

Infection Control: Your Role in Stopping Disease Transmission

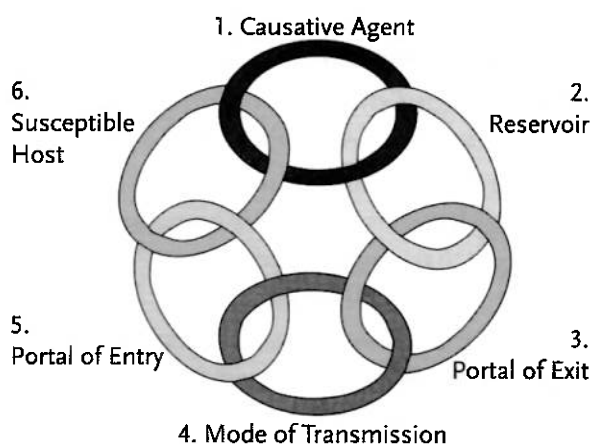
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After completing this section you should be able to:

1. Name the six links in the chain of infection and describe your role in stopping disease transmission
 2. Explain Standard and Transmission-Based Precautions
 3. Explain the term “hand hygiene” and identify when to wash hands
 4. Discuss the use of personal protective equipment (PPE)
 5. List guidelines for handling equipment and linen
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1. Name the six links in the chain of infection and describe your role in stopping disease transmission

Infections occur when harmful microorganisms, called pathogens, enter the body and cause illness or disease. To understand how to prevent disease you must first understand how it is spread. The chain of infection describes how disease is transmitted from one living being to another:



Link 1: The **causative agent** is a pathogen or microorganism that causes disease; it includes bacteria, viruses, fungi, protozoa

Link 2: The **reservoir** is a place in the body where the pathogen lives and grows; it includes the lungs, blood, and large intestine.

Link 3: The **portal of exit** is any body opening on an infected person that allows pathogens to leave; it includes the nose, mouth, eyes, other mucous membranes, or a cut in skin.

Link 4: The **mode of transmission** is how the pathogen travels from one person to the next; this includes through the air, getting on hands (direct contact) or other surfaces, such as a tissue or clothes (indirect contact).

Link 5: The **portal of entry** is any body opening on an uninfected person that allows pathogens to enter; it includes the nose, mouth, eyes, other mucous membranes, cut in skin, or dry/cracked skin.

Link 6: A **susceptible host** is an uninfected person who could get sick; this refers to you, your co-workers, and anyone in your care who is not already infected with that disease.

If one of the links in the chain of infection is broken, then the spread of infection is stopped. By using infection control practices, such as washing your hands, you will be able to help stop the pathogens from traveling (Link 4), and getting on your hands, nose, eyes, mouth, skin, etc. (Link 5). Following infection control practices can also reduce your chances of getting sick, also called susceptibility. It is also wise to take advantage of immunizations (Link 6) for diseases such as Hepatitis B and influenza.

2. Explain Standard and Transmission-Based Precautions

In 1996, the Centers for Disease Control (CDC) recommended a new infection control system for reducing the risk of contracting infectious diseases in the health-care field. This infection control system eliminated several older methods of infection control. There are two tiers of precautions in this system—**Standard Precautions** and **Transmission-Based, or Isolation, Precautions**. In 2004, the CDC proposed some changes to this system.

Standard Precautions and Transmission-Based Precautions provide a way to stop the spread of infection by disrupting the mode of transmission. In other words, these guidelines do not stop an infected person from giving off pathogens (germs), but by following these guidelines you can help prevent those pathogens from infecting you or other persons in your care.

Standard Precautions is a system of infection control which is designed to prevent the transmission of diseases that can

be transmitted through all body fluids and body substances, with the exception of sweat, such as Human Immunodeficiency Virus (HIV), Hepatitis-B (HBV), Hepatitis-C (HCV), and other bloodborne pathogens. Standard Precautions should ALWAYS be practiced on every single person in your care.

The body substances covered under Standard Precautions are blood and blood products, all body fluids, secretions, excretions (regardless of whether or not they contain visible blood), except sweat, non-intact skin (including acne and open sores), and mucous membranes (the membranes that line body cavities such as the mouth or nose).

