

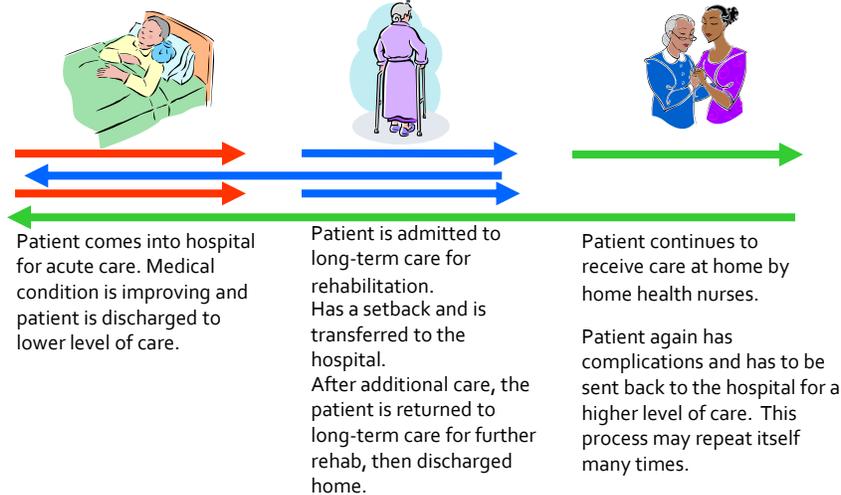
Infection Prevention and Control

What infections are and what we can do to prevent their spread in our facilities

Objectives

- Explain why infection prevention and control is important in assisted living facilities and nursing homes
- Describe the chain of infection and give examples
- List and give an example of the 4 main groups of microorganisms
- List the risk factors for colonization and infection
- List risk factors for infection in the elderly
- Describe why multidrug-resistant organisms (MDROs) are a public health concern and give examples
- Explain why surveillance is important and how logs are used
- Explain how to identify and report an outbreak
- Explain CDC's 12 Steps to Prevent Antimicrobial Resistance

Realistic Path of Care: Setting the stage for infection OR infection control and prevention?



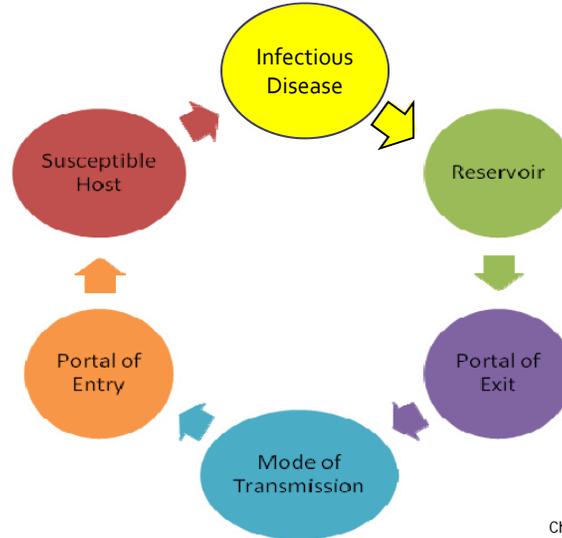
Infection Prevention and Control



Infection prevention and control help us protect

- Our residents from getting infections FROM us
- Our residents from getting infections from other residents
- Ourselves from getting infections from our residents

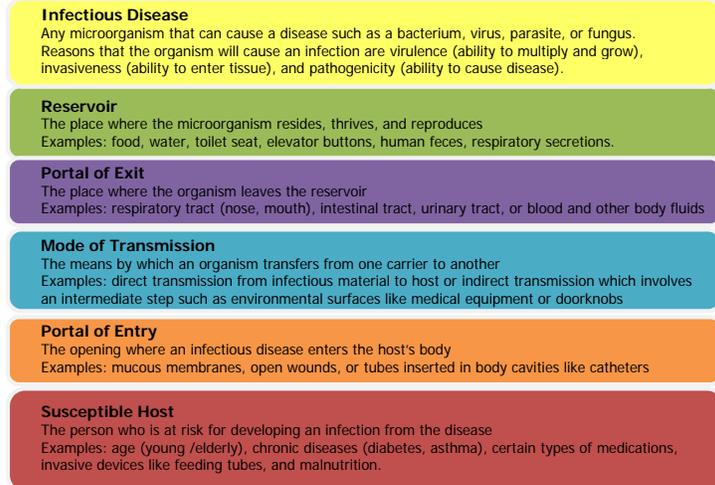
Chain of Transmission



Chain of Transmission



Chain of Transmission



Microbiology 101: Microorganisms

- Microbiology is the science that deals with the study of microorganisms
 - Bacteria
 - Viruses
 - Fungi
 - Parasites
- Reasons that the organism will cause an infection:
 - Virulence – the ability to multiply and grow
 - Invasiveness – the ability to enter tissue
 - Pathogenicity – the ability to cause disease



Infectious Disease

Microbiology 101



Microbiology 101: Bacteria and Viruses

- Bacteria
 - Single-celled organisms that typically live in air, soil, water, organic matter, and on our skin
 - Can be treated with antibiotics
 - Examples: tuberculosis, *Staphylococcus aureus*
- Viruses
 - Smaller than bacteria
 - Can be treated with antiviral medications, but NOT antibiotics
 - Examples: chicken pox, influenza, hepatitis, HIV



Infectious Disease

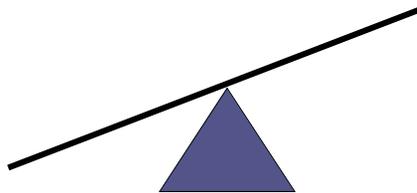
Microbiology 101: Parasites and Fungi

Infectious
Disease

- Parasites
 - Live in, on, or with another organism because it cannot live on its own
 - Disease occurs when it attacks a host and multiplies
 - Can often be treated with antibiotics
 - Examples: scabies, *Giardia*
- Fungi
 - Thrive in moist, humid, dark environments
 - Treated with topical creams or oral medications
 - Examples: athlete's foot, ringworm, yeast infections

Colonization versus Infection

- It is first important to determine whether the resident has an infection or if they are colonized.
- This distinction determines whether or not the physician will treat with antibiotic therapy.



Colonization versus Infection

Infectious
Disease

Colonization	Infection
Presence of microorganisms in/or on the resident but without tissue invasion or damage.	Presence of microorganisms that are actively invading tissue and causing tissue invasion or damage.



Colonization: This culture of a hand print shows the amount of bacteria that can live on our hands without causing infection.



Infection: Bacteria invading human cells.

Early Detection of Infection

- The diagnosis of infection in older adults is challenging.
- **Early diagnosis** of infections can help reduce morbidity and mortality.
- **Early detection and treatment** avoids many long-term negative outcomes such as:
 - hospitalization
 - additional healthcare costs
 - possible premature death

Early Detection of Infection: Elevated Temperature

Susceptible
Host

- Because frail older adults tend to have a poorer body temperature response, elevations in body temperature of **1.1° C (2° F)** from their normal baseline temperature should be considered a febrile response.
- Fevers higher than **38.3° C (101° F)** often indicate severe, life-threatening infections in older adults, and the attending physician should be notified immediately.

Early Detection of Infection: Decreased Temperature

Susceptible
Host

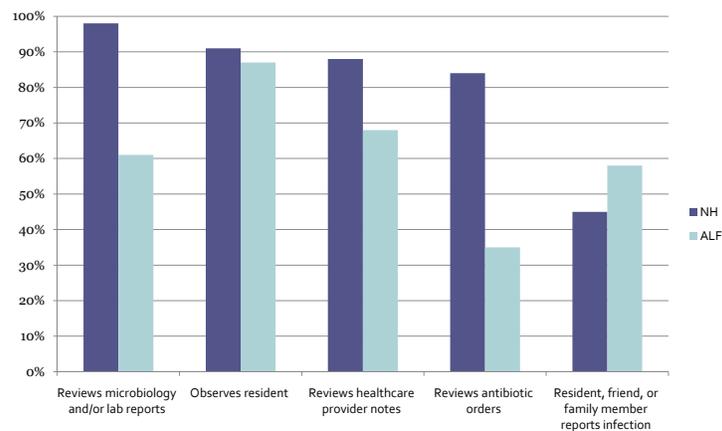
- A temperature of **<97° F (<36° C)** is called hypothermia.
- When older individuals have a drop in their temperature and have an infection, they tend to have greater changes in mental status when compared with residents with a fever.
- They are also more likely to have central nervous system dysfunction or circulatory shock and **are at increased risk of death.**

