

Protecting Our Community With Exceptional Service

BLOOD BORNE PATHOGENS

Instructors

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Blood-Borne Pathogens

- Types of pathogens
- Modes of transmission
- What to do in the event of an exposure
- Biohazard labeling
- PPE

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Student Performance

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By the end of the lesson students will be able to:

- List three types of blood-borne pathogens.
- Describe modes of transmission for each pathogen.
- List actions to take in the event of an exposure.
- Explain labeling standards for biohazards.
- Properly use PPE

3 Major Types of Blood-Borne Pathogens

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- Hepatitis B (HBV)

- Hepatitis C (HCV)

- Human Immunodeficiency Virus (HIV)

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Hepatitis B (HBV)

- Viral liver infection usually transmitted by blood to blood contact
 - Can lead to cirrhosis of the liver or liver cancer
 - Vaccination can greatly reduce risk and is highly recommended for health care workers
 - Virus can live outside the body for 7 days on a dry surface

- Signs and Symptoms develop in 1 to 8 months
 - Fatigue
 - Stomach pain
 - Loss of appetite
 - Nausea
 - Jaundice (a distinct yellowing of the eyes and skin)
 - Darkened urine

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Hepatitis C (HCV)

- Viral liver infection usually transmitted by blood to blood

- 75% to 85% develop chronic liver disease, though asymptomatic for years
- 80% never show any symptoms
- 1% – 5% die from liver failure
- Leading indicator of liver transplants
- No vaccination is available.

- Signs and Symptoms may never develop, but include

- Fatigue
- Stomach pain
- Loss of appetite
- Nausea
- Jaundice (a distinct yellowing of the eyes and skin)
- Darkened urine

Human Immunodeficiency Virus (HIV)

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- HIV causes Acquired Immune Deficiency Syndrome (AIDS)
- The virus attacks the body's immune system, increasing susceptibility to infection and disease
- HIV infection often develops over time into Acquired Immune Deficiency Syndrome (AIDS), a fatal disease
- Current treatments are improving, but there is no cure

Protecting Our Community With Exceptional Service **Signs and Symptoms of HIV**

- Weakness
- Fever
- Sore throat
- Nausea
- Headaches
- Diarrhea
- White coating on the tongue
- Weight loss
- Swollen lymph glands

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HBV, HCV, and HIV

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Modes of Transmission

■ Blood to blood contact

- Contact with infected human blood or with bodily fluids that allow infection to enter your system through an open cut, sore, abrasion, or damaged or broken skin, or through sexual transmission.
- Contact between infected blood and the mucus membranes in your eyes, nose, or mouth.

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Modes of Transmission continued

- Contact with other infected bodily fluids such as
 - Saliva
 - Semen
 - Vaginal secretions
 - Cerebrospinal fluid
 - Pleural fluid
 - Peritoneal fluid
 - Amniotic fluid

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Modes of Transmission continued

- HBV, HCV, and HIV are most commonly transmitted through:
 - Sexual contact (rare for HCV).
 - Sharing hypodermic needles.
 - The placenta from a mother to a fetus.
 - Accidental puncture from a contaminated needle, broken glass, or other sharps.
 - Contact between broken skin or mucus membranes and contaminated body fluids.

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Risk Assessment

- Fairly low*, but precautions must still be taken due to consequences
- HBV: 6% to 30% or negligible with successful vaccination
- HCV: 1.8%
- HIV: 0.3% to broken skin; 0.1% for eye, nose or mouth contact

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Immediate Response in the Event of Exposure

- Wash a puncture wound or contaminated cuts with soap and water.
- Flush splashes to the nose, mouth, or skin with fresh water.
- Irrigate the eyes with fresh water, saline, or a sterile eye wash.

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Immediate Response in the Event of Exposure

- Report the exposure to your supervisor.
- Fill out any necessary forms to document the exposure.
- Needle exposure requires immediate medical treatment and documentation.
- Get appropriate treatment within 24 hours
 - HBV vaccination and HBIG
 - HCV: no treatment available
 - HIV: consult with your physician about antiretroviral drugs

OPD – What to do with contaminated Protecting Our Community With Exceptional Service Patrol Unit

■ Contaminated Vehicle Procedure

- Notify Supervisor
- Mark contaminated vehicle if left in lot
 - Biohazard stickers
 - printed sign
- Notify CSOs via email of vehicle contamination
- 7th and Ventura carwash sometimes is appropriate (small clean-up)
- If contaminated ER to County Jail
 - Notify Jail Deputies for clean up.

Post Exposure Follow-Up

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- HBV: Get tested 1 to 2 months after vaccination to ensure immunity has developed. If signs or symptoms develop, see your doctor.
- HCV: antibody and liver enzyme checks immediately, and then again 4 to 6 weeks later. If signs or symptoms develop, see your doctor.

