

# Common Infections and Infection Control in Delaware

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Newark, Delaware

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# Learning Objectives

- Understand the scope of and clinical presentation of common infections in all PALTC settings
- Review current Delaware regulation that relate to required Infection Prevention and Control.
- Discuss components of an Infection Prevention and Control Program
- Understand roles of different staff relating to Infection Prevention and Control

# Why Our Residents are Susceptible to Infections

- Age
- Comorbid Conditions and Chronic Conditions
- Communal Living and Group Activities
- Functional Impairment
- Invasive Devices
  - Catheters (AL?)
  - Vascular access (AL?)
  - Feeding tubes (AL?)
  - Vent/trach (AL?)

# Scope of the Problem in LTCFs

- 1 to 3 million serious infections occur every year in these 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.

***<https://www.cdc.gov/longtermcare>***

# Where Does Assisted Living (AL) Fit: Center for Disease Control

- Nursing homes, skilled nursing facilities, and assisted living facilities, (collectively known as long-term care facilities, LTCFs) provide a variety of services, both medical and personal care, to people who are unable to manage independently in the community. Over 4 million Americans are admitted to or reside in nursing homes and skilled nursing facilities each year and nearly one million persons reside in assisted living facilities.

# Source of Infectious Agents

- People
  - Roommate
  - Staff
  - Visitors
- Environment
  - Surfaces
  - Equipment
  - Food/water
- Our own Endogenous Organisms

# Mode of Transmission

- Contact (MDROs)
  - Direct
  - Indirect
- Droplet-cough, sneeze, talking (influenza)
- Airborne particles suspended in air and travel farther distances (tuberculosis)

YOU CAN TRANSMIT INFECTION WHEN YOU ARE NOT SYMPTOMATIC

# Common Infections in Institutional Settings

- Urinary Tract
- Respiratory Tract
- Skin and Soft Tissue
- Gastrointestinal

# Urinary Tract Infection

- Simple cystitis
- Complicated
- Catheter associated (CAUTI)

Asymptomatic Bacteriuria is not an infection but colonization

# Respiratory Tract

- Upper respiratory
  - Sinusitis
  - Pharyngitis
- Lower respiratory
  - Tracheobronchitis
  - Pneumonia
  - Tuberculosis
  - Legionella

# Skin and Soft Tissue Infections

- Cellulitis
- Wound Infections
- Abscess
- Scabies

# Gastrointestinal Infections

- Bacterial
  - C. diff
  - E. Coli, Salmonella and Shigella
- Viral
  - Rotavirus
  - Norovirus

# Health Care Associated Infections (HAIs)

- Health care-associated infections (HAIs) are infections people get while they are receiving health care for another condition. HAIs can happen in any health care facility, including hospitals, ambulatory surgical centers, end-stage renal disease facilities, and long-term care facilities. HAIs can be caused by bacteria, fungi, viruses, or other, less common pathogens.

# Common HAIs

- Central Line Associated Infections (CLABSI)
- Catheter associated Urinary Tract Infections (CAUTI)
- Surgical Site Infection Infections (SSI)
- Ventilator-associated Events(VAE)



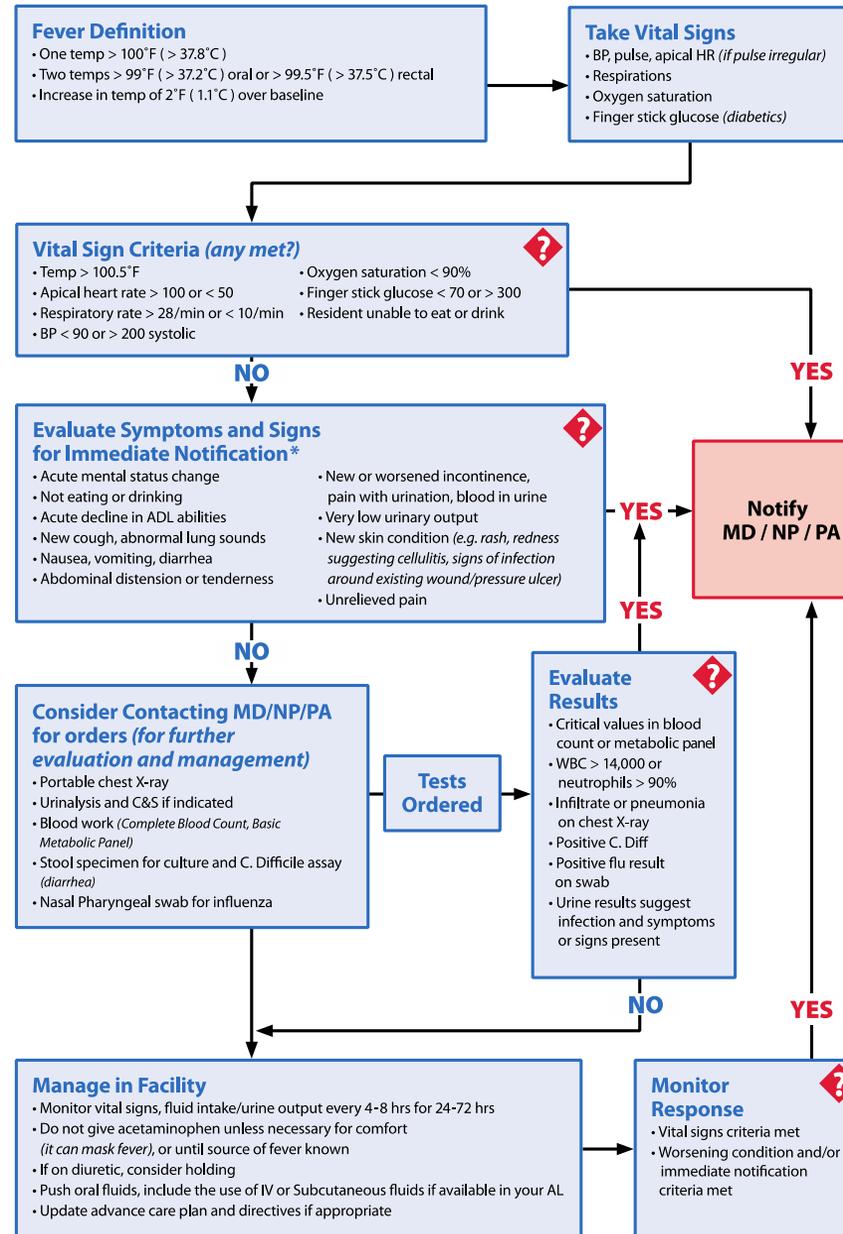
**PATHWAY  
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Insight | Expertise | Knowledge



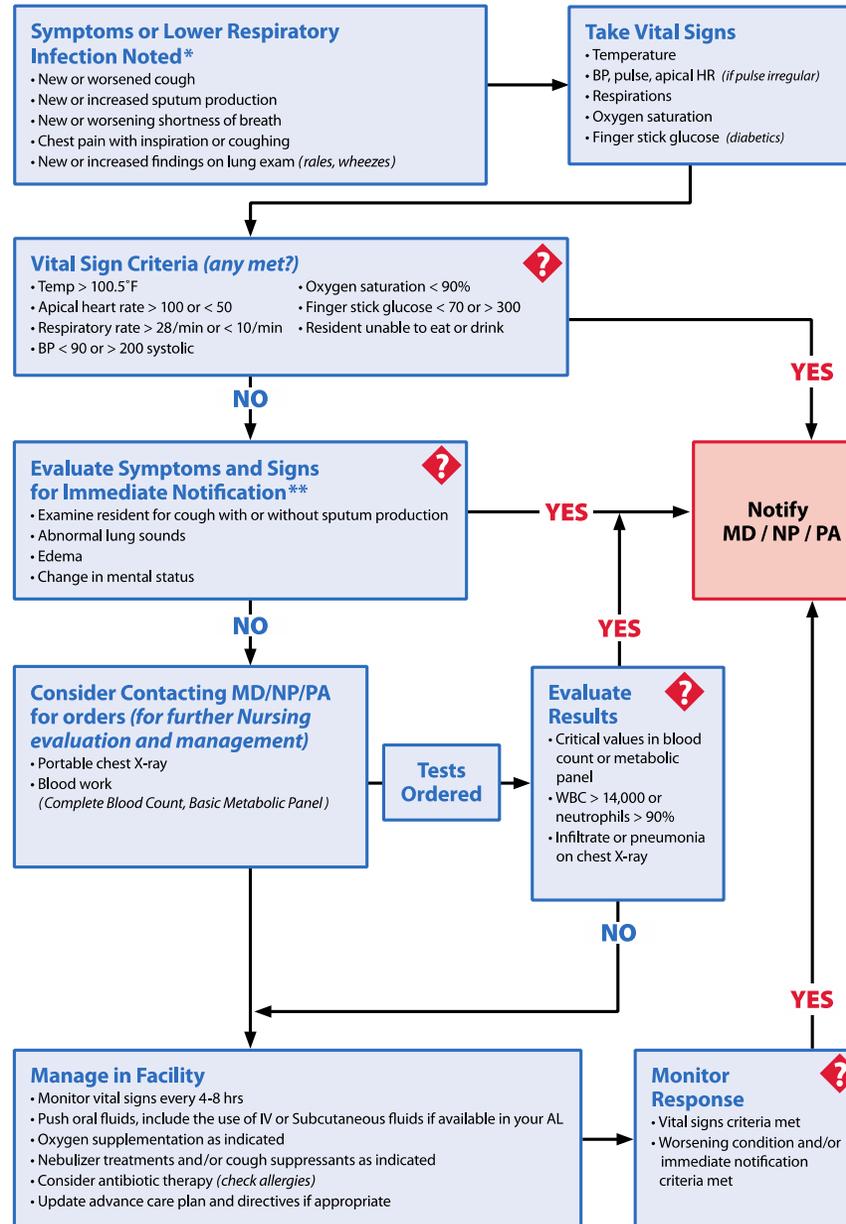
## Assisted Living Tools

Overview of the INTERACT™ QIP for Assisted Living

<https://pathway-interact.com>

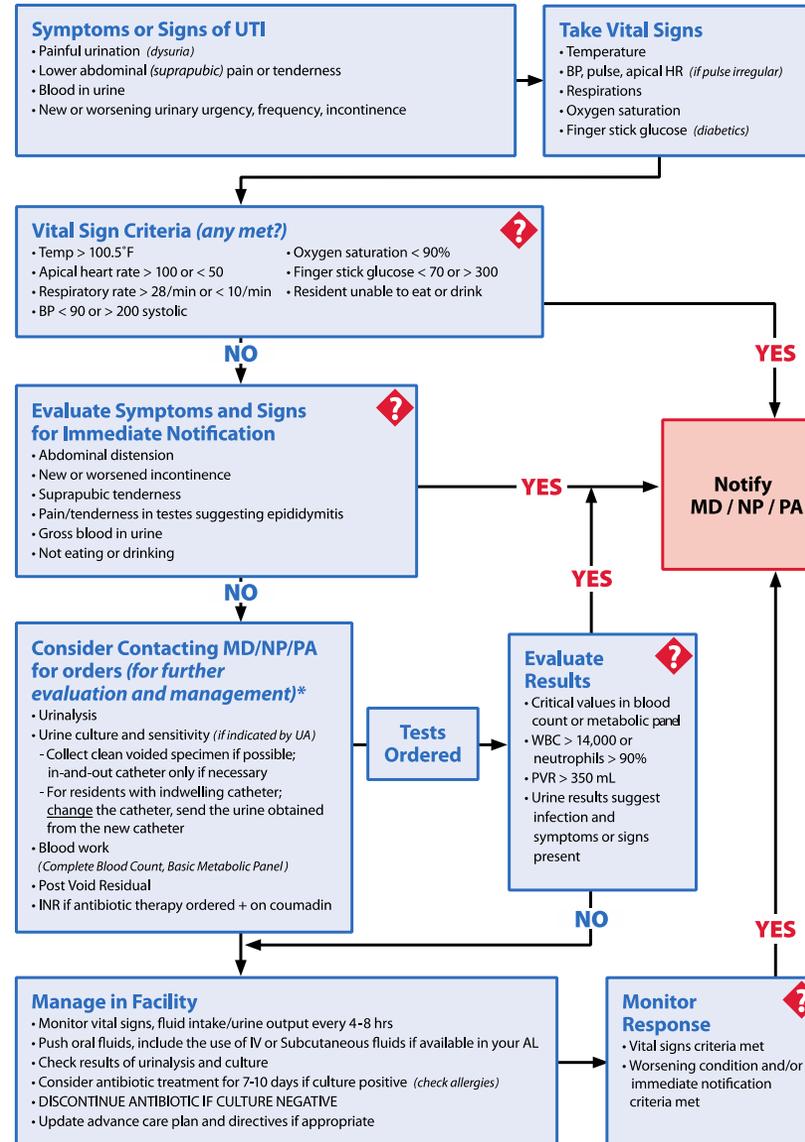


# CARE PATH Symptoms of Lower Respiratory Infection



# CARE PATH Symptoms of Urinary Tract Infection (UTI)

(in residents without an indwelling catheter)