Early Detection of Infection: Cognitive and Physical Changes

Susceptible
Host

- Cognitive impairment, or a change in mental status, are commonly present in elderly residents with infections, which may include:
 - Inability to do tasks previously performed
 - Mood changes
 - Frank delirium - 50% of elderly with infections
- Physical changes caused by infection in the elderly are subtle, and nonspecific complaints may be the only indications, which may include:
 - Difficulty sitting up, difficulty walking
 - Falls

Needs Assessment Results: Top methods to identify infections by facility type



Infection Risk Factors: Environment

- Shared spaces and group activities
- Widespread colonization of organisms
- Low vaccination rates (residents and staff)
- Contaminated environment
- Inconsistent and poor infection control practices



Infection Risk Factors: Host

Host infection risk factors can be grouped into three main areas:

1. Based on a resident's physical condition
2. Based on a resident's psychological condition
3. Residents using medical devices



Physical Risk Factors in ALF/NH Setting

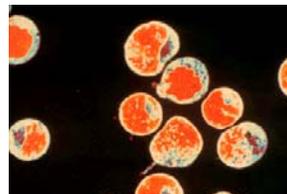
Susceptible
Host

- Age-related decline in immune function
- Incontinence
- Decreased gastric acid secretions
- Impaired mobility
- Thinning of the skin

Physical Risk Factors: Age-Related Changes in Immune System

- The immune system of the elderly does not fight off infections as effectively as younger people.
- Their T-cells, the basic component of the human immune system, do not respond correctly or with enough force to overcome some invading bacteria.

Human T-cells



Physical Factors: Incontinence

- One in ten people over age 65 have some type of bladder control loss - urge incontinence accounts for 2/3 of incontinence cases.
- About half of the elderly in nursing homes experience incontinence; between 25% to 30% of older adults have urinary leakage problems after hospitalization for a serious illness.
- Incontinence can lead to irritation of the skin, increasing the risk of infection.
- Fecal incontinence increases the likelihood that stool with infectious material comes into contact with environmental surfaces and/or other residents.

Susceptible Host

Portal of Exit

Physical Factors: Reduction of Gastric Acid Secretions

- The normal production of gastric acid prevents bacterial colonization and infection in the stomach.
- Many elderly residents do not produce enough gastric acid.
- This change in the stomach has been shown to promote the growth of some infectious bacteria, including *Clostridium difficile*.

Physical Factors: Impaired Mobility

- Infections can result from impaired mobility or lack of mobility due to prolonged pressure to an area of the body from a bed or chair.
- This can cause pressure sores or ulcers since extended pressure contributes to:
 - Decreases in blood circulation to the area
 - The collapsing of capillaries in the area
 - Cell death through interrupting the tissue's supply of oxygen and nutrients

Physical Factors: Thinning of Skin

- The body's skin has many functions:
 - Is the body's first line of defense from infections
 - Protects your body from the environment
 - Helps to maintain fluid balance
 - Helps to regulate body temperature
 - Stores the receptors of pain and sensation
- Thinning of the skin may lead to breaks in the body's first line of defense, increasing the risk of infection.

Susceptible
Host

Portal of
Entry

Psychological Risk Factors



- Many of our residents suffer from:
 - Decreased ability to communicate with their care providers
 - Depression
 - Dementia
- These conditions make it very difficult for our residents to express to their care providers when they feel ill and what symptoms of infection they are experiencing

Device-Related Risk Factors

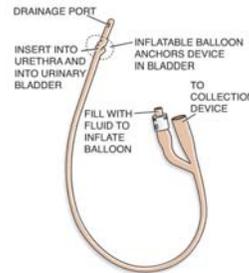


- Catheterization
- Feeding tubes
- IV devices
- Ventilators /Tracheostomy



Device-Related Risk Factors: Bladder Catheterization

- Catheter-associated urinary tract infections (CAUTIs) are the most common HAIs, causing >40% HAIs in hospitals and nursing homes.
- Use of catheters may be an infection risk due to:
 - Improper insertion
 - Poor daily cleaning
 - Breaks in the sterile system
 - Having the bag lifted above the waist of the resident causing a back flow of urine into the bladder



UTI FAQ



Device-Related Risk Factors: Bladder Catheterization

Urinary Catheter Checklist

Appropriate Indications:

- Ensure resident meets appropriate indications for catheter use and document reason.
- Consider alternatives to indwelling urethral catheterization.

Hand Hygiene:

- Wash hands thoroughly with soap and water or sanitize with an alcohol-based hand rub before and after catheter insertion or manipulation.

