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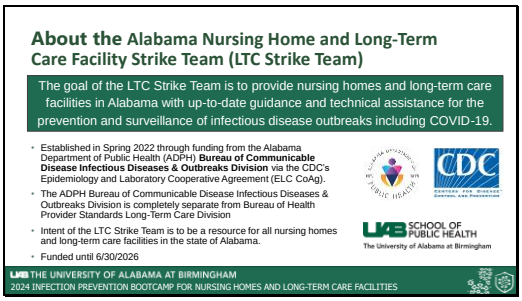


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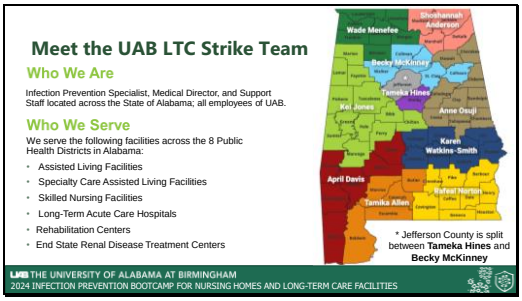

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## Primary Activities

| Infection Prevention and Control Consultation for nursing homes and long-term care facilities | In-Service Training for health care providers and in your facility | Technical Assistance |
|---|---|---|
| We utilize the CDC's Infection Control and Response Assessment (ICAR) tools to assist facilities in Alabama in preparing for or responding to COVID-19 and other infectious disease outbreaks. | We provide specialized training to assist facilities in building and maintaining infection prevention infrastructure. | We support the effective implementation of practices to prevent the transmissions of COVID-19 and other infectious diseases by providing technical assistance to facilities. |
| • Voluntary<br>• Non-regulatory<br>• In-person<br>• Before, during or following an outbreak | • Environmental Cleaning<br>• Handwashing and Basics of Infection Prevention<br>• PPE Selection<br>• PPE Donning/Doffing Sequence<br>• Others as requested by facilities | • N-95 Fit Testing<br>• HEPA Filtration Systems<br>• Assistance with COVID-19 Administration |

https://sites.uab.edu/ltcstriketeam/



Slide 5

## ADPH/LTC Strike Team Partnership

### ADPH's Bureau of Communicable Disease - Infectious Diseases & Outbreaks Division

- Disease surveillance/reporting
- Infectious disease outbreak investigations
- Work with facilities to implement plans to reduce the occurrence of infectious diseases
- Provide technical expertise, consultation, and assistance *(may ask LTC Strike Team IP Specialist to offer outbreak ICAR)*
- Education

**Primary POC:** Your District Investigator
https://www.alabamapublichealth.gov/infectiousdiseases/investigators.html

### LTC Strike Team

- Preventative ICAR Consultations (COVID-19 or general)
- In-service training on IPC topics
- N-95 Respirator Fit-testing for employees
- COVID-19 Line List Review and Outreach

**Primary POC:** Infection Prevention Specialist who serve your county
https://sites.uab.edu/ltcstriketeam/about/leadership-and-staffing/



Slide 6

## Free HEPA Air Purifiers Available

- Available for resident and common rooms in your facility
- Continuous use, portable units
- Hospital grade filters
- Lifetime warranty

***Always follow manufacturer's instructions for use for use, care, and maintenance***

Slide 7

## Mini-Regional Infection Prevention Bootcamps for LTC Facilities

- April 26, 2024 in Mobile County

*Coming to a County near you!*

https://sites.uab.edu/ltcstriketeam

Registration for the bootcamps will be available on our website at least one month prior to the bootcamp.

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2024 INFECTION PREVENTION BOOTCAMP FOR NURSING HOMES AND LONG-TERM CARE FACILITIES

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## Learn More About the Alabama Nursing Home and Long-Term Care Facility Strike Team

WEBSITE
https://sites.uab.edu/ltcstriketeam/

EMAIL
ltcstriketeam@uab.edu

REQUEST A FREE IP CONSULTATION, TRAINING OR TECHNICAL ASSISTANCE ON OUR WEBSITE OR EMAIL US

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## About the Alabama Regional Center for Infection Prevention and Control Training and Technical Assistance (ARC IPC)

- The Epidemiology and Laboratory Cooperative Agreement (ELC CoAg) tasked ADPH with the creation of a regional center for infection prevention and control consultation and support services in Alabama
- Purpose of this regional center:
  - Enhance capacity for infection control and prevention
  - Build infection prevention and control and outbreak response expertise

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## Learn More About the Alabama Regional Center for Infection Prevention and Control Training and Technical Assistance

WEBSITE
https://uab.edu/arcipc

EMAIL
arcipc@uab.edu

SIGN UP FOR OUR NEWSLETTER
https://uab.edu/arcipc



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## Thank You to Our Co-Sponsors

Deep South Center for occupational health & safety

Learn more: https://sites.uab.edu/dsc/



Slide 12

## Housekeeping

- Please make sure you signed in!
- CEs
- Training Evaluation
- Certificates of Participation
- Questions
- Restrooms

**CEUs approved for this bootcamp:**

**Nursing:** The Deep South Center for OH&S is an approved provider of continuing education units for nurses by the AL Board of Nursing (Provider ABNP0420 Expiration Date 12/16/2026) and has awarded this program **4.5 CEUs.** All other professionals are awarded .38 CEU's

**Nursing Home Administrator:** The Board of Examiners of Nursing Home Administrators has reviewed and approved the seminar for continuing education credit for licensed nursing home administrators in the State of Alabama for **3.5 hours**.

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**Lori Lloyd, BSN, RN**

- Infectious Disease and Outbreaks Division
- Emergency Management Division

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SCHOOL OF PUBLIC HEALTH
The University of Alabama at Birmingham

ALABAMA NURSING HOME & LONG-TERM CARE FACILTIY STRIKE TEAM

***Laundry Services: General Infection Prevention Overview for Long-Term Care Facilities***

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OBJECTIVES

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## OBJECTIVES

1. Review processes used in healthcare laundry services on premises or offsite.
2. Identify steps to minimize the spread of infections during linen transport.
3. Describe how improper personnel handling, laundering, and storage of soiled linen can pose a risk of exposure to infectious materials.

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HEALTHCARE LAUNDRY

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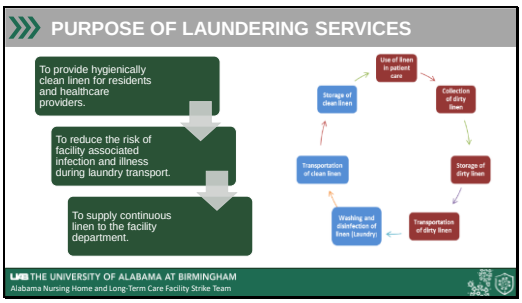


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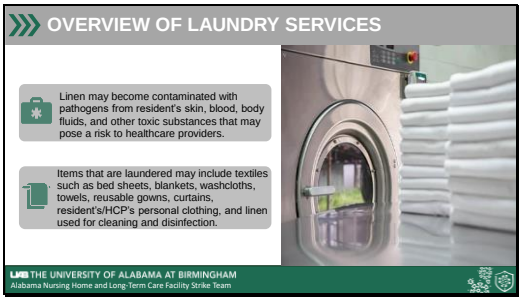

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## Centers for Medicare & Medicaid Services (CMS) ASP Regulations in Long-Term Care Facilities

- 42 CFR § 483.80 (e) states, *"personnel must handle, store, process, and transport linens so as to prevent the spread of infection."*
- 42 CFR § 483.10 (i)(3) states that facilities must provide, *"clean bed and bath linens that are in good condition."*
- 42 CFR § 483.470 (g)(3) The facility must, *"provide adequate clean linen and dirty linen storage areas."*

Facilities must have structures and processes that provide oversight of contracted services.

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## MINIMIZE TRANSMISSION OF INFECTION

- Disease transmission is attributed to health-care laundry that involves contaminated fabrics that were handled inappropriately (i.e., the shaking of soiled linens).
- Bacteria (*Salmonella* spp., *Bacillus cereus*), viruses (hepatitis B virus [HBV]), fungi (*Microsporum canis*), and ectoparasites (scabies) presumably have been transmitted from contaminated textiles and fabrics to workers via direct contact or aerosols of contaminated lint generated from sorting and handling contaminated textiles.

**When heavily contaminated, soiled linen can contain bacterial loads of 1,000,000 - 100,000,000 CFU/100cm² of fabric.**

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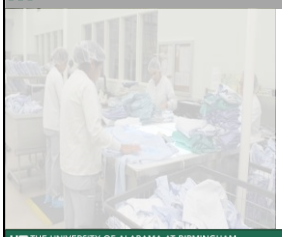
## MINIMIZE TRANSMISSION OF INFECTION



- Contaminated laundry can be rendered hygienically clean through a combination of soil removal and pathogen inactivation.
- Hygienically clean laundry carries a negligible risk to HCPs and residents, provided that the linen is maintained in a manner to prevention contamination.

