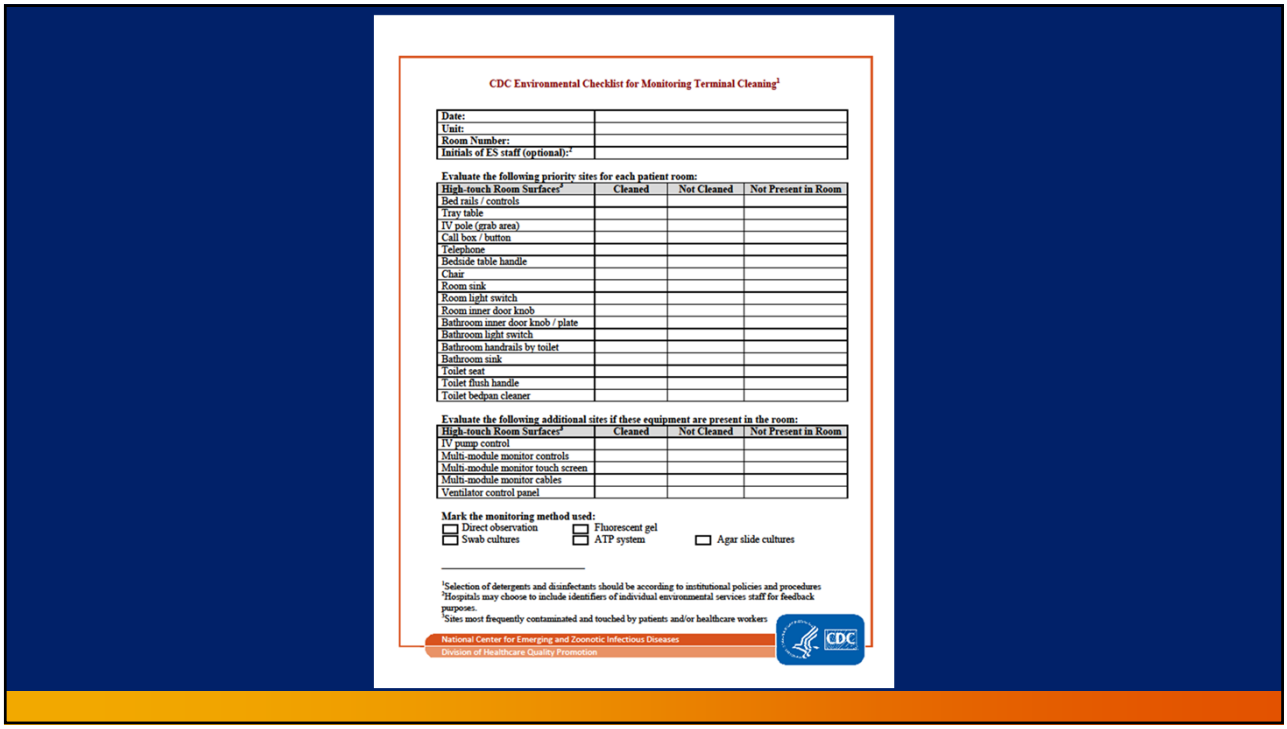
Don't Use Unregistered Disinfectants

If a product says that it kills SARS-CoV-2 (COVID-19), but it doesn't have an EPA registration number, it may not be safe or effective. Federal law requires disinfectants to be registered with EPA.

EPA

For CDC public health guidelines, visit: go.usa.gov/xHc8q
For information on disinfectants, visit: epa.gov/coronavirus

April 2021



CDC Environmental Checklist for Monitoring Terminal Cleaning[1]

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional):[2]	

Evaluate the following priority sites for each patient room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls			
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			
Bedside table handle			
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate			
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink			
Toilet seat			
Toilet flush handle			
Toilet bedpan cleaner			

Evaluate the following additional sites if these equipment are present in the room:

High-touch Room Surfaces[3]	Cleaned	Not Cleaned	Not Present in Room
IV pump control			
Multi-module monitor controls			
Multi-module monitor touch screen			
Multi-module monitor cables			
Ventilator control panel			

Mark the monitoring method used:

☐ Direct observation ☐ Fluorescent gel ☐ Agar slide cultures
☐ Swab cultures ☐ ATP system

[1]Selection of detergents and disinfectants should be according to institutional policies and procedures
[2]Hospitals may choose to include identifiers of individual environmental services staff for feedback purposes.
[3]Sites most frequently contaminated and touched by patients and/or healthcare workers

National Center for Emerging and Zoonotic Infectious Diseases
Division of Healthcare Quality Promotion

