



Antibiotic Use and Antibiotic Resistance for Nursing Assistants in Long-Term Care Facilities

WASHINGTON STATE DEPARTMENT OF HEALTH



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Learning Objectives

1. Define the term “antibiotic resistance”
2. Describe ways that germs become resistant to antibiotics
3. Define factors that can lead to antibiotic resistance
4. List at least 3 action steps to prevent antibiotic resistance and the spread of antibiotic-resistant germs

Education is adapted with permission from the [Minnesota Department of Health](#)

Introduction

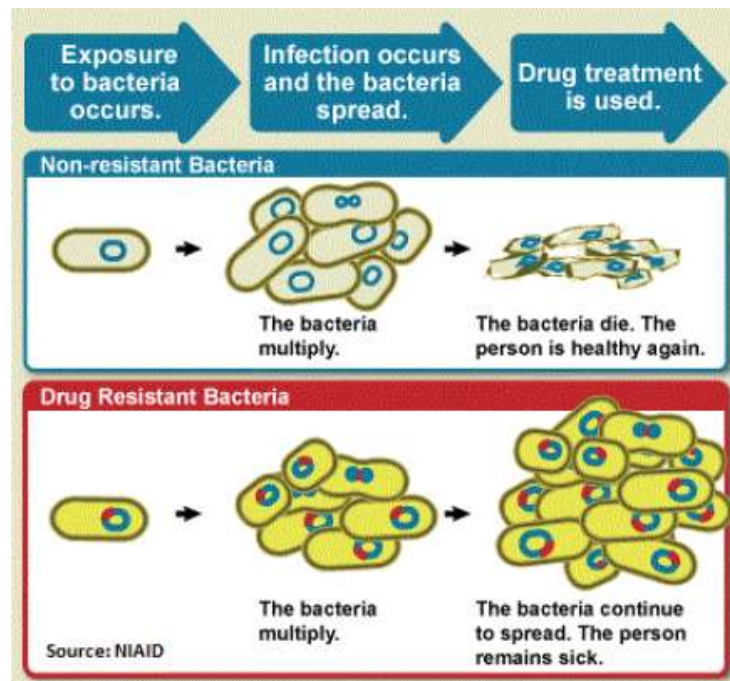
- Antibiotic resistance is one of the most important public health threats that we face today
- Infections caused by antibiotic-resistant bacteria (germs) require treatment with more toxic and expensive antibiotics
- Antibiotic use is the biggest driving factor in the development of antibiotic-resistant germs
- Antibiotic resistance is of concern in long-term care facilities (LTCF) where antibiotic use is very common



Antibiotic Resistance

Antibiotic Resistance

- What is antibiotic resistance?
 - The ability of a germ to mutate or change so that antibiotic can't kill it



How Bacteria Become Resistant to Antibiotics




- Ways that bacteria become resistant are different depending on the germ
- Two ways that bacteria become resistant:
 - Mutations: Change in genes
 - Gene transfer: new genes picked up from other bacteria
- Antibiotic use is the biggest reason that bacteria become resistant to (unable to be killed by) antibiotics

Consequences of Antibiotic Resistance

- Antibiotics are the most important tool that we have to fight life-threatening bacteria infections
- Antibiotics may kill susceptible bacteria, but resistant bacteria continue to survive and multiply
- If antibiotic-resistant bacteria cause an infection, the infection may be more serious and difficult to treat with routine antibiotics

Diagram of How Antibiotic Misuse Can Cause Antibiotic-Resistant Bacteria to Multiply

Here are the players:

-  Virus
-  Naturally Resistant Bacteria
-  Susceptible Bacteria

Taking antibiotics for a viral infection:

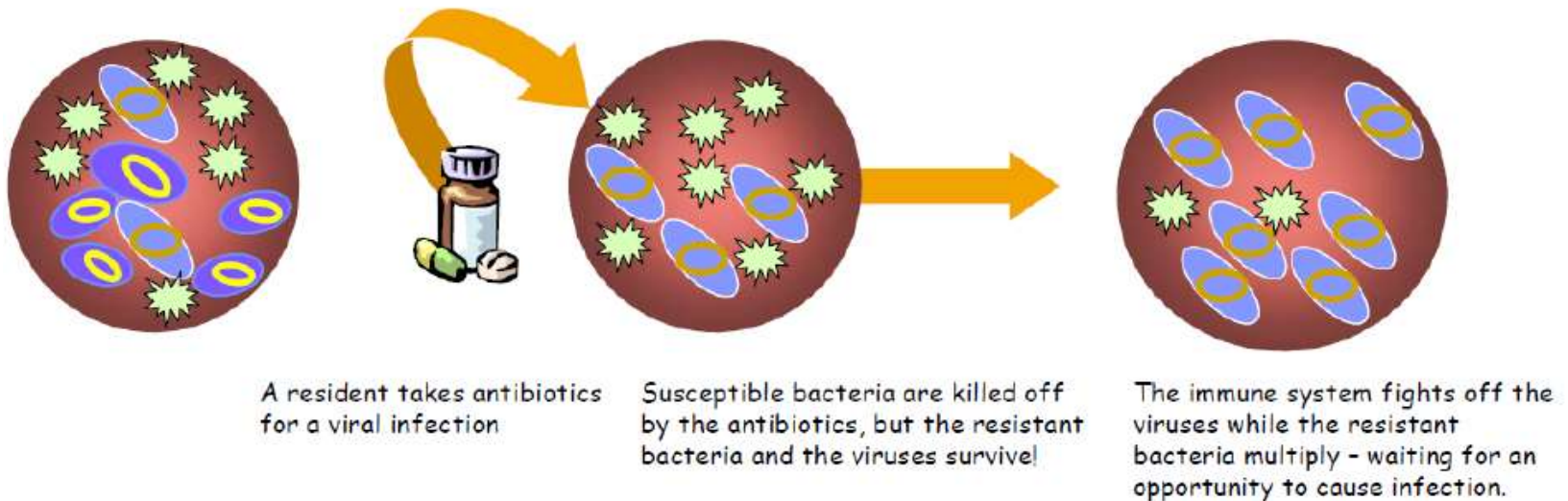



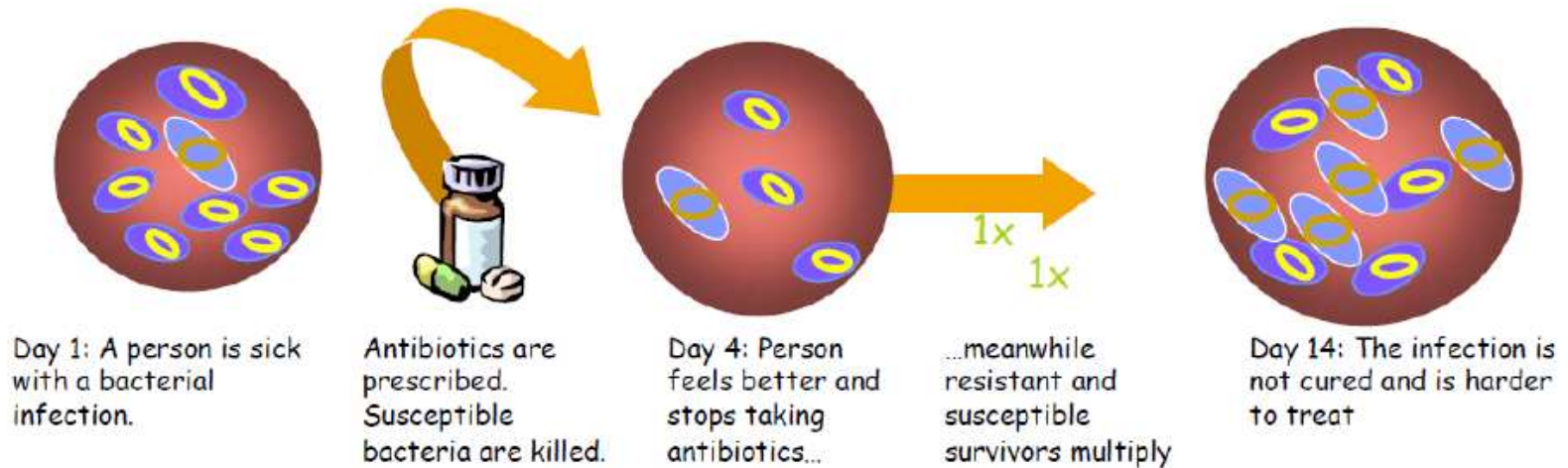


Diagram of How Antibiotic Misuse Can Cause Antibiotic-Resistant Bacteria to Multiply

Here are the players:

-  Virus
-  Naturally Resistant Bacteria
-  Susceptible Bacteria

Not finishing the full course of antibiotics can also lead to antibiotic resistance:



Examples of Antibiotic Misuse

- Taking antibiotics when not needed
 - For asymptomatic bacteriuria (bacteria in the urine without the presence of clinical symptoms)
 - For a resident with green or yellow nasal discharge – without other symptoms, this does not mean that the resident has a bacterial infection
- Not finishing an antibiotic prescription
 - Example: A person stops taking the antibiotic when he feels better instead of when his prescription is gone

Examples of Antibiotic Misuse (Cont.)