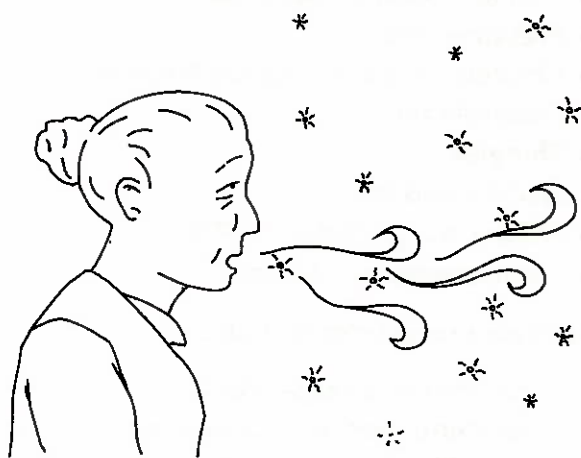
Standard Precautions are used on all residents/clients regardless of their infection status. *These precautions are followed because you cannot tell if a person has a bloodborne disease by looking at him or her or even by reading his or her chart.* When used properly, Standard Precautions reduce the risk of bloodborne pathogen transmission and the risk of disease transmission from body substances.

Transmission-Based Precautions deal with infectious diseases that require special precautions IN ADDITION to the Standard Precautions. In the 2004 proposed guidelines, the CDC suggests that the term “Expanded Precautions” be used instead of “Transmission-Based Precautions.” Transmission-Based Precautions should be used for residents/clients infected or suspected of being infected with a highly transmittable and harmful pathogen for which additional precautions beyond Standard Precautions are required.

Three types of Transmission-Based Precautions are:

- Airborne Precautions
- Droplet Precautions
- Contact Precautions

Airborne Precautions are used when caring for residents/clients with an airborne disease. These diseases are small enough to slip through the pores of regular surgical masks; therefore, special precautions must be taken to isolate an infected person and prevent anyone else from contracting an airborne disease, including you. Airborne Precautions reduce, but do not eliminate, the risk of airborne transmission of infectious agents.



Examples of airborne diseases:

- Tuberculosis (TB)
- Measles
- Chicken pox (may also require Contact Precautions)

Airborne Precautions include:

1. Place the resident/client in a private room if possible. If not possible, place with another person who has the same infection and no other infections.

2. Put the resident/client in a negative air pressure room. Negative air pressure means air flows into the room from the outside. Air inside is changed a minimum of six times per hour and is also eliminated to the outside. Remember to open the door to this type of room slowly to keep contaminated air from flowing back into the building.
3. Keep door to room closed.
4. Wear a respirator when entering the room (HEPA or N95 mask).
5. Do not enter the room of persons suspected or known to have measles or chicken pox if you have not had these diseases.
6. If you must take an infected person outside the room, have him or her wear a surgical mask (not a respirator, as respirators only filter inhaled air, not exhaled air).

Droplet Precautions are used when caring for residents/clients with a disease whose microbes are expelled from the lungs in drops that fall to the floor, usually within three feet of the infected person. Droplets are generated through coughing, sneezing, talking, laughing, singing, and during the performance of certain procedures such as suctioning and bronchoscopy. Special precautions must be taken to isolate an infected person and prevent anyone else from contracting a droplet disease, including you. Droplet Precautions reduce, but do not eliminate, the risk of droplet transmission of infectious agents.

Examples of droplet diseases:

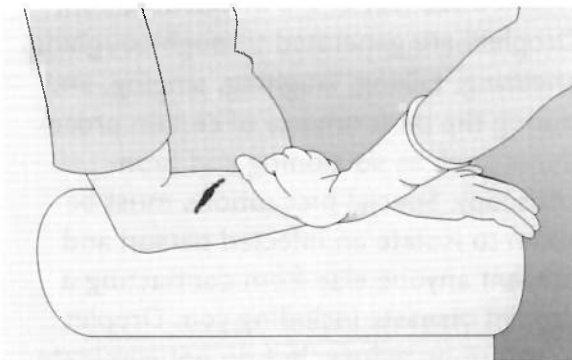
- Influenza

- Pneumonia
- Mumps
- Common cold
- Bronchitis

Droplet Precautions include:

1. Place resident/client in a private room if possible. If not possible, place with another person who has the same infection and no other infections.
2. Maintain a distance of at least three feet between the beds.
3. Wear a surgical mask when working within three feet of the infected person.
4. If you must take the infected person outside the room, have him or her wear a surgical mask.