Performance Monitoring

What are Environmental Staff using for Performance Monitoring?	
	Visual Assessment
	Direct Observation
	Fluorescent Markers
	ATP Bioluminescence Assay
	Culturing of Surfaces (outbreaks only)
	Checklists and Documentation
	Should be utilizing more than one type

Laundry Services

Laundry Service Areas

- Is there a dedicated space for performing laundering of soiled linen?
- Do they have handwashing facilities, standard operating procedure (SOPs) and other job aids to assist laundry staff with procedures?
- Are the floors and walls made of durable materials?
- Is there a separation between the soiled linen and clean linen storage areas?
- Are there any food, beverage or personal items?

https://www.cdc.gov/hai/prevent/resource-limited/laundry.html

Laundry Services

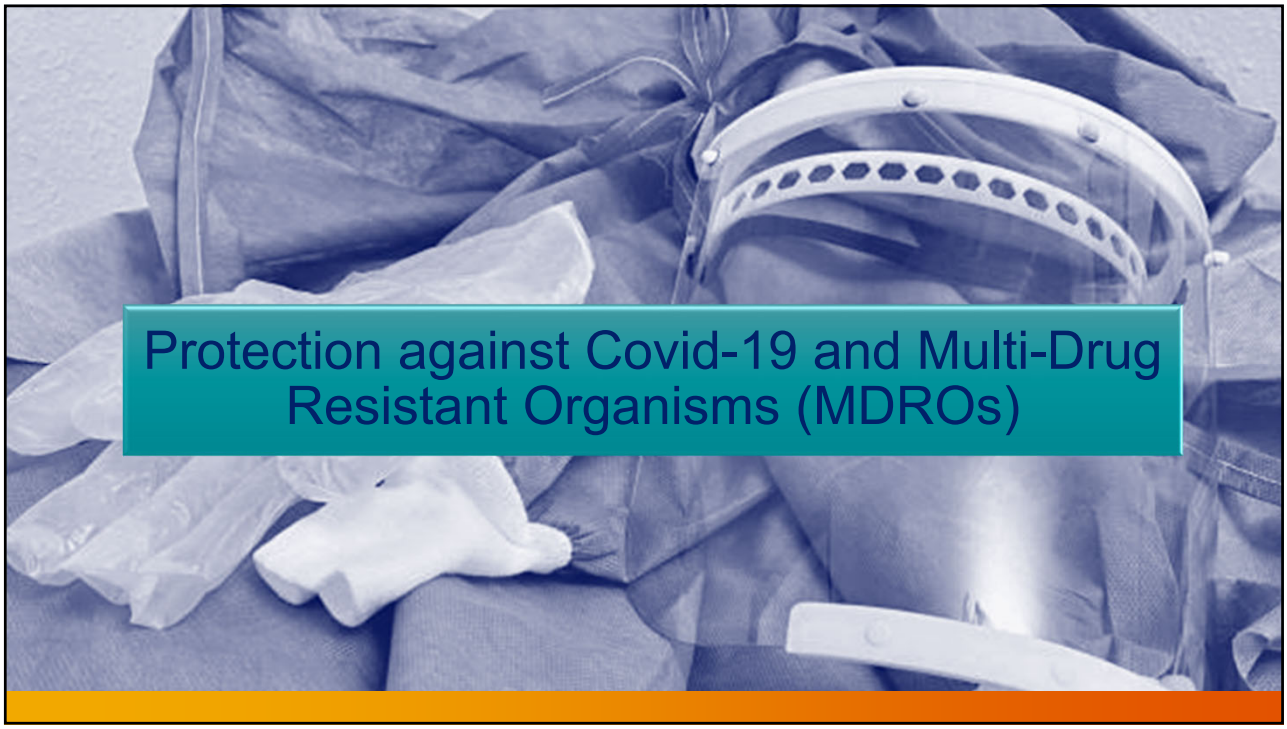
Best practices for management of clean linen:

Sort, package, transport and store clean linens in a manner that prevents risk of contamination by dust, debris, soiled linens or other soiled items.	Each floor/ward should have a designated room for sorting and storing clean linens.	Transport to patient care areas on designated carts or within designated containers that are regularly cleaned with a neutral detergent and warm water solution.

