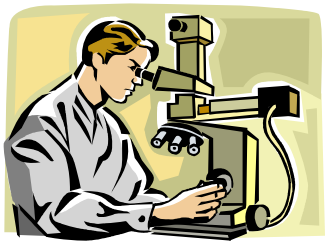
Infection Control

Lesson Plan

To use this lesson for self-study, the learner should read the material, do the activity, and take the test. For group study, the leader may give each participant a copy of the Learner's Guide and follow this plan to conduct the lesson. Copy certificates for everyone who completes the lesson and passes the test. ***Approximate time: One hour.***



Objectives

At the conclusion of this lesson, participants will be able to:

1. Explain how diseases move from one person to another.
2. Discuss the four disease transmission categories.
3. Describe Standard Precautions and how and when to use them.
4. Describe Additional Precautions and how and when to use them.
5. Use precautions that will help protect both workers and clients from disease.

Preparation

1. Have construction paper, scissors, markers, and tape available. Make copies of the Learner's Guide.
2. Have soap, water, and toweling handy for the handwashing demonstration.
3. Have masks, gloves, gowns, goggles, and other personal protective equipment available.

Activity

Ask participants to make a paper chain with six links. They should write one of these words on each link and tape them together in this order: Germ, Reservoir, Exit, Transportation, Entry, and Person. Tell participants that they have made a Chain of Infection, and that each link represents one of the elements of disease transmission. Explain that today they are going to learn how to break the links in the chain. By breaking the links in the chain, they can stop disease transmission and prevent diseases from spreading to others, including themselves.

Lesson

1. Give a copy of the Learner's Guide to each participant.
2. Read and discuss the information about "How People Get Sick," "How People Pass Sickness to Others," and "Breaking the Chain of Infection." As you discuss how to break each piece of the chain of infection, have participants find and break each link in the chains they made. Point out that the disease cannot infect someone else when any of the links are broken.
3. Discuss the section on "Disease Transmission." Have participants complete the 4 questions. Check their answers: **1. C., 2. A., 3. D., 4. B**
4. Lecture on Standard and Additional Precautions, using the material in the Learner's Guide.
5. Using the handwashing instructions, demonstrate proper handwashing, giving time for participants to practice. Observe learners to be sure they know how to wash their hands correctly.
6. Go over each piece of personal protective equipment (PPE) with participants. Ensure that everyone knows how and when to use the PPE.
7. Post the handwashing instructions where workers can see and be reminded how to do this properly.

Evaluation

Ask participants to complete the test and grade their work. Distribute certificates to those who complete the test with at least 16 correct answers (75%).

Test Answers: 1.f, d, a, b, e, c (worth 6 pts.); 2.c; 3.b; 4.a.; 5.d; 6.d; 7.F; 8. airborne, bloodborne, contact, droplet (worth 4 pts.); 9. wash hands; wear gloves; wear gown, mask, goggles if will get splashed; dispose of sharps properly (worth 4 pts.); 10.F.; 11.T.

Infection Control

Learner's Guide

Our bodies are constantly at war with the tiny disease-causing organisms that live all around us. These germs are trying to get inside us to live and grow and make us sick, and our bodies are trying to keep them out. A communicable disease is any illness that can be spread by contact with infected persons or objects they have handled.

How People Get Sick

A person gets sick when the body is invaded by a harmful germ that it cannot destroy or fight off. Disease needs 3 things:

1. **An infectious agent**. These are called germs, pathogens, viruses, disease-causing bacteria, or harmful microorganisms. An infectious agent must enter a person through an opening in the body for disease to occur.

2. **A susceptible host**. This refers to a person who is invaded by a harmful germ and gets sick as a result. This person is the host for the germ; being "susceptible" means the individual's body is in a condition that will allow germs to enter and cause illness.

   People are more prone to infection if they are tired, weak, very young, very old, poorly nourished, or if they have other diseases or bad habits such as smoking or drinking too much alcohol. Some germs are so strong that no one, no matter how strong or healthy, can fight them off once they enter the body.

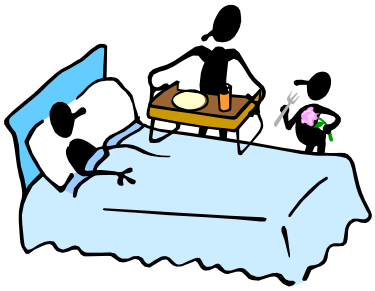
3. **A portal of entry**. This is a way for the germ to get inside the susceptible host. Germs can get in to a person's body through any opening. The nose, mouth, eyes, ears, urethra, vagina, and rectum are the normal openings in the body. Each of these openings has a barrier that helps keep germs out, but sometimes these barriers are not enough.