\* Please Note:

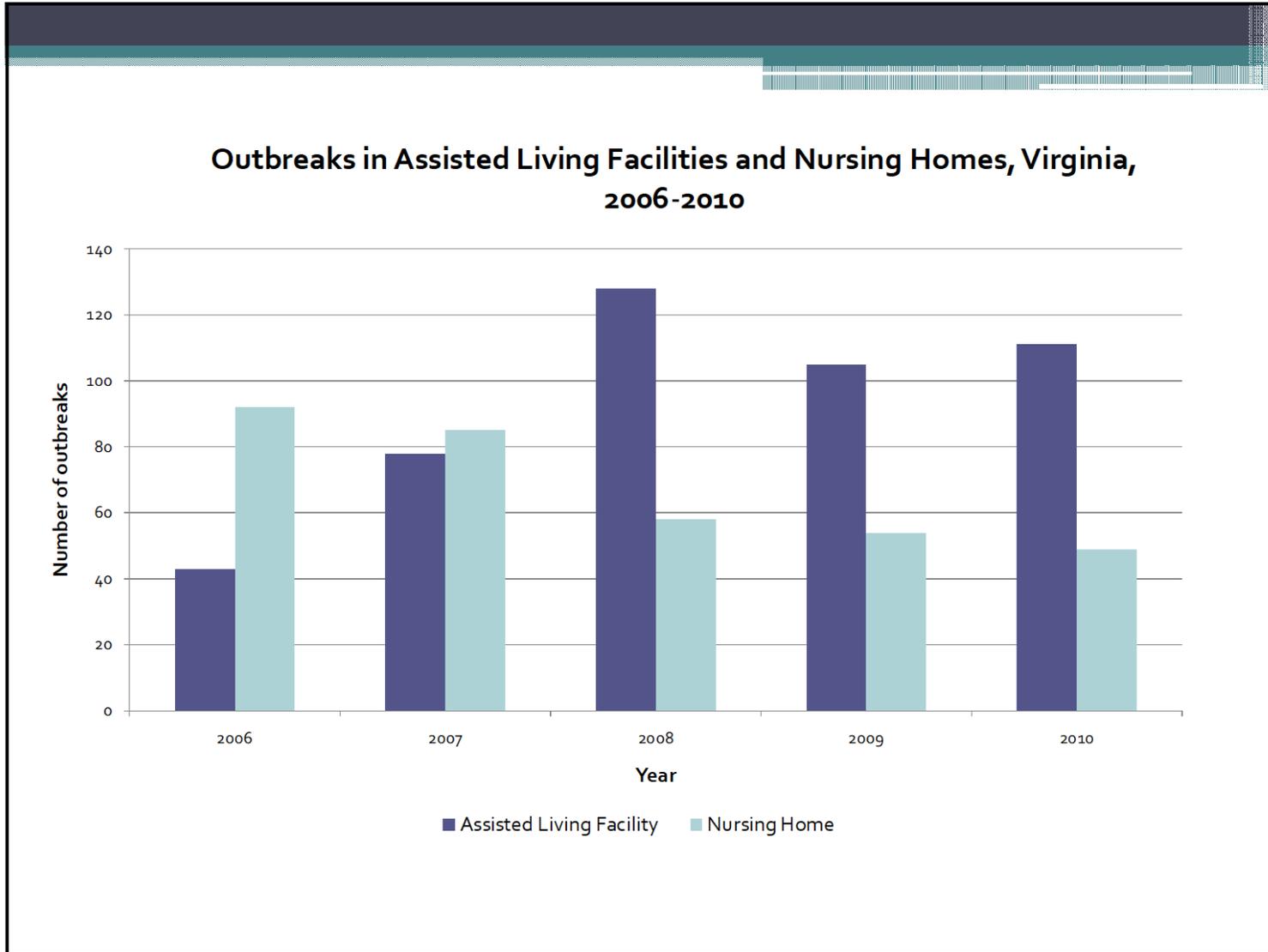
1. Overtreatment of asymptomatic bacteriuria labeled as a "UTI" is a major problem contributing to adverse events, C. Difficile infection, and resistant organisms. Antibiotic treatment should be reserved for those who meet specific clinical criteria.
2. Evaluation and management of patients with indwelling catheters includes different criteria.

See [http://www.cdc.gov/nhsn/PDFs/LTC/LTCF-UTI-protocol\\_FINAL\\_8-24-2012.pdf](http://www.cdc.gov/nhsn/PDFs/LTC/LTCF-UTI-protocol_FINAL_8-24-2012.pdf); or JAMDA 15 (2014) 133-139

# Purpose of Having an Infection Prevention and Control (IPC) Program

- Provide a safe, sanitary, and comfortable environment and to help prevent the development and transmission of communicable diseases and infections
- Prevent, Identify, Investigate, report, and control communicable diseases and infections among residents, staff, and visitors

# Virginia Department of Health



# Outbreaks: Assisted Living

## **2 dead, 54 sickened in respiratory outbreak at Virginia assisted living facility**

**Mackenzie Bean** - Friday, July 12th, 2019 [Print](#) | [Email](#)

Two people have died and 18 required hospitalization due to a respiratory outbreak at an assisted living facility in Virginia, reports [ABC News](#).

The Fairfax County Health Department confirmed the outbreak July 11. Fifty-four residents at the Greenspring Retirement Community in Springfield have reported symptoms of respiratory illness since the first case was reported June 30, health officials said.

# Outbreak of Severe Respiratory Illness in an Assisted-Living Facility — Colorado, 2012 MMWR

- On May 28, 2012, the Colorado Department of Public Health and Environment (CDPHE) was notified of six cases of severe respiratory illness among 12 residents of an assisted-living facility (ALF) specializing in the care of elderly persons with dementia or memory loss. During May 22–27, 2012, five residents were hospitalized, and two developed invasive disease with *Streptococcus pneumoniae* (pneumococcal) bacteremia. *S. pneumoniae* is spread by airborne droplets and causes an estimated 175,000 hospitalizations and 50,000 cases of pneumococcal bacteremia each year. The case-fatality rate of pneumococcal bacteremia can be as high as 60% among the elderly.

# Strep Pneumonia Outbreak in AL Colorado

- Staff member index case-worked sick
- All had received pneumonia vaccine
- Other residents offered additional vaccination/chemoprophylaxis

# Assisted Monitoring of Blood Glucose (ASBG)

- Multiple Outbreaks of Hepatitis B Virus Infection Related to Assisted Monitoring of Blood Glucose Among Residents of Assisted Living Facilities — Virginia, 2009–2011 (MMWR)
- Concerns identified
  - Vaccination policies
  - Hand hygiene
  - Cleaning and disinfection
  - Sharing of monitors
  - Sharing of pens
  - Staff education and training

# Norovirus Outbreaks in AL

- **Virus outbreak that affected 65 at West Milford assisted-living facility is declared over**
- [Lindy Washburn and David M. Zimmer](#), NorthJerseyPublished 6:14 p.m. ET March 14, 2019 | **Updated 7:50 p.m. ET March 14, 2019**

# Rotavirus Outbreak in PALTC

- Three Rotavirus Outbreaks in the Postvaccine Era — California, 2017
- *Weekly* / April 27, 2018 / 67(16);470–472
- Rachel M. Burke, PhD<sup>1,2</sup>; Jacqueline E. Tate, PhD<sup>1</sup>; Nora Barin, MPH<sup>3</sup>; Carly Bock<sup>4</sup>; Michael D. Bowen, PhD<sup>1</sup>; David Chang, MD<sup>4</sup>; Rashi Gautam, PhD<sup>1</sup>; George Han, MD<sup>5</sup>; John Holguin, MPH<sup>3</sup>; Thalia Huynh<sup>6</sup>; Chao-Yang Pan, MPH<sup>6</sup>; Rebecca Quenelle, MPH<sup>5</sup>; Catherine Sallenave, MD<sup>4</sup>; Cindy Torres<sup>3</sup>; Debra Wadford, PhD<sup>6</sup>; Umesh Parashar, MBBS<sup>1</sup> ([View author affiliations](#))

# IPC Program: Core Activities

- Develop and Implement Policies and Procedures
- Identify, Record and Correct IPC Incidents
- Perform Infection Surveillance
- Investigate and Report Communicable Diseases
- Conduct an Annual Review
- Establish and Antibiotic Stewardship Program

# Core Practices In IPC for All Settings

- Core Infection Prevention and Control Practices for Safe Healthcare Delivery in All Settings – Recommendations of the Healthcare Infection Control Practices Advisory Committee
  - Inpatient
  - Outpatient

***<https://www.cdc.gov/hicpac/pdf/core-practices.pdf>***

# Core Practices: Who

- Healthcare personnel (HCP)
  - all persons, paid and unpaid, in the healthcare setting having direct patient contact and/or potential for exposure to patients and/or to infectious materials (e.g., body substances, used medical supplies and equipment, soiled environmental surfaces).
  - includes persons not directly involved in patient care (e.g., clerical staff, environmental services, volunteers) who could be exposed to infectious material in a healthcare setting.

# Infection Control Core Practices (HICPAC)

1. Leadership Support
2. Education and Training of Healthcare Personnel
3. Patient, Family, Caregiver Education
4. Performance Monitoring and Feedback
5. Standard Precautions
6. Transmission-Based Precautions
7. Temporary Invasive Medical Devices for Clinical Management
8. Occupational Health

# IPC Leadership Support

Core Practice Category	Core Practices	Comments
<b>1. Leadership Support</b> References and resources: 1-12	<ol style="list-style-type: none"><li>1. Ensure that the governing body of the healthcare facility or organization is accountable for the success of infection prevention activities.</li><li>2. Allocate sufficient human and material resources to infection prevention to ensure consistent and prompt action to remove or mitigate infection risks and stop transmission of infections. Ensure that staffing and resources do not prevent nurses, environmental staff, et. al., from consistently adhering to infection prevention and control practices.</li><li>3. Assign one or more qualified individuals with training in infection prevention and control to manage the facility's infection prevention program.</li><li>4. Empower and support the authority of those managing the infection prevention program to ensure effectiveness of the program.</li></ol>	To be successful, infection prevention programs require visible and tangible support from all levels of the healthcare facility's leadership.