Laundry Services

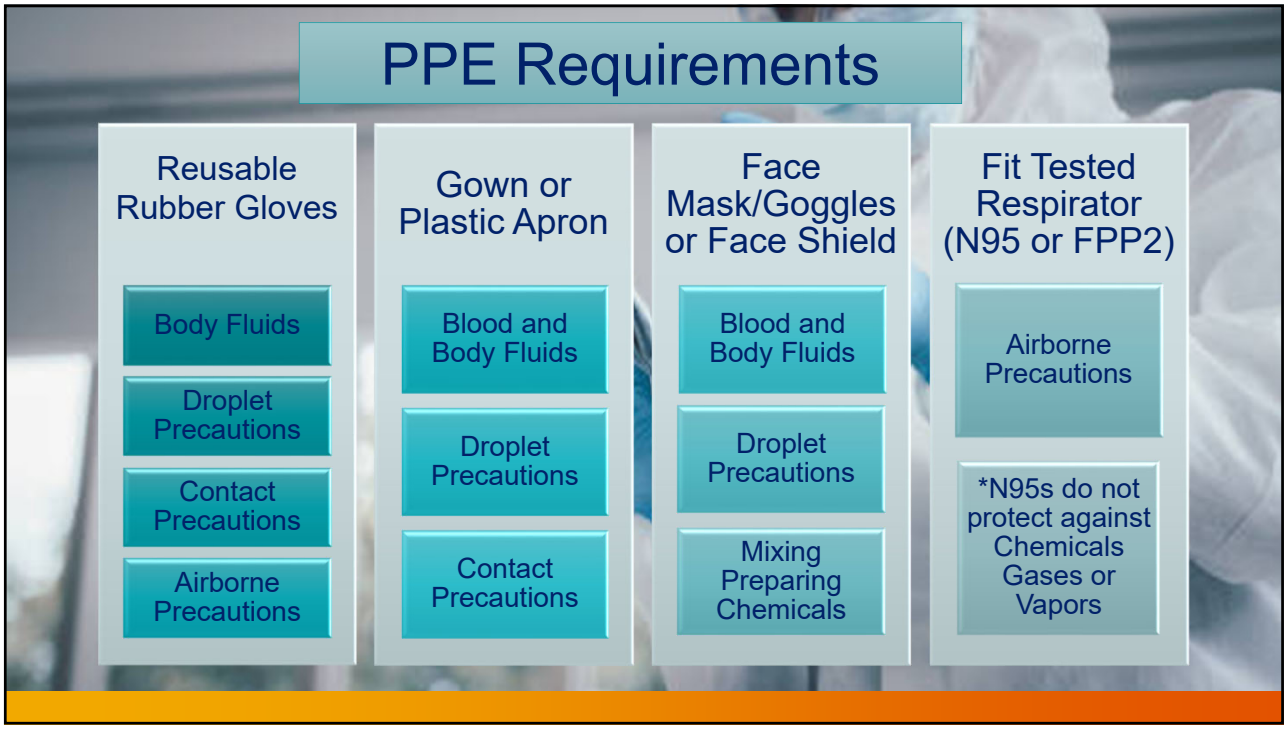
Laundry Chutes

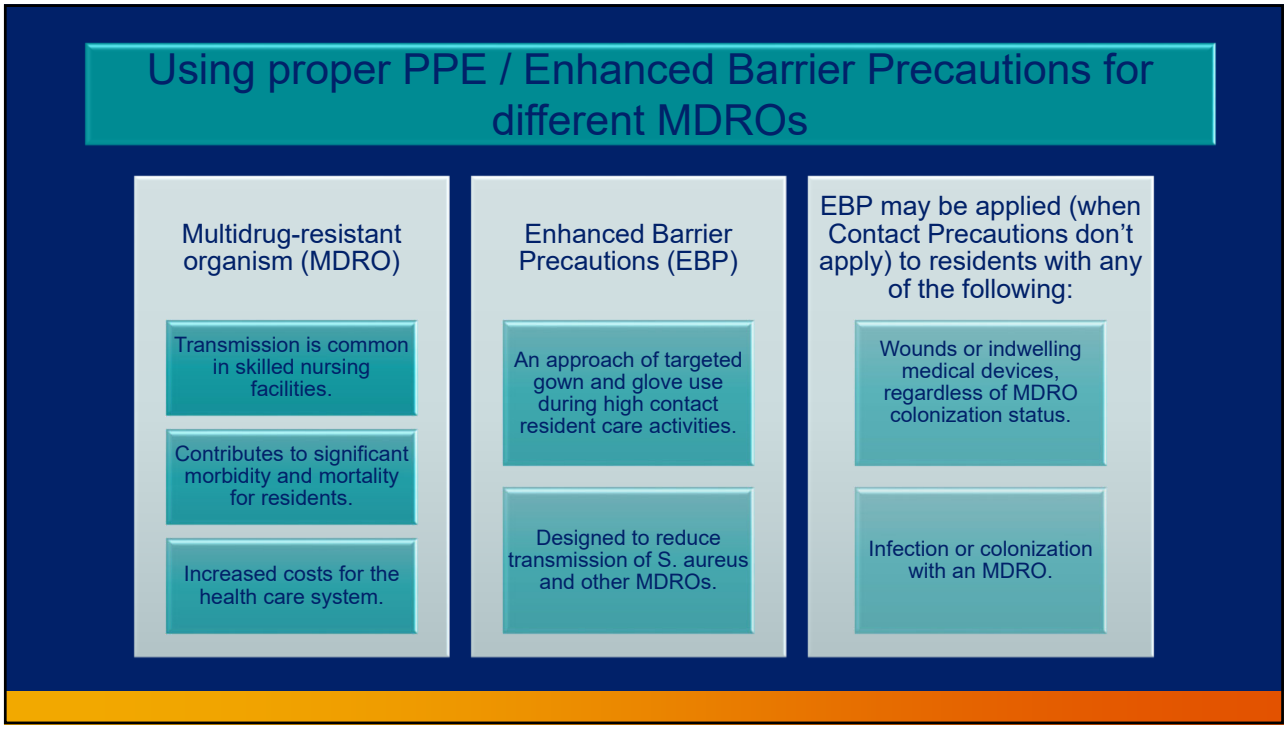
- Should be maintained under negative air pressure to prevent the spread of microorganisms from floor to floor.
- Loose, contaminated pieces of laundry should not be tossed into chutes
- Laundry bags should be closed or otherwise secured to prevent the contents from falling out into the chute.