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THE LAUNDRY PROCESS

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## THE LAUNDRY PROCESS

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## THE LAUNDRY PROCESS: CONTAINMENT

- Used linens should be handled in a manner that avoids contamination of the environment and healthcare personnel clothing. They should not be shaken, sorted, or prerinsed at the point of use.
- Soiled laundry should be contained in bags or containers that clearly indicate they are soiled at the point of use. Hamper covers are not required in patient care areas.
- Contaminated textiles and fabrics are placed into bags or other appropriate containment in this location; these bags are then securely tied or otherwise closed to prevent leakage.

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TRANSPORTING LAUNDRY

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## THE LAUNDRY PROCESS: TRANSPORTING LINEN



- Contaminated textiles and fabrics in bags can be transported by cart or chute.
- Bags containing contaminated laundry are clearly identified with labels, color-coding, or other methods so that health-care workers handle these items safely, regardless of whether the laundry is transported within the facility or destined for transport to an off-site laundry service.
- Laundry carts used to transport textiles offsite should be cleaned and disinfected with EPA-registered healthcare disinfectants. This is usually done when soiled carts are emptied, prior to restocking them with laundered textiles for return to the facility.

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SORTING LAUNDRY

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## THE LAUNDRY PROCESS: SORTING LINEN

Health-care facilities should determine the point in the laundry process at which textiles and fabrics should be sorted.

*before*

Sorting laundry ***before*** washing protects both the machinery and fabrics from hard objects (e.g., needles, syringes, and patients' property) and reduces the potential for recontamination of clean textiles.

S O R T I N G

Sorting ***after*** washing minimizes the exposure of laundry workers to infective material in soiled fabrics, reduces airborne microbial contamination in the laundry area, and helps to prevent potential percutaneous injuries to personnel.

*after*

**Minimize agitation of the contaminated items to prevent the dispersal of potentially infectious aerosols.**

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## PARAMETERS OF THE LAUNDRY PROCESS

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## THE LAUNDRY PROCESS: LAUNDRY OVERVIEW




- Fabrics, textiles, and clothing used in health-care settings are disinfected during laundering and generally rendered free of vegetative pathogens (i.e., hygienically clean), but they are not sterile.
- Laundering cycles consist of flush, main wash, bleaching, rinsing, and souring.
- Cleaned wet textiles, fabrics, and clothing are then dried, pressed as needed, and prepared (e.g., folded and packaged) for distribution back to the facility.

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## THE LAUNDRY PROCESS: LAUNDRY OVERVIEW

- Washing/drying processes includes the use of manufacturer's instructions for use (IFU) for laundry additives and equipment maintenance.
- Laundry equipment (washing machines and dryers) is used and maintained according to the manufacturer's IFU to prevent microbial contamination of the system

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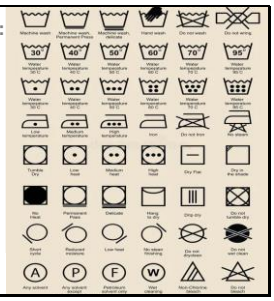
## THE LAUNDRY PROCESS: LAUNDRY SYMBOL GUIDE

**Ensure that staff are appropriately trained and deemed competent.**

**Also ensure that the manufacturer's instructions for use are followed.**



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## THE LAUNDRY PROCESS: WASHING PARAMETERS

**The effectiveness of the laundering process depends on many factors, including:**

- time and temperature
- mechanical action
- water quality (pH, hardness)
- volume of the load
- extent of soiling
- model/availability of commercial washers and dryers

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## THE LAUNDRY PROCESS: WASHING PARAMETERS



- The antimicrobial action of the laundering process results from a combination of mechanical, thermal, and chemical factors.
- Dilution and agitation in water remove substantial quantities of microorganisms.
- Soaps and detergents function to suspend soils and exhibit some microbiocidal properties.

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## THE LAUNDRY PROCESS: WASHING PARAMETERS

- Hot water provides an effective means of destroying microorganisms.
  - Washing with hot-water, defined as 160°F (71°C) temperature, for a minimum of 25 minutes
  - Water can be provided by steam jet or separate booster heater.
- Low-temperature laundry cycles rely heavily on the presence of chlorine- or oxygen-activated bleach to reduce the levels of microbial contamination.
  - Washing in low water temperatures of 71°F–77°F (22°C–25°C) can reduce microbial contamination when the cycling of the washer, the wash detergent, and the amount of laundry additive are carefully monitored and controlled.





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## THE LAUNDRY PROCESS: CHLORINE BLEACH

- Chlorine bleach is an economical, broad-spectrum chemical germicide that enhances the effectiveness of the laundering process.
- Chlorine bleach is not, however, an appropriate laundry additive for all fabrics.
- The use of chlorine bleach assures an extra margin of safety.
  - A total available chlorine residual of 50–150 ppm is usually achieved during the bleach cycle.
  - Chlorine bleach becomes activated at water temperatures of 135°F–145°F (57.2°C–62.7°C).

***Always follow manufacturer's instructions for use.***

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## THE LAUNDRY PROCESS: RINSE CYCLE



- The last of the series of rinse cycles is the addition of a mild acid (i.e., sour) to neutralize any alkalinity in the water supply, soap, or detergent.
  - It inactivates some microorganisms.
  - It reduces the risk for skin reactions among residents.
- Damp laundry is not left in machines overnight.

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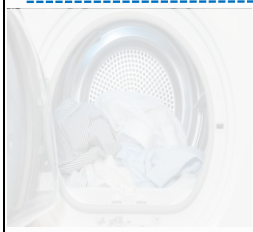
## THE LAUNDRY PROCESS: DRYING PARAMETERS



- Regardless of whether hot or cold water is used for washing, the temperatures reached in drying and especially during ironing provide additional significant microbiocidal action.
- Dryer temperatures and cycle times are dictated by the materials in the fabrics.
- Man-made fibers (i.e., polyester and polyester blends) require shorter times and lower temperatures.

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## THE LAUNDRY PROCESS: DISINFECTION OF MACHINES

- Disinfection of the tubs and tumblers of these machines is unnecessary ***when proper laundry procedures are followed***; these procedures involve:
  - the physical removal of bulk solids (e.g., feces) before the wash/dry cycle ***and***
  - proper use of temperature, detergent, and laundry additives.
- Infection has not been linked to laundry procedures in residential-care facilities, even when consumer versions of detergents and laundry additives are used.

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## THE LAUNDRY PROCESS: CLEAN LINENS



Bed and bath linens must be maintained in good condition.

Linens are inspected and replaced if any holes, tears, and physical defects are found.

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## THE LAUNDRY PROCESS: CLEAN LINENS



- Clean linens provided by an off-site laundry must be packaged prior to transport to prevent inadvertent contamination from dust and dirt during loading, delivery, and unloading.
- Functional packaging of laundry can be achieved in several ways, including:
  - placing clean linen in a hamper lined with a previously unused liner, which is then closed or covered
  - placing clean linen in a properly cleaned cart and covering the cart with disposable material or a properly cleaned reusable textile material that can be secured to the cart; and
  - wrapping individual bundles of clean textiles in plastic or other suitable material and sealing or taping the bundles.

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## INFECTION CONTROL PREVENTION STRATEGIES

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## BASIC INFECTION PREVENTION & CONTROL STRATEGIES

- Standard Precautions
- Hand Hygiene
- Minimize Transmission of Infection
- Disinfection of Surfaces

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STANDARD PRECAUTIONS

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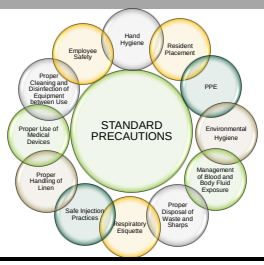
## STANDARD PRECAUTIONS




Standard Precautions are a group of infection prevention practices that ***apply to the care of all residents***, ***regardless*** of suspected or confirmed infection or colonization status.

*USE STANDARD PRECAUTIONS FOR EVERYONE!*

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## STANDARD PRECAUTIONS

- Standard precautions **protect** and **prevent** healthcare personnel or the environment from transmitting infections to other residents.
- Standard precautions are based on the principle that ***all*** blood, body fluids, secretions, and excretions (except sweat) ***may*** contain transmissible infectious agents.

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HAND HYGIENE

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## Why is Hand Hygiene Important?