# IPC Education and Training of Health Care Personnel

<p><b>2. Education and Training of Healthcare Personnel on Infection Prevention</b></p> <p>References and resources: 1-4, 6-8, 10-13</p>	<ol style="list-style-type: none"><li>1. Provide job-specific, infection prevention education and training to all healthcare personnel for all tasks.</li><li>2. Develop processes to ensure that all healthcare personnel understand and are competent to adhere to infection prevention requirements as they perform their roles and responsibilities.</li><li>3. Provide written infection prevention policies and procedures that are available, current, and based on evidence-based guidelines (e.g., CDC/HICPAC, etc.)</li><li>4. Require training before individuals are allowed to perform their duties and at least annually as a refresher.</li><li>5. Provide additional training in response to recognized lapses in adherence and to address newly recognized infection transmission threats (e.g., introduction of new equipment or procedures).</li></ol>	<p>Training should be adapted to reflect the diversity of the workforce and the type of facility, and tailored to meet the needs of each category of healthcare personnel being trained.</p>
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# IPC Patient, Family and Caregiver Education

<p><b>3. Patient, Family and Caregiver Education</b> References and resources: 2-5, 7-8, 10-11</p>	<p>1. Provide appropriate infection prevention education to patients, family members, visitors, and others included in the caregiving network.</p>	<p>Include information about how infections are spread, how they can be prevented, and what signs or symptoms should prompt reevaluation and notification of the patient's healthcare provider. Instructional materials and delivery should address varied levels of education, language comprehension, and cultural diversity.</p>
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# IPC Performance Monitoring and Feedback

Core Practice Category	Core Practices	Comments
<b>4. Performance Monitoring and Feedback</b> References and resources: 1-14	<ol style="list-style-type: none"><li>1. Monitor adherence to infection prevention practices and infection control requirements.</li><li>2. Provide prompt, regular feedback on adherence and related outcomes to healthcare personnel and facility leadership.</li><li>3. Train performance monitoring personnel and use standardized tools and definitions.</li><li>4. Monitor the incidence of infections that may be related to care provided at the facility and act on the data and use information collected through surveillance to detect transmission of infectious agents in the facility.</li></ol>	Performance measures should be tailored to the care activities and the population served.

# IPC Standard Precautions

<b>5. Standard Precautions</b>	<p>Use Standard Precautions to care for all patients in all settings.</p> <p>Standard Precautions include:</p> <ul style="list-style-type: none"><li>5a. Hand hygiene</li><li>5b. Environmental cleaning and disinfection</li><li>5c. Injection and medication safety</li><li>5d. Risk assessment with use of appropriate personal protective equipment (e.g., gloves, gowns, face masks) based on activities being performed</li><li>5e. Minimizing Potential Exposures (e.g. respiratory hygiene and cough etiquette)</li><li>5f. Reprocessing of reusable medical equipment between each patient and when soiled</li></ul>	<p>Standard Precautions are the basic practices that apply to all patient care, regardless of the patient's suspected or confirmed infectious state, and apply to all settings where care is delivered. These practices protect healthcare personnel and prevent healthcare personnel or the environment from transmitting infections to other patients.</p>
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# Standard Precautions

- a. Hand Hygiene
- b. Environmental cleaning and Disinfection
- c. Injection and Medication Safety
- d. Risk Assessment and Appropriate Use of PPE
- e. Minimizing Potential Exposures
- f. Reprocessing of Reusable Medical Equipment

# Personal Protective Equipment (PPE)

- Gloves
- Gowns
- Face protection
  - Facemasks
  - Goggles
  - Face shields
- Respirators (airborne transmission)
  - Fit testing

# IPC Hand Hygiene

<p><b>5a. Hand Hygiene</b> References and resources: 3, 7, 11</p>	<ol style="list-style-type: none"><li>1. Require healthcare personnel to perform hand hygiene in accordance with Centers for Disease Control and Prevention (CDC) recommendations.</li><li>2. Use an alcohol-based hand rub or wash with soap and water for the following clinical indications:<ol style="list-style-type: none"><li>a. Immediately before touching a patient</li><li>b. Before performing an aseptic task (e.g., placing an indwelling device) or handling invasive medical devices</li><li>c. Before moving from work on a soiled body site to a clean body site on the same patient</li><li>d. After touching a patient or the patient's immediate environment</li><li>e. After contact with blood, body fluids or contaminated surfaces</li><li>f. Immediately after glove removal</li></ol></li><li>3. Ensure that healthcare personnel perform hand hygiene with soap and water when hands are visibly soiled.</li><li>4. Ensure that supplies necessary for adherence to hand hygiene are readily accessible in all areas where patient care is being delivered.</li></ol>	<p>Unless hands are visibly soiled, an alcohol-based hand rub is preferred over soap and water in most clinical situations due to evidence of better compliance compared to soap and water. Hand rubs are generally less irritating to hands and are effective in the absence of a sink.</p> <p>Refer to “CDC Guideline for Hand Hygiene in Health-Care Settings” or “Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007” for additional details.</p>
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# IPC Environmental Cleaning and Disinfection

Core Practice Category	Core Practices	Comments
<p><b>5b. Environmental Cleaning and Disinfection</b> References and resources: 4, 7, 10, 11, 13, 21</p>	<ol style="list-style-type: none"><li>1. Require routine and targeted cleaning of environmental surfaces as indicated by the level of patient contact and degree of soiling.<ol style="list-style-type: none"><li>a. Clean and disinfect surfaces in close proximity to the patient and frequently touched surfaces in the patient care environment on a more frequent schedule compared to other surfaces.</li><li>b. Promptly clean and decontaminate spills of blood or other potentially infectious materials.</li></ol></li><li>2. Select EPA-registered disinfectants that have microbiocidal activity against the pathogens most likely to contaminate the patient-care environment.</li><li>3. Follow manufacturers' instructions for proper use of cleaning and disinfecting products (e.g., dilution, contact time, material compatibility, storage, shelf-life, safe use and disposal).</li></ol>	<p>When information from manufacturers is limited regarding selection and use of agents for specific microorganisms, environmental surfaces or equipment, facility policies regarding cleaning and disinfecting should be guided by the best available evidence and careful consideration of the risks and benefits of the available options.</p> <p>Refer to "CDC Guidelines for Environmental Infection Control in Health-Care Facilities" and "CDC Guideline for Disinfection and Sterilization in Healthcare Facilities" for details.</p>

# IPC Injection and Medication Safety

<p><b>5c. Injection and Medication Safety</b> References and resources: 11, 17-20</p>	<ol style="list-style-type: none"><li>1. Use aseptic technique when preparing and administering medications</li><li>2. Disinfect the access diaphragms of medication vials before inserting a device into the vial</li><li>3. Use needles and syringes for one patient only (this includes manufactured prefilled syringes and cartridge devices such as insulin pens).</li><li>4. Enter medication containers with a new needle and a new syringe, even when obtaining additional doses for the same patient.</li><li>5. Ensure single-dose or single-use vials, ampules, and bags or bottles of parenteral solution are used for one patient only.</li><li>6. Use fluid infusion or administration sets (e.g., intravenous tubing) for one patient only</li><li>7. Dedicate multidose vials to a single patient whenever possible. If multidose vials are used for more than one patient, restrict the medication vials to a centralized medication area and do not bring them into the immediate patient treatment area (e.g., operating room, patient room/cubicle)</li><li>8. Wear a facemask when placing a catheter or injecting material into the epidural or subdural space (e.g., during myelogram, epidural or spinal anesthesia)</li></ol>	<p>Refer to “Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007” for details.</p>
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# IPC Risk Assessment with Appropriate PPE

Core Practice Category	Core Practices	Comments
<p><b>5d. Risk Assessment with Appropriate Use of Personal Protective Equipment</b> References and resources: 7, 11, 20</p>	<ol style="list-style-type: none"> <li>1. Ensure proper selection and use of personal protective equipment (PPE) based on the nature of the patient interaction and potential for exposure to blood, body fluids and/or infectious material:               <ol style="list-style-type: none"> <li>a. Wear gloves when it can be reasonably anticipated that contact with blood or other potentially infectious materials, mucous membranes, non-intact skin, potentially contaminated skin or contaminated equipment could occur.</li> <li>b. Wear a gown that is appropriate to the task to protect skin and prevent soiling of clothing during procedures and activities that could cause contact with blood, body fluids, secretions, or excretions.</li> <li>c. Use protective eyewear and a mask, or a face shield, to protect the mucous membranes of the eyes, nose and mouth during procedures and activities that could generate splashes or sprays of blood, body fluids, secretions and excretions. Select masks, goggles, face shields, and combinations of each according to the need anticipated by the task performed.</li> <li>d. Remove and discard PPE, other than respirators, upon completing a task before leaving the patient's room or care area. If a respirator is used, it should be removed and discarded (or reprocessed if reusable) after leaving the patient room or care area and closing the door.</li> <li>e. Do not use the same gown or pair of gloves for care of more than one patient. Remove and discard disposable gloves upon completion of a task or when soiled during the process of care.</li> <li>f. Do not wash gloves for the purpose of reuse.</li> </ol> </li> <li>2. Ensure that healthcare personnel have immediate access to and are trained and able to select, put on, remove, and dispose of PPE in a manner that protects themselves, the patient, and others</li> </ol>	<p>PPE, e.g., gloves, gowns, face masks, respirators, goggles and face shields, can be effective barriers to transmission of infections but are secondary to the more effective measures such as administrative and engineering controls.</p> <p>Refer to "Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007" as well as Occupational Safety and Health Administration (OSHA) requirements for details.</p>

# IPC Minimizing Exposure

<p><b>5e. Minimizing Potential Exposures</b> References and resources: 1, 7, 11, 16</p>	<ol style="list-style-type: none"><li>1. Use respiratory hygiene and cough etiquette to reduce the transmission of respiratory infections within the facility.</li><li>2. Prompt patients and visitors with symptoms of respiratory infection to contain their respiratory secretions and perform hand hygiene after contact with respiratory secretions by providing tissues, masks, hand hygiene supplies and instructional signage or handouts at points of entry and throughout the facility</li><li>3. When space permits, separate patients with respiratory symptoms from others as soon as possible (e.g., during triage or upon entry into the facility).</li></ol>	<p>Refer to “Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007” for details.</p>
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# IPC Reprocessing of Medical Equipment

Core Practice Category	Core Practices	Comments
<p><b>5f. Reprocessing of Reusable Medical Equipment</b> References and resources: 2-4, 7-8, 11-13</p>	<ol style="list-style-type: none"><li>1. Clean and reprocess (disinfect or sterilize) reusable medical equipment (e.g., blood glucose meters and other point-of-care devices, blood pressure cuffs, oximeter probes, surgical instruments, endoscopes) prior to use on another patient and when soiled.<ol style="list-style-type: none"><li>a. Consult and adhere to manufacturers' instructions for reprocessing.</li></ol></li><li>2. Maintain separation between clean and soiled equipment to prevent cross contamination.</li></ol>	<p>Manufacturer's instructions for reprocessing reusable medical equipment should be readily available and used to establish clear operating procedures and training content for the facility. Instructions should be posted at the site where equipment reprocessing is performed. Reprocessing personnel should have training in the reprocessing steps and the correct use of PPE necessary for the task. Competencies of those personnel should be documented initially upon assignment of their duties, whenever new equipment is introduced, and periodically (e.g., annually). Additional details about reprocessing essentials for facilities can be found in HICPAC's recommendations Essential Elements of a Reprocessing Program for Flexible Endoscopes (<a href="https://www.cdc.gov/hicpac/recommendations/flexible-endoscope-reprocessing.html">https://www.cdc.gov/hicpac/recommendations/flexible-endoscope-reprocessing.html</a>).</p> <p>Refer to "CDC Guideline for Disinfection and Sterilization in Healthcare Facilities" for details.</p>

# IPC Transmission Based Precautions

<p><b>6. Transmission-Based Precautions</b> References and resources: 7, 11</p>	<ol style="list-style-type: none"><li>1. Implement additional precautions (i.e., Contact, Droplet, and/or Airborne Precautions) for patients with documented or suspected diagnoses where contact with the patient, their body fluids, or their environment presents a substantial transmission risk despite adherence to Standard Precautions</li><li>2. Adapt transmission-based precautions to the specific healthcare setting, the facility design characteristics, and the type of patient interaction.</li><li>3. Implement transmission-based precautions based on the patient’s clinical presentation and likely infection diagnoses (e.g., syndromes suggestive of transmissible infections such as diarrhea, meningitis, fever and rash, respiratory infection) as soon as possible after the patient enters the healthcare facility (including reception or triage areas in emergency departments, ambulatory clinics or physicians’ offices) then adjust or discontinue precautions when more clinical information becomes available (e.g., confirmatory laboratory results).</li><li>4. To the extent possible, place patients who may need transmission-based precautions into a single-patient room while awaiting clinical assessment.</li><li>5. Notify accepting facilities and the transporting agency about suspected infections and the need for transmission-based precautions when patients are transferred.</li></ol>	<p>Implementation of Transmission-Based Precautions may differ depending on the patient care settings (e.g., inpatient, outpatient, long-term care), the facility design characteristics, and the type of patient interaction, and should be adapted to the specific healthcare setting.</p> <p>Refer to “Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings, 2007” for details.</p>
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# IPC Temporary Invasive Devices

Core Practice Category	Core Practices	Comments
<p><b>7. Temporary invasive Medical Devices for Clinical Management</b></p> <p>References and resources: 8, 1</p>	<ol style="list-style-type: none"><li>1. During each healthcare encounter, assess the medical necessity of any invasive medical device (e.g., vascular catheter, indwelling urinary catheter, feeding tubes, ventilator, surgical drain) in order to identify the earliest opportunity for safe removal.</li><li>2. Ensure that healthcare personnel adhere to recommended insertion and maintenance practices</li></ol>	<p>Early and prompt removal of invasive devices should be part of the plan of care and included in regular assessment. Healthcare personnel should be knowledgeable regarding risks of the device and infection prevention interventions associated with the individual device, and should advocate for the patient by working toward removal of the device as soon as possible.</p> <p>Refer to “CDC Guidelines for Environmental Infection Control in Health-Care Facilities” and “CDC Guideline for Disinfection and Sterilization in Healthcare Facilities” for details.</p>

# IPC Occupational Health

<p><b>8. Occupational Health</b> References and resources: 1, 7, 16, 20</p>	<ol style="list-style-type: none"><li>1. Ensure that healthcare personnel either receive immunizations or have documented evidence of immunity against vaccine-preventable diseases as recommended by the CDC, CDC's Advisory Committee on Immunization Practices (ACIP) and required by federal, state or local authorities.</li><li>2. Implement processes and sick leave policies to encourage healthcare personnel to stay home when they develop signs or symptoms of acute infectious illness (e.g. fever, cough, diarrhea, vomiting, or draining skin lesions) to prevent spreading their infections to patients and other healthcare personnel.</li><li>3. Implement a system for healthcare personnel to report signs, symptoms, and diagnosed illnesses that may represent a risk to their patients and coworkers to their supervisor or healthcare facility staff who are responsible for occupational health</li><li>4. Adhere to federal and state standards and directives applicable to protecting healthcare workers against transmission of infectious agents including OSHA's Bloodborne Pathogens Standard, Personal Protective Equipment Standard, Respiratory Protection standard and TB compliance directive.</li></ol>	<p>It is the professional responsibility of all healthcare organizations and individual personnel to ensure adherence to federal, state and local requirements concerning immunizations; work policies that support safety of healthcare personnel; timely reporting of illness by employees to employers when that illness may represent a risk to patients and other healthcare personnel; and notification to public health authorities when the illness has public health implications or is required to be reported.</p> <p>Refer to OSHA's website for specific details on healthcare standards: Occupational Safety and Health Administration - Infectious Diseases (<a href="https://www.osha.gov/SLTC/healthcarefacilities/infectious_diseases.html">https://www.osha.gov/SLTC/healthcarefacilities/infectious_diseases.html</a>).</p>
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# 9.0 Infection Control DE Assisted Living Regulations

- 9.1 The assisted living facility shall establish written procedures to be followed in the event that a resident with a communicable disease is admitted or an episode of communicable disease occurs. It is the responsibility of the assisted living facility to see that:
  - 9.1.1 The necessary precautions stated in the written procedures are followed; and
  - 9.1.2 All rules of the Delaware Division of Public Health are followed so there is minimal danger of transmission to staff and residents.
- 9.2 Any resident found to have active tuberculosis in an infectious stage may not continue to reside in an assisted living facility.

# Infection Control DE AL Regulations

- 9.3 A resident, when suspected or diagnosed as having a communicable disease, shall be placed on the appropriate isolation or precaution as recommended for that disease by the Centers for Disease Control. Those with a communicable disease which has been determined by the Director of the Division of Public Health to be a health hazard to visitors, staff, and other residents shall be placed on isolation care until they can be moved to an appropriate room or transferred.

# Infection Control: DE AL Regulations

- 9.4 The admission of a resident with or the occurrence of a disease or condition on the Division of Public Health List of Notifiable Diseases/Conditions within a nursing facility shall be reported to the resident's physician and the facility's medical director. The facility shall also report such an admission or occurrence to the Division of Public Health's Health Information and Epidemiology office.
- 9.4.1 The assisted living facility shall have policies and procedures for infection control as it pertains to staff, residents, and visitors.
- 9.4.2 All assisted living facility staff shall be required to use Standard Precautions.

# Infection Control: DE AL Regulations

- 9.5 Requirements for tuberculosis and immunizations:
- 9.5.1 The facility shall have on file the results of tuberculin testing performed on all newly placed residents.
- 9.5.2 Minimum requirements for pre-employment require all employees to have a base line two step tuberculin skin test (TST) or single Interferon Gamma Release Assay (IGRA or TB blood test) such as QuantiFERON. Any required subsequent testing according to risk category shall be in accordance with the recommendations of the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services. Should the category of risk change, which is determined by the Division of Public Health, the facility shall comply with the recommendations of the Center for Disease Control for the appropriate risk category.
- 9.5.2.1 No person, including volunteers, found to have active tuberculosis in an infectious stage shall be permitted to give care or service to residents.
- 9.5.2.2 Any person having a positive skin test but a negative X-ray shall receive an annual evaluation for signs and symptoms of active TB if they cannot provide documentation of completion of treatment for LTBI (latent TB infection).
- 9.5.2.3 Persons with a prior BCG vaccination are required to be tested as set forth in 9.5.2. 9.5.2.4 A report of all test results shall be kept on file at the facility of employment.

# Infection Control: DE AL Regulations

- 9.6 The assisted living facility shall have on file evidence of annual vaccination against influenza for all residents, as recommended by the Immunization Practice Advisory Committee of the Centers for Disease Control, unless medically contraindicated. All residents who refuse to be vaccinated against influenza must be fully informed by the facility of the health risks involved. The reason for the refusal shall be documented in the resident's medical record.
- 9.7 The assisted living facility shall have on file evidence of vaccination against pneumococcal pneumonia for all residents older than 65 years, or those who received the pneumococcal vaccine before they became 65 years and 5 years have elapsed, and as recommended by the Immunization Practice Advisory Committee of the Centers for Disease Control, unless medically contraindicated. All residents who refuse to be vaccinated against pneumococcal pneumonia must be fully informed by the facility of the health risks involved. The reason for the refusal shall be documented in the resident's medical record.

# Outbreak Management

- Follow health department guidance for reporting
- Educate all staff to recognize 24/7
- Start line listing
- Initiate precautions

# Influenza Management

- Vaccinate
  - residents
  - Family/visitors
  - Health Care workers
- Isolate
- Treatment
- Chemoprophylaxis
- Get help from health department
- PREPARE-flu testing

# Other “outbreaks”

- Scabies
- Diarrhea
- Other respiratory

# Training Staff and Leadership in Basic Infection Control(not just Infection Preventionist)

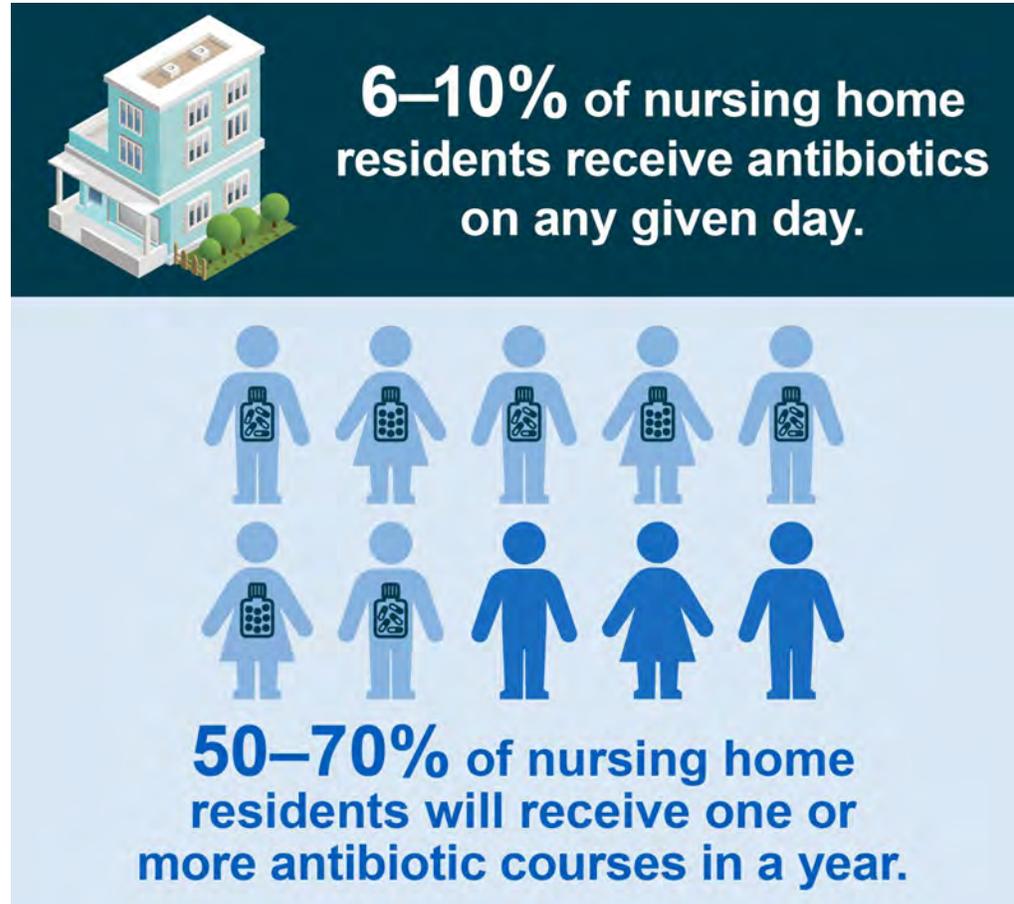
- **CMS & CDC Offer a specialized, online Infection Prevention and Control Training For Nursing Home Staff in the Long-Term Care Setting**
- <https://www.cdc.gov/longtermcare/training.html>

***TWO OF THE MODULES ADDRESS ANTIBIOTIC STEWARDSHIP***

# Antibiotic Stewardship in AL

- One study of interventions to educate without clear impact
- True scope of usage not known but seems less than nursing homes but no good studies

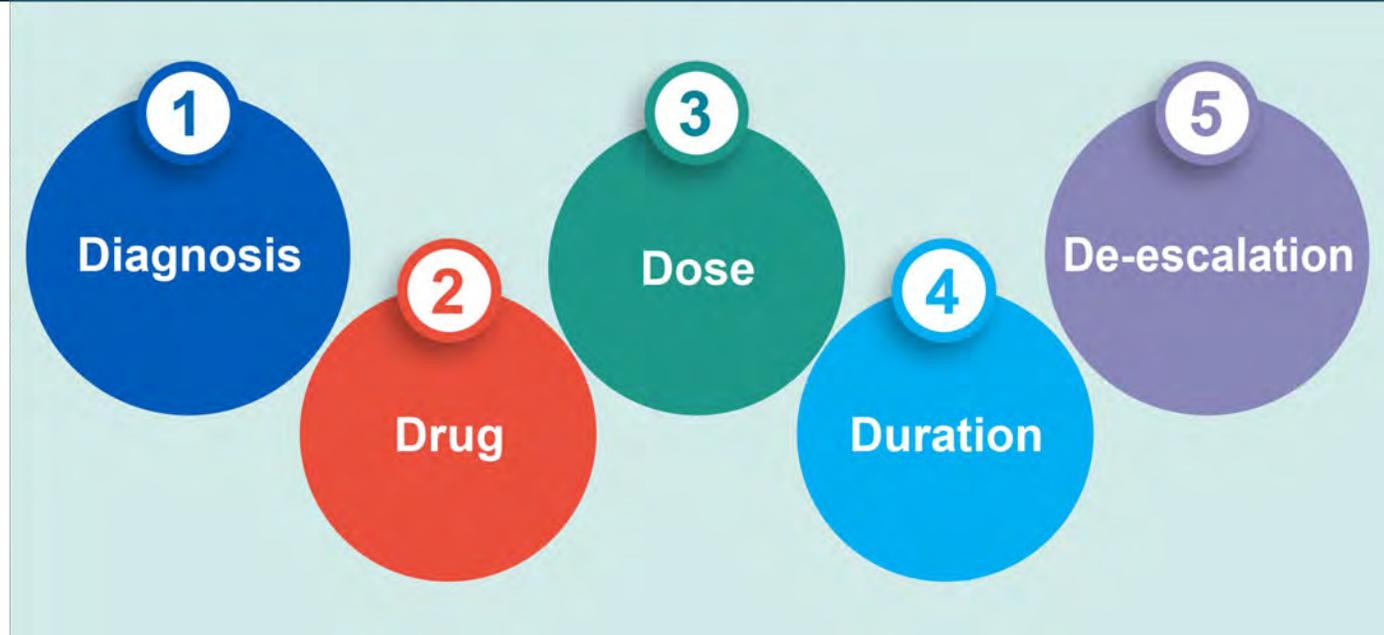
# Use of Antibiotics in Nursing Homes



# Appropriate Antibiotic Prescribing

## *The 5Ds* of APPROPRIATE ANTIBIOTIC PRESCRIBING

- An estimated 40–75% of antibiotic use in nursing homes is inappropriate.
- Prescribers should ensure that documentation in the medical record reflects the 5Ds of appropriate antibiotic prescribing.