Insertion Technique:

- Use sterile equipment including: sterile gloves, drape, sponges, and appropriate antiseptic solution.
- Use aseptic technique to insert catheter. If aseptic technique is broken, replace catheter and collecting system aseptically with sterile equipment.
- Use a single-use packet of lubricant jelly for insertion for each resident.
- Secure catheter to prevent movement and urethral traction.

Catheter Maintenance:

- Keep collection bag below level of the bladder at all times.
- Check tubing frequently for kinking.
- Keep drainage bag off the floor.
- Empty the collecting bag regularly.
- Maintain a closed-drainage system.

Catheter Care:

- Perform perineal care daily and after each bowel movement.

Catheter Removal:

- Assess resident daily for catheter need.
- Take steps to remove catheter when resident no longer meets indications.

Urinary Catheter Reminder

DATE: _____

PHYSICIAN: _____

This resident has had a urinary catheter in place since ____/____/____

In an attempt to reduce catheter-associated urinary tract infections, please verify the reason(s) for continuing the indwelling urinary catheter:

- Resident has acute urinary retention or bladder outlet obstruction.
- Need for accurate measurements of urinary output in critically ill resident.
- <48 hours post-urologic surgery or other surgery on contiguous structures of the genitourinary tract.
- To assist in healing of open sacral or perineal wounds in incontinent resident.
- Prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
- To improve comfort for end of life care.
- Other: _____

If the resident no longer requires the catheter, please discontinue.

Urinary Catheter Checklist
Urinary Catheter Reminder



Device-Related Risk Factors: Feeding Tubes

- **Non-sterile ingredients**, nutritionally rich solutions where microorganisms thrive if not handled correctly, should be prepared and stored according to manufacturer's recommendations to prevent bacterial growth.
- **Touch contamination** can be avoided by using aseptic technique and minimal handling when connecting the food container and the external feeding tube.
- **Cleaning and care of stoma** helps prevent bacteria from infecting the site.

Device-Related Risk Factors: Intravenous (IV) Devices



- IV lines and tubes have the potential of bringing microorganisms from the skin of the resident or from the surrounding environment into the normally sterile body cavities, putting the resident at risk of infection.
- Central line-associated bloodstream infection (CLABSI)
 - **Current HAI focus in acute care settings in Virginia and nationally.**

Device-Related Risk Factors: Ventilators /Tracheostomy

- The ventilated resident has difficulty clearing secretions from his/her lungs, making him/her more prone to developing bacterial colonization or infection.
- Mechanically ventilated residents are at highest risk for pneumonia, also known as ventilator-associated pneumonia (VAP).



Needs Assessment Results: Services provided by facility type

Service provided	Nursing Home	Assisted Living Facility
Glucose monitoring	98%	97%
Wound care	100%	67%
Blood draws	100%	51%
Foley (urinary) catheter	98%	44%
Central lines	90%	14%
Peripheral lines	94%	8%
Management of residents with a tracheostomy	78%	8%

Susceptible Host

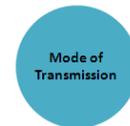
Reservoir

Mode of Transmission

Portal of Entry

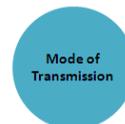
Mechanisms of Transmission

- Contact
 - Indirect
 - Direct
- Droplet
 - Large respiratory particles
 - Travel short distances
- Airborne
 - Small respiratory particles
 - Stay suspended in air



Common Infections by Transmission Route in ALF/NH Setting

- Gastrointestinal
- Respiratory
- Blood / Bodily Fluids



Needs Assessment Results: Most frequent infections by facility type



	First	Second	Third	Fourth	Fifth
Nursing Home	UTI 90%	Pneumonia 83%	MRSA 77%	CAUTI 71%	SST 66%
Assisted Living Facility	UTI 71%	Influenza 35%	Pneumonia 33%	Norovirus 26%	SST 19%

CAUTI= catheter-associated urinary tract infection
 MRSA= methicillin-resistant *Staphylococcus aureus*
 Pneumonia: percentage does not include ventilator-associated pneumonia (VAP)
 SST= skin and soft tissue infections
 UTI= urinary tract infection; percentage does not include CAUTI

Gastrointestinal (GI) Illnesses



- Infections that occur in the GI system are most commonly in the stomach and intestines.
- Most caused by viruses (Norovirus), bacteria, or toxins created by bacteria (*Clostridium difficile*).
- Transmission (contact with stool)
 - Direct contact with an ill person
 - Contaminated surfaces, food, ice, or other objects
 - Improper preparation of food, including handling of raw items and improper cooking

