

## BLOOD BORNE PATHOGENS AND INFECTION CONTROL

### BLOOD BORNE PATHOGENS AND INFECTION CONTROL PRINCIPLES

This section should serve as the foundation regarding agency policy and practices concerning blood borne pathogens and infection control.

#### Blood Borne Pathogens

Blood Borne Pathogens are viruses, bacteria and other microorganisms present in human blood that can cause disease. Examples of blood borne pathogens that pose the greatest risk include HIV-AIDS and Hepatitis B or HBV.

- Hepatitis B (HBV) – An inflammation of the liver that can be caused by chemicals, alcohol, drugs or viruses. HBV can be spread by contact with body fluids, which contain the virus such as blood, semen, vaginal fluids and saliva, a break in the skin through cuts or needle sticks, or through sexual activity.
- HIV/AIDS – A virus that attacks and damages the immune system and destroys the immune system and its ability to fight off disease and infections. The HIV virus that infects certain cells of the immune system and destroys the immune system causes AIDS. HIV is spread through close sexual contact, when blood, semen and/or vaginal secretions are exchanged. The virus can also be spread through the shared use of needles.

#### Disease Transmission

If a person comes in contact with blood that is infected with a blood borne pathogen, he/she may become infected as well, especially when not following universal precautions and/or not using the appropriate barriers. Diseases caused by blood borne pathogens are also transmitted by contact with semen, vaginal secretions, or other fluids containing visible blood.

High-risk body fluids are blood, semen, and vaginal secretions through sexual transmission. Low-risk body fluids are feces, urine, sputum, sweat, tears and saliva.

#### Method of Disease Transmission

Consumers who have an infection could be the source of an infection for you; you could be the source of an infection for your consumer. Sexual contact and sharing needles generally transmit diseases caused by blood borne pathogens. It is also possible for transmission to occur through broken, non-intact skin, (chapped, weeping, rashes or open wounds) mucous membranes, (eyes, nose and mouth) and accidental needle sticks.

### THE CHAIN OF INFECTION

1. The **pathogen** is the causative agent
  - a. Protozoa are parasites that live off cell nutrients and cause malaria and amebic dysentery
  - b. Rickettsia is transmitted by insects and cause Rocky Mountain spotted fever and typhus
  - c. Fungi cause thrush and athlete's foot
  - d. Bacteria cause a multitude of diseases, such as diphtheria, gonorrhea, typhoid fever, tuberculosis, cholera, and wound infections
  - e. Viruses cause polio, influenza, AIDS, measles, mumps, and the common cold

2. The **reservoir** is the environment where pathogens can survive
  - a. The human reservoir can be a person infected with the disease or a carrier who shows no signs of the infection
  - b. Animals
  - c. Non-animal reservoirs, such as dust, lint, or soil
3. **Mode of escape** is the exit route for pathogens
  - a. Human: intestinal tract, respiratory tract, genitourinary tract, lesions or breaks in the skin, or through blood
  - b. Animal bites
4. **Mode of transmission** is the way that pathogens spread from one place to another
  - a. Direct contact with infected person
  - b. Direct contact with infectious material, such as nose and throat secretions, blood, urine, feces, saliva, semen, vaginal fluids
  - c. Indirect contact with objects contaminated with secretions, such as dressings, food, needles, or sharp objects
  - d. Vectors, such as animals, insects, fleas, and ticks
5. **Mode of entry** is the way into the body
  - a. Corresponds to the modes of escape
  - b. Mouth, breaks in the skin or mucous membranes, respiratory tract, genitourinary tract, or bloodstream
6. The **susceptible host** is where pathogens can grow and survive
  - a. Pathogen entering may not necessarily cause disease
  - b. Resistance to disease is based on age, immunity, fatigue, general health, medications, and drug and alcohol abuse
  - c. Individuals at risk include those with impaired resistance due to chronic or acute illness, injury, surgery, burns, radiation therapy, chemotherapy, stress; infants; children; pregnant women; and the elderly

*Asepsis* means the absence of pathogens (disease-causing microorganisms):

1. Asepsis involves two types of actions
  - a. Those which kill or impede the growth of germs
  - b. Those which prevent contact with pathogens
2. Aseptic (clean) techniques prevent contact with the pathogens
  - a. Keep clean and dirty items separate
  - b. Work in the direction from the cleaner to the dirtier
3. Aseptic practices for the environment kill or retard the growth of germs
  - a. Disinfection is the process that kills all pathogens with chemicals
  - b. Products for disinfection include 1:10 bleach solution, 70% isopropyl alcohol, 3% hydrogen peroxide, and some commercial products

## UNIVERSAL PRECAUTIONS

Universal Precautions are a simple and effective approach to infection control. Universal Precautions are designed to protect both direct caregivers and consumers from exposure to infectious disease, including blood borne pathogens. In the practice of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for HIV, HBV, and other blood borne pathogens. The level of precautions taken is based on the care being given and not on whether or not the patient has been diagnosed with an infectious disease. Universal Precautions must be used when caring for all consumers, regardless of diagnosis. Universal precautions such as hand washing, use of protective barriers, cleaning and disinfecting procedures have been established to reduce the occurrence of blood borne transmission. You can also reduce the risk by covering cuts, scrapes, hangnails, rashes, etc.