Post Exposure Follow-Up continued

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- HIV: immediate test for antibody, followed by periodic testing over 6 months

- If you are to take antiretroviral drugs, get a complete blood count and kidney and liver function tests before starting treatment, and after 2 weeks on the drugs.

- Signs or symptoms that develop could be HIV or a drug reaction.

Post Exposure Precautions

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- Do not donate blood, semen, or organs.
- Do not have sexual intercourse, or use a condom consistently and correctly.
- Do not breast-feed infants.

HEPATITIS B

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In 2014, a total of 2,953 cases of acute hepatitis B were reported from 48 states to CDC (Table 3.1). The overall incidence rate for 2014 was 0.9 cases per 100,000 population. After adjusting for under-ascertainment and under-reporting, an estimated 19,200 acute hepatitis B cases occurred in 2014. (Data for 2014 were unavailable for the District of Columbia, Rhode Island, and Wyoming.)

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HEPATITIS C

In 2014, a total of 2,194 cases of acute hepatitis C were reported to CDC from 40 states (Table 4.1). The overall incidence rate for 2014 was 0.7 cases per 100,000 population, an increase from 2010–2012. After adjusting for under-ascertainment and under-reporting, an estimated 30,500 acute hepatitis C cases occurred in 2014. (Data for 2014 were unavailable for Alaska, Arizona, Connecticut, Delaware, the District of Columbia, Hawaii, Iowa, Mississippi, New Hampshire, Rhode Island, and Wyoming.)

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- More than 1.2 million people in the US are living with HIV, and 1 in 8 of them don't know it.
- From 2005 to 2014, the annual number of new HIV diagnoses declined 19%.

In 2015, 39,513 people were diagnosed with HIV infection in the United States. The number of new HIV diagnoses fell 19% from 2005 to 2014.

Biohazard Labels

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■ Examples



BIOHAZARD



Protecting Our Community With Exceptional Service **Biohazard Labeling Standards**

- Containers of regulated waste:
 - Liquid or semi-liquid blood or other potentially infectious materials.
 - Contaminated items that might release blood or other potentially infectious materials if compressed.
 - Items that are caked with dried blood or other potentially infectious materials and that might release these materials during handling.
 - Contaminated sharps containers.
 - Pathological and microbiological wastes containing blood or other potentially infectious materials.
- Refrigerators or freezers containing blood or other potentially infectious materials.
- Containers used to store or ship blood or other potentially infectious materials.

Universal Precautions

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Per the U. S. Center for Disease Control (CDC)

- Place a barrier between you and someone else's body fluids.
 - Examples are: face shields, latex gloves, pocket breathing masks.
- Cover open sores, cuts, or scrapes you might have on exposed skin.
- Minimize splashing body fluids.
- Handle sharp objects with care.
- Do not handle food or drink when providing first aid.
- Clean and disinfect any area where body fluids may have been spilled.
- Thoroughly wash your hands and any exposed skin areas immediately after you have provided first aid or cleaned up a spill.



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For More Information:

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- The World Health Organization (WHO)
www.who.int/en/
- The United States Department of Labor Occupational Safety and Health Administration (OSHA) "Blood-Borne Pathogens Standard 1910.1030."
www.osha.gov
- The United States Department of Health and Human Services Centers for Disease Control and Prevention (CDC).
www.cdc.gov

Student Performance

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By the end of the lesson students will be able to:

- List three types of blood-borne pathogens.
- Describe modes of transmission for each pathogen.
- List actions to take in the event of an exposure.
- Explain labeling standards for biohazards.

Basic Life Support

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Duty of Care

Legal obligation to provide care

- *Bystanders*: no legal obligation to respond
- may have obligation to notify authorities
- *Health care providers (Police Included)*: acting in capacity of their profession may have a legal obligation to respond

ALWAYS ask permission before rendering aid of any kind.

- “My name is _____. I know first aid. May I help you?”

Responsive person should give permission

- Permission is assumed for unresponsive person

Basic Life Support

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Key Steps during Cardio-Pulmonary Resuscitation

Circulation

Airway

Breathing

Check for responsiveness
activate EMS

Quickly check for normal
breathing and a pulse

Provide chest compressions if
not breathing normally and no
pulse

Provide rescue breaths

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Initial Assessment

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Assessing Responsiveness

Tap and shout "are you OK?"