- Inappropriate prescribing
 - Prescribing antibiotics for too many days
 - Example: Prescribing a 14-day course when a 7-day course is sufficient
- Use of broad-spectrum antibiotics when a narrow-spectrum antibiotic would be effective
 - Example: Prescribing ciprofloxacin (broad-spectrum) when lab results show that penicillin (narrow-spectrum) can be used

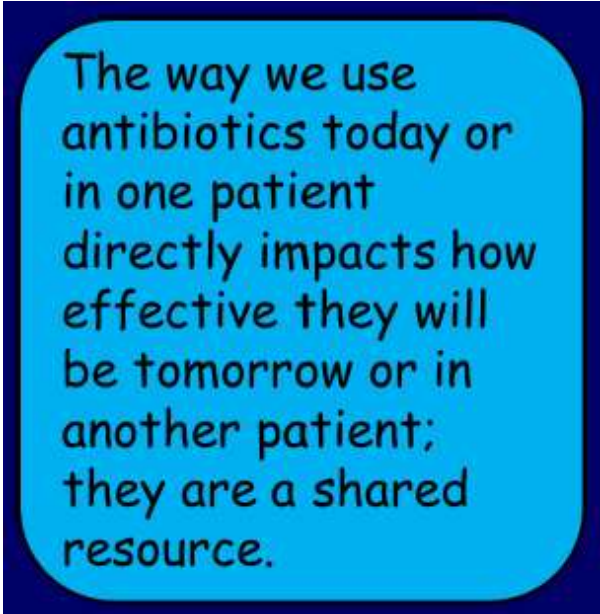
Examples of Antibiotic Misuse (Cont.)

- Antibiotics do not work against viral infections!
- Antibiotics will not:
 - Cure viral infections
 - Stop the spread of viruses
 - Improve symptoms of viral infections



Consequences of Antibiotic Misuse

- Taking antibiotics when not clinically needed can result in:
 - Drug-drug interactions
 - Medication side effects
 - Increased health costs
- Antibiotic misuse can lead to resistant bacteria
- When antibiotics are misused, they will not be able to fight infections that they were meant to treat



The way we use antibiotics today or in one patient directly impacts how effective they will be tomorrow or in another patient; they are a shared resource.

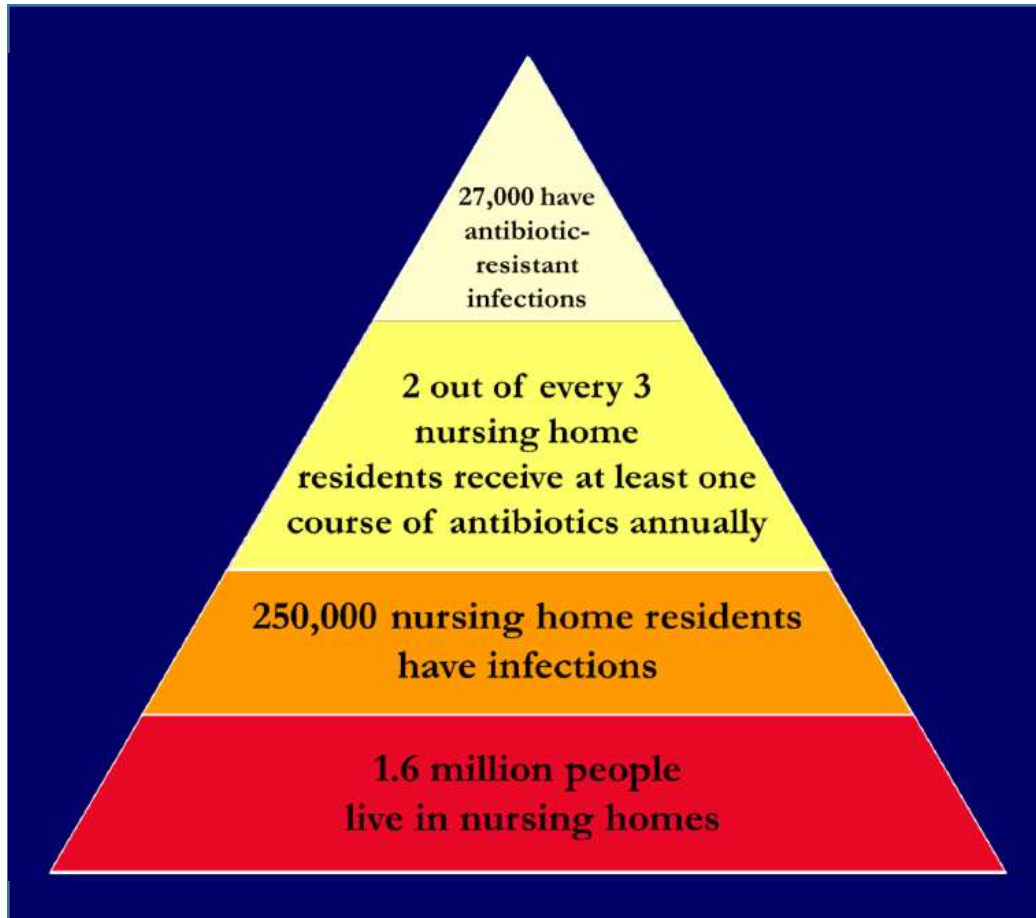
Antibiotic Use in LTCF

- 40% of all prescriptions written in LTCF are antibiotics
- Up to 70% of LTCF residents receive at least one systemic antibiotic every year
 - 25-75% are not needed
- Infections are common among LTCF residents
- LTCF residents are at higher risk of infection



Infections in Long-term Care

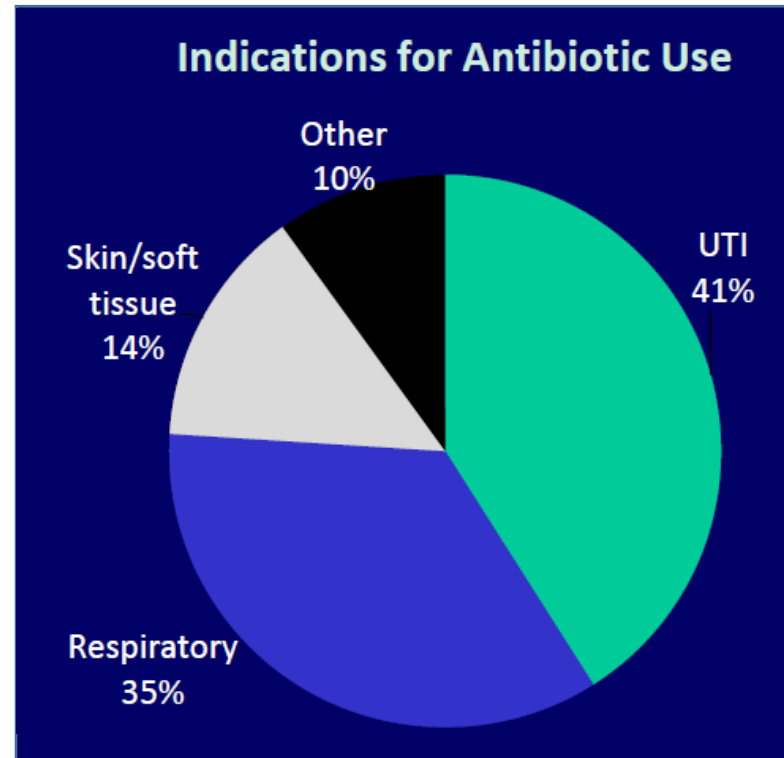
Burden of Infections in Long-Term Care



Centers for Medicare & Medicaid Services, Long Term Care MDS, Resident profile table as of 5/2/2005. (www.cdc.gov)