   The nose, for example, has tiny hairs that trap many germs and keep them out of the body. Some germs can still get past these hairs and enter the sinuses or lungs. The skin is an excellent barrier to germs, but if the skin is broken or damaged, germs can enter the body through the opening in the broken skin.

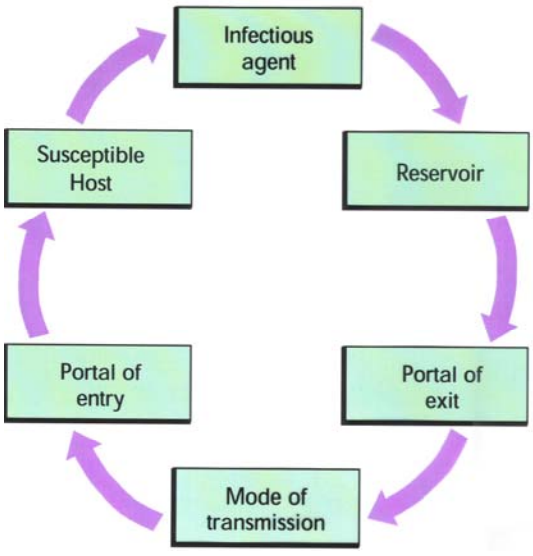
How People Pass Sickness to Others: The Chain of Infection

Communicable diseases are also called infectious diseases. Both terms mean that this type of illness can be transmitted, or given, to another person. We say that the disease has been *communicated* to someone else, or that someone else has become infected as a result of contact with a sick person.

For a disease to be given to another person, 6 things are required:



1. **A reservoir**. This is any place where germs live. People are often reservoirs for disease-causing bacteria. A sick person is a reservoir for the germ that caused his or her illness. Germs can live for different periods of time on equipment or objects, in water or food, and on surfaces.
2. **A portal of exit**. This is a way for the infectious agent to leave the reservoir and go somewhere else. The same openings in the body that serve as portals of entry also serve as portals of exit. For example, when a sick person sneezes or coughs, germs that live in the sick person leave the body through the openings of the mouth and nose. Harmful bacteria in the bowels pass out of the body through another opening, the rectum.
3. **A mode of transmission**. This is a way for the germ to get from one place or person to the other. Once an infectious agent leaves the body of a sick person, or whatever reservoir it is living in, it must have a means for traveling to a susceptible host or another reservoir. Germs can be carried on hands or objects from one person or place to another, they can fly through the air, and they can catch a ride in food or fluid. The main means of transportation are contact, airborne, and droplet transmission.



The next three things apply to the person who gets the disease. The harmful germ (infectious agent) travels from a reservoir, through a portal of exit, by some mode of transmission, to a susceptible host, where it gets in through a portal of entry. These components of the ***Chain of Infection*** were explained in the section on how people get sick:

4. **A susceptible host.**
5. **A portal of entry.**
6. **An infectious agent.**

Breaking the Chain of Infection: How to Stop the Transmission of Disease

Caregivers can stop the transmission of communicable diseases by breaking any of the links in the chain of infection. Break the chain by doing the following:

Portal of entry—by taking good care of ours and our clients' skin, we can help keep infectious agents out. Good hygiene is important to prevent the entry of bacteria.

Means of transmission—Hand washing, wearing gloves, and following proper food handling methods are all good ways to break the transmission link. By eliminating the methods of travel, we prevent infectious agents from being transported to others.

Portal of exit—Hand washing, proper handling of body wastes, and proper waste disposal are ways we can stop infectious agents at the point where the germs leave a body or reservoir and go in search of another one.

Reservoirs—by cleaning equipment and surfaces with disinfectants, by keeping ours and our clients' surroundings and belongings clean, and by following careful hygiene practices we can eliminate the reservoirs germs live in.

Infectious agent—by recognizing signs and symptoms of disease and reporting problems, we can help physicians destroy the germs with the right medications.

Susceptible host—by taking good care of ourselves and our clients through such measures as proper nutrition, sufficient rest, and choosing not to smoke we can promote healthy bodies that are more resistant to disease and infection.