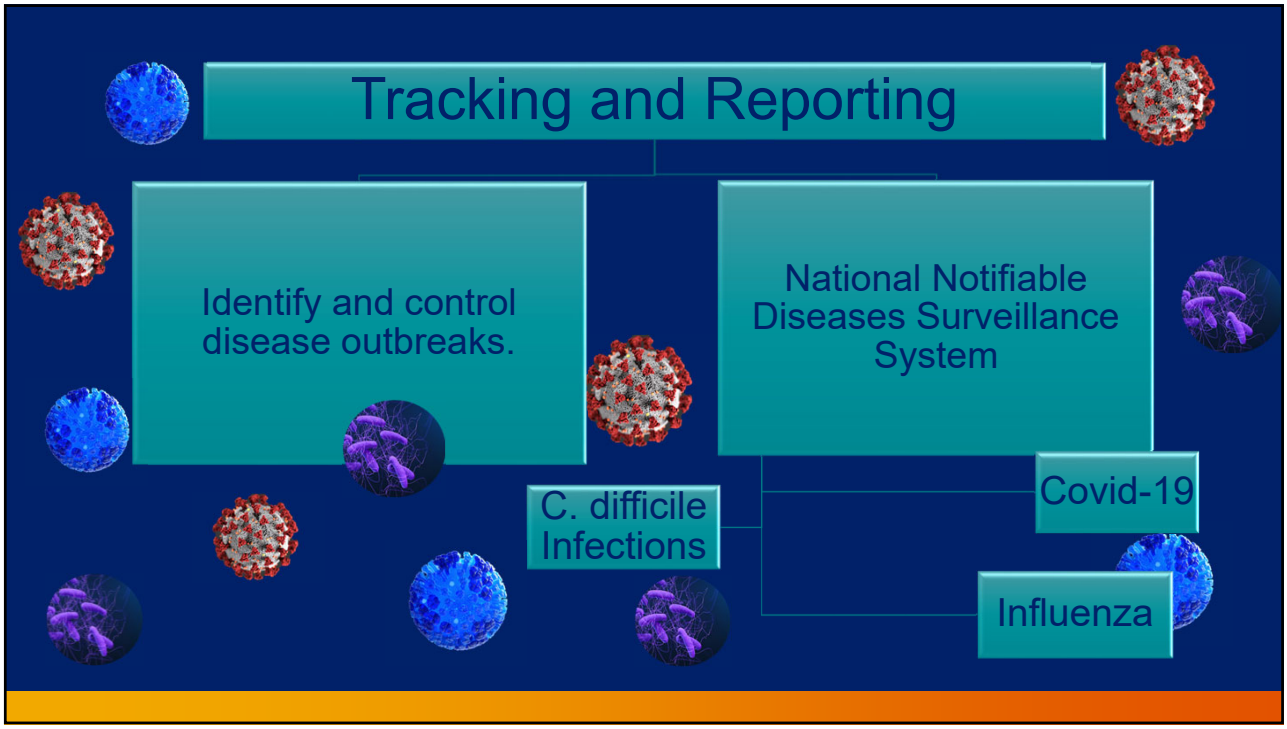
Cleaning Staff use of PPE:

Hand hygiene	Appropriate Use, application, and removal of PPE	PPE on before entering and off before leaving patient rooms	SOPs for required PPE for specific tasks	Safety data sheets (SDS)


PPE Requirements
Reusable Rubber Gloves
Body Fluids
Droplet Precautions
Contact Precautions
Airborne Precautions
Gown or Plastic Apron
Blood and Body Fluids
Droplet Precautions
Contact Precautions
Face Mask/Goggles or Face Shield
Blood and Body Fluids
Droplet Precautions
Mixing Preparing Chemicals
Fit Tested Respirator (N95 or FPP2)
Airborne Precautions
*N95s do not protect against Chemicals Gases or Vapors


Using proper PPE / Enhanced Barrier Precautions for different MDROs
Multidrug-resistant organism (MDRO)
Transmission is common in skilled nursing facilities.
Contributes to significant morbidity and mortality for residents.
Increased costs for the health care system.
Enhanced Barrier Precautions (EBP)
An approach of targeted gown and glove use during high contact resident care activities.
Designed to reduce transmission of S. aureus and other MDROs.
EBP may be applied (when Contact Precautions don't apply) to residents with any of the following:
Wounds or indwelling medical devices, regardless of MDRO colonization status.
Infection or colonization with an MDRO.


STOP
ENHANCED BARRIER PRECAUTIONS
STOP
EVERYONE MUST:
Clean their hands, including before entering and when leaving the room.
PROVIDERS AND STAFF MUST ALSO:
Wear gloves and a gown for the following High-Contact Resident Care Activities.
Dressing
Bathing/Showering
Transferring
Changing Linens
Providing Hygiene
Changing briefs or assisting with toileting
Device care or use:
central line, urinary catheter, feeding tube, tracheostomy
Wound Care: any skin opening requiring a dressing
Do not wear the same gown and gloves for the care of more than one person.
U.S. Department of Health and Human Services
Centers for Disease Control and Prevention


Tracking and Reporting
Identify and control disease outbreaks.
National Notifiable Diseases Surveillance System
C. difficile Infections
Covid-19
Influenza

High SARS-CoV-2 Community Transmission Levels

- Source Controls
  - N-95s* or a barrier face covering that meets ASTM F3502-21 requirements.
  - Well-fitting
  - Cover's mouth and nose
  - Fits snugly around the cheeks and chin
  - Fit tested
  - https://wwwn.cdc.gov/PPEInfo/RG/FaceCoverings

Isolation

Physically separate someone who is sick with a contagious disease from others who are not sick.	Transmission-based precautions: IP and control measures used when residents with known or suspected infection are separated from others.	Transmission-based precautions are used in both isolation and quarantine.

Isolation Carts

- Placed outside patients room.
- Gloves, shoe covers, respirators, masks, gowns, etc.
- Used while patient is in isolation.
- Helps protect all when PPE is near.
- Effective way to reduce spread of infection.

https://www.medicus-health.com/isolation-station-wheeled-cart.html

Cohorting

An IPC measure of grouping residents together who are infected with the same organism

- Confines their care to one area
- Prevents contact and spread to other residents

Cohorts are created based on:

- Clinical diagnosis
- Microbiologic confirmation when available
- Epidemiology
- Mode of transmission of the infectious agent

Benefits of forming resident cohorts:

- Limits the risk of spreading respiratory illnesses by
- Using dedicated staff to care only for positive residents
- Allows for
  - Conservation of PPE resources
  - Extended use of PPE

Surveillance

MDRO Colonization Screening

Threats in Health Care

Acinetobacter species	Candida, including Candida auris	Carbapenem-resistant Enterobacterales (CRE)	Carbapenem-resistant Pseudomonas aeruginosa	Clostridioides difficile

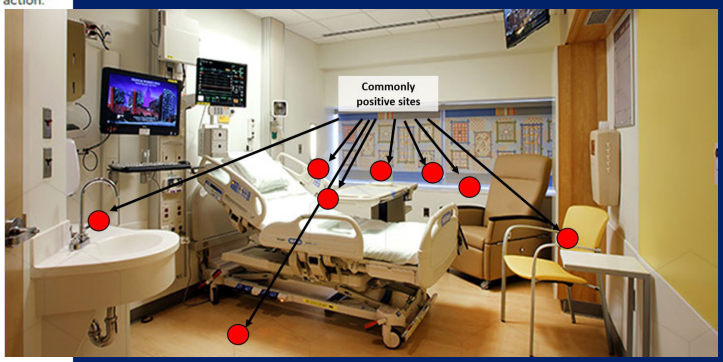
Antimicrobial Resistance Laboratory Network

CDC's Antimicrobial Resistance Laboratory Network is one of the leading nationwide systems to rapidly detect antibiotic-resistant pathogens and genes

CDC and Public Health Departments

CDC works directly with public health departments to provide expertise and support for outbreak response

Antimicrobial Stewardship



Antimicrobial Stewardship

Prescribing antimicrobials for colonization may contribute to antimicrobial overuse.

