Bloodborne Pathogens: Preventing Disease Transmission

You Are the Emergency Medical Responder

Your police unit responds to a call for a medical emergency involving a man who has collapsed in front of a school building. When you and your partner arrive, you see that the man is bleeding from the mouth and face. Vomit and blood are on the ground around him. "His face hit the ground when he fell," a bystander says. The victim does not appear to be breathing.

What can you do to protect yourself from possible disease transmission?

Bloodborne Pathogens Training: Preventing Disease Transmission DVD

Write down 5 statements that stick out to you

Pathogens

- Most common:
  - Bacteria – no dependence on other organisms and can live outside the body
  - Viruses – depend on other organisms to reproduce. Difficult to eliminate/few medications
- Other pathogens:
  - Fungi, protozoa – athlete's foot/ringworm
  - Rickettsia – typhus/rocky mountain spotted fever
  - Parasitic worms – GI tract
  - Prions, yeasts – mad cow disease

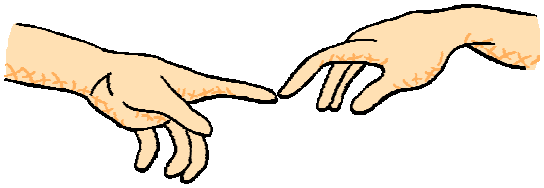
Natural Defenses

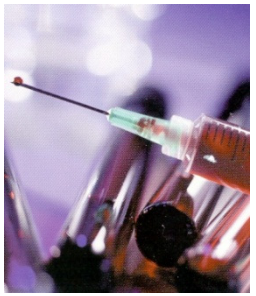
- Intact skin and mucous membranes
  - Mucous membranes in the mouth, nose, eyes
  - Cuts, sores in skin can allow germs in
- Immune system
  - White blood cells - attack pathogens and release
  - Antibodies - which fight infection
- Immunity
  - Innate – what we were born with
  - Adaptive – develops as we are exposed/immunized
  - Passive – external sources (mothers breast milk)

Four Conditions Necessary for Spreading Disease

- Presence of the pathogen
- Sufficient quantity of the pathogen
- Susceptible person
- Pathogen passes through correct entry site

Spread of Disease





- Direct contact
  - Greatest risk; blood or body fluids at entry site
- Indirect contact
  - Touching an object that contains blood/body fluids
- Respiratory droplet transmission
  - Inhales droplets/touching surface with respiratory droplets
- Vector-borne transmission
  - Animal, insect bite/sting

Activity
Scenario #1

You arrive at the home of an older gentleman who has fallen. The man's son called to report the fall. While evaluation the patient, you notice the son coughing, sneezing and blowing his nose quite a bit. He tells you that he has the "flu."

What are some ways that an infection might be transmitted?

Activity
Scenario #2

Building security has called for the medical emergency team to respond to a man who has collapsed in the lobby of a school building. When you and your partner arrive, you see that the man is bleeding from the mouth and face. Vomit and blood are on the ground around him. "His face hit the ground when he fell," a bystander says. The victim does not appear to be breathing.

What are some ways that an infection might be transmitted?

Bloodborne Diseases That Cause Concern

- Hepatitis A, B, C, D and E – all affect liver function
  - HAV – contaminated food/water
  - Rarely causes permanent damage/chronic illness
  - Vaccine
  - HBV – contact with infectious blood/semen/fluids
  - Severe to fatal
  - Vaccine
  - HCV – most common bloodborne infection in U.S.
  - Leading cause of liver transplants
  - No vaccine

Bloodborne Diseases That Cause Concern

- HDV – relies on HBV to replicate
- Contact with infectious blood, uncommon in U.S.
- No vaccine

- HEV – ingesting water with fecal matter
- No vaccine

- HIV is the virus that causes AIDS
  - Attacks white blood cells
  - Destroys the body's ability to fight infection

Other Diseases of Concern

- Tuberculosis (TB)
  - Airborne - Lungs
- Meningitis
  - Direct/Airborne – meninges
  - Bacterial and Viral
- MRSA – methicillin-resistant staphylococcus aureus
  - Direct/indirect - Staph
- SARS – severe acute respiratory syndrome
  - Airborne/indirect
- Influenza

How can EMR's protect themselves from disease transmission?

Exposure Control Plan
Occupational Safety and Health Administration (OSHA)

Written program outlining protective measures the employer will take to eliminate or minimize employee exposure incidents

- Exposure determination
- Methods for implementing other parts of the OSHA standard
- Procedures for evaluating details of an exposure incident

Standard Precautions

- Prevention of occupational-risk exposure to blood and other potentially infectious materials
- Combination of Body Substance Isolation (BSI) and universal precautions
- Assumption: ALL body fluids possibly infective

Application of Standard Precautions

- Personal Protective Equipment (PPE)
- Hand hygiene
- Engineering controls
- Work practice controls
- Proper equipment cleaning
- Spill cleanup procedures

PPE

- Disposable gloves (includes proper removal)
- Eye protection
- CPR breathing barriers
- Masks
- Gowns

Skill Session

- Removing Disposable Gloves

Proper Hand Hygiene

- Wash the hands to prevent the spread of infection and remove disease-causing germs
  - Frequently for at least 15 seconds
  - Most effective measure to prevent the spread of infection
- Use alcohol-based hand sanitizers when soap and water are not available and the hands are not visibly soiled

Activity

Building security has called for the medical emergency team to respond to a man who has collapsed in the lobby of a school building. When you and your partner arrive, you see that the man is bleeding from the mouth and face. Vomit and blood are on the ground around him. "His face hit the ground when he fell," a bystander says. The victim does not appear to be breathing.

What PPE would be appropriate to use?

Engineering and Work Practice Controls

- Engineering Control – Objects used to reduce exposure
  - Sharps disposal containers
  - Self-sheathing needles
  - Biohazard containers and labels
  - PPE

- Work Practice Control – Way task is carried out to reduce exposure
  - Washing hands
  - Cleaning and Disinfecting

Vehicle and Equipment Cleaning and Disinfecting

- Properly dispose of all disposable and single-use items in biohazard container
- Place soiled clothing in marked plastic bags for disposal or washing
- Immediately clean up spills
- Clean and disinfect vehicles according to standard procedures

If An Exposure Occurs

An exposure would include any contact with potentially infectious blood or other bodily fluids through a needle stick, broken skin, or membranes of the eye, nose, or mouth

- Clean contaminated area with soap and water
- Wash needlestick injuries, cuts and exposed skin
- Flush splashes to mouth and nose with water
- Irrigate eyes, if involved
- Seek follow-up care – employer's exposure plan
- Report and document incidents

You Are the Emergency Medical Responder

After EMS personnel assumed the care of your patient, you note that, in addition to the blood and vomit on the ground there is some blood on your disposable gloves and the mask of your BVM.

What steps would you follow to avoid coming in contact with blood and other body fluids?

How should the area be decontaminated?