Properly washing your hands greatly reduces the risk of getting an infection and spreading an infectious disease. Always wash your hands between clients. Wash your hands carefully after using the toilet or handling urine, saliva, blood or any other body fluids. After applying or removing a bandage you need to wash your hands well. After shaking hands, handling tissues, coughing, or sneezing, wash your hands thoroughly. Of course, you always want to wash right before eating, preparing food, or handling food. Proper hand washing will protect you and others from communicable diseases.

<u>To wash your hands</u>:

Wet your hands under warm running water. Using soap, rub your hands together until the soap lathers. Wash your hands briskly while you count slowly to 15 or 20. Rub between the fingers and along the nail beds. Use a circular motion to wash the palms, the back of the hands, and the wrists. Clean underneath each fingernail. Rinse under running water. Use a paper towel to turn off the faucet. Discard the towel in the trashcan. Dry your hands with a clean towel. Use a paper towel to open the bathroom door, and then discard the towel.

Disease Transmission

Diseases move from one person to another by four basic methods.

A Airborne Transmission

Airborne germs can travel long distances through the air. People breathe them in when they take a breath of air containing the germ. Tuberculosis and chickenpox are examples of diseases caused by airborne germs.

B Bloodborne Transmission

When the blood of an infected person contacts the bloodstream of another person, germs from the infected person get into the other person's bloodstream. Bloodborne germs are sometimes present in other body fluids besides blood, such as urine, feces, saliva, and vomit. Bloodborne germs cause hepatitis and AIDS.

C Contact Transmission

Some germs spread by touch. Touching an infected person might cause *direct* contact with the germ. Touching an object *handled by* an infected person might cause *indirect* contact with the infection. Contact germs cause pinkeye, scabies, wound infections, and MRSA.

D Droplet Transmission

Some germs travel in tiny drops of liquid. These droplets can travel only short distances through the air, usually not more than 3 feet. Sneezing, coughing, and talking can spread these germs. Examples of diseases caused by droplet germs are flu and pneumonia.

What kinds of germs are spreading in the following cases? Match the activity with the type of transmission by writing "A", "B", "C", or "D."

1. Changing the bed linens of a client with a rash, without wearing gloves: _____
2. Keeping a fan blowing and the door open when a client has shingles: _____
3. A client who has a cold sneezes on others sitting at her table: _____
4. Wiping urine off the floor without gloves: _____

Standard Precautions
Against Bloodborne Diseases

Hundreds of different tiny, invisible organisms live in blood and other body fluids that can cause disease in humans. These are *bloodborne pathogens*.

Some bloodborne pathogens are harmless and easily handled by the body's immune system. Others can cause severe illness, such as hepatitis or AIDS.

Standard precautions are a set of behaviors that prevent transmission of hepatitis and AIDS. Observe standard precautions whenever where there is ***potential*** for contact with blood or other potentially infectious body fluids.

Standard precautions apply to these fluids:

- Blood
- Semen
- Vaginal secretions
- Saliva
- Spinal fluid
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Pericardial fluid
- Amniotic fluid
- Feces
- Nasal secretions
- Sputum
- Sweat
- Tears
- Urine
- Vomitus

Treat all human blood and body fluids as if they are infectious.
Remember whom you are protecting—**YOURSELF!**

Standard precautions are *basic* infection control guidelines. Use them at all times while working. They protect us from diseases spread by bloodborne transmission. Standard precautions include these four items:

1. **Handwashing**
2. **Gloves**
3. **Protective Barriers**
4. **Proper Disposal of Sharp Items**

Know and Use Standard Precautions at All Times

Standard Precaution #1: Handwashing

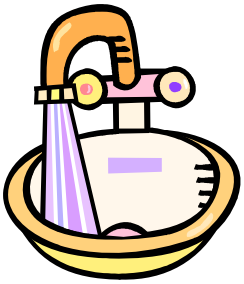
Handwashing is the single most important thing you can do to prevent the spread of infection. Thorough handwashing removes pathogens from the skin.

Wash hands before and after all client or body fluid contact. Immediately wash hands and other skin surfaces contaminated with blood or body fluids. When wearing gloves, wash hands immediately after removing the gloves.

Use germicidal or disinfectant hand gels or foams, such as alcohol gel, ***whenever you cannot wash your hands thoroughly***. **Think "Foam In, Foam Out."** When you enter a room, rub alcohol-based foam on your hands. Do this again when you leave a room.

Proper Handwashing Procedure

1. Remove watch or push it up your arm. You should not wear rings or bracelets at work.
2. Do not touch the sink with your hands while you are washing, and stand back from the sink to keep it from touching your clothes.
3. Use warm water. Hot water may dry skin.

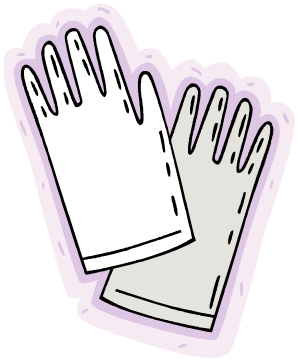


4. Either bar soap or liquid soap is OK. If using a bar, rinse it first and hold it the whole time you are lathering. Soap does not have to be an antiseptic type, unless you are doing an invasive procedure such as catheterization.
5. Wet your wrists and hands.
6. Apply plenty of soap. Work up a thick lather all over your hands and wrists, between your fingers and thumbs, and on the back of your hands and wrists.
7. Vigorously rub all areas of your hands, fingers, and wrists for **a minimum of 10-15 seconds:** 60 seconds is better.
8. Clean under your nails by using the nails on your other hand, or rub your nails into the palm of your other hand. Clean around the top of your nails.
9. Rinse with warm water, letting water run down from wrists to fingertips and into the sink.
10. Dry with a clean paper towel and throw it away.
11. Turn off the faucet with a clean, dry paper towel and throw the towel away.
12. Use lotion on your hands to prevent irritation and chapping, which makes skin prone to infection.

Remember these three rules when washing hands:

1. Use friction (rub hands together).
2. Wash for 10-15 seconds. Sing the song "Happy Birthday to You," which takes 10 seconds to sing, while washing. Even better, sing it twice.
3. Use soap and water.

Standard Precaution #2: Gloves



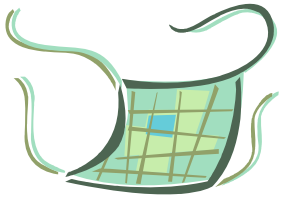
1. Use gloves in all situations where you might touch blood or body fluids.
2. Use gloves for contact with mucous membranes, such as brushing clients' teeth.
3. Change gloves and wash hands between tasks and client contacts. Dirty gloves spread germs, just like dirty hands.
4. Use gloves when you have scrapes, scratches, or chapped skin.
5. Do not wash or disinfect disposable gloves for reuse.

Standard Precaution #3: Protective Barriers

Protective barriers, including gloves, reduce the risk of exposure to potentially infective blood and body fluids. Wear appropriate barriers for the work.

Employers must provide suitable *personal protective equipment* (PPE) in the right sizes. Protective equipment includes gloves, gowns, masks, eye protection, face shields, mouthpieces, resuscitation devices, and other things. Hypoallergenic gloves, glove liners, powderless gloves, or other alternatives must be available for those who are allergic to regular gloves.

The equipment you need depends on your work. When splashing of blood or body fluids is likely, wear the following PPE in addition to gloves:



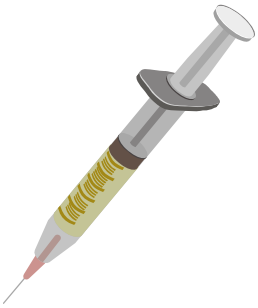
- **Mask**, if blood or body fluids might splash your face

- **Eye protection**, if blood or body fluids might splash your eyes

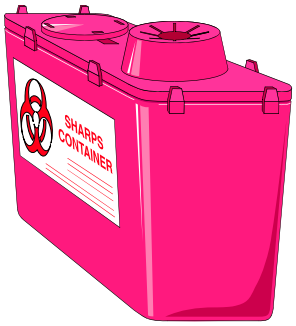
- **Gown**, if blood or body fluids might splash your clothing or skin. The gown should be waterproof if there might be enough fluid to soak through it.

Remove dirty protective clothing as soon as you can, and then wash your hands.

Standard Precaution #4: Proper Disposal of Sharp Items



A ***sharp*** is any object that can penetrate the skin, such as needles, scalpels, broken glass, broken capillary tubes, and exposed ends of wires. A ***contaminated sharp*** has been in contact with blood, body fluids, or body tissues.



Contaminated sharps must be disposed of properly. Follow your organization's policies. Use a puncture-proof biohazardous container in care facilities. Specially licensed companies must dispose of biohazardous waste from facilities.