Remember, consistent practice of Universal Precautions, especially frequent and proper hand washing, as well as the appropriate use of disposable gloves, limits the spread of infection!

## INFECTION CONTROL PROCEDURES

### HAND WASHING

Out of all of the infection control practices, ***the most important technique is thorough and frequent hand washing***. For hand washing to be effective, it must be done frequently and correctly. Hand washing is expected as part of your regular routine, even in the absence of recognized disease.

#### Hand Washing Procedure:

1. Stand in front of sink with knees flexed; try not to touch the sink with your clothing
2. Remove jewelry
3. Rinse hands and apply soap to the palm of hand; join hands palm to palm and lather up hands, wrists and forearms. Interlock fingers and work them back and forth, covering all areas between fingers with soap.
  - If using bar soap, rinse it off after lathering and return to soap dish
  - Hold hands lower than elbows
4. Scrub fingers, palms, backs of hands, wrists, and forearms for at least 15 seconds
5. Be sure to clean under fingernails
6. Rinse thoroughly
7. Use a single use paper towel to blot hands dry and turn off faucet using the paper towel
8. Discard the paper towel without touching the cover of the waste container
9. Apply lotion, if needed, and keep fingernails trimmed frequently

#### When to Wash Hands:

- Upon arrival at work and before leaving
- After using the toilet, blowing your nose, covering a sneeze or cough, or combing your hair
- After assisting with toileting or after performing incontinence care
- Before and after medication administration
- Before and after food preparation
- After handling soiled items, such as linens, clothing, bedpans, urinals, or garbage
- Before and after gloves are used
- Before and after touching wounds or performing wound care
- After contact with blood or body fluids
- Immediately after any contact with blood, semen, vaginal secretion, or any body fluid visibly contaminated with blood

- Any time you think that you may have had contact with infectious material

### **PROTECTIVE BARRIERS**

It is essential to wear protective barriers when it is likely that you will come in direct contact with blood or any of the identified body fluids to which universal precautions apply. This could include, but not limited to, performing CPR, administering medications, first aid, or cleaning up after an accident. Protective barriers include gloves and protective face or eye wear.

#### **Gloves:**

Gloves must be worn whenever you have contact with blood or body fluids or you anticipate you'll have contact with these. Vinyl and latex gloves must be changed between person-to-person contact and should never be washed, as they are intended for single use. General-purpose utility rubber gloves used for cleaning procedures may be reused after they have been washed and disinfected. They should be checked to make sure there are not cracked, peeling, or have holes. Hand washing must occur whenever you remove gloves, regardless of whether or not you have handled blood or body fluids.

Examples of when you must wear gloves, although not inclusive, are as follows:

- When you will have contact with bodily fluids during procedures:
  - a. Giving an enema
  - b. Emptying drainage bottles
  - c. Cleaning the genital area
  - d. Performing a venipuncture (not performed under PCA services)
  - e. Performing tracheostomy care
- When you handle utensils or supplies which are soiled with bodily fluids
- When you will change linens soiled with bodily fluids
- When you clean up spills of bodily fluids

Procedure for using gloves:

1. Wash your hands and dry them thoroughly
2. Put on the gloves, handling them carefully so you do not puncture or tear them
3. To remove gloves
  - a. Carefully peel off the first one, as if turning it inside out (contaminated surfaces on the inside) and discard
  - b. Grab the second glove at the very top of the cuff (considered the cleanest area), peel it off, and discard
  - c. Appropriately dispose of trash
  - d. Wash your hands

During a dressing change, you will need to use two pairs of gloves.

- Wear one pair to remove the soiled dressing
- Discard that pair
- Wash your hands
- Put on a clean pair of gloves to apply the new dressing

#### **Protective Face and Eye Wear:**

These can include goggles, glasses, and/or disposable facemasks. The eyes and mucous membranes should be protected from splashes or sprays of blood or body fluids visibly contaminated with blood because of risk of infection caused by possible exposure. Eye wear is to be worn whenever it is likely that splashes of blood or body

fluids in the eye(s) may occur. Masks should be worn if it is likely that splashes of blood or body fluids in the mouth may occur.

### **CLEANING AND DISINFECTING PROCEDURES**

Objects and surfaces in the environment may be a source of disease transmission. Standard housekeeping practices are adequate for routine cleaning, but the cleaning of objects or surfaces that may be contaminated with blood or body fluids require special cleaning and decontamination procedures using utility gloves. Objects or surfaces contaminated with blood or any body fluids must be cleaned immediately after contamination following one of the procedures below.