- **Practicing hand hygiene is the simplest, yet effective, way to prevent the spread of infections**
- **Hand hygiene not only protects the resident from potentially being exposed to other infections, but it also protects the healthcare provider**

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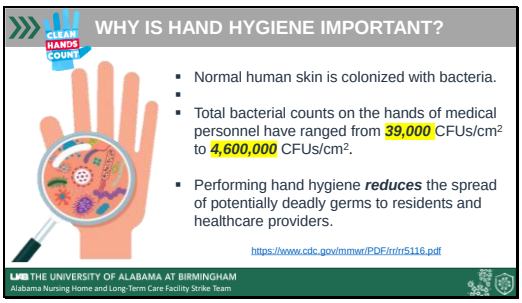


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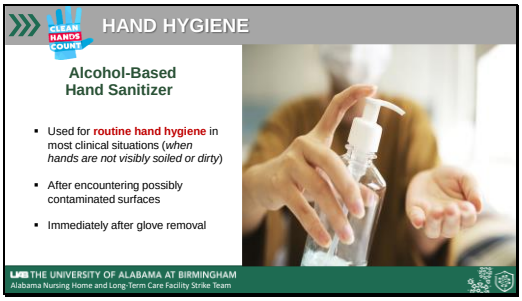

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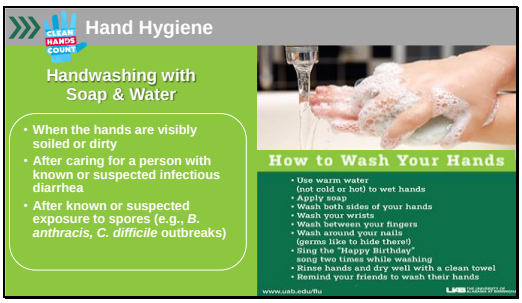


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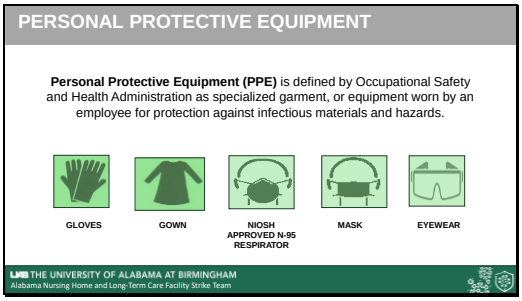

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## SEQUENCE* FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT

*The combination of PPE will affect sequence—be practical.

**There are examples listed by the CDC as guidance for safe donning of PPE.**

**Ensure that staff are appropriately trained and deemed competent.**

**Also ensure that the manufacturer's instructions for use are followed.**

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## SEQUENCE* FOR REMOVING PERSONAL PROTECTIVE EQUIPMENT

*THE COMBINATION OF PPE WILL AFFECT SEQUENCE—BE PRACTICAL.

**There are two examples listed by the CDC as guidance for safe removal of PPE.**

**Ensure that staff are appropriately trained and deemed competent.**

**Also ensure that the manufacturer's instructions for use are followed.**

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## CLEANING AND DISINFECTION IN LONG-TERM CARE LAUNDRY FACILITIES

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## LAUNDRY FACILITIES

- Guidelines for laundry construction and operation for health-care facilities, including nursing facilities, have been published.
- The design and engineering standards for existing facilities are those cited in the AIA edition in effect during the time of the facility's construction.
- A laundry facility is usually partitioned into two separate areas – a "dirty" area for receiving and handling the soiled laundry and a "clean" area for processing the washed items.
- To minimize the potential for recontamination of cleaned laundry with aerosolized contaminated lint, areas receiving contaminated textiles should be at **negative air pressure relative to the clean areas**.
- Laundry areas should have handwashing facilities readily available to workers.



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## GERMS CAN PERSIST IN THE ENVIRONMENT

Germs or pathogens of concern, such as a bacteria, fungi, virus, or parasite can survive for long periods of time if proper cleaning and disinfection are not performed.

Susceptible personnel can become infected or colonized with pathogens if they have direct or indirect contact with contaminated surfaces or equipment.

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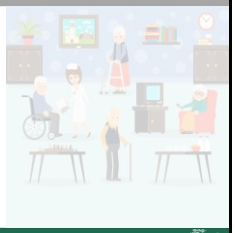
## FOMITES

- Fomites, or inanimate objects, that may facilitate pathogen transmission deposited by an infected host into a susceptible host.
- Examples of fomites are door handles, faucet handles, tables, and shared equipment.
- Examples of diseases caused by fomite transmission are the common cold, Influenza, Meningitis, and COVID-19.



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## ENVIRONMENTAL SURFACES

In Laundry Facilities,

- The physical environment (e.g., floors, walls, ceilings, vents, working surfaces, and installed equipment) must receive **scheduled cleaning** appropriate for the surface, the frequency dependent upon the level of contamination, and the operation performed in the area according to facility policy.
- Clean textile working surfaces (e.g., counters, benches, tables, etc.) must be **kept clean of visible soil, dust, and lint**.

***All surfaces are to be cleaned and disinfected on a routine basis to prevent transmission of germs through fomites, or inanimate objects.***



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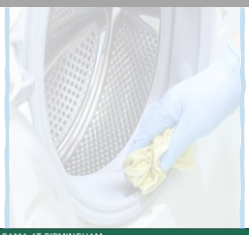
## LAUNDRY FACILITIES

*"Soiled laundry holding areas are anticipated to be heavily contaminated and should undergo at a minimum, daily cleaning and disinfection consistent with other areas of the hospital."*



*"These areas include soiled utilities on the units, laundry chute discharge areas, and soiled laundry holding areas near the loading dock if healthcare laundry is performed offsite."*



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## LAUNDRY FACILITIES

***"Laundry chutes should be used in a manner to minimize dispersion of aerosols."***

CDC does not recommend an interval for routine visual inspection by infection preventionist or those charged with maintaining the environment of care, however the facility should inspect these areas routinely to ensure the cleanliness of the area.

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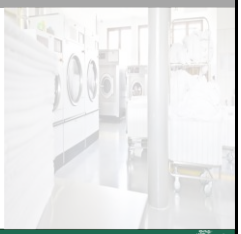
## LAUNDRY FACILITIES: SOILED LINEN AREA

*"Maintain the receiving area for contaminated healthcare textiles at negative pressure compared with the clean areas of the laundry in accordance with AIA construction standards in effect during the time of facility construction."*

In all facility types (including long-term care), ASHRAE Standard 170-2017 indicates that soiled utility and soiled holding areas "*should be at negative pressure to adjacent areas with a minimum of 2 outdoor air changes per hour (ACH) and 10 total ACH.*"



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## LAUNDRY FACILITIES : CLEAN LINEN AREA

- Stock inventory of clean textiles are rotated and used in a "first in – first out" manner.
- Storage area must be free of dust and lint
- The bottom shelf must be of solid nonporous construction, free from visible soil and dirt, and at a minimum of 8 inches from the floor for accessible cleaning to prevent contamination.
- Storage area must be under positive air pressure relative to adjacent spaces, thereby preventing intrusion of contamination from soiled textile areas.
- The doors to the clean textile storage area shall always remain closed, except for entrance or exit.

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## LAUNDRY FACILITIES: CLEAN VS. SOILED LINEN AREA

- Clean linen must always be kept separate from contaminated linen.
- The use of separate rooms, closets, or other designated spaces with a closing door provides the most secure methods for reducing the risk of accidental contamination.

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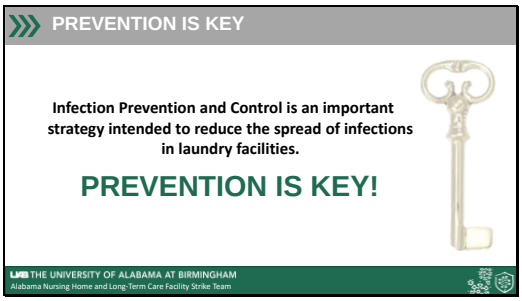


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## RESOURCES

https://hlacnet.org/wp-content/uploads/2023/06/HLAC_AccreditationStandards_05-31-2023.pdf

Guidelines for laundry in health care facilities - UniMac

LTCF laundry standards cdc - Google Search

https://hlacnet.org/wp-content/uploads/2023/09/HLAC_AccreditationStandards_09-21-2023.pdf

https://hlacnet.org/standards/

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https://www.slideserve.com/lkenneth/linen-management-powerpoint-ppt-presentation

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

https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/laundry.html

https://www.cdc.gov/infectioncontrol/pdf/icar/IPC-mod9-healthcare-laundry-508.pdf

https://www.cdc.gov/infectioncontrol/pdf/guidelines/environmental-guidelines-P.pdf

https://www.cdc.gov/infectioncontrol/guidelines/environmental/index.html

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OBJECTIVES

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## Objectives

- Identify the functions and responsibilities of the nurse/medication tech during medication pass.
- Identify items of preparation for Medication administration.
- Discuss ideal Medication Administration practices utilizing food and beverages.
- Review areas of concentration during Infection Prevention consultations
- Describe strategies for assessing the adherence to infection control procedures during medication administration.



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HISTORICAL PROCESS

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## Historical Process Review

The medication nurse/tech is responsible for administering the medications as they have been prescribed by their medical provider.