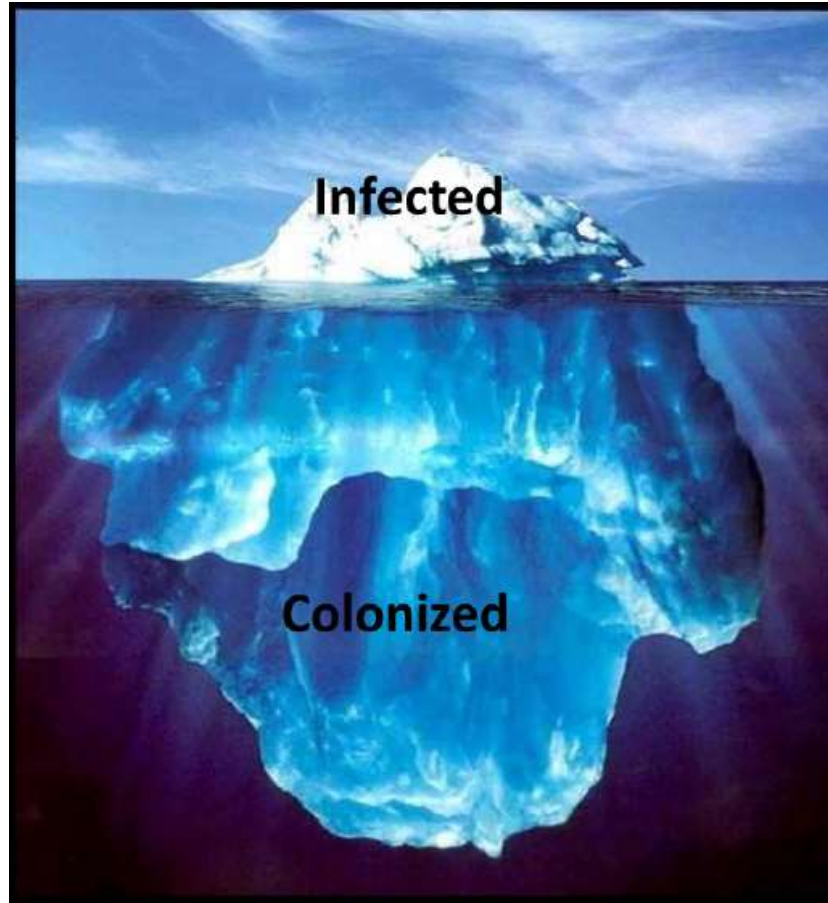
Common Infections in LTCF Residents

- Urinary tract infections
- Respiratory infections
- Skin and soft tissue infections
- Gastroenteritis



Katz et. Al. Arch Int Med 1990

The Iceberg Effect



Colonization versus Infection

- Colonization (“carrier”)
 - Presence of bacteria (such as in urine or on skin) without signs or symptoms of illness
- Infection
 - Presence of disease-causing bacteria that results in symptoms of infection

Bacteria can be transmitted if the person is colonized OR infected.

Increased Infection Risk in LTCF Residents



Facility Factors

- Close contact with other individuals
- Transfers to and from hospitals
- Staffing issues
- Inadequate hand hygiene
- Low flu vaccination rates in staff



Resident Factors

- Older age
- Decreased immune function
- Functional impairment
- Use of invasive devices
- Chronic and degenerative diseases



Prevent Antibiotic-Resistant Infections in Long-Term Care

Steps to Prevent the Spread of Antibiotic-Resistant Bacteria in LTCF

- Practice excellent hand-hygiene – clean your hands every time you provide care for a resident
- Follow recommended infection prevention and control practices
- Use antibiotics wisely
- Stay home from work when you're sick
- Get a flu shot every year
- Cover your cough or sneeze with a tissue or use your sleeve (near the shoulder or elbow)

Steps to Reduce the Risk of Infection Among LTCF Residents

- Use your familiarity with the resident's usual condition to accurately recognize a change in condition and notify the resident's nurse
- Limit the use of invasive devices like urinary catheters
- Limit the contact of healthy residents to infected residents by cohorting (grouping or rooming residents with the same illness or infection together)
- Use excellent infection control practices – especially hand hygiene
- Always use Standard Precautions – gowns, gloves, masks, etc. as needed according to symptoms (coughing, incontinence) and the care given (change a dressing or perform tracheostomy care)

Effective Diagnosis and Treatment

- Obtain microbiology cultures whenever possible to guide appropriate antibiotic use
 - Collect specimens *prior to* initiating antibiotic therapy
- Do not request antibiotics for:
 - Viral infections
 - Asymptomatic bacteriuria
 - Change in condition not likely due to bacterial infection (such as falls, confusion)