In nursing homes with higher antimicrobial use, residents are at increased risk of indirect related harms due to the spread of resistant bacteria and fungi.

Poor communication between facilities plus insufficient infection control practices can result in misuse and the spread of antimicrobial resistance.

Do Facilities have an Antimicrobial Stewardship Program?

Antibiotic stewardship: Commitments and actions designed to "optimize the treatment of infections while reducing the adverse events associated with antibiotic use."

CDC recommends that all nursing homes take steps to improve antibiotic prescribing practices and reduce inappropriate use.

Studies have shown that 40–75% of antibiotics prescribed in nursing homes may be unnecessary or inappropriate.

Harms from antibiotic overuse are significant for the frail and older adults receiving care in nursing homes.

Water Systems

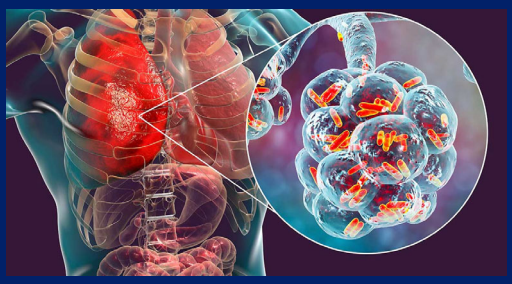
Legionella

Legionella Bacteria Symptoms Explained After Duke University Outbreak (newsweek.com)

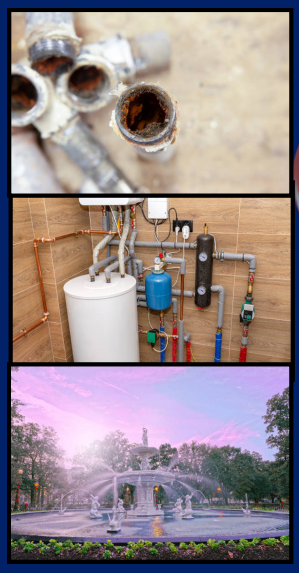
- Waterborne bacteria pathogen
- Over 60 species – 90% of illness by 1 species
- Growth needs
- Biofilm – other microbes
- Warm temperature – 98.6 °F
- Nutrients – soil or other organic materials

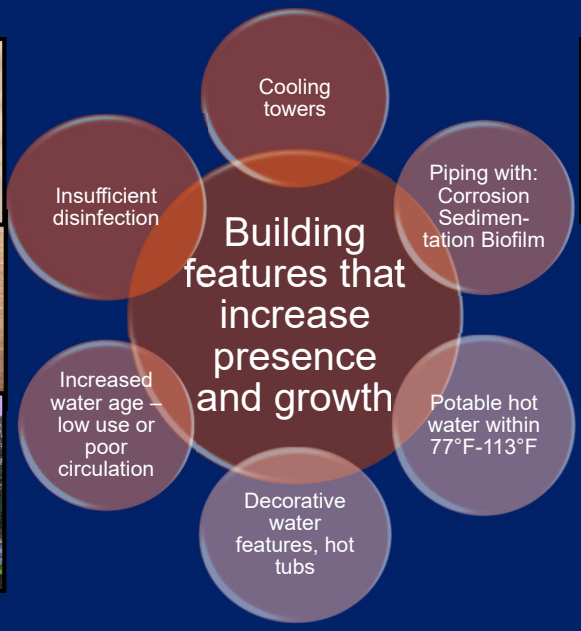
Illnesses Caused by Legionella

- Contracted by exposure to bacteria to susceptible host
- Legionnaires' disease
  - Bacterial pneumonia caused by *Legionella*
  - Confirmed by an urinary antigen test
  - High risk of death 10-30%
  - Treatment in hospital with antibiotics
- Pontiac fever
  - Self-limited, flu-like illness caused by *Legionella* that resolves without treatment



A-Tech Consulting Blog - Legionnaires' Disease: A Deadly Killer (atechinc.net)





Legionella Red Flags

- Stagnation
- External hazards (water main breaks, etc.)
- Maintenance
- New construction
- Changes in the municipal water supply
- Low or no disinfectant residual
- Dead legs, capped pipes, unused faucets
- Changes in equipment, treatment, water usage

Water Management Plan

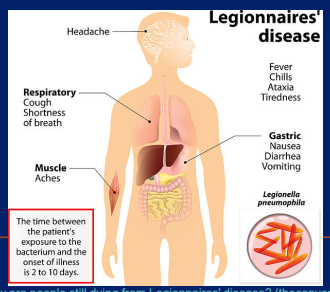
What is it?

Identify hazardous conditions and take steps to minimize them

Growth of Legionella and other waterborne pathogens in building water systems

Who is in involved?

A team consisting of maintenance, administration and others



Why are people still dying from Legionnaires' disease? (theconversation.com)

When is it implemented?

Maintaining a water management program is a process that requires continuous review

How does it help?

By monitoring potentially hazardous conditions, Legionella and other bacteria can be stopped before they have a chance to invade and proliferate

Essential Steps of a Water Management Plan

- Water safety and management team
- Flow diagram and water system
- Water system analysis/ control measures
- Monitoring/ corrective actions
- Confirmation
- Documentation

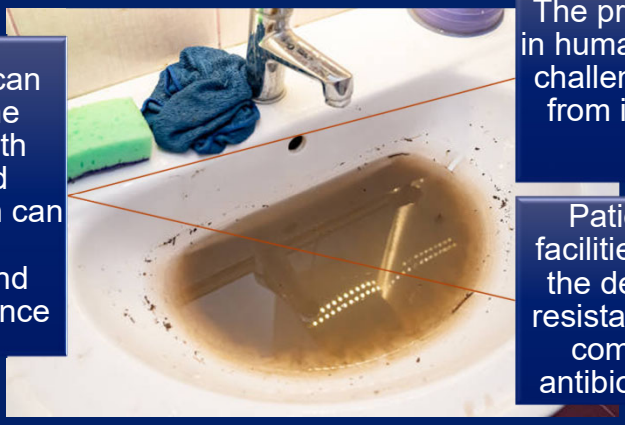
Wastewater

Environmental cleaning requires large quantities of water and produces almost as much wastewater, which must be disposed of safely and appropriately to prevent contamination of the environment and surrounding community.

Graywater drainage system diverts water away from the facility and also protects nearby households.

Wastewater

Human activity can contaminate the environment with antibiotics and antifungals, which can speed up the development and spread of resistance

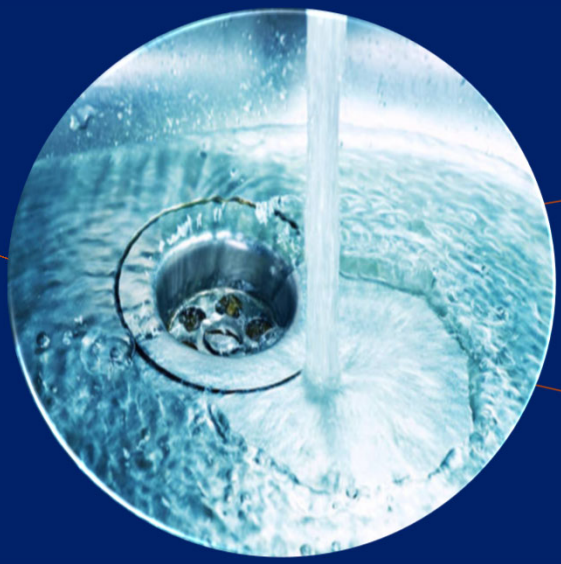


The presence of AR germs in human waste is especially challenging for wastewater from inpatient healthcare facilities

Patients at healthcare facilities can shed some of the deadliest germs from resistant infections and are commonly prescribed antibiotics and antifungals

Off Set Sinks

Sink drains have been identified as important reservoirs for multi-drug-resistant Gram-negative bacteria



Bacteria form biofilms in pipe lumens; cells may be released during sink use

Surfaces in the innate patient environment may become contaminated

Off Set Sinks

- Focus on cleaning or preventing the colonization of drains and strainers
- Install drain plugs, reducing dripping from taps
- Commonly used hospital disinfectants have limited efficacy on these biofilms
- Offsetting taps and/or drains

Heating, Ventilation, and Air Conditioning

- Heating
- Ventilation
- Air Purification
- Cooling
- Humidity
- Maintenance

HVAC systems alone can act as sources of pollutants.
Systems not appropriately maintained can cause:

- Microbial growth from:
  - Saturated ventilation air filters
  - Stagnant water in drain pans
  - Uncontrolled moisture inside of air ducts and cooling coils.
- Odor concerns:
  - Can you smell mold or mildew?
  - Strong odors in general can indicate issues with HVAC systems

https://www.cdc.gov/niosh/topics/indoorenv/ventactionsteps.html#

HVAC items to be Aware of:

Indoor Dampness

- Can cause or worsen health problems.
- Cause growth of bacteria and mold.
- Attract vectors.
- Release volatile organic compounds from wet building materials.