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## Factors That Affect Medication Administration

- Resident appointment schedules (Example: dialysis, therapy, doctor, or dental appointment)
- The number of prescribed medications that are to be administered to each resident
- Performing an assessment (resident, lab values, or vital signs) prior to medication administration
- Medication calculations
- Resident with a higher acuity, on isolation precautions, or with an urgent/emergent situation
- Need for order clarification from ordering provider
- Often working with limited staffing resources, increased staffing ratios or provider with multiple roles
- Ensuring that the necessary equipment to complete medication administration is available
- The length of time it takes to prepare and pass medication in the morning, mid-day, afternoon, or evening and being timely when passing medications at the appropriate times
- To be informed and knowledgeable about each medication and to have a working knowledge of side effects, adverse effects, and potential drug interactions of these medications

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## THE MEDICATION CART

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## Medication Cart Items

- List of resident names and medication list
- Report Sheet/Worksheet (for documentation of vital signs that are required for meds)
- Computer (documentation)
- Gloves
- Alcohol wipes
- OTC and Extra medications
- Trash Can
- Sharps container
- BP cuff  Medication
- Disinfectant wipes

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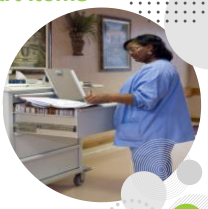
## Medication Cart Items

- Pill crusher (silent knight)
- Drinking cups
- Medication cups
- Spoons
- Applesauce (comes from kitchen)
- Water pitcher (Dated and Labelec
- Thickened Water
- Juice (If resident prefers)
- Protein Supplement
- Straws
- Diabetes Management supplies
- Lancet, strips, glucometer
- Hand sanitizer
- Facility provided lotion



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## Medication Administration By Route

- Oral
- Intravenous (Peripheral IV/ Midline/ Central (PICC) Line
- Eye Drops/Ointments
- Ear Drops
- Topical Medications (Creams, Ointments, or Patches)
- Suppositories
- Gastrostomy/PEG Tube
- Subcutaneous Injections
- Intramuscular Injections
- Intranasal

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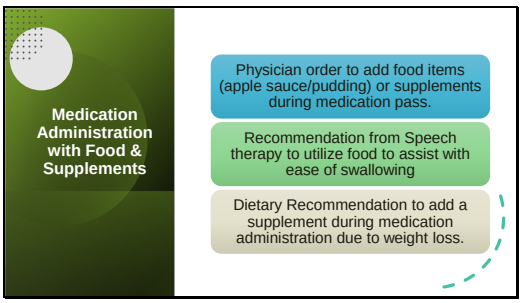


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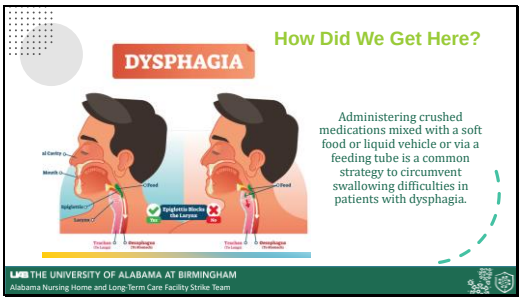


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BASICS IN INFECTION PREVENTION

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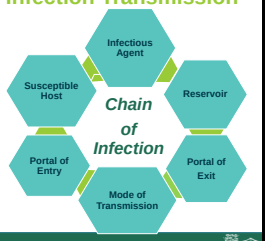
## Review of the Chain of Infection Transmission

In healthcare settings, the *transmission*, or spread of an infection is described as a "*chain*," or an active infectious cycle.

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## Role of Infection Prevention and Control

The role of infection prevention and control is critical in healthcare settings as it assists in the *disruption* or *ending* of the cycle that will **STOP THE SPREAD** of pathogens and germs within the environment.

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## So, What's The Infection Control Issue?

Medication administration is often fraught with many potential infection control risk.

**Let's highlight a few!**

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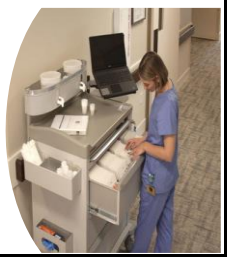
## Infection Prevention Plan

- The IP must address the potential increased risk of pathogen transmission associated with these additional activities and services.
- A comprehensive IPC plan must now include measures to prevent environmental contamination of items such as in-room computers, computer keyboards, touch screens, and equipment.
- In addition, the plan must anticipate an increasing traffic flow to the LTC facility by visitors and service providers who support these activities.



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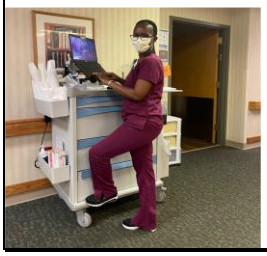
## Infection Prevention Plan



- The IP should collaborate with the pharmacy provider to ensure that medications are dispensed and delivered to the facility in a manner that prevents possible contamination.
- Periodic observation of medication administration will provide real-time, useful data regarding the safe handling and administration of commonly prescribed drugs.

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## Perform Hand Hygiene Between Care of Residents

**Germs are primarily thought to be spread through the hands of healthcare providers. Therefore, hand hygiene remains the #1 way to prevent the spread of infection.**

***Use the appropriate hand hygiene based upon the situation (wash hands with soap and water when visibly soiled or dirty or when caring for resident with C. difficile or Norovirus.)***

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## Prevent Infection Transmission From Fomites

- Fomites are inanimate objects that can be contaminated with germs.
- Germs can be spread when the fomites are touched.
- Examples of fomites are medication drawer handles, surface of medication cart, touch screen monitors, and bedside tables.
- Ensure that these surfaces are **cleaned and disinfected** on a routine basis and as needed when soiled or contaminated.

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## Point of Care POC Device

- Glucometer
  - Is the device for single resident use
  - Cleaning and Disinfection per IFU
  - Proper Disinfectant Used
  - Where to clean and disinfect
  - Proper storage procedure followed
- Insulin Pins/ Multidose Insulin Vials
  - Needles – Single use
- Lancet
  - Lancet - Single use
- All supplies should remain in original containers (with lot #s, expiration dates).
- Cotton balls should be maintained and covered to prevent contamination

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## Infection Prevention with Supplies on Medication Cart

- Items are to be maintained as single use
- Items are to be protected from being contaminated (cups turned downward)
- Water pitcher (labeled and dated)
- Foods used (labeled and dated)
- Surfaces intact without, rust, or breaks in its integrity
- Medications should not be touched with bare hands
- No personal drinks or items should be on the medication cart
- Items are used before expiration date
- Outdate checks (shift older items to the front or top)

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## Infection Prevention and Medication Administration

- Care should be planned based on the type of medication being administered
- Take care to scrub the hub prior to administering intravenous medications
- Note IV access: Site intact, flushes with ease, without redness, without signs of infiltration
- For all creams and drops, ensure that these do not get contaminated.
- Utilize appropriate PPE
- Care should be given for proper cart cleaning and disinfection (Example: between shift change or daily)

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## WHAT TO LOOK FOR DURING OBSERVATIONS

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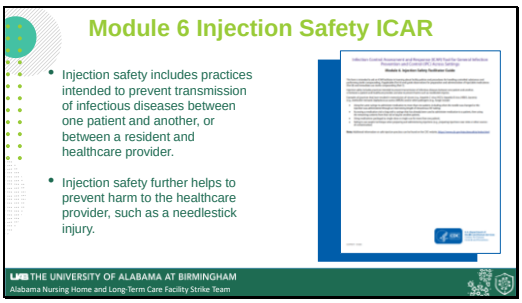


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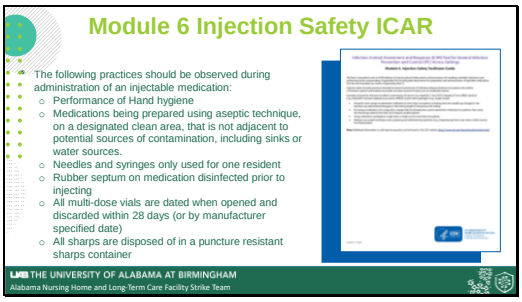


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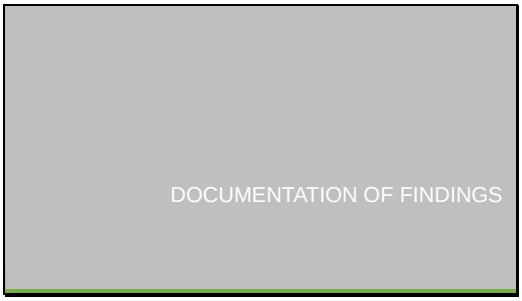

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## Description of Findings

- Be as descriptive without making assumptions
  - Even if it looks as if it is mold or blood, do not call it such.
  - Describe it as:
    - "Brown or black debris noted on"
    - "Appears to be dark red-like debris"
    - "White dust like debris on surface of"
- All items should appear neat and orderly. Any areas of clutter are a magnet for drawing further attention to it.
- All items should be stored in a manner to prevent contamination.
- If you know something is not right, but do not have the language for it, make a note of it and bring to the attention of nursing leadership.



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## Scenario #1 - Question

A nurse is administering medications to a resident with a gastrostomy tube.

*What type of precautions should the nurse take to prevent infection with this resident?*

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## Scenario #1 - *Answer*

At minimum:

We could expect the nurse to:

- Perform hand hygiene
- Wear PPE per standard precaution

*This situation may include the need for gloves, gown, and/or face shield if splashing is anticipated.*

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## Scenario #2 - Question

You are performing infection control observations at a SNF. You notice a small container of applesauce left unattended on the medication cart. This applesauce container is open, with a spoon in it, without a labeled time or date.

***What would you do next?***

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## Scenario #2 - *Answer*

At minimum: You would:

- Inform nursing leadership of the issue in a non-confrontational, non-judgmental way.
- Encourage them to notify the appropriate staff to discard the applesauce.
- The new applesauce will be dated and timed and discarded after each medication pass.
- Provide just in time education of the importance of proper storage and maintenance of food items that are not in use.

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## Scenario #3 - Question

**While performing observations, you observe a medication nurse/tech getting ready to enter a resident's room that is on Contact Precaution without personal protective equipment.**

***You should:***

a. Go about your business since you are not skilled in passing meds.
b. Do nothing since PPE for this type of room is optional.
c. Access the facility intercom and announce "Attention, you may not want to eat the potato salad that _____ brought today."
d. Bring it to the attention of the medication nurse/tech in a non-threatening way. Provide just in time education reminding the staff member that a gown and gloves are to be for residents on Contact Precautions, worn per policy.



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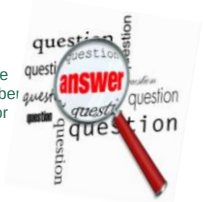
## Scenario #3 - *Answer*

d. Bring it to the attention of the medication nurse/tech in a non-threatening way. Provide just in time education reminding the staff member that a gown and gloves are to be for residents on Contact Precautions, worn per policy.



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## Scenario #4 - Question

**While performing observations, you observe a glucometer with a strip inserted in it on top of the medication cart.**

***You should:***

a. Do nothing since it is time for your break.
b. Thank the staff member that has prepared it for your use and use it to check a resident's blood glucose.
c. Provide just in time education sharing that the glucometer should be cleaned and disinfected after each resident's use, per the manufacturer's instructions for use.
d. Do nothing because it only needs to be cleaned and disinfected at the end of each shift.

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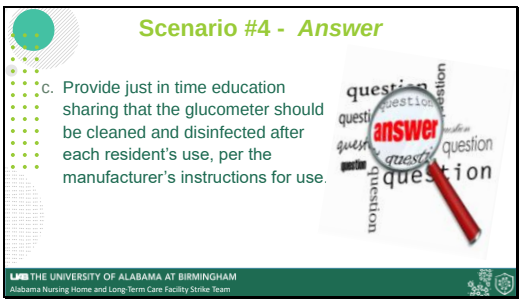


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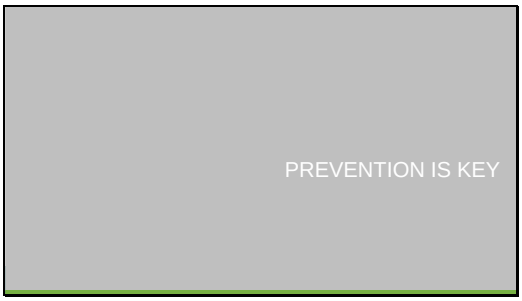


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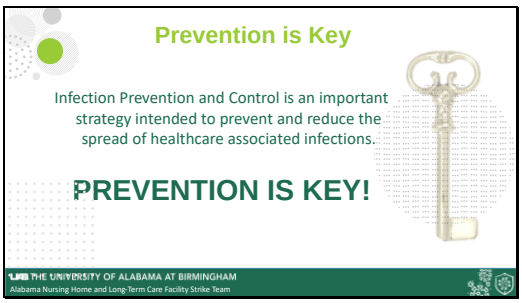


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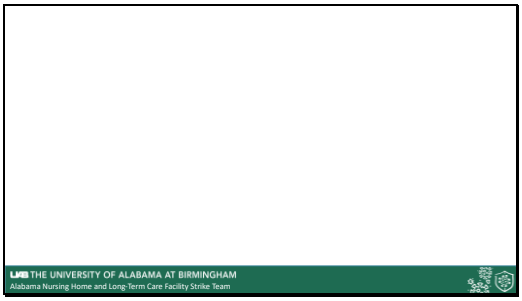

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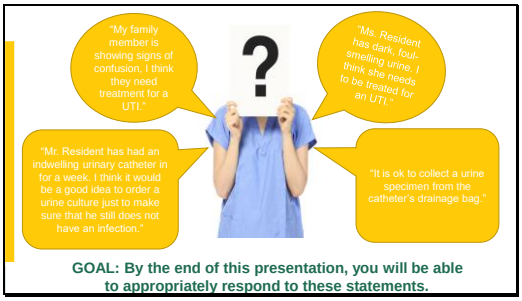

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## OBJECTIVES

1. Define urinary tract infection (UTI) and describe the different types of UTIs.
2. Identify the risk factors, signs and symptoms and infection prevention strategies related to UTI.
3. Recognize the importance of antibiotic stewardship in residents with suspected UTIs and identify the consequences of overuse of antibiotics.



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## According to Centers for Disease and Control

- **Healthcare Associated Infections (HAIs)**
  - **1 to 3 million serious infections occur every year in nursing homes, skilled nursing and assisted living facilities.**
  - **Infections include urinary tract infection, diarrheal diseases, antibiotic-resistant staph infections, and many others.**
  - **Infections are a major cause of hospitalization and death; as many as 380,000 people die of the infections in LTCFs every year.**

**Reducing HAIs is critical to improving patient safety and controlling healthcare costs.**



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## ANTIBIOTIC USAGE IN NURSING HOMES

- **4.1 million** Americans are admitted to or reside in nursing homes during a year
- **12%** of LTCF residents have an infection **at any given time**
- Up To **70%** of nursing home residents received one or more antibiotics during a year
- Up to **75% of antibiotics** are prescribed incorrectly

**Having an effective Antimicrobial Stewardship Program is important in this setting**

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“In a 1945 interview with *The New York Times*, Alexander Fleming, who won a Nobel Prize that year for his discovery of penicillin, warned that misuse of the drug could result in selection for resistant bacteria.”

**The judicious use of antibiotics is necessary considering the growth of antimicrobial resistance and escalating costs in health care.**

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2702430/

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**Centers for Medicare & Medicaid Services (CMS) ASP Regulations in Long-Term Care Facilities**

**Antimicrobial Stewardship is Mandated by CMS**

As part of the revised Requirements for Participation, the Centers for Medicare and Medicaid Services (CMS) required all long-term care (LTC) facilities to have an antibiotic stewardship program by November 28, 2017.

If surveyors haven't visited facility yet, they likely will in 2019 to assess the 7 CDC Core Elements of Nursing Home Antimicrobial Stewardship Programs are in place.

Regulations (F881; **42 CFR 483.80(a)(3)**) requiring an ASP that includes:

- Antibiotic use protocols
- System to monitor antibiotic use
- Be reviewed on an annual basis and as needed

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**SURVEILLANCE VERSUS CLINICAL CRITERIA FOR LTCFS**

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## SURVEILLANCE CRITERIA FOR LTC FACILITIES

**Surveillance criteria** is used to track true case events and to estimate the actual incidence/prevalence of disease conditions consistently.

**Clinical criteria** is meant to assist with making informed decisions on individual residents when care is needed.

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## MCGEER, NHSN, AND LOEB CRITERIA

**McGeer and NHSN Criteria are designed for Surveillance**

- Surveillance definitions are highly specific for **setting benchmarks across facilities**
- Revised McGeer criteria often applied retrospectively to review and count cases
- Not very useful for diagnosis or necessity of treatment.

**Loeb Criteria is designed for Clinical Use**

- Establish minimum criteria that should be present ***before*** initiating antibiotics
- Useful for guiding resident care and clinical practice

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## Revised McGeer Criteria for Infection Surveillance Checklist

https://www.pharmacy.umaryland.edu/media/SOP/wwwpharmacyumarylandeduCenters/amyfantimicrobial-stewardship/mcgeer-criteria-for-infection-surveillance-checklist_form.pdf

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## APPLYING THE LOEB CRITERIA

Loeb Criteria is applied prospectively, in "real time" to identify cases in which antibiotic initiation is appropriate in LTCF

Loeb Criteria developed for:

- Urinary Tract Infections (UTIs)
- Skin and Soft-Tissue Infections
- Respiratory Infections
- Fever of Unknown Origin



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## URINARY TRACT INFECTION (UTI)

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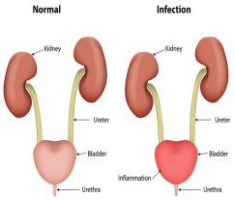
## WHAT IS A URINARY TRACT INFECTION (UTI)?

The urinary tract includes the kidneys, bladder, ureters and urethra.

Disease producing microorganisms invade the urinary tract producing an infection with symptoms.

Commonly caused by bacteria but can be caused be a fungal infection.



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## RISK FACTORS FOR UTI

- History of UTIs
- Dementia
- Catheter Use
- Bladder Incontinence
- Bowel Incontinence
- A prolapsed bladder
- Immobility

In Women:

- For women over age 65, the incidence rate of UTIs is over 10%.
  - For women over age 85, the incidence rate increases to almost 30%.
- Estrogen deficiency in postmenopausal women

In Men:

- A bladder or kidney stone
- An enlarged prostate
- Bacterial prostatitis

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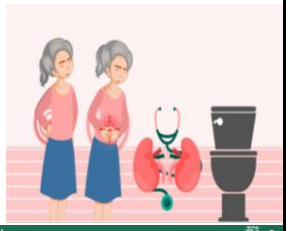
## SIGNS AND SYMPTOMS OF UTI

- The symptoms of UTI (cystitis) are:
  - Dysuria
  - Frequency
  - Urgency
  - Suprapubic pain
- If pyelonephritis occurs (in which the infection spreads to the kidneys), these severe symptoms can include:
  - Fever
  - Nausea
  - Vomiting
  - Flank pain
- Older adults may present with atypical or non-localizing symptoms.



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## MCGEER CRITERIA – Resident *Without* Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for Meeting Surveillance Definitions. |
|---|---|
| **Resident *WITHOUT* Urinary Catheter**<br><br>**Must fulfill both 1 *AND* 2:** | **1. At least one of the following signs or symptoms:**<br>☐ Acute dysuria or pain, swelling, or tenderness of testes, epididymis, or prostate<br>☐ Fever or leukocytosis, and ≥ 1 of the following:<br>- Acute costovertebral angle pain or tenderness<br>- Suprapubic pain<br>- Gross hematuria<br>- New or marked increase in incontinence<br>- New or marked increase in urgency<br>- New or marked increase in frequency<br>☐ If no fever or leukocytosis, then ≥ 2 of the following:<br>- Suprapubic pain<br>- Gross hematuria<br>- New or marked increase in incontinence<br>- New or marked increase in urgency<br>- New or marked increase in frequency<br><br>***AND***<br><br>**2. At least one of the following microbiologic criteria:**<br>☐ ≥ 10$^5$ cfu/mL of no more than 2 species of organisms in a voided urine sample<br>☐ ≥ 10$^2$ cfu/mL of any organism(s) in a specimen collected by an in-and-out catheter |

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## LOEB CRITERIA – Resident *Without* Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for Collecting Urine & Starting Antibiotic Therapy |
|---|---|
| **Resident *WITHOUT* Urinary Catheter** | **Either one of the following criteria:**<br>• Acute dysuria (discomfort, pain, burning) OR<br>• Temp >100°F (>37.9°C) or 2.4°F (1.5°C) increase above baseline<br>**AND**<br>>1 of the following new or worsening symptoms:<br>▫ Urgency (sudden desire to void)<br>▫ Suprapubic pain<br>▫ Urinary incontinence<br>▫ Frequency (needing to urinate 8 or more times a day)<br>▫ Gross hematuria<br>▫ Costovertebral angle tenderness |



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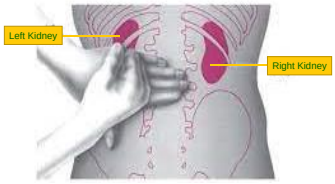
## COSTOVERTEBRAL ANGLE TENDERNESS



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## CATHETER ASSOCIATED URINARY TRACT INFECTION

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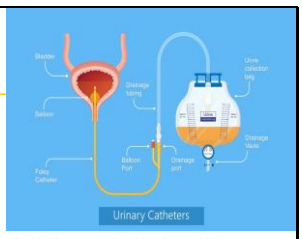
## INDWELLING URINARY CATHETER

A drainage tube that is inserted into the urinary bladder through the urethra, is left in place, and is connected to a drainage bag/collection system to drain the urine from the bladder. (*Example: Foley catheter.*)




***The risk of a catheter associated urinary tract infection (CAUTI) is directly related to the duration of catheterization!***



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## BACKGROUND: PATHOGENESIS OF CAUTI

**Infections can either occur early due to contamination at insertion or later due to improper maintenance techniques.**

**Extraluminal (Outside of the closed catheter system)**
- Early, at insertion
  - Endogenous- Meatal, rectal, or vaginal colonization
  - Exogenous- Health care providers hands or equipment
- Late, by capillary action

**Intraluminal (Inside the closed catheter system)**
- Break in closed drainage
- Ascension of fecal or skin flora
- Balloon prevents complete bladder emptying
- Biofilm formation
- Contamination of collection bag urine

Figure from: Maki DG, Tambyah PA. Emerg Infect Dis 2001;7:1-6

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## APPROPRIATE URINARY CATHETER USE

**Insert and continue catheters *only* for appropriate indications**

- Acute urinary retention or bladder outlet obstruction.
- Critically ill with need for accurate urinary output monitoring
- Perioperative for certain surgeries
  - Urologic surgery or other surgery on the contiguous structures of the genitourinary systems
  - Prolonged duration of surgery (should be removed post-op)
  - Anticipation of large-volume infusions or diuretics during surgery
  - Need for intraoperative monitoring of urinary output
- Assist in open sacral or perineal wound healing in the incontinent resident
- Prolonged immobilization
- End-of-life comfort, if needed

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## INAPPROPRIATE URINARY CATHETER USE

- Substitution for nursing care of the resident with incontinence
- Obtaining urine for culture or other diagnostic tests when the resident can voluntarily void
- Prolonged postoperative duration without appropriate indications

**Insert and continue catheters *only* for appropriate indications**



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## ALTERNATIVES TO INDWELLING CATHETERS

Male, Female urinals

Male external catheters

Female external urinary management device

Intermittent straight catheters

Bedside Commode

Scale to Weigh Absorbent Products

Incontinence Care Supplies

Ultrasound for Bladder Scanning

Pictures are not intended to imply recommendations for specific products or brands.



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## MCGEER CRITERIA – Resident *With* Indwelling Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for meeting surveillance definition |
|---|---|
| **Resident *WITH* Indwelling Urinary Catheter**<br><br>**Must fulfill both 1 *AND* 2:** | **Must fulfill both 1 *AND* 2 criteria:**<br><br>**1. At least *one* of the following signs or symptoms:**<br><br>☐ Fever, rigors, or new onset hypotension, with no alternate site of infection<br>☐ Either acute change in mental status or acute functional decline, with no alternate diagnosis and leukocytosis<br>☐ New-onset suprapubic pain or costovertebral angle pain or tenderness<br>☐ Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate<br><br>***AND***<br><br>**2.** ☐ Urinary catheter specimen culture with ≥ 105 cfu/mL of any organism(s) |

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## LOEB CRITERIA – Resident *With* Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for Collecting Urine & Starting Antibiotic Therapy |
|---|---|
| Resident *WITH* Urinary Catheter | At Least *One* of the following criteria:<br>▪ Rigors – an episode of shaking or exaggerated shivering *with* a rise in temperature<br>▪ New onset delirium – confusion<br>▪ Temp > 100° F or 2.4° F above baseline<br>▪ New costovertebral angle tenderness |



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## PLEASE NOTE:

***Residents with an indwelling urinary catheter should be categorized as 'with catheter'***

The following devices ***are not categorized*** as an indwelling urinary catheter:

- Intermittent/Straight in-and-out catheters
- Suprapubic catheters
- Condom catheters
- External urinary drainage devices.
- Nephrostomy tube(s)



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## DETERMINING WHEN TO ORDER AN URINE CULTURE

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## LOEB CRITERIA – Resident *Without* Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for Collecting Urine & Starting Antibiotic Therapy |
|---|---|
| Resident *WITHOUT* Urinary Catheter | Either one of the following criteria:<br>• Acute dysuria (discomfort, pain, burning) OR<br>• Temp >100°F (>37.9°C) or 2.4°F (1.5°C) increase above baseline.<br>AND<br>>1 of the following new or worsening symptoms:<br>▫ Urgency (sudden desire to void)<br>▫ Suprapubic pain<br>▫ Urinary incontinence<br>▫ Frequency (needing to urinate 8 or more times a day)<br>▫ Gross hematuria<br>▫ Costovertebral angle tenderness |

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## LOEB CRITERIA – Resident *With* Urinary Catheter

| Urinary Tract Infection | Minimum Criteria for Collecting Urine & Starting Antibiotic Therapy |
|---|---|
| Resident *WITH* Urinary Catheter | At Least *One* of the following criteria:<br>▫ Rigors – an episode of shaking or exaggerated shivering *with* a rise in temperature<br>▫ New onset delirium – confusion<br>▫ Temp > 100° F or 2.4° F above baseline<br>▫ New costovertebral angle tenderness |

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## ASYMPTOMATIC BACTERIURIA (ASB)

**Bacteria present in urine without symptoms**

- Prevalence of ASB is 15-50% of all residents in LTC Facilities (ASB in Women: 25-50%; ASB in Men:15-35%)
- Chronic genitourinary symptoms are not due to UTI, however many residents with these symptoms have positive cultures
- The absence of pyuria (high levels of white blood cells—pus—in urine) is useful to exclude UTI, but presence does not mean infection
- The presence of ASB has not been shown to cause adverse outcome in LTC Residents
- Mortality rates with ASB are comparable to those without ASB