GI Illness FAQ



GI: Norovirus

Infectious
Disease

- Norovirus is a highly contagious virus that causes most viral GI outbreaks
 - Lasts longer in the elderly and in individuals with chronic medical conditions
 - Spreads rapidly in congregate settings
- Signs & symptoms similar to other GI infections
 - More frequent or explosive stools
 - Vomiting
 - Nausea
 - Low grade fever

Guidelines for Control of Suspected
Norovirus Outbreak



GI: *Clostridium difficile*



Infectious
Disease

- *C. difficile* bacteria can produce spores (dormant bacteria) that persist in the environment and make the organism very difficult to eliminate
- *C. difficile* endotoxins cause symptoms that may lead to toxic megacolon, which can be fatal
- Risk factors
 - Underlying GI issues or prior GI surgery
 - Antibiotic use - destroys normal gut flora in the colon, allowing *C. difficile* to grow

Clostridium difficile FAQ



Respiratory Illness



- Infection of the respiratory system (nose, sinuses, throat, and lungs)
- Caused by viral or bacterial infections
- Range in severity from mild head colds to severe influenza or pneumonia
- Transmission
 - Direct person-to-person contact, including through droplets that are spread into the air when an ill person coughs or sneezes
 - Indirect contact: many bacteria and viruses can also survive on a variety of objects in the environment such as bed rails, door knobs, wheelchairs, or resident care equipment

Respiratory Illnesses FAQ



Respiratory: Influenza (Flu)



- When someone has influenza and coughs or sneezes, the droplets carrying the virus spread easily.
- People living in ALFs or NHs are often elderly and may have other underlying medical conditions that place them at greater risk for serious illness if they develop influenza.
- Residents live in close quarters, allowing more opportunities for the virus to spread to other residents, employees, or visitors.

Influenza FAQ (for Providers)
Influenza FAQ (for Residents)
ALF Guidelines to Control Suspected Outbreak
NH Guidelines to Control Suspected Outbreak
Respiratory Hygiene/ Cough Etiquette



Respiratory: Tuberculosis (TB)

Infectious Disease

- TB disease occurs when TB bacteria exist and are *active*; the person is symptomatic and can spread the disease to other people.
 - Latent TB infection (LTBI) occurs when *inactive* TB bacteria exist and no symptoms occur
- Because the infectious dose of tuberculosis is very low, it is important to follow federal and state regulations and guidelines to appropriately screen and evaluate all residents and staff.
- TB usually affects the lungs, but can affect other parts of the body.

Tuberculosis FAQ



Bloodborne Diseases

Infectious Disease

Reservoir

Portal of Exit

Mode of Transmission

Portal of Entry

- Growing number of outbreaks (hepatitis B/C)
- Other bloodborne diseases include HIV
- Related to poor infection control practices
 - Contaminated glucose monitoring equipment
 - Unsafe injection practices
- Required to comply with OSHA Bloodborne Pathogen Standard
- Required written facility protocols to address:
 - Environmental cleaning
 - Glucose monitoring
 - Hand hygiene
 - Personal protective equipment (PPE)
 - Podiatry services

Administrator's Checklist for Glucose Monitoring
BBP Exposure Control Plan Template
BBP Standard In-Service
BBP Standard Summary
Blood Glucose Monitoring In-Service
Blood Glucose Monitoring Policy Template
Bloodborne Diseases FAQ



Parasites

Mode of
Transmission

- Scabies and pediculosis (head lice)
- Transmitted by prolonged contact with infested skin, indirectly from bedding and bed clothes
- Itching is the most common sign, red lesions often present on webs of fingers, inside of elbows and wrist, waist
- Incubation period
 - 2-6 weeks newly exposed
 - 1-4 days re-exposure



Scabies FAQ



Bacterial Infections: Resistance

- Powerful antibiotics first became commercially available in the 1940s, saving millions of lives.
- Antibiotic resistance occurs when bacteria change in some way that reduces or eliminates the antibiotic's effectiveness to cure or prevent infections.
- Persons with antibiotic-resistant infections have:
 - Increased risk of hospitalization and transfer to an intensive care unit
 - Longer length of stay in the hospital
 - Higher hospital costs
 - Higher risk of death

Drug Resistance and Antibiotic Stewardship FAQ



Multidrug-Resistant Organisms (MDROs): Learning the Acronym Language

Infectious
Disease

- CRE - carbapenem-resistant *Enterobacteriaceae*
 - KPC – carbapenem-resistant *Klebsiella pneumoniae*
- ESBLs - extended spectrum beta-lactamase producing bacteria
- MDRO – GNR - multidrug-resistant gram negative rods
- MRSA - methicillin/oxacillin-resistant *Staphylococcus aureus*
- VRE - vancomycin-resistant *Enterococci*

MDROs: MRSA

- Gram-positive bacteria
- Appear as grape-like clusters when viewed through a microscope
- Large, round, golden-yellow colonies



MRSA FAQ



MDROs: MRSA as an Example

Infectious
Disease

- Methicillin-resistant *Staphylococcus aureus* (MRSA) were first resistant to methicillin
- Because MRSA has been tracked and focused upon more than other types of MDROs, MRSA may help predict and explain trends in other MDROs
 - Healthcare-associated vs. community-associated
 - Impact and risk factors
- According to a 2005 CDC study:
 - Approximately 94,000 people developed a serious (invasive) MRSA infection in 2005
 - Approximately 19,000 persons died during a hospital stay related to these serious MRSA infections

MDROs: Healthcare-associated (HA) MRSA

- MRSA occurs most frequently among persons:
 - who undergo invasive medical procedures
 - who have weakened immune systems
 - who are being treated in hospitals and healthcare facilities such as nursing homes and dialysis centers
- MRSA in healthcare settings commonly causes serious and potentially life-threatening infections, such as bloodstream infections, surgical site infections, or pneumonia.
- Serious MRSA disease is still predominantly related to exposures to healthcare delivery.

MDROs: Community-associated (CA) MRSA

- CA-MRSA are infections that occur in the community.
 - Primarily healthy people with no direct contact with any healthcare facility in the two years previous to their infection.
- Generally mild infections that affect the skin with pimples or boils that can be swollen, painful and drain pus.
- CA-MRSA infections can sometimes cause severe invasive disease that can be fatal.



Image of CA-MRSA infection
from cchealth.org

MDROs: MRSA - Impact

- People infected with antibiotic-resistant organisms like MRSA are more likely to:
 - Have longer and more expensive hospital stays
 - Die as a result of the infection
- When the drug of choice for treating their infection doesn't work, they require treatment with second- or third-choice medicines that may be less effective, more toxic, and more expensive.

- CDC MRSA Fact Sheet (Oct 2007)

MDROs: VRE



Infectious
Disease

- Enterococci are gram-positive bacteria that are normally present in the human body but may also cause infection
- Vancomycin is an antibiotic that is often used to treat infections caused by enterococci
- In some instances, enterococci have become resistant to this drug and thus are called vancomycin-resistant enterococci (VRE)
- VRE is usually transmitted by direct person-to-person contact but can also be spread indirectly from contaminated objects/surfaces

VRE FAQ



MDROs: VRE

- Studies have shown that most VRE infections occur in hospitals or other healthcare facilities.
- VRE was not reported in U.S. hospitals until 1989.
- In 2004, VRE caused about 1 of every 3 infections in hospital intensive care units. (CDC)

MDROs: Gram-Negative Rods (GNR)

Infectious
Disease

- Examples of gram-negative MDROs:
 - *Acinetobacter*
 - *Stenotrophomonas maltophilia*
 - *Pseudomonas aeruginosa*
 - Members of the Enterobacteriaceae family –
Escherichia coli and *Klebsiella pneumoniae*



MDROs: CRE/KPC

Infectious
Disease

- Carbapenem-Resistant *Enterobacteriaceae*
 - Part of a family of bacteria that include *Escherichia (E. coli)*, *Enterobacter*, *Klebsiella*, and *Salmonella*.
 - Organism is resistant to almost all available antibiotics.
 - Can be transmitted via direct person-to-person contact with an infected person or indirect contact with objects/surfaces, such as resident care equipment, bed rails, and door knobs.

CRE FAQ



MDROs: CRE/KPC

- Currently, carbapenem-resistant *Klebsiella pneumoniae* (KPC) is the most common CRE in the US
- Risk factors for CRE:
 - Prolonged hospitalization
 - Critically ill
 - Frequent antibiotic use
 - Recent surgery or transplants
 - Exposure to invasive devices
 - Ventilators
 - Central venous catheters

MDROs: ESBL

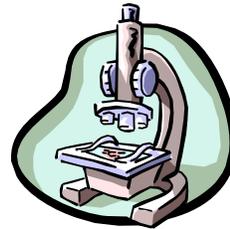
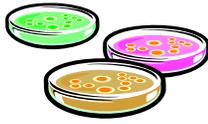


- **ESBLs** – extended spectrum beta-lactamase producing bacteria
- Gram-negative bacteria that produce an enzyme that makes them resistant to certain types of antibiotics including cephalosporins and monobactams.