**TABLE 1.**  
**Twelve Common Nursing Home Situations for Which Systemic Antibiotics Are Often Prescribed but Rarely Indicated**

1. Positive urine culture in an asymptomatic patient.
2. Urine culture ordered solely because of a change in urine appearance.
3. Nonspecific symptoms or signs not referable to the urinary tract (with or without a positive urine culture).
4. Upper respiratory infection (common cold).
5. Bronchitis or asthma in a patient who does not have advanced chronic obstructive pulmonary disease.
6. Infiltrate on chest x-ray in the absence of clinically significant symptoms.
7. Suspected or proven influenza in the absence of a secondary infection (but *do* treat influenza with antivirals).
8. Respiratory symptoms in a patient with advanced dementia, a patient on palliative care, or a patient at the end of life.
9. Skin wound without cellulitis, sepsis, or osteomyelitis (regardless of culture result).
10. Small (<5 cm) localized abscess without significant surrounding cellulitis (drainage is required of all abscesses).
11. Decubitus ulcer in a patient at the end of life.
12. Acute vomiting and/or diarrhea in the absence of a positive culture for *Shigella* or *Salmonella*, or a positive toxin assay for *Clostridium difficile*.

## Pre-Prescribing Decision-Making

Q1

- Are Antibiotics Needed?

Q2

- Which Antibiotic (Drug & Dose)?

## Post-Prescribing Decision-Making

Q3

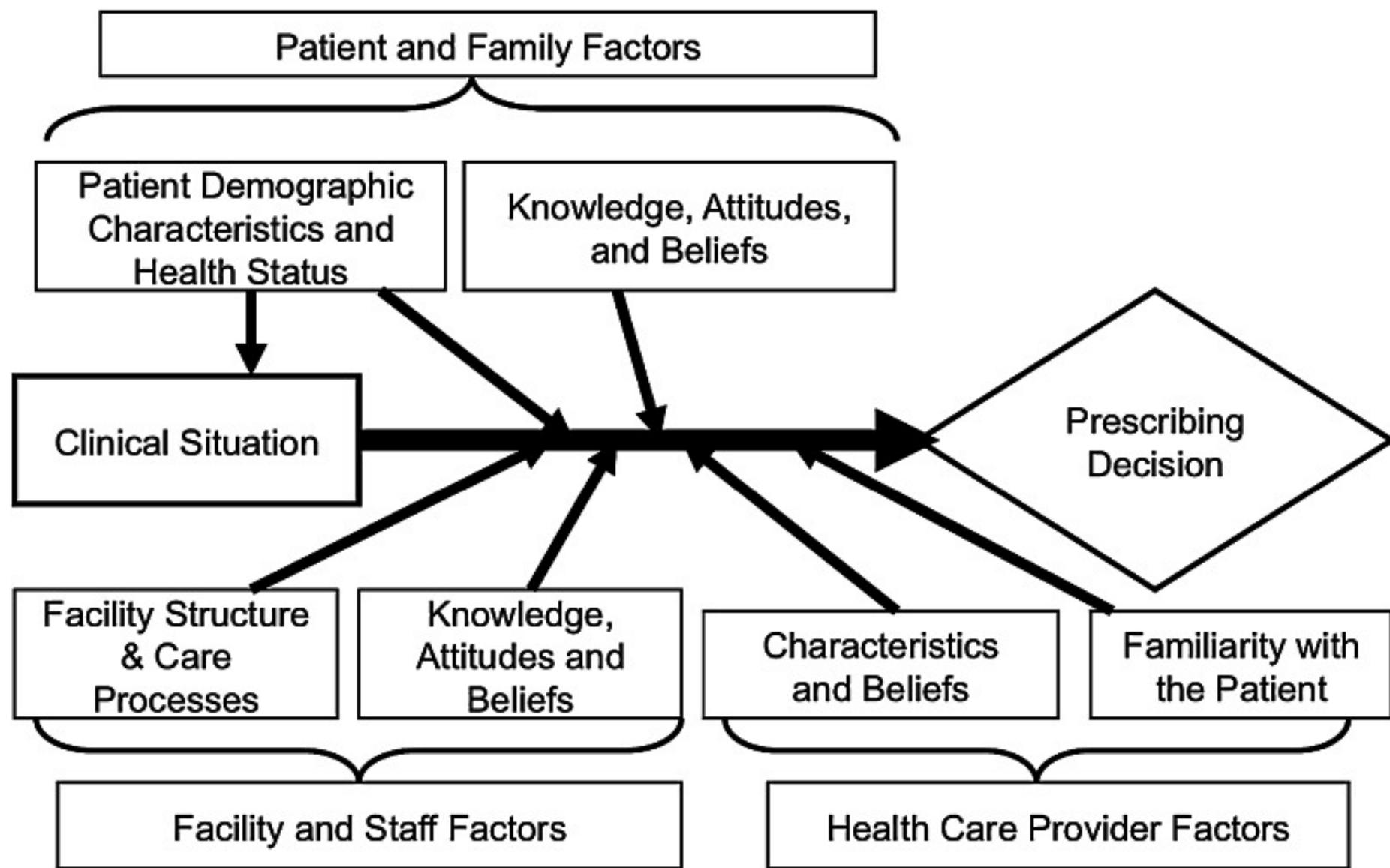
- Can Antibiotic be Stopped?

Q4

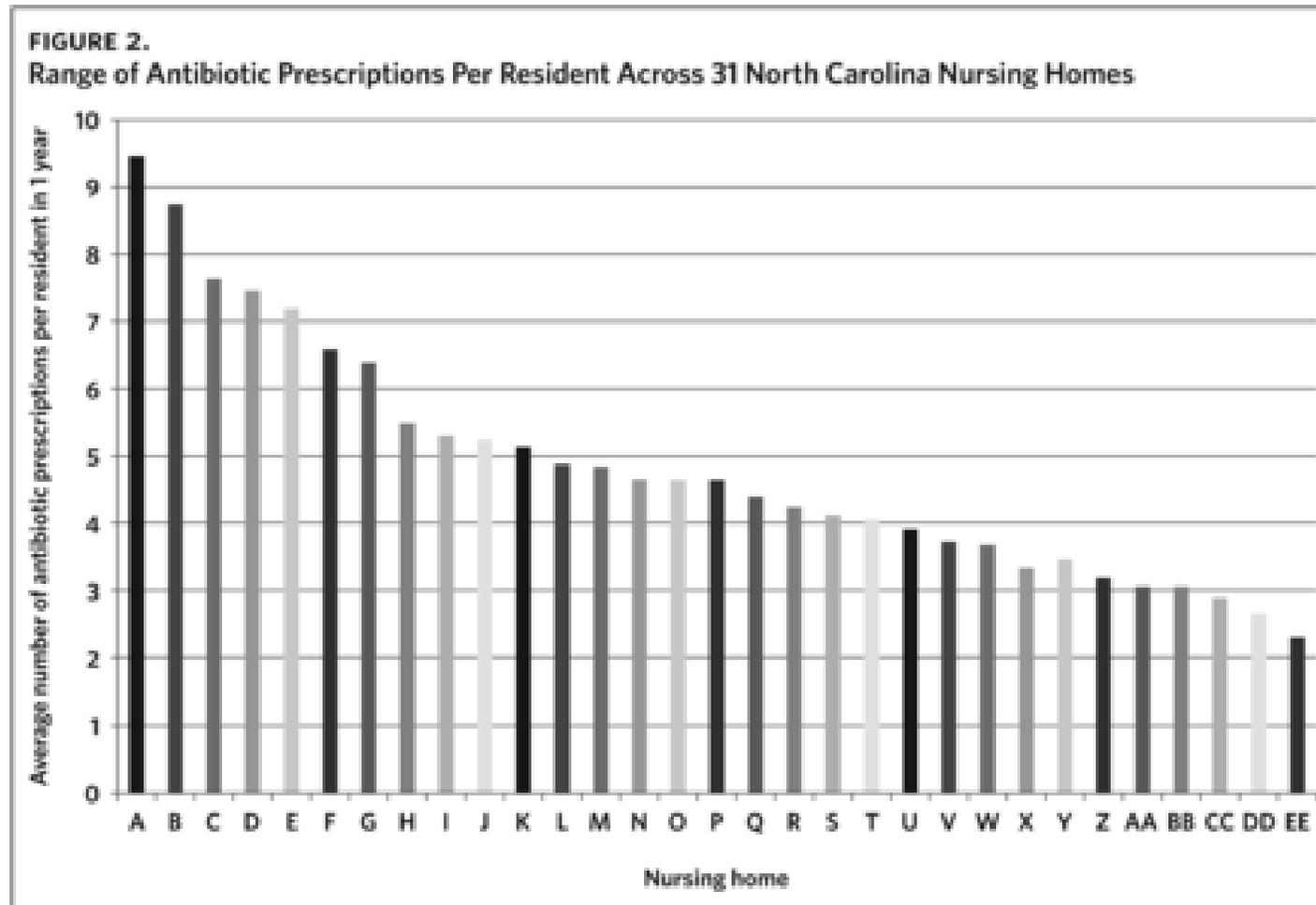
- Can Spectrum be Narrowed?

Q5

- How Long to Continue Therapy?



# Range of Antibiotic Prescription per Resident in 31 North Carolina Nursing Homes

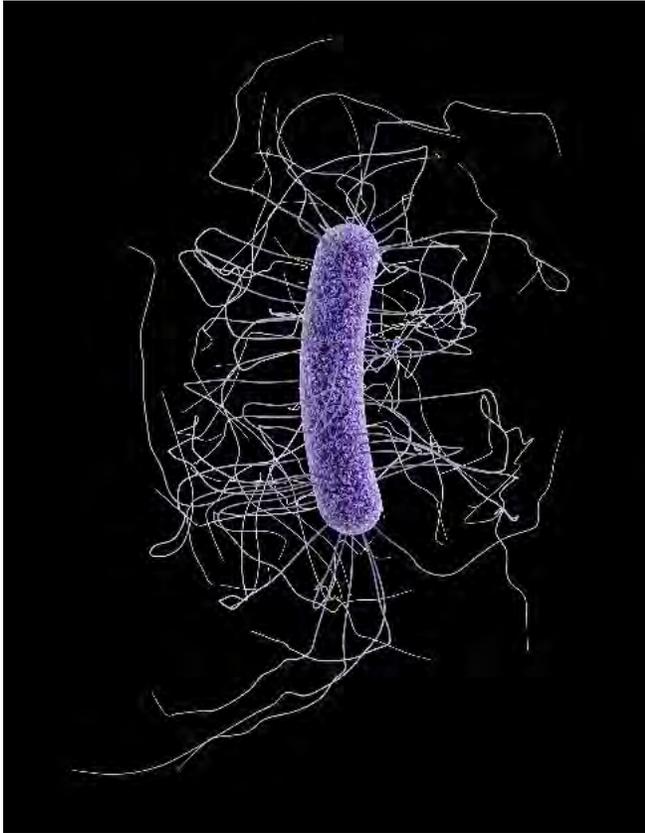


# Adverse Events From Antibiotics

ANTIBIOTICS	ADVERSE EVENTS
 <p data-bbox="402 701 690 768">Metronidazole and cephalosporins</p>	 <p data-bbox="924 672 1156 801">May increase the risk of bleeding in individuals on warfarin.</p>
 <p data-bbox="402 1068 690 1100">Fluoroquinolones</p>	 <p data-bbox="924 953 1192 1225">U.S. Food and Drug Administration (FDA) warns about serious, potentially irreversible side effects, such as peripheral neuropathy.</p>

- Can cause unintended harms including:
  - Allergies.
  - Side effects.
  - Drug interactions.
- Antibiotics associated with higher rates of adverse events (e.g., hypoglycemia, renal insufficiency).
- Polypharmacy associated with greater risk of adverse events, drug interactions, and hospitalizations.