***Antimicrobial treatment for ASB is NOT recommended!***

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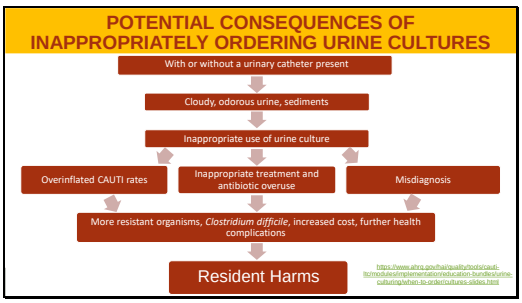


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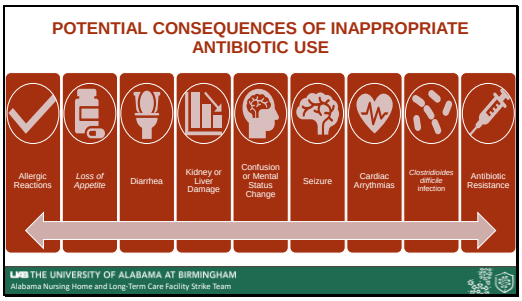


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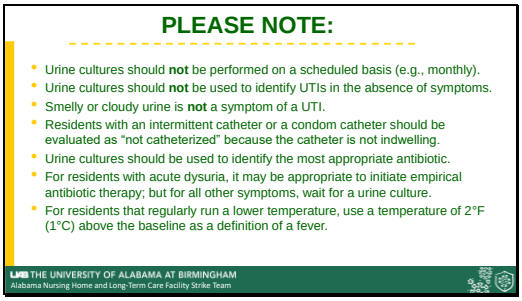

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## COULD IT BE SEPSIS?

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## COULD IT BE SEPSIS?

- The urinary tract infection can lead to can lead to cystitis, pyelonephritis, bacteremia, and septic shock, resulting in decreased functionality, possible acute care hospitalization and mortality.
- Management of sepsis is a complicated clinical challenge requiring **early recognition** and management of infection, hemodynamic issues, and other organ dysfunctions.

https://jamanetwork.com/journals/jama/article-abstract/2598892

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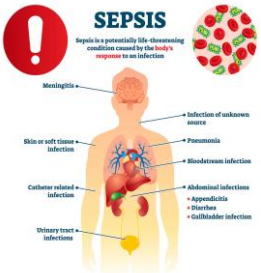
## WHAT IS SEPSIS?

- Sepsis is the body's extreme response to an infection. It is a life-threatening medical emergency.
- Without timely treatment, sepsis can rapidly lead to tissue damage, organ failure, and death.



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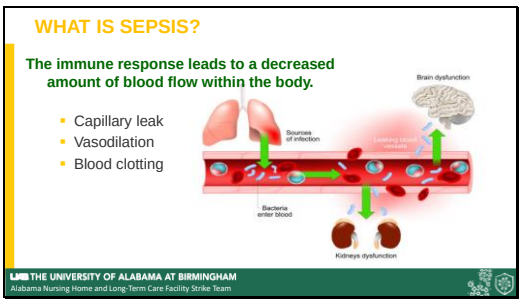


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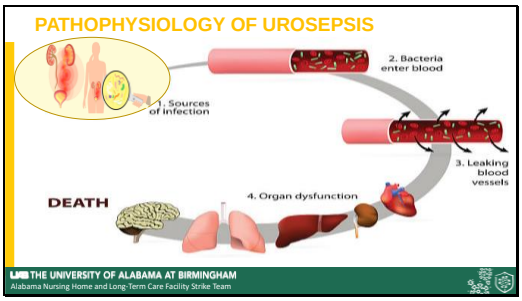


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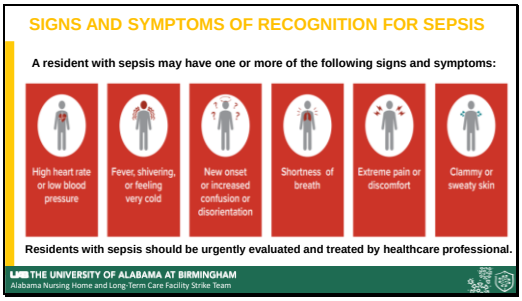

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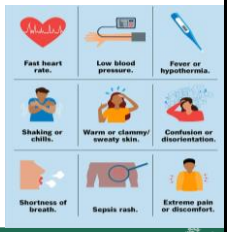
## WHAT ARE THE CLASSIC SIGNS OF SEPSIS?

- Classic signs and symptoms, such as fever and pain, that may be ***subtle*** in older adults and not conform to the expected inflammation/infection response.
  - Lethargy, changes in level of consciousness, weakness, blood pressure changes, shortness of breath, and decreased oxygenation can indicate an infectious or noninfectious process

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When it comes to sepsis, remember ***IT'S ABOUT TIME***™. Watch for:

**T** — **I** — **M** — **E**™

| TEMPERATURE | INFECTION | MENTAL DECLINE | EXTREMELY ILL |
|---|---|---|---|
| higher or lower than normal | may have signs and symptoms of an infection | confused, sleepy, difficult to rouse | severe pain, discomfort, shortness of breath |

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## BASIC INFECTION PREVENTION & CONTROL STRATEGIES

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## BASIC INFECTION PREVENTION & CONTROL STRATEGIES

- Standard Precautions
- Hand Hygiene
- Proper Specimen Collection
- Use Infection Prevention Strategies

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## STANDARD PRECAUTIONS

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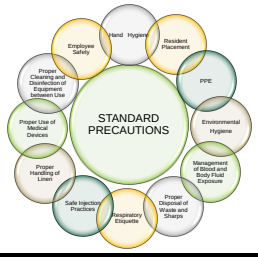
## STANDARD PRECAUTIONS




Standard Precautions are a group of infection prevention practices that ***apply to the care of all residents***, ***regardless*** of suspected or confirmed infection or colonization status.

*USE STANDARD PRECAUTIONS FOR EVERYONE!*

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## HAND HYGIENE

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## WHY IS HAND HYGIENE IMPORTANT?

- Normal human skin is colonized with bacteria.
- Total bacterial counts on the hands of medical personnel have ranged from ***39,000*** CFUs/cm$^2$ to ***4,600,000*** CFUs/cm$^2$.
- Performing hand hygiene ***reduces*** the spread of potentially deadly germs to residents and healthcare providers.

https://www.cdc.gov/mmwr/PDF/rr/rr5116.pdf

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## HAND HYGIENE

**Germs are primarily spread through the hands of healthcare providers. Therefore, hand hygiene remains the #1 way to prevent the spread of infection.**

Hand hygiene includes:

- Hand sanitizing with an alcohol-based hand rub (with 60-95% alcohol content)
- Hand washing with soap and water

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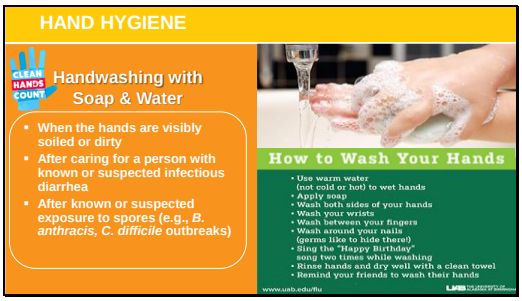


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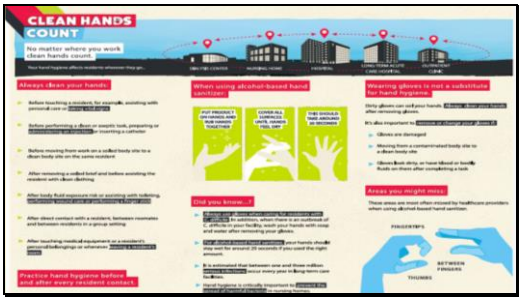

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PROPER URINE SPECIMEN COLLECTION

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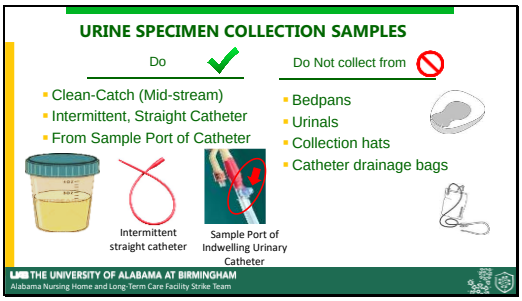


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UTI PREVENTION
IN LONG-TERM CARE FACILITIES

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## PREVENTION STRATEGIES TO REDUCE UTI IN LTCFS

- Perform hand hygiene
- Use gowns and gloves to protect staff and residents
- Only use catheters when they meet criteria
- Increase fluid intake, if appropriate: Older adults are subject to dehydration and over hydration. (Example: Offer 2-3 gulps of water every 30 minutes between the hours of 8am to 4pm (averages to approximately 64 oz))
- Offer scheduled toileting for each resident (Example: every 2 to 4 hours).
- Educating staff and residents to practice proper genital-urinal hygiene (Example: For women, wiping in a "front to back" method to prevent fecal contamination.
- For incontinent persons, use soap and water for cleansing the perineal area (do not use antiseptics).