State your name and desire to help

If the injured person responds, leave in position found

If the injured person does not respond, scan quickly to determine if he is breathing normally, and simultaneously check for a pulse

- Call or send someone to call EMS

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Initial Assessment

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Pulse Check: Adult/Child

- Use carotid artery in the neck
- Place two fingers on “Adam’s Apple”
- Slide fingers toward you and slightly upward into groove on side of neck
- Allow 5-10 seconds
- Adjust pressure to locate pulse but avoid excessive pressure



Initial Assessment

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DAN

CPR Health-Care
Provider with First Aid



Pulse Check: Infant

- Use brachial artery on upper arm
- Place two fingers on inner arm just under armpit
- Find groove formed by muscles
- Use gentle pressure
- Allow 5-10 seconds
- Adjust pressure to locate pulse but avoid excessive pressure



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Scene Safety

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Avoid becoming a victim

Think S A F E

Remember S-A-F-E

S

Stop

- Stop
- Think
- Act

A

Assess the scene

- Scene safe?
- Safe to approach?
- Any hazards?
- Additional risks?

F

Find and locate the 1st aid kit (and oxygen and AED unit)

- First aid kits contain critical supplies such as barriers

E

Exposure protection

- Use barriers such as gloves and mouth-to-mask barrier devices
- Don gloves and inspect them for damage

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RECOVERY POSITION



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PURPOSE OF THE RECOVERY POSITION

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- ENSURE AN OPEN AIRWAY

- PREVENTS BLOOD AND VOMIT FROM OBSTRUCTING THE AIRWAY

- POSITION ALLOWS GRAVITY TO ASSIST IF VOMITTING OR BLEEDING OCCURS

- PLACES PATIENT IN SAFE POSITION UNTIL EMS CAN ARRIVE

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PLACING PATIENT INTO

RECOVERY POSITION



DO NOT DRAG PEOPLE WITH SUSPECTED SPINAL OR HIP INJURIES INTO THE RECOVERY POSITION
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SUMMARY

- UNRESPONSIVE, BREATHING PATIENTS
- KEEPING THE AIRWAY CLEAR OF OBSTRUCTIONS
- MONITOR BREATHING UNTIL EMS ARRIVES
- HOW TO PHYSICALLY PLACE A PATIENT INTO THE RECOVERY POSITION

Student Performance FBAO

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By the end of the lesson students will be able to:

- Provide foreign body airway obstruction first aid for a conscious victim
- Provide foreign body airway obstruction first aid for an unconscious victim

Section 3, Unit 6

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Conscious Victims

- Generally will clutch at their throat
 - Universal sign for choking
- Partially blocked
 - Breathe with difficulty, perhaps speak
 - Wheezing, coughing
 - May cough out the object:
LET THEM
- Completely blocked
 - cannot breathe, speak, or cough (will shortly lose consciousness)
- Inform victim you are trained; ask for consent to assist

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Conscious Adult – First Aid for *Protecting Our Community With Exceptional Service* Completely Obstructed Airway

1. Stand to the side and slightly behind the victim.
2. Have the victim bend forward at the waist to ensure object is dislodged if dislodged.
3. Support the victim with one hand under their chest.
4. With the heel of the other hand deliver up to five sharp back blows between the shoulder blades. any blow may dislodge the obstruction.
5. If the back blows are not successful and the victim is still conscious move on to abdominal thrusts.



Abdominal Thrusts

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1. Stand behind the victim.
2. Wrap your arms around the victim's waist.
3. Feel for the victim's navel, and place two fingers of one hand above the navel.
4. Place the fist from your other hand above the two fingers with your thumb facing in.
5. Grasp the fist with the other hand.
6. Perform up to five quick inward and upward thrusts using your arms. With each thrust you are attempting to dislodge the object.
7. If the object is not expelled and the person is still conscious, perform five back blows and continue to alternate methods until the object is expelled or the person loses consciousness.
8. Lower the person to the ground if they lose consciousness. Immediately activate the emergency response system and begin CPR.



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Chest Thrusts for Pregnant or Obese Victims

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1. Standing behind the victim, wrap your arms around the chest.
2. Place a fist from one hand against the center of the victim's breastbone.
3. Grasp the fist with the other hand.
4. Perform up to five quick inward chest thrusts using your arms.
5. If the object is not expelled and the person is still conscious perform five back blows as previously described, and continue to alternate sets of back blows and chest thrusts until the object is expelled or the person loses consciousness.

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FBAO in Infants

1. If the infant is actively coughing or crying, examine them closely to see if the object is expelled.

2. If unable to cough or cry

- Drape infant over your forearm, face down with head down, supporting head and neck with your hand
- Deliver 5 back blows between the shoulder blades, each able to cause the object to be expelled

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FBAO in Infants (continued)

3. Place your free hand and arm on the infant's head, neck, and torso, sandwiching them between your two arms.

4. Turn the infant onto their back on the other forearm so that their head is lower than the trunk of their body.

5. Place your index finger, middle finger, and ring finger just below an imaginary line between the nipples.

6. Raise your index finger, leaving the other two fingers on the chest.

7. Deliver five chest thrusts. Do not perform abdominal thrusts on infants.

8. Repeat steps 1 through 7 until the infant expels the object or loses consciousness.



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