Identifying Infection: Diagnostic Tests

- Radiology: Chest X-ray
- Labs
 - Antibiotic susceptibility testing
 - Antigen assays
 - Cultures
 - Molecular techniques
 - Serological testing
 - Stains: Gram, Acid Fast (AFB)
 - Toxin assays
 - White blood cell (WBC) count



Collection of Specimens for Culture

- Patient Instructions
- Stage of Disease
- Stage of Antimicrobial Therapy
- Appropriateness of Specimen
- Sufficient Quantity of Specimen
- Prompt Delivery of Specimen
- Appropriate Collection Technique
- Sufficient Clinical Information



How to Collect NP Swabs
and Stool Specimens



Surveillance

- Systematic and ongoing approach to monitoring illnesses of your residents and staff
 - Establish illness-specific baselines to define what is normal in your facility
 - Track changes over time
 - Notice when diseases increase more quickly
- Capturing health problems early helps identify common factors to inform measures to put in place to prevent further illnesses

Needs Assessment Results: Tracking methods by facility type

Tracking Method	Nursing Home	Assisted Living Facility
Log/spreadsheet	87%	38%
Electronic database	24%	16%
Does not track	0%	48%

Surveillance: Using Logs to Track Illness

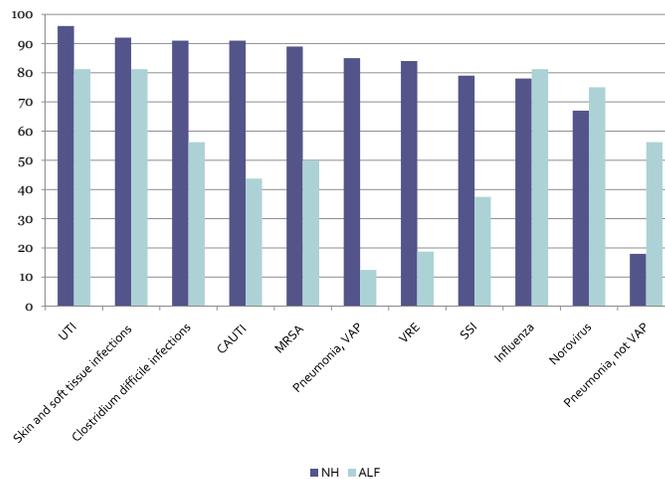
- Things to consider:
 - Prioritized illnesses/conditions to track
 - Definitions to differentiate cases from non-cases
 - Number and location of logs
 - Fill out every day and review weekly and monthly
 - Data to be collected:
 - Person
 - Important risk factors specific to the illness
 - Place
 - Time

Surveillance in ALFs and NHs



Needs Assessment Results:

Percent of facilities tracking infections by infection type and facility type



Surveillance Logs: Tracking Illness

Resident Respiratory Illness Log

Facility Name: _____ Total Residents Ill: _____

Date Log Started: _____ Total Residents (ill and well): _____

Identification Information			Onset	Signs and Symptoms							Lab Info		Outcomes		Prevent/Treat					
Name of resident with respiratory illness	Age	Sex	Room Number	Onset Date	Body aches	Chills	Cough	Fever	Headache	Sore throat	Unusual fatigue	Highest Temp. (°)	Duration of Symptoms	Lab Test?	Result	Hospitalized? If Yes, Date	Death? If Yes, Date	Date of Flu Vaccine	Antiviral Used?	
																				Yrs

Staff GI Illness Log
 Resident GI Illness Log
 Staff Respiratory Illness Log
 Resident Respiratory Illness Log
 Resident Illness Log (General)
 Monthly Infection Surveillance Log



Surveillance: Count vs. Rate

- Count:
 - Number of people (# ill, # well, total population)
- Rate
 - Accounts for differences in population size
 - How to calculate a basic illness rate:
 - Numerator - Number of ill people in the surveillance area (e.g., ill residents in your facility)
 - Denominator - Number of people "at risk" (e.g., total residents in your facility)
 - Divide the number ill (numerator) by the size of the population (denominator) and multiply by 100