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## CAUTI PREVENTION IN LONG-TERM CARE FACILITIES

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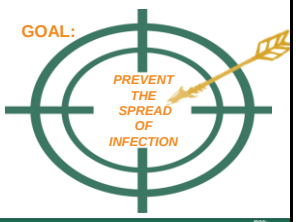
## Enhanced Barrier Precautions

Enhanced Barrier Precautions (EBP) are infection control measures designed to *reduce the spread of resistant organisms* by using personal protective equipment during high contact resident care activities or with residents with an increased risk for acquiring a multidrug-resistant organism (such as, residents with wounds or ***indwelling medical devices***).

**GOAL:**



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## Enhanced Barrier Precautions

**Applies to all residents in Skilled Nursing Facilities with any of the following:**

- Infection or colonization with an MDRO ***when Contact Precautions do not otherwise apply***
- Wounds and/or indwelling medical devices (e.g., central line, **urinary catheter**, feeding tube, tracheostomy/ventilator) regardless of MDRO colonization status

**PPE used for these situations during high-contact resident care activities:**

- Dressing
- Bathing/Showering
- Transferring
- Providing hygiene
- Changing Linens
- Changing briefs or assisting with toileting
- Device care or use: central line, urinary catheter, feeding tube, tracheostomy/ventilator
- Wound care: any skin opening requiring a dressing

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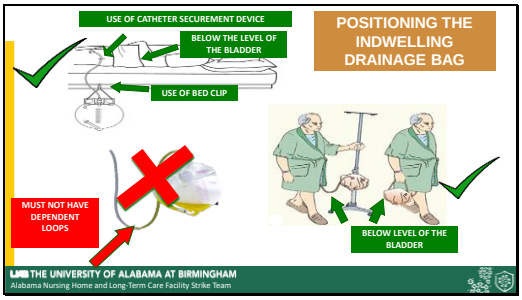


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## SUMMARY OF CAUTI PREVENTION MEASURES*

**Best Practice**

- Perform Hand hygiene and standard (or appropriate isolation) precautions
- Insert catheters only for appropriate indications
- Leave catheters in place only as long as needed
- Only properly trained persons insert and maintain catheters
- Insert catheters using aseptic technique and sterile equipment
- Maintain a closed drainage system
- Maintain unobstructed urine flow
- Prevent dependent loops in the catheter
- Position the drainage bag below the level of the bladder

*All recommendations in HICPAC guidelines at: http://www.cdc.gov/hicpac/cauti/001_cauti.html

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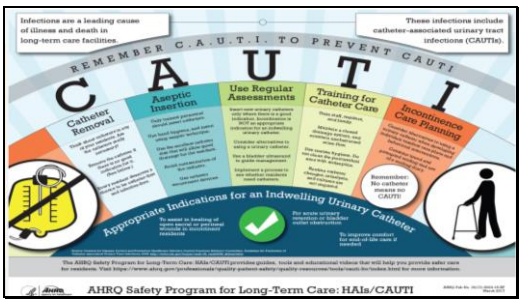


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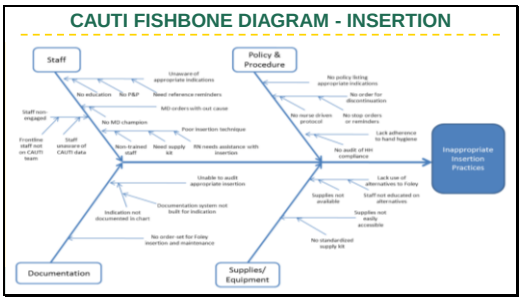


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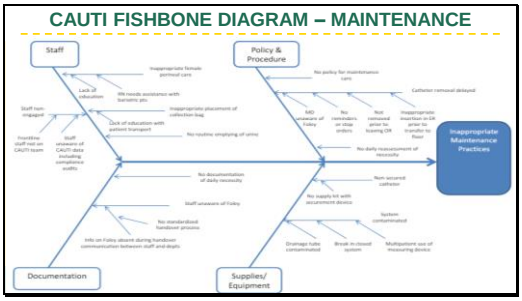

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## PERFORMANCE MEASURES

### Process Measures

- Consider reporting both process and outcome measures to senior administration, medical, and nursing leadership and clinicians who care for residents at risk for CAUTI.
  - **Compliance with education program**: Calculate percent of healthcare personnel (HCP) who have been trained
    - Example: # of trained HCP who insert catheters/# of HCP who insert catheters (Multiply by 100 to express as a percentage)
  - **Compliance with documentation of catheter insertion and removal dates:**
    - Example: # of residents with catheters with proper documentation/# of residents with a catheter in place at some point since admission (Multiply by 100 to express as a percentage)
  - **Compliance with documentation of indication for catheter placement:**
    - Example: # of residents with catheters with proper indication documentation/# of residents with a catheter in place (Multiply by 100 to express as a percentage)

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## PERFORMANCE MEASURES

### Outcome Measures

- Consider reporting both process and outcome measures to senior administration, medical, and nursing leadership and clinicians who care for residents at risk for CAUTI.
  - **Rates of CAUTI**:
    - Example: # of CAUTIs/Total # of urinary catheter days for all residents with an indwelling urinary catheter (Multiply by 1,000 to express as cases per 1,000 catheter days)

Use Quality improvement programs as an active approach to accomplish recommendations and when process and outcome measure goals are not being met based on internal reporting.

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## USE SBAR TOOL FOR COMMUNICATION

**SBAR is a *TeamSTEPPs* framework for team members to effectively communicate information to one another**

**Communicate the following information:**

**Situation—What is going on with the resident?**

**Background—What is the clinical background or context?**

**Assessment—What do I think the problem is?**

**Recommendation—What would I recommend?**

**SBAR can be used with clinicians and with residents and families**

https://www.ahrq.gov/hai/quality/tools/cauti-ltc/modules/implementation/education-bundles/urine-culturing/when-to-order/cultures-slides.html

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## PREVENTION IS KEY

**Infection Prevention and Control is an important strategy to prevent urinary tract infections.**

**PREVENTION IS KEY!**

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## RESOURCES

https://www.cdc.gov/infectioncontrol/guidelines/CAUTI/index.html

https://www.ahrq.gov/hai/quality/tools/cauti-ltc/resources.html

Fishbone Diagram (tnpatientsafety.com) https://www.tnpatientsafety.com/wp-content/uploads/2020/08/Fishbone-Diagram.pdf

https://www.ahrq.gov/nhguide/toolkits/determine-whether-to-treat/antibiotic-tool.html

Urinary Tract Infections (UTI) Module for Long-term Care Facilities (LTCFs) - Part 1 (youtube.com) https://www.youtube.com/watch?v=IFdOuVMKWaM

https://www.asn-online.org/education/distancelearning/curricula/geriatrics/Chapter32.pdf

https://www.cdc.gov/antibiotic-use/uti.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fantibiotic-use%2Fcommunity%2Ffor-patients%2Fcommon-illnesses%2Futi.html

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3878051/

https://www.ahrq.gov/hai/quality/tools/cauti-ltc/modules/implementation/education-bundles/urine-culturing/when-to-order/cultures-slides.html

D.A. Nace, S. P.-F. (2018). The Improving Outcomes of UTI Management in Long-Term Care Project Consensus Guidelines for the Diagnosis of Uncomplicate Cystitis in Nursing Home Residents. JAMDA, 765-769.

D.K. McMaughan, e. a. (2016). Impact of a decision-making aid for suspected urinary tract infections on antibiotic overuse in nursing homes. BMC Geriatrics, 16:81.

L.E. Nicolle, T. Y. (2000). Urinary Tract Infection in Long-Term Care Facility Residents. Clinical Infectious Diseases, 757-761.

Nelson, S., & Flynn, L. (2015). Relationship between missed care and urinary tract infections in nursing homes. Geriatric Nursing, 126-130.

S. Salem-Schatz, e. a. (2020). A Statewide Program to Improve Management of Suspected Urinary Tract Infection in Long-Term Care. JAGS, 68:62-69

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## RESOURCES (CONTINUATION)

https://infectioncontrolma.org/docs/Loeb-and-Revised-McGeer-Criteria.pdf

https://www.ahrq.gov/sites/default/files/wysiwyg/nhguide/4_TK3_T4-Letter_to_Prescribing_Clinicians.pdf

https://www.pharmacy.umaryland.edu/media/SOP/wwwpharmacyumarylandedu/centers/lamy/antimicrobial-stewardship/mcgeer-criteria-for-infection-surveillance-checklist_form.pdf

CDC's Clean Hands Count Campaign: https://www.cdc.gov/handhygiene/campaign/index.html

UAB Handwashing Video: https://www.youtube.com/watch?v=cViNneQbPyA

https://www.cdc.gov/handhygiene/pdfs/Provider-LTC-Brochure-P.pdf

Technical Resources & Guidelines | Sepsis | CDC

Surviving Sepsis Campaign: International Guidelines for Mana... : Critical Care Medicine (lww.com)

Management of Sepsis and Septic Shock | Guidelines | JAMA | JAMA Network

https://jamanetwork.com/journals/jama/article-abstract/2598892

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