- Be careful to prevent injuries from needlesticks and other sharp instruments after procedures, when cleaning used instruments, and when disposing of used needles. ***Do not recap or manipulate needles***.
- Nursing and personal care facilities should ***use needleless injection systems or needles with injury protection***. If you must use a regular needle, remember:
    - Do not recap needles. If it is necessary to recap a needle, use one hand to slide the needle into a cap lying on a flat surface. Do not hold the cap in your other hand while recapping.

IF AN EXPOSURE OCCURS

Immediately following an exposure to blood or body fluids:

- Wash needlesticks and cuts with soap and water.
- Flush splashes to the nose, mouth, or skin with water.
- Irrigate eyes with clean water, saline, or sterile irrigants.

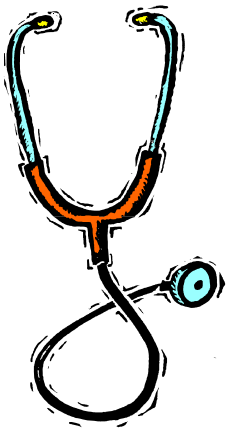
Next:

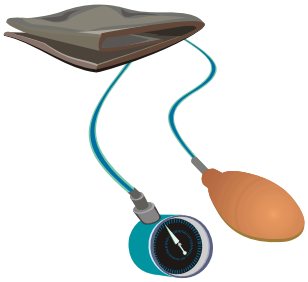
- Report the exposure at once. Begin treatment as soon as possible. See a medical professional.
- Discuss the possible risks and the need for treatment with the person managing your exposure.
- Remember that mandatory testing of a client is not legal. Clients who might be the source of an infection must give consent to be tested.

Standard Precautions for Handling Objects

1. Clean any equipment used by one client before giving it to another client.
2. Use disposable equipment ***only once***.
3. Roll dirty linens, do not shake them, and hold them away from your body. Wash linens soiled with body fluids using your organization's procedures.

4. Wash dishes and silverware with dish soap and hot water. The water temperature must be hot enough to kill germs.
5. Change cleaning rags and sponges frequently.





6. Clean stethoscopes, blood pressure cuffs, and thermometers between each use.
7. Dispose of dangerous waste such as needles VERY CAREFULLY. Needles and other sharp devices should go into clearly marked puncture-proof containers, NOT the regular trash container! DO NOT RECAP used needles—put them in the puncture-proof container without the cap on.
8. Trash contaminated with germs, such as wound dressings, should be disposed of according to your organization's procedures.
9. Containers marked ***Biohazard*** are only for discarding contaminated waste—do not remove anything from them! Do not put your hand in anything that contains needles or sharp objects.
10. Check gloves and other protective clothing frequently. If you see tears or holes, remove the gloves, wash your hands, and apply clean gloves.

Tips:

1. Use thick rubber household gloves to protect your hands during housekeeping chores or instrument cleaning involving potential blood contact.
2. Treat all linen soiled with blood or body secretions as potentially infectious.
3. Clean up spills as soon as possible.
4. Clean surfaces contaminated with blood or body fluids with a disinfectant.
5. Do not touch your face (nose, mouth, eyes) when giving client care, unless you remove your gloves and wash your hands first. Protect yourself from infection.

Additional Precautions for Infection Control

If you know or suspect that a client has a disease that spreads in one of the following ways, use these *extra* precautions, **in addition to standard precautions:**

Airborne

1. Wear a mask. If the client has, or might have, tuberculosis, wear a special respiratory mask (ask your supervisor). A regular mask will not protect you.
2. Remind the client to cover nose and mouth when coughing or sneezing.
3. Treat clients' used tissues or handkerchiefs as infected material.
4. The client should have a private room, possibly one with a special air filter.
5. Keep the client's room door closed.
6. Ask the client to wear a mask if he or she wants or needs to be around others.

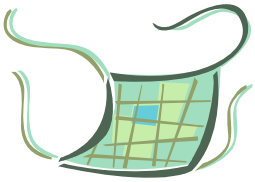
Bloodborne

Use Standard Precautions.