#### **Hard Surface Cleaning:**

1. Wash hands
2. Place gloves on both hands
3. Remove excess fluids with single use paper towels and discard
4. Clean area with an approved solution
5. Allow to air dry

#### **Food Contact Surface Cleaning:**

1. Follow hard surface cleaning procedure
2. Allow to air dry for 30 minutes
3. Wash area with regular water

#### **Fabric or Carpeted Surface Cleaning:**

These surfaces when contaminated with blood or body fluids should be laundered or dry-cleaned whenever possible. If this is not possible, use the following procedure:

1. Wash hands
2. Place gloves on both hands
3. Remove excess fluid with single use paper towels and discard
4. Clean are with a fabric or carpet cleaner
5. Follow up with Lysol after cleaning

#### **Broken Glassware Clean Up:**

Never use your hands to pick up broken glass, regardless if it could be contaminated or not. Use a broom and dustpan, or vacuum cleaner, to collect all of the broken particles of glass; dispose of glass immediately. Never reach into the trash to retrieve an object.

#### **Waste Basket/Trash Removal:**

Wastebaskets must be lined with plastic trash bags and be emptied on a regular basis and not allowed to overflow. Infectious material such as paper toweling used for blood/body fluid cleanup, dressings, gloves and menstrual supplies must be either placed in a plastic bag that is tied off/secure and placed in a lined wastebasket. If not tied/secured, the wastebasket must be immediately emptied.

#### **Linen Change:**

All laundry contaminated with blood, body fluids visibly contaminated with blood, semen, and vaginal secretions should be handled with gloves. If the items cannot be laundered immediately, they should be bagged at their place of origin in a leak proof bag.

Procedure for changing linens soiled with blood or bodily fluids:

1. Wash your hands before you begin

2. Survey the room to identify a place for clean and soiled linens
  - a. Place clean linens on the seat of a chair or patient's bedside table if washed/cleaned
  - b. For soiled linens, use a hamper, dirty pillowcase, laundry basket or bag
3. Put on gloves
4. Loosen linens on bed
5. Remove soiled linens, folding the cleaner portion over the stained area. Holding soiled linens away from your clothing, put linens in hamper or designated place
6. Remove and discard your gloves
7. Wash your hands
8. Open and spread clean linen on the bed; avoid shaking or fanning linens
9. Complete linen change, observing principles of asepsis

**Remember these important principles:**

- Always keep clean and dirty linen separate
- Carry soiled linens away from your clothing, put linens in hamper or designated place
- Avoid shaking or fanning linens
- Don't place any linen on the floor

**Laundering soiled linens:**

- Always wear gloves
- Wash laundry in family machine on the warmest appropriate cycle, per linen care instructions, with detergent, separately from other laundry
- Presoak linens contaminated with blood or body fluids in cold water for 10 minutes with detergent that has a bleach additive or add ½ cup of bleach per load (for whites only).
- Laundry should be dried in a clothes dryer whenever possible

**HANDLING OF WASTES AND DISPOSABLES**

Dispose of needles and other sharps immediately in a puncture proof, hard plastic or metal container with a tightly secured lid. Commercial containers are available from a pharmacy or equipment company. Also suitable for use is a bleach bottle or coffee container. Consider all used needles and other sharp instruments contaminated.

- Procedure for disposal of a used syringe
  - a. Immediately after completing the injection, carefully discard the syringe and needle into the container
  - b. Make sure the opening is large enough for disposal of the entire syringe and needle
  - c. Never recap the syringe or break the needle off
  - d. Seal container securely
  - e. Check with health department about disposal of container
- Disposal of consumer wastes
  - a. Flush feces, urine, blood, and emesis down the toilet
  - b. Be careful not to splash
- Disposal of bandages, dressings, catheters, gloves, incontinence pads, and other similar items
  - a. Wrap in a plastic bag, brown paper bag, or newspaper
  - b. Place in plastic bag with the patient's regular garbage
  - c. Or, double bag immediately and discard with regular garbage

- Dressing change  
(Your role in dressing change procedures is dictated by your agency policy and procedure, and as outlined on the care plan. These are general guidelines to follow.)

**Procedure for a dressing change:**

1. Gather all supplies you will need, such as dressings, tape, scissors, any special treatment items, and a bag for disposal; and place in a clean area
2. Use an apron or clean towel to protect your clothing, if necessary
3. Wash your hands and put on gloves
4. Explain the procedure to your consumer
5. Limit exposure of the consumer
6. Remove tape carefully to protect the skin from tears
7. Remove the old dressings by lifting gently, touching only the top part of the clean corner
8. Handle the dressing carefully and discard into the bag for double bagging
9. Observe the wound and old dressing of them
10. Remove your gloves and dispose of them
11. Wash your hands
12. Put on a new pair of gloves
13. Unwrap the new dressing carefully
14. Apply the dressing directly to the wound
  - Limit taping on fragile skin
15. Remove your gloves and discard
16. Wash your hands
17. Report to the Qualified Professional (QP) any foul odor, bleeding, increase drainage, or changes in appearance of wound or drainage
18. Disinfect any surfaces contaminated with drainage using a 1:10 bleach solution
19. Document significant observations and any report to the Qualified Professional (QP)

**Signs of a possible infection in a wound:**

- Redness
- Excessive swelling
- Tenderness or pain in the area
- Red streaks in the skin near the wound
- Pus or other discharge from the wound
- A foul smell from the wound
- Generalized body chills or fever
- Elevated temperature and pulse
- Enlarged, tender lymph nodes in the area of the wound