Surveillance: Rate Calculation

Illness Rate=

$$\frac{\begin{array}{l} \# \text{ with the illness in the area in a time period} \\ \text{(numerator)} \end{array}}{\begin{array}{l} \# \text{ residents/staff in the area in that time period} \\ \text{(denominator)} \end{array}} \times 100$$

Surveillance: Outbreak/Cluster

- Outbreak/cluster
 - Occurs when there are more cases of a disease in a designated population than usually occur for a given period of time
 - Every disease has an expected level of activity, or a “baseline” number of cases that occur over a given time period
- Surveillance helps identify outbreaks!
 - Establish baseline and seasonal trends
 - Identify commonalities among those who are sick (types of symptoms, area of the facility where they reside, etc.)

How to Identify an Outbreak



Surveillance: Reporting Outbreaks

- All outbreaks are reportable to the local health department by the most rapid means
- Work with local health department to identify the source of the problem and prevent the spread of disease



Outbreak Sign



Infection Prevention and Control

What can you and your infection control staff do to prevent the spread of infection, including MDROs?

CDC 12 Steps to Protect our LTC Residents

The CDC advocates these 4 basic groups of actions that we should take to prevent antimicrobial resistance in long-term care:

- Prevent infection
- Diagnose and treat infection effectively
- Use antimicrobials wisely
- Prevent transmission

CDC 12 Steps



CDC 12 Steps: Prevent Infection

- Step 1. Vaccinate
 - Give influenza and pneumococcal vaccinations to residents
 - Promote vaccination among all staff
- Step 2. Prevent conditions that lead to infection
 - Prevent aspiration
 - Prevent pressure ulcers
 - Maintain hydration
- Step 3. Get the unnecessary devices out
 - Insert catheters and devices only when essential and minimize duration of exposure
 - Use proper insertion and catheter-care protocols
 - Reassess catheters regularly
 - Remove catheters and other devices when no longer essential

CDC 12 Steps: Diagnose and Treat Infection Effectively

- Step 4. Use established criteria for diagnosis of infection
 - Target empiric therapy to likely pathogens
 - Target definitive therapy to known pathogens
 - Obtain appropriate cultures and interpret results with care
 - Consider *C. difficile* in residents with diarrhea and antibiotic exposure
- Step 5. Use local resources
 - Consult infectious disease experts for complicated infections and potential outbreaks
 - Know your local and/or regional data
 - Get previous microbiology data for transfer residents

Use Antimicrobials Wisely

- “Studies conducted over the years indicate that antibiotic use is unnecessary or inappropriate in as many as **50% of cases**”
- “LTC antibiotic use patterns reveal that antibiotic prescriptions are written for an **inappropriate dose**, given for treatment of a **viral infection**, used needlessly for **asymptomatic bacteriuria**, or began in the **absence of clinical evidence** of infection.”

- Dr. Neil Fishman

CDC 12 Steps: Use Antimicrobials Wisely

- **Step 6. Know when to say “no”**
 - Minimize use of broad-spectrum antibiotics
 - Avoid chronic or long-term antimicrobial prophylaxis
 - Develop a system to monitor antibiotic use and provide feedback to appropriate personnel
- **Step 7. Treat infection, not colonization or contamination**
 - Perform proper antisepsis with culture collection
 - Re-evaluate the need for continued therapy after 48-72 hours
 - Do not treat asymptomatic bacteriuria
- **Step 8. Stop antimicrobial treatment**
 - When cultures are negative and infection is unlikely
 - When infection has resolved

CDC 12 Steps: Prevent Transmission

- **Step 9. Isolate the pathogen**
 - Use Standard Precautions
 - Contain infectious body fluids (use approved Contact and Droplet Precautions)
- **Step 10. Break the chain of contagion**
 - Follow CDC recommendations for work restrictions and stay home when sick
 - Cover your mouth when you cough or sneeze
 - Educate staff, residents, and families
 - Promote wellness in staff and residents

CDC 12 Steps: Prevent Transmission

- Step 11. Perform hand hygiene
 - Use alcohol-based hand rubs or wash your hands with soap and water
 - Encourage staff and visitors
- Step 12. Identify residents with multidrug-resistant organisms (MDROs)
 - Identify both new admissions and existing residents with MDROs
 - Follow standard recommendations for MDRO case management

It is everyone's job to provide safe, infection-free care for our residents



Thank you