Contact

1. The client should be in a private room, but the door may stay open.
2. Put gloves on before entering the room.
3. Change gloves after touching a contaminated object (bed linens, clothes, wound dressings). Treat bed linens, clothes, and wound dressings as infected material.
4. Remove gloves right before leaving the room. Do not touch anything else until you wash your hands. Wash your hands as soon as possible.
5. Wear a gown in the room if the client has drainage, diarrhea, or is incontinent. Remove the gown right before leaving the room.
6. Use a disinfectant to clean stethoscopes, blood pressure cuffs, or any other equipment used on the infected client.

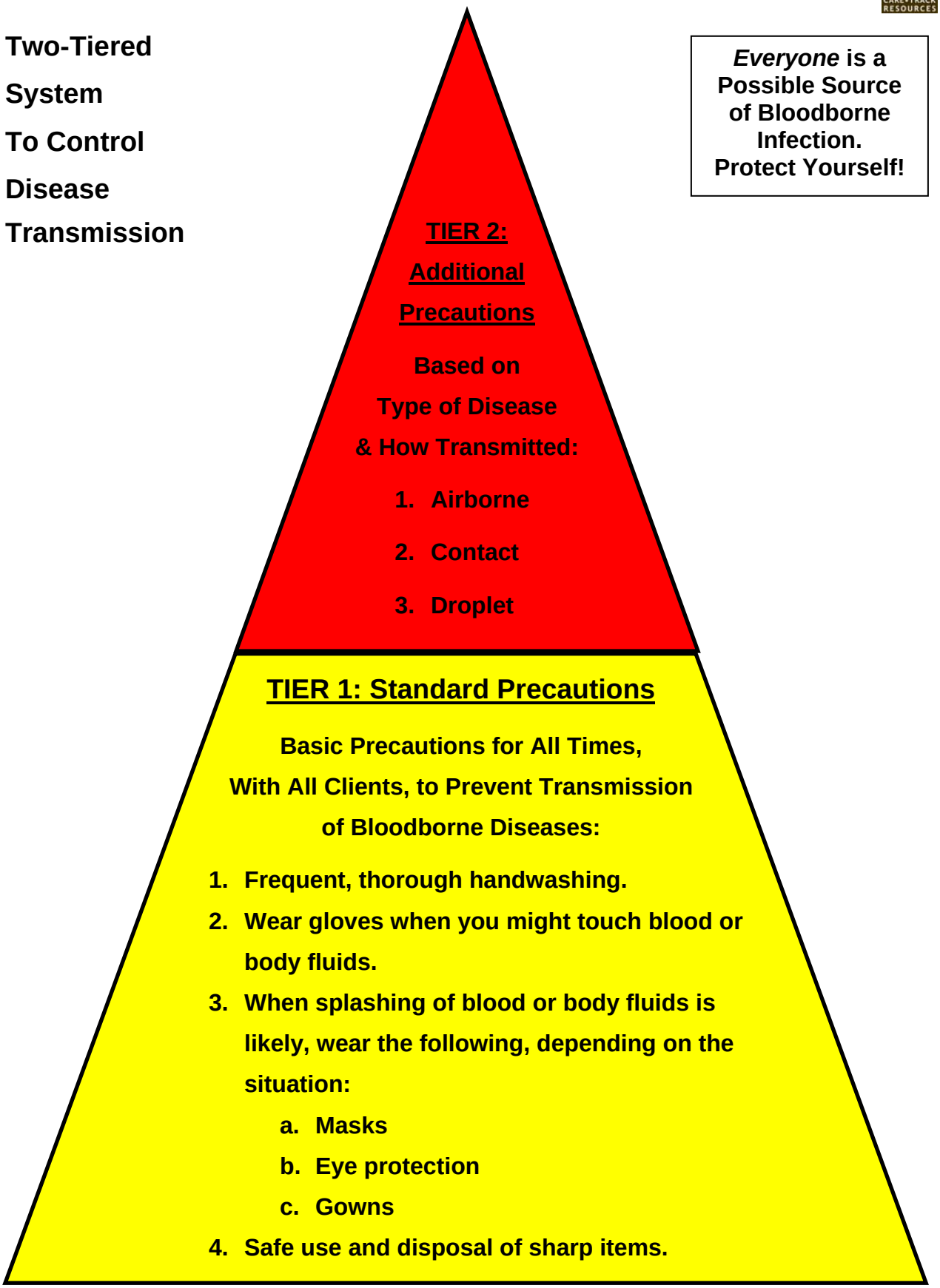
Droplet



1. Wear a mask when working close to the client (within 3 feet).
2. Put the client in a private room. The door may stay open.
3. Ask the client to wear a mask if he or she wants or needs to be around others.