Contact Precautions are used when caring for a residents/clients with a contact disease. This type of disease contains microbes that are spread through direct or indirect contact. Direct contact involves touching an infected person (turning a person, bathing, providing other personal care).



Indirect contact involves touching an object that has been contaminated, for example, while caring for equipment or having contaminated hands or gloves, and

thereby transmitting the disease to oneself or another person. Transmission may also occur during transfers or bathing. Special precautions must be taken to isolate an infected person and prevent anyone else from contracting a contact disease, including you. Contact Precautions reduce, but do not eliminate, the risk of contact transmission of infectious agents. Most contact diseases are spread through indirect contact.

Examples of contact diseases:

- MRSA (methicillin-resistant *Staphylococcus aureus*)
- VRE (vancomycin-resistant enterococcus)
- Skin and wound infections
- Pressure sores
- Chicken pox (also requires Airborne Precautions)
- Shingles
- Scabies and lice
- Urinary tract infection (UTI)
- Conjunctivitis (pink eye)

Contact Precautions include:

1. Isolate the disease. Place resident/client in a private room, if possible. If not possible, place with another person who has the same infection and no other infections.
2. Transport the person for essential purposes only. This is important in restricting the spread of diseases because it is difficult to keep up with everyone and everything that a person comes into contact with when outside of his/her room.
3. Wash your hands often. Use an antimicrobial soap if available. (In home care, this should be provided by

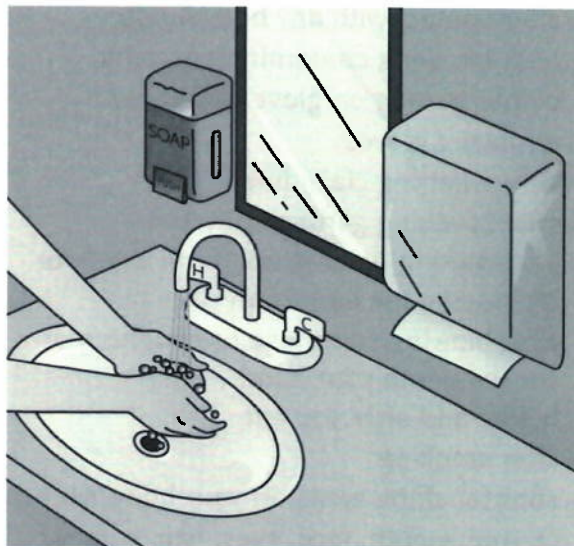
your agency—other precautions do not require antimicrobial soap.) Make sure ungloved hands do not touch potentially contaminated environmental surfaces or items in the room.

4. Wear gloves if contact with infectious material is anticipated. Remove gloves before leaving the person's room and wash your hands. Change gloves after having contact with infectious material. Be certain gloved hands do not contaminate objects that ungloved hands will touch, like the doorknob to the room.
5. Wear gowns if contact is anticipated. Wear gowns, aprons, or bibs if you think that your clothing will have contact with infectious material. Wear gloves especially if the person is incontinent, has diarrhea, an ileostomy, colostomy, or wound drainage not contained by a dressing. Remove gowns before leaving the person's room. Be certain your clothing does not touch a potentially contaminated environmental surface or item in the person's room. Never turn your back to a contaminated area, as you may accidentally contaminate the back of your gown. Step back three feet, then turn around and move away.
6. Avoid sharing non-critical patient care items between infected persons. If unavoidable, then clean and disinfect after each use.

3. Explain the term "hand hygiene" and identify when to wash hands

In your work you will use your hands constantly. Microorganisms are on everything you touch. Washing your hands is the sin-

gle most important thing you can do to prevent the spread of disease.



The CDC (The Centers for Disease Control and Prevention) has defined hand hygiene as handwashing with either plain or antiseptic soap and water and using alcohol-based hand rubs. Alcohol-based hand rubs include gels, rinses, and foams. They do not require the use of water.

Alcohol-based hand rubs have proven effective in reducing bacteria on the skin. However, they are not a substitute for proper handwashing. Always use soap and water for visibly soiled hands. It is important to wash your hands often. Once they are clean, alcohol-based products can be used in addition to handwashing.

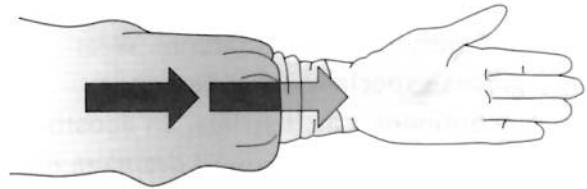
If you wear rings, consider removing them while working. Rings may increase the risk of contamination. Keep fingernails short and clean. Do not wear false nails. False nails increase the risk of contamination.