# Impact of Antibiotic Use on *C. diff.*

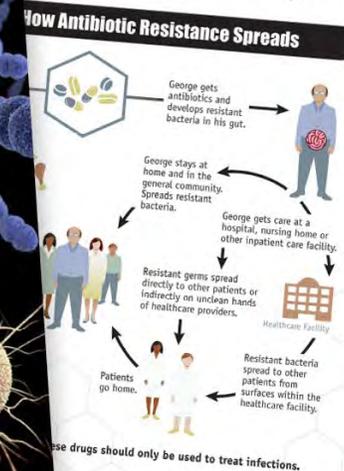
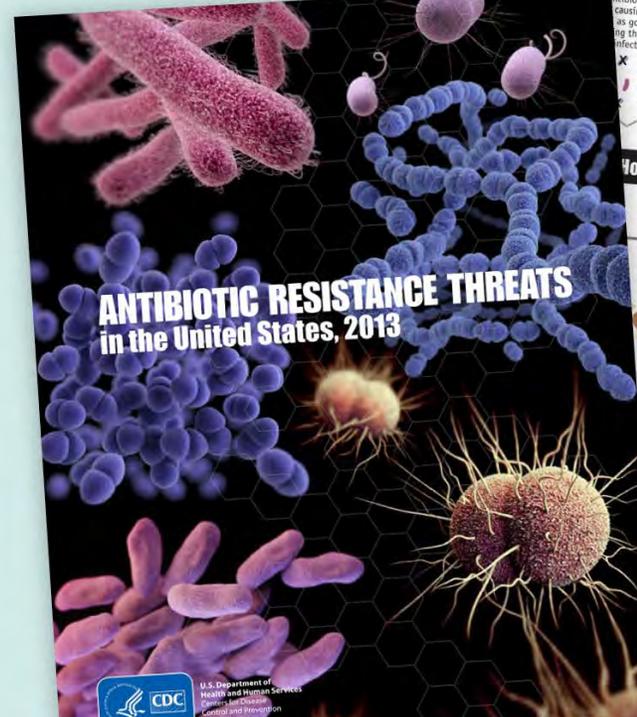


- Disrupts the microbiome and creates an environment for resistant bacteria and pathogens.
- Microbiome disruption leads to acquisition and increased risk of *C. difficile* infection.
  - Complications from *C. difficile* infection (e.g., hospitalization and death) are higher in older adults.
- Among nursing home residents with *C. difficile* infections, up to 75% have been recently exposed to antibiotics

# Impact of Inappropriate Antibiotic Use

## Antibiotic Resistance

- The ability of bacteria to avoid the killing effects of an antibiotic.
- Results in higher mortality, longer hospitalizations, and higher costs.
- The use of antibiotics increases the risk for acquiring resistant pathogens.



### MOVING BACK AGAINST ANTIBIOTIC RESISTANCE

#### More Actions to Prevent Antibiotic Resistance

#### STOPPING THE SPREAD OF RESISTANCE

Avoiding infections in the first place reduces the amount of antibiotics that have to be used and reduces the likelihood that drug-resistant infections will develop during therapy. There are many ways that drug-resistant infections can be prevented: immunization, safe food preparation, handwashing, and using antibiotics as directed and only when necessary. In addition, preventing infections also prevents the spread of resistant bacteria.

Gathering data on antibiotic-resistant infections, causes of infections and whether there are particular reasons (risk factors) for why some people get a resistant infection. With that information, experts can develop specific strategies to prevent infections and prevent the resistant bacteria from spreading.

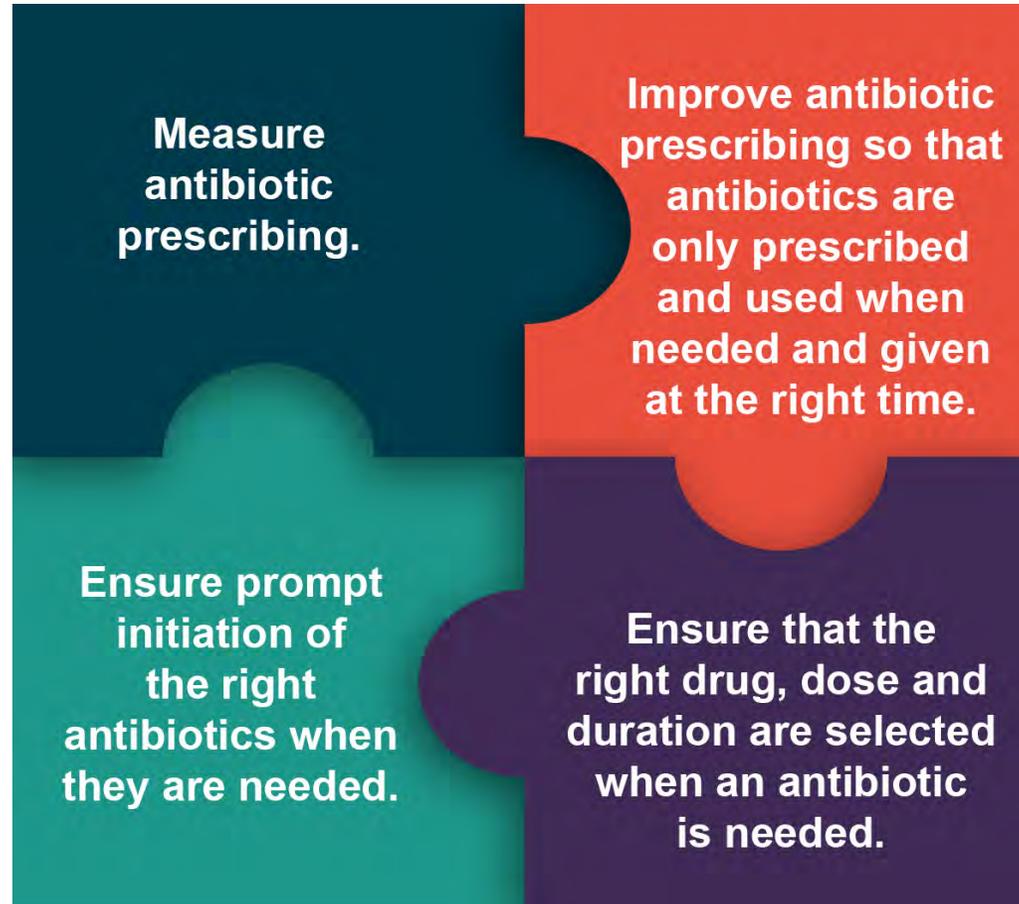
#### ANTIBIOTIC PRESCRIBING/STEWARDSHIP

The single most important action needed to greatly slow the development and spread of antibiotic-resistant infections is to use the way antibiotics are used. Up to half of antibiotic prescriptions are unnecessary and makes everyone less safe. Stopping even inappropriate and unnecessary use of antibiotics in humans and animals would help greatly in slowing down the spread of antibiotic-resistant bacteria. This commitment to always use antibiotics in a safe and effective way is known as antibiotic stewardship.

#### NEW DRUGS AND DIAGNOSTIC TESTS

Because antibiotic resistance occurs as part of the natural evolution of bacteria, we will always need new drugs and diagnostic tests to keep up with the bacteria as well.

# Responsible for All Steps of Antibiotic Use



# CDC Core Elements of Antibiotic Stewardship



**Leadership  
commitment**



**Accountability**



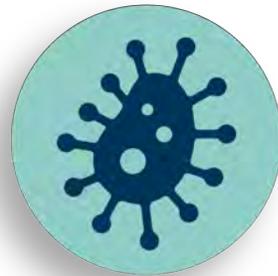
**Drug expertise**



**Action**



**Tracking**



**Reporting**



**Education**

# Improving Resident Assessments and Communication

- AHRQ Suspected Infection SBAR Forms
- Interact Assisted Living Care Paths
- AMDA When to Call the Practitioner tools