Two-Tiered System To Control Disease Transmission

***Everyone* is a Possible Source of Bloodborne Infection. Protect Yourself!**



Workers' Rights

The Occupational Safety and Health Administration (OSHA) is a federal agency that guarantees rights to a safe workplace. Under OSHA's rules, workers who might be exposed to contaminated blood or body fluids have specific rights.

Employers must train workers that might be exposed to blood or body fluids about the hazards and how to protect themselves. This training must occur during working hours at no cost to employees, at orientation and annually thereafter.

Standard precautions must be practiced at all times. Puncture-proof and leak-proof containers must be provided for disposal of sharp items. There must be a system for reporting exposures to blood or body fluids.

Employers must provide free hepatitis B vaccine, free protective equipment, and free immediate medical evaluation and follow-up for anyone exposed to blood or body fluids. Employees must receive confidential treatment, and their medical records must be protected.

Workers' Responsibilities

- Always use standard precautions.

- Actively participate in evaluating safer equipment and encouraging your organization to purchase safer equipment. Be open to new products or practices that could prevent exposure and protect workers and clients.
- Be immunized against hepatitis B, getting the series of three injections.
- Report all exposures immediately after cleaning and disinfecting the exposed skin or mucus membranes.
- Comply with post-exposure recommendations of your organization.
- Support other workers who have been exposed. HIV-infected workers who continue working deserve support and confidentiality.
- Know your own HIV / HBV / HCV status. If you are positive for any of these viruses, you do not pose a risk for clients if you do not do invasive procedures.

Infection Control: Test

Name _____ Date _____ Score _____
(16 correct answers required)

Directions: Circle the best answer, or write the correct answer in the blank.

1. Match the link in the chain of infection with a way to break the link (worth 6 pts.):

a. Reservoir	_____ Wash hands, wear gloves, handle food safely
b. Infectious agent	_____ Good skin care, good hygiene
c. Susceptible host	_____ Keep surfaces & objects clean
d. Portal of entry	_____ Report signs of infection
e. Portal of exit	_____ Wash hands, proper waste disposal
f. Means of transmission	_____ Get good nutrition and rest

2. If a client has the flu, you should use the following Additional Precautions:
   a. No Additional Precautions are necessary.
   b. Wear a mask, gown, gloves, and goggles whenever you are in the client's room.
   c. Wear a mask when working close to the client.
   d. Isolate the client from all contact with others.

3. You should use Standard Precautions when:
   a. A client appears to be sick.
   b. Doing all client care.
   c. You are sick.
   d. You know the client has AIDS or hepatitis.

4. When disposing of a needle or other sharp object, always:
   a. Place it carefully in a biohazard puncture-proof container without touching the sharp end.
   b. Recap it very carefully.
   c. Leave it alone and tell your supervisor.

5. When changing a bed or handling linens, the correct Standard Precautions procedure is to:
   a. Shake out the linens to remove any objects or dirt.
   b. Place the used linens on the floor or a table.
   c. Wash linens soiled with body fluids separately from other laundry.
   d. Roll the dirty linens up and hold them away from you until they can be placed in a laundry bag.

6. If a client has an infected wound, use the following Additional Precautions:
   a. Standard Precautions are good enough.
   b. Wear a gown, gloves, mask, and goggles while in the client's room.
   c. The client should not go to the dining room until the wound is healed.
   d. Put gloves on before entering the client's room and remove them right before leaving.

7. Clients may share walkers, wheelchairs, and other equipment without worrying about cleaning it between clients. True or False.

8. Write the <u>four</u> types of disease transmission: _____

9. List the <u>four</u> basic rules of Standard Precautions: _____

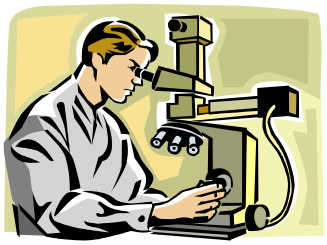
10. Standard Precautions only protect against airborne diseases. For bloodborne, contact, and droplet transmission, Additional Precautions must be used. True or False

11. Airborne germs, like tuberculosis, can travel long distances through the air. True or False

Certificate of Completion

Awarded to: _____
(Name of Participant)

For Completing the One-Hour Course Entitled



Infection Control

Date of Course: _____

Organization: _____

Presented by: _____
(Signature of presenter, or write “self-study”)