You should wash your hands:

- when you get to work
- before and after touching meal trays and/or handling food

- before and after feeding residents/clients
- before, between, and after all contact with residents/clients
- after contact with any body fluids
- after handling contaminated items
- before putting on gloves and after removing gloves
- before getting clean linen
- after touching garbage or trash
- after picking up anything from the floor
- after using the bathroom
- after blowing your nose or coughing or sneezing into your hand
- before and after you eat
- after smoking
- after touching areas on your body, such as your mouth, face, eyes, hair, ears, or nose
- before and after applying makeup
- before leaving the facility or client's home
- doing or helping with perineal care (care of the genitals and anal area)
- performing personal care on a resident or client whose skin is broken by abrasions, cuts, rash, acne, pimples, or boils
- helping with personal care when you have open sores or cuts on your hands
- shaving a resident/client
- disposing of soiled bed linens, gowns, dressings, and pads

Clean, non-sterile gloves are adequate. They may be vinyl or latex. Always let your supervisor know if you have dry, cracked, or otherwise non-intact skin. Disposable gloves are worn only once. They may not be washed or disinfected for reuse.



4. Discuss the use of personal protective equipment (PPE)

Personal protective equipment (PPE) is a barrier (a block or obstacle) between a person and disease. PPE helps protect you from potentially infectious material. Your employer is responsible for giving you the appropriate PPE to wear. PPE includes gloves, gowns, masks, goggles, and face shields.

You must wear gloves when there is a chance of contact with body fluids, open wounds, or mucous membranes. Always wear gloves for these tasks:

- any time you might touch blood or any body fluid, including vomitus, urine, feces, or saliva
- doing or helping with mouth care or care of any mucous membrane

Change gloves right before contact with mucous membranes or broken skin, or if gloves are soiled, torn, or damaged. Wash your hands before putting on fresh gloves.

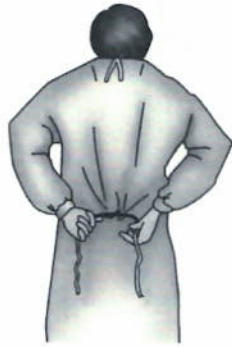
Remove gloves promptly after use and before caring for another resident or client. Wash your hands. Remove your gloves before touching noncontaminated items or surfaces.

Remember to wash hands before and after wearing gloves!

The guidelines for wearing other PPE are the same as for gloves. Wear PPE if there is a chance of contact with body fluids, mucous



membranes, or open wounds. Gowns, masks, goggles, and face shields are worn when splashing or spraying of body fluids or blood could occur.



Clean, non-sterile gowns protect your exposed skin. They also prevent soiling of your clothing. Gowns should fully cover your torso. They should fit comfortably over your body, and have long sleeves that fit snugly at the wrist. When finished with a procedure, remove the gown as soon as possible. Wash your hands.

Masks should also be worn when caring for residents and clients with respiratory illnesses. Masks should fully cover your nose and mouth and prevent fluid penetration. Masks should fit snugly over the nose and mouth. Always change your mask between residents/clients. Goggles provide protection for your eyes. Eyeglasses alone do not provide proper eye protection. Goggles should fit snugly over and around your eyes or eyeglasses.

When additional skin protection is needed, a face shield can be used as a substitute to wearing a mask or goggles. Follow your facility's or agency's policies. The face shield should cover your forehead and go below the chin. It wraps around the sides of your face.

5. List guidelines for handling equipment and linen

Handle all equipment in a manner that prevents

- skin/mucous membrane contact

- contamination of your clothing with the equipment
- transfer of disease to other residents, clients, or areas from the equipment

Do not use "re-usable" equipment again until it has been properly cleaned and reprocessed. Dispose of all "single-use" equipment properly.



Clean and disinfect:

- all environmental surfaces
- beds, bedrails, bedside equipment
- all frequently touched surfaces (such as doorknobs)

Handle, transport, and process soiled linens in a manner that prevents:

- skin and mucous membrane exposure
- contamination of clothing (hold linen and clothing away from uniform)
- transfer of disease to other resident/clients and areas (hold linen and clothing away from uniform)