# THE IOU STUDY

IMPROVING OUTCOMES OF UTI

# TOOL KIT



University  
of Pittsburgh

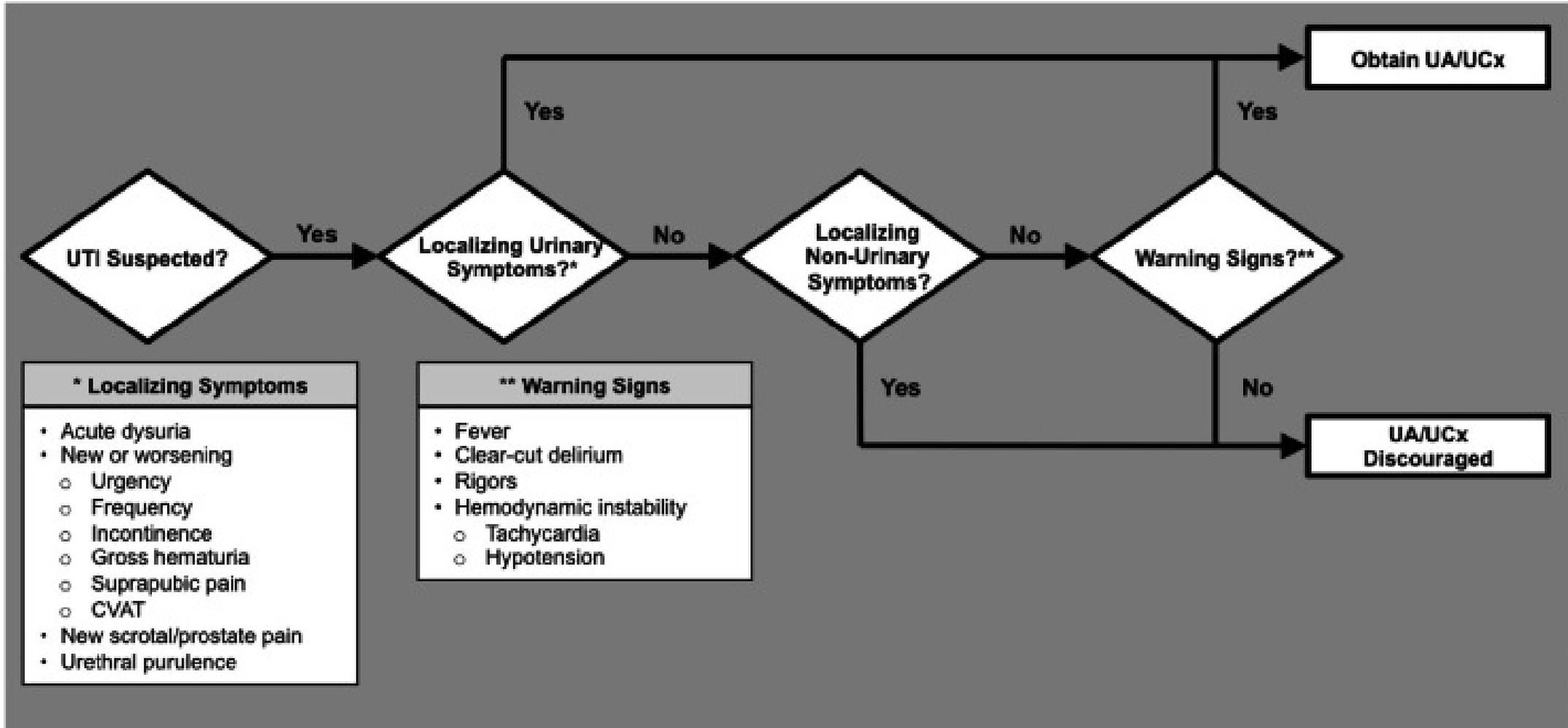


THE SOCIETY  
FOR POST-ACUTE AND  
LONG-TERM  
CARE MEDICINE™



WISCONSIN  
UNIVERSITY OF WISCONSIN-MADISON

# Criteria for Obtaining a Urinalysis and Culture



**FIGURE 3.**

**Sample Nurse Situation-Background-Assessment-Recommendation (SBAR) Communication Tool**

**SBAR TOOL FOR COMMUNICATING WITH PROVIDERS ABOUT RESPIRATORY SIGNS AND SYMPTOMS (S/S)**

<b>1. SITUATION (brief summary of current problem)</b>		
<b>2. RELEVANT INFO</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Medical history (COPD, vaccine status)</li><li><input type="checkbox"/> Medications and med changes</li><li><input type="checkbox"/> Recent labs</li><li><input type="checkbox"/> Drug allergies/advanced directives</li></ul>	<b>4. NON-SPECIFIC S/S</b> <ul style="list-style-type: none"><li><input type="checkbox"/> New or worsening confusion</li><li><input type="checkbox"/> New or worsening agitation</li><li><input type="checkbox"/> Decreased eating/drinking</li><li><input type="checkbox"/> New or worsening weakness</li><li><input type="checkbox"/> Sleepy/less active or alert</li><li><input type="checkbox"/> Decline in function</li><li><input type="checkbox"/> Malaise</li><li><input type="checkbox"/> Body aches</li><li><input type="checkbox"/> Headache</li><li><input type="checkbox"/> Other non-specific changes</li></ul>	<b>5. SPECIFIC S/S</b> <p><b>Suggests URI/bronchitis:</b></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Nasal congestion/drainage</li><li><input type="checkbox"/> Sneezing</li><li><input type="checkbox"/> Sore throat</li><li><input type="checkbox"/> New/worse cough (+/- sputum)</li></ul> <p><b>Suggests possible pneumonia:</b></p> <ul style="list-style-type: none"><li><input type="checkbox"/> Shortness of breath</li><li><input type="checkbox"/> Labored breathing</li><li><input type="checkbox"/> Pleuritic chest pain</li><li><input type="checkbox"/> Changes to lung exam (focal)</li><li><input type="checkbox"/> Positive chest X-ray</li></ul>
<b>3. VITAL SIGNS</b> <ul style="list-style-type: none"><li><input type="checkbox"/> Blood pressure</li><li><input type="checkbox"/> Pulse</li><li><input type="checkbox"/> Respiratory rate</li><li><input type="checkbox"/> Temperature (Fever <math>\geq 99^{\circ}</math> or <math>1.2^{\circ}\text{F}</math> above baseline; include baseline and highest recorded in the past 24 hours)</li><li><input type="checkbox"/> Pulse Ox (include baseline)</li></ul>		
<b>6. ASSESSMENT</b>		
<b>7. REVIEW, RECOMMEND AND NOTIFY</b>		

Note. COPD, chronic obstructive pulmonary disease; Ox, oxygenation; URI, upper respiratory infection.

# Establishing Criteria for Initiating Antibiotics

- AHRQ Minimum Criteria For Antibiotics
- Loeb
- McGeer(Stone Criteria)
- Interact
- SHEA/IDSA
- Pharmacy Providers

See comparison tool: differentiate surveillance criteria for defining infection(retrospective) and guidelines for initiating therapy based on clinical assessment (prospective)

USE EVIDENCE BASED resources in developing

# Clinical vs. Surveillance Criteria for Infection



## **Loeb and McGeer Criteria**

**A PRACTICAL GUIDE FOR USE IN LONG-TERM CARE**

Find more information about these criteria and about implementing antibiotic stewardship in long-term care at [Antibiotic Resistance and Stewardship for Health Professionals](https://www.health.state.mn.us/diseases/antibioticresistance/hcp/index.html) (<https://www.health.state.mn.us/diseases/antibioticresistance/hcp/index.html>).

## Clinical and Surveillance Criteria—Why do we have both?

**Clinical criteria are meant to inform decisions on individual patients when care is needed.**

- When these criteria are used for clinical decision making (e.g., to start an antibiotic), clinical information (e.g., diagnostic test results, condition duration) is often unknown.
- Clinical criteria take into account patient factors, like indwelling devices.
- Clinical criteria are important because we treat patients, not case definitions.

**Surveillance criteria are used to count true case events (i.e., diagnosed infections) and to estimate the actual incidence/prevalence of disease conditions.**

- These criteria are applied retrospectively (after the fact), often with new information (e.g., diagnostic culture results, which can take days to receive) that was not available during initial clinical assessment.
- Surveillance criteria are designed to increase the likelihood that all patients counted truly have the infection of interest.
- Because infections in long-term care patients might not have typical symptoms, failure to meet surveillance definitions does not always mean there was no infection present.

## Loeb Criteria are Designed for Clinical Use

Loeb criteria are meant to be a minimum set of signs and symptoms which, when met, indicate that the resident likely has an infection and that an antibiotic might be indicated, even if the infection has not been confirmed by diagnostic testing.

- When criteria are met, there is reasonable expectation that the resident has an infection.
- Clinical criteria err on the side of caution, leading to treatment of some likely infections, not just confirmed infections. For this reason, these criteria are not used for retrospectively counting true infections.

Because they summarize information available to prescribers when making initial treatment decisions, Loeb criteria can be used retrospectively to assess antibiotic initiation and selection appropriateness.

## McGeer and NHSN Criteria are Designed for Surveillance

Revised McGeer criteria (Stone 2012) are used for retrospectively counting true infections.

- To meet the criteria for definitive infection, more diagnostic information (e.g., positive laboratory tests) is often necessary.
- Surveillance criteria are not intended for informing antibiotic initiation because they depend on information that might not be available when that decision must be made.

If, instead of Loeb criteria, these McGeer guidelines are used to retrospectively assess antibiotic initiation appropriateness, they should be applied without inclusion of diagnostic criteria (e.g., positive urine culture, chest x-ray) that were not available at the time of antibiotic initiation.

- If diagnostic information that was not available in real-time is included in an antibiotic appropriateness assessment, measures of inappropriate prescribing might be artificially increased. This is because the metric would incorporate information (e.g., negative urine culture) unavailable to the prescriber at the time of antibiotic initiation.

National Healthcare Safety Network (NHSN) criteria are used for active, resident-based, prospective surveillance of events.

- Criteria might be based on laboratory results alone (CDI LabID) or include specific signs and/or symptoms.
- Criteria are specifically designed to remove subjectivity and ensure accurate, reproducible, and comparable surveillance data for a facility over time and across facilities.
- Participation in NHSN reporting can provide a way for facilities to benchmark infection rates with other U.S. facilities.
- NHSN criteria are not intended for clinical decision making.

# INTERACT Guidance on Identification and Management of Infections

Some facilities have asked why criteria in INTERACT Care Paths and Change in Condition guidance (“File Cards”) for clinician notification are not the same as other published criteria for specific infections.

The primary reasons are as follows:

1. The purpose of the INTERACT criteria is to provide a set of clinically sound criteria that is consistent with most published guidelines about when to notify a clinician (MD, NP or PA) about a change in condition. The INTERACT criteria are not designed to define any specific infection or to indicate the need for antibiotic therapy.
2. The purpose of published criteria for infections is to establish standards for diagnosis and to guide therapy. In general, antibiotic therapy should not be initiated unless a patient/resident meets criteria for an infection.

# INTERACT Guidance on Identification and Management of Infection

As illustrated in the tables below, there is no consensus on various published criteria for specific infections.

For INTERACT Care Paths Change in Condition guidance, we have chosen criteria that are internally consistent, with the goal of simplifying implementation. It would be very difficult for facilities to use multiple criteria for notification of clinicians based on specific clinical circumstances.

***Individual facilities should select specific criteria for Infections and criteria for when to notify clinicians of changes in condition and use them consistently.***

***When antibiotics are prescribed, principles of antibiotic stewardship should be followed (see References).***

Vital Sign Criteria	INTERACT 4.0 Criteria for Clinician Notification	McGeer Criteria 2012 for Surveillance <sup>1</sup>	AHRQ Minimum Criteria for Common Infections Toolkit <sup>2</sup>
Temperature/Fever	> 100.5°F  INTERACT Fever Care Path uses McGeer definition	<ul style="list-style-type: none"> <li>• Single oral temperature &gt;37.8 °C (100 °F)</li> <li>• Repeated oral temperatures &gt;37.2 °C (99 °F) or rectal temperatures &gt;37.5 °C (99.5 °F)</li> <li>• Single temperature &gt;1.1 °C (2 °F) over baseline from any site (oral, tympanic, axillary)</li> </ul>	<p><b>Suspected Lower Respiratory Infection:</b>            ≥ 102 °F (38.9 °C) (need to check RR and O2 sat)            100 °F (37.9 °C) and less than 102 °F (38.9 °C) (need to check RR and pulse)</p> <p><b>Suspected Urinary Tract Infection:</b>  <b>With indwelling catheter:</b> See McGeer criteria.  <b>Without indwelling catheter:</b>            Single temperature of 100°F (37.8°C)</p>
Apical heart rate or pulse	> 100 or < 50	N/A	<b>Suspected Lower Respiratory Infection:</b> Pulse >100
Respiratory rate	> 28/min or < 10/min	<b>Pneumonia and Lower respiratory tract (bronchitis/ tracheobronchitis) criteria:</b> ≥25 breaths/min	<b>Lower Respiratory Infection:</b> ≥25 breaths/min
Blood Pressure	< 90 or > 200 systolic	N/A	<b>Urinary Tract Infection:</b> <b>With indwelling catheter.</b> Hypotension (significant change from baseline BP or a systolic BP <90)
Oxygen saturation	< 90%	<b>Pneumonia and Lower respiratory tract (bronchitis or tracheobronchitis) criteria:</b> O2 saturation <94% on room air or a reduction in O2 saturation of >3% from baseline	<b>Lower Respiratory Infection:</b> O2 saturation <94% on room air or a reduction in O2 saturation of >3% from baseline

# Effectiveness of Antibiotic Stewardship Programs in Nursing Homes

JAMDA 19 (2018) 110-116

- 14 Studies reviewed that looked at outcomes
  - 8 showed reduction in antibiotic prescriptions
  - 10 found an increased adherence to guidelines
  - No change in mortality, C. diff, hospitalization

***Need more studies to see if same benefit of antibiotic stewardship in nursing homes as in hospitals***

# Tracking Antibiotic Processes, Outcomes, and Use:



## DATA SOURCES

1. Pharmacy
2. Electronic Health Records
3. Manual Chart Review

# Rates of Antibiotic Starts

## RATE CALCULATION

$$\frac{\text{\# of new antibiotic prescriptions}}{\text{total \# of resident-days}} \times 1,000$$

**= rate of new antibiotic prescriptions initiated**

- Rate of new antibiotic prescriptions initiated in a nursing home during a given timeframe (e.g., monthly or quarterly).
- Data may already be collected as part of current infection surveillance activity.
- Used to track the effect of stewardship initiatives designed to educate prescribers on situations when antibiotics are not appropriate.

# Antibiotic Days of Therapy

## RATE CALCULATION

sum of  
antibiotic DOTs

————— X 1,000

total # of  
resident-days

= rate of total  
antibiotic days

- Rate of total antibiotic days in a nursing home during a given timeframe (e.g., monthly or quarterly).
- Tracking DOT may be easier and more accurate when using pharmacy or EHR data sources.
- Used to track effect of stewardship intervention on overall antibiotic use over time.

# Prevalence of Antibiotics

## POINT PREVALENCE CALCULATION

$$\frac{\text{\# of residents on antibiotics}}{\text{total \# of residents in the facility}} \times 100$$

**= prevalence of antibiotics**

- Proportion of residents receiving antibiotics during a single, defined timeframe.
- Time-limited measure used to provide a snapshot of antibiotic use.
- Used to identify targets for stewardship activities.