Regular Maintenance

- Filter logs.
- Service logs.
- Exhaust fan inspections
- Outdoor air intake.
- Is the facility documenting all maintenance activities?

Humidification

- Survival of viruses may be reduced when the relative humidity is in the 40–60% range.
- Preventing excessive dryness helps maintain the effectiveness of the human body's immune system.

HVAC Tips

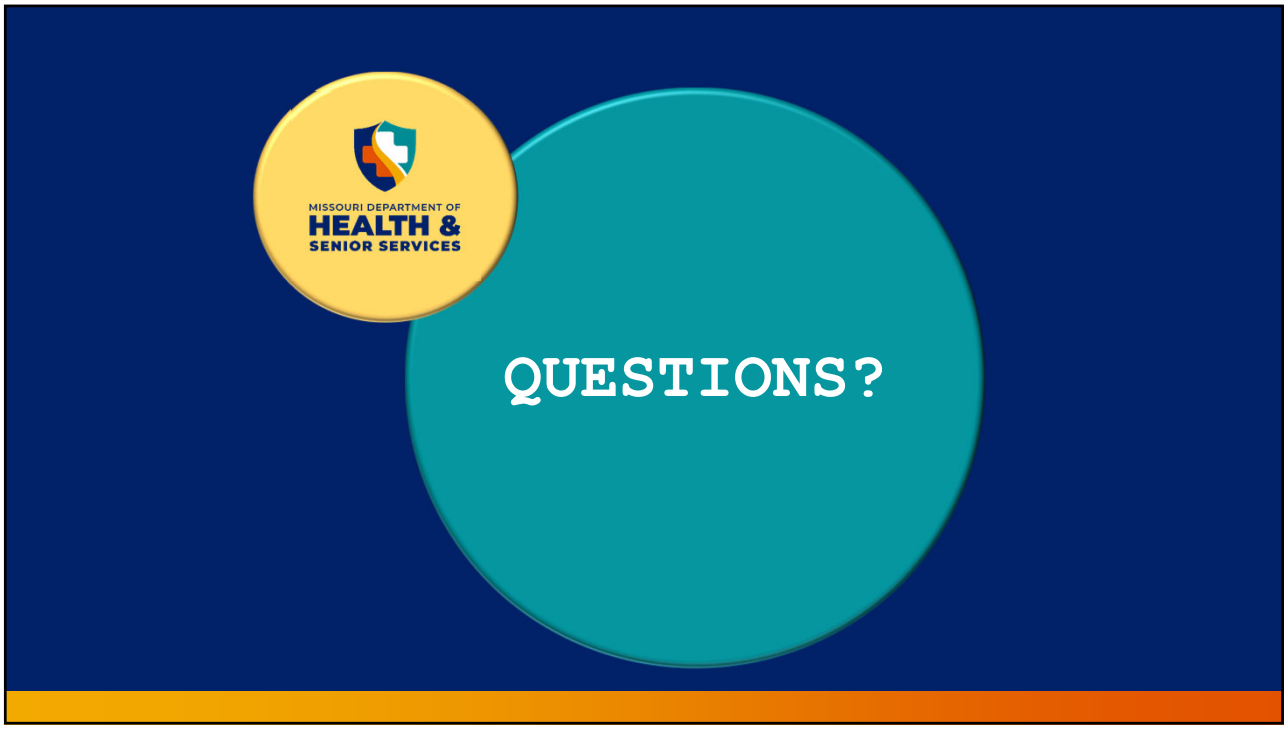
Use ultraviolet germicidal irradiation (UVGI) as a supplemental treatment.

Do not shut down HVAC systems in patient-care areas.

Do not use a room with a through-the-wall ventilation unit as an Airborne Infection Isolation (AII) room unless it can be demonstrated that all required AII engineering controls required are met.

MISSOURI DEPARTMENT OF HEALTH & SENIOR SERVICES

The HAI/AR program is happy to help with Infection Prevention Programs within facilities. If you would like an Infection Control Assessment and Response (ICAR) visit, please contact us at (573)751-6113.



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