Source: CDC

Antimicrobial Stewardship

- Antimicrobial stewardship prevents misuse, enabling the benefits of antibiotics to outweigh the risks
- Ingredients for successful stewardship include:
 - Education for healthcare providers
 - Accurate observation of resident changes in condition
 - Accurate, timely communication and documentation of resident changes in condition
 - Participation of all care providers within the LTCF

Principles of Antibiotic Stewardship

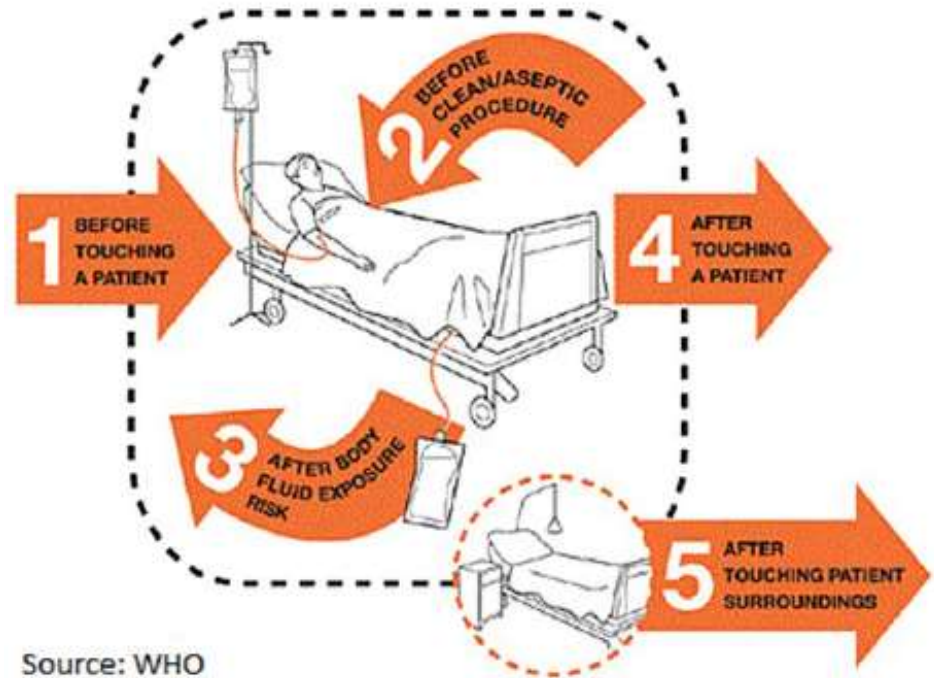
- Use antibiotics only when they are prescribed
- Assist residents in managing symptoms of non-bacterial infections
- Use evidence-based guidelines to guide decisions about antibiotic therapy



Prevent Transmission
of Infections

Prevent Transmission of Infections

- Stopping the spread of germs from one person to another is a critical way to control antibiotic resistance
- The World Health Organization (WHO) has promoted the “**My 5 Moments for Hand Hygiene**” approach



Prevent Transmission of Infections (Cont.)

- Standard Precautions – use for all residents, all of the time
 - Hand hygiene
 - Gloves when you expect to have contact with blood, body fluids, secretions, excretions, and contaminated items
 - Gown to protect clothing against contact with resident blood, body fluids, secretions, excretions, or contaminated items
 - Mask and eye protection (goggles) if spraying or splashing is anticipated

Prevent Transmission of Infections (Cont.)

- Contact Precautions – use for any resident that:
 - Has a wound or skin lesion that cannot be covered fully or has drainage that cannot be completely contained by dressings
 - Is incontinent of urine and/or stool that cannot be contained by incontinence products
 - Has a tracheostomy with secretions that cannot be contained
 - Has been epidemiologically linked to infections caused by antibiotic-resistant organisms in other residents
- Cohorting – if private rooms are not available, room residents known to be colonized or infected with the same organism together

Prevent Transmission of Infections: Contact Precautions (Cont.)

- Gloves upon room entry, especially when providing direct care to residents and when handling potentially contaminated items
- Gowns upon room entry and especially:
 - When providing direct care to residents with antibiotic-resistant or other disease-causing germs (such as performing ADLs) or if having contact with blood, body fluids, secretions, or excretions (such as linen changes, incontinence care)

More Information

[Nursing Home Resources | Washington State Department of Health](#)



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