# Purpose of Antibiogram

- Infection control
  - Classify types of bacteria found in cultures
  - Identify patterns of antibiotic susceptibility
  - Track changes in antibiotic susceptibility over time
- Clinical decision support
  - Determine the most appropriate agents for initial or empiric antibiotic for a suspected organisms



This article originally  
appeared in our  
Sept/Oct 2009 issue

# Antibiogram Rules

Include cultures from at least a 12 month period

Only include diagnostic cultures

Only include the first isolate for each resident

Only include organisms with data for  $\geq 30$  isolates

# Antibiograms

	Gram Negative				Gram Positive		
Antibiotic Tested	<i>Escherichia coli</i>	<i>Klebsiella pneumoniae</i>	<i>Proteus mirabilis</i>	<i>Pseudomonas aeruginosa</i>	<i>Staphylococcus aureus</i> Non-MRSA	<i>Staphylococcus aureus</i> MRSA †	<i>Staphylococcus coag. Neg</i>
# of Isolates ‡	165	75	39	33	10*	35	18
	Oral or Oral Equivalent				Oral or Oral Equivalent		
<b>Ampicillin</b>	46%	0%	62%		50%	0%	50%
<b>Amox/Clav</b>	77%	96%	100%				
<b>Cefazolin</b>	70%	93%	88%		100%	0%	50%
<b>Cefoxitin</b>	82%	100%	100%				
<b>Ceftriaxone</b>	85%	79%	92%				
<b>Ciprofloxacin</b>	58%	79%	62%	56%		0%	0%
<b>Levofloxacin</b>	59%	79%	62%	57%	33%	20%	0%
<b>Nitrofurantoin</b>	100%	0%	0%		100%	100%	100%
<b>TMP/SMX</b>	64%	79%	54%		67%	100%	100%
<b>Tetracycline</b>	64%	60%	0%		100%	100%	80%
<b>Oxacillin</b>					100%	0%	50%
<b>Clindamycin</b>					50%	50%	100%
<b>Erythromycin</b>					50%	0%	0%
<b>Linezolid</b>					100%	100%	
	IV Only				IV Only		
<b>PIP/TAZ</b>	98%	96%	100%	100%			
<b>Cefepime</b>	89%	95%	92%	91%			
<b>Ceftazidime</b>				91%			
<b>Gentamicin</b>	85%	83%	92%	91%	100%	100%	67%
<b>Imipenem</b>	100%	100%	100%	71%			
<b>Vancomycin</b>					100%	100%	100%

- Summarize organisms from clinical specimens across all residents for specific timeframe.
- Display organism susceptibility to various antibiotics.
- Track changes in antibiotic resistance.
- Inform clinicians' prescribing practices.
- AHRQ Antibiogram Program Toolkit

# Education

- Staff
- Practitioners
- Residents/Families
- Contractors
- Visitors/Volunteers
- Community/other stakeholders

# Educating Residents and Families

**Core Elements for Antibiotic Stewardship in Nursing Homes**

## What You Need to Know About Antibiotics in a Nursing Home

**What are antibiotics?**

Antibiotics are drugs used to treat infections caused by bacteria. They do not work for illnesses caused by viruses, like flu and most cases of bronchitis.

**When are antibiotics necessary?**

There are times when antibiotics are urgently needed; for example, to treat sepsis (e.g., when bacteria cause a severe infection of the bloodstream), pneumonia caused by bacteria, and meningitis caused by bacteria. Using antibiotics when they are not necessary increases the risk they will not work when needed most.

**Can taking antibiotics be harmful?**

Antibiotics, like any medications, can have minor side effects like upset stomach or a rash, as well as serious allergic reactions or dangerous interactions with other medications a person is taking. In particular, antibiotics put people at risk for a deadly type of diarrhea caused by *C. difficile*. Frequent or excessive use of antibiotics leads to developing bacteria that are resistant to

**What is antibiotic stewardship?**

Antibiotic stewardship refers to a set of commitments and actions designed to make sure patients receive the right dose, of the right antibiotic, for the right amount of time; and only when truly necessary. Improving antibiotic use will ensure these life-saving medications are effective and available when we need them.

**Why is improving antibiotic prescribing practices important for nursing homes?**

Nursing home residents have a higher risk of colonization with bacteria for many reasons. The presence of invasive devices such as urinary-catheters and feeding tubes, wounds, and conditions that affect the bladder (e.g., diabetes or stroke) can all lead to colonization. Difficulties in separating colonization of bacteria from true illness in frail or older adults can lead to the overuse of antibiotics, which in turn drives antibiotic resistance.

# Educating Staff



- Workshops or in-service training may be most effective for fostering discussion.
- **BEWARE OF ONLINE TRAINING AS SOLE WAY TO EDUCATE**

Special Article

## Template for an Antibiotic Stewardship Policy for Post-Acute and Long-Term Care Settings

Robin L.P. Jump MD, PhD<sup>a,b,\*</sup>, Swati Gaur MD, MBA, CMD<sup>c</sup>, Morgan J. Katz MD<sup>d</sup>, Christopher J. Crnich MD, PhD<sup>e,f</sup>, Ghinwa Dumyati MD<sup>g</sup>, Muhammad S. Ashraf MBBS<sup>h</sup>, Elizabeth Frentzel MPH<sup>i</sup>, Steven J. Schweon RN, MPH, MSN, CIC, HEM<sup>j</sup>, Philip Sloane MD, MPH<sup>k</sup>, David Nace MD, MPH, CMD<sup>l</sup> on behalf of the Infection Advisory Committee for AMDA—The Society of Post-Acute and Long-Term Care Medicine

JAMDA 18 (2017) 913e920

# ADMISSION ANTIBIOTIC STEWARDSHIP CHECKLIST FOR PA/LTC

YES	NO	DISCHARGE SUMMARY INFORMATION ON ADMISSION
<input type="checkbox"/>	<input type="checkbox"/>	The reason for antibiotic use is documented.
<input type="checkbox"/>	<input type="checkbox"/>	The patient/family is aware of the need for antibiotic use.
<input type="checkbox"/>	<input type="checkbox"/>	A signed, medication reconciliation sheet is available for review.
<input type="checkbox"/>	<input type="checkbox"/>	The antibiotic order includes a dosage, route, frequency and duration of treatment.
<input type="checkbox"/>	<input type="checkbox"/>	For patients receiving intravenous antibiotics, the facility is prepared and able to give the medication.
<input type="checkbox"/>	<input type="checkbox"/>	The patient has poor kidney function (and requires special dosing of the antibiotic).
<input type="checkbox"/>	<input type="checkbox"/>	Test results are available (to review the reason for antibiotic use).
<input type="checkbox"/>	<input type="checkbox"/>	Allergies to antibiotics (and other medications) are listed, or "no known drug allergies" is documented.
<input type="checkbox"/>	<input type="checkbox"/>	The patient has a history of <i>Clostridium Difficile</i> colitis.
<input type="checkbox"/>	<input type="checkbox"/>	The patient is taking warfarin/Coumadin.
<input type="checkbox"/>	<input type="checkbox"/>	While on antibiotic, there is monitoring or laboratory testing that needs to be completed (i.e. antibiotic levels, c-reactive protein, liver and/or renal function testing).
<input type="checkbox"/>	<input type="checkbox"/>	There needs to be communication or follow-up with an infectious disease specialist.
<input type="checkbox"/>	<input type="checkbox"/>	The patient requires isolation precautions.
<input type="checkbox"/>	<input type="checkbox"/>	There is hospital/provider contact information provided for questions or concerns about the patient or antibiotic use.



# Inter-Facility Infection Control Transfer Form for States Establishing HAI Prevention Collaboratives

Available from: [https://www.cdc.gov/hai/prevent/prevention\\_tools.html](https://www.cdc.gov/hai/prevent/prevention_tools.html)

This example Inter-facility Infection Control patient transfer form can assist in fostering communication during transitions of care. This concept and draft was developed by the Utah Healthcare-associated Infection (HAI) working group and shared with Centers for Disease Control and Prevention (CDC) and state partners courtesy of the Utah State Department of Health.

This tool can be modified and adapted by facilities and other quality improvement groups engaged in patient safety activities.



# Coronavirus Disease 2019 (COVID- 19)

# Strategies to Prevent the Spread of COVID-19 in LTCF

Prevent the introduction of germs **INTO** your facility

Prevent the spread of germs **WITHIN** your facility

Prevent the spread of germs **BETWEEN** facilities

<https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/prevent-spread-in-long-term-care-facilities.html>



**KEEP  
CALM  
AND  
CARRY  
ON**

# COVID-019: LEADERSHIP

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- Read and educate yourself using authoritative sources
- COMMUNICATION, COMMUNICATION, COMMUNICATION
  - Residents
  - Staff
  - Families/visitors (reallocate burden to non direct caregivers)
- Lead by example
- Priority is now as always safety/public health

# Covid-19 Prevention Strategy LTCF: INTO

- Visitors
  - Signage
  - Education/communication
- Staff
  - Sick leave
  - Return to work post-influenza like illness
- New residents
  - Screen for potential recent exposure
  - Anyone who has had or may have been exposed to COVID-19 check with health department

# COVID-19 Prevention Strategy LTCF: **WITHIN** (ILI)

- Keep all informed and educated
- Monitor residents and employees for fever and respiratory symptoms
  - Restrict symptomatic residents to their room and mask if they must leave their room
  - Standard, Contact, and Droplet precautions with eye protection
  - Monitor national, state, local health department resources
- Support hand and respiratory hygiene for staff, residents, visitors
  - CDC guidelines for hand hygiene
  - Alcohol based hand rub/soap and water/paper towels
- Dedicated employees for COVID-19 residents (super trained and competencies)
  - Restrict symptomatic residents to their room and mask if they must leave their room

# COVID-19 Prevention Strategy LTCF: **WITHIN**

- Supplies
  - Signs about proper use of PPE(no gowns and gloves in the halls)
  - Dedicated/disposable equipment
  - Access to PPE easy
  - Disposal of PPE at the exit to resident room

# COVID-19 Prevention Strategy LTCF: **BETWEEN**

- Notify transporters/accepting facilities you are sending someone with possible infectious disease
- Report possible case of COVID-19 in residents and employees to local health department
- Isolate potential case in room with door closed pending instruction from health department

# Covid-19: Other (AMDA)

- Heighten surface cleaning with hospital grade disinfectant
- N-95 masks
- Heighten surveillance
  - Staff, residents, community
  - Screening if a community outbreak for staff, visitors

# COVID-19 Resources

- CDC
- State and Local Health Department
- AMDA
- AHCA/NCAL

# Implementation of PPE in Nursing Homes to Prevent Spread of Novel or Targeted Multidrug-resistant Organisms(MDROs)

Pan-resistant

Carbapenemase-producing Enterobacteriaceae

Carbapenemase-producing Pseudomonas species

Carbapenemase-resistant Acinetobacter

Candida auris

<https://www.cdc.gov/hai/containment/PPE-Nursing-Homes.html>

# Enhanced Barrier Precautions: Who else? *(Regardless of Known MDRO status)*

- Wounds
- Indwelling medical devices
  - Central line
  - Urinary catheter
  - Feeding tube
  - Trach
  - Vent

# CDC-Enhanced Barrier Precautions: High Contact Resident Care Activities

- Dressing
- Bathing/showering
- Transferring
- Providing hygiene
- Changing linens
- Changing briefs/toileting
- Device care
- Wound care

# Department of Justice Launches a National Nursing Home Initiative March 3, 2020

- The department considers a number of factors in identifying the most problematic nursing homes. For example, the department looks for nursing homes that consistently fail to provide adequate nursing staff to care for their residents, ***fail to adhere to basic protocols of hygiene and infection control***, fail to provide their residents with enough food to eat so that they become emaciated and weak, withhold pain medication, or use physical or chemical restraints to restrain or otherwise sedate their residents.
- <https://www.justice.gov/opa/pr/department-justice-launches-national-nursing-home-initiative>

