

BLOODBORNE PATHOGEN EXPOSURE REFRESHER PROGRAM

ANNE ARUNDEL COUNTY FIRE DEPARTMENT

Training Objectives

- The following objectives are to provide information regarding:
 - Bloodborne Pathogens and the diseases that they cause
 - The role of the Department's Designated Infection Control Officer
 - Infectious Disease Laws and Guidelines that pertain to Fire Department Personnel
 - What constitutes an exposure to a Bloodborne pathogen

Training Objectives

- The specific steps that you must take in the event of a possible exposure
- The Department's Infection Control Policies and how you can get a copy
- Exposure follow-up procedures
- The Hepatitis "B" Vaccination series and encourage vaccination
- Engineered equipment, work practice controls, and personal protective equipment that are employed to make your workplace safer

Background

- Hundreds of Health and Pre-Hospital Care Providers in the United States die from occupationally acquired diseases each year.
- These diseases don't discriminate.
 - 12 Exposure Incidents in 2009
 - 13 members of the Anne Arundel County Fire Department have tested positive for Hepatitis C.
 - Fair number who tested positive for the HBV antibodies prior to vaccination.
 - 91 members have had positive PPD test.

Bloodborne Pathogen Standard

Federal/State Regulations

- OSHA: 29 CFR 1910.1030
- MD Plan: 09.12.31
 - Both plans apply
 - Employer requirements
 - Designated Officer
 - Employee education
 - Exposure control plans
 - Immunizations
 - Post-exposure treatment

Infection Control Officer

- Develops departmental policies/procedures
- Point of contact for third party exposure notifications
- Provide confidential exposure notification
 - Employee infection control workgroup
 - Maintains employee records referencing infectious exposures
- Oversees department immunization program

Infection Control Officer

 Contact Information
Lieutenant Matthew Miller Health/Safety Division 410-222-8346, M-F, 7 a.m. to 3 p.m. 443-336-1012 Cell Radio Designation "Safety 2"

Local Exposure Control Plan

Required by OSHA/MOSH Standards

- OPM-4 Infection Control
 - PPE
 - Immunizations
 - Post exposure treatment
 - Engineering/work practice controls
 - Record keeping
 - Annual review/update

What is a Bloodborne Pathogen (BBP)?

Bloodborne pathogens are disease-causing microorganisms (such as viruses, bacteria or parasites) carried in human blood. Common BBPs include hepatitis B, hepatitis C and human immunodeficiency virus (HIV). These pathogens may be transmitted through unprotected contact with human blood or body fluids.

Potentially Infectious Body Fluids

- Blood
- Semen
- Vaginal Secretions
- Cerebrospinal Fluid
- Synovial Fluid
- Plural Fluid

- Amniotic Fluid
- Any body fluid that contains visible blood
- Unidentifiable body fluid
- Saliva from dental procedures

Body Fluids that do **NOT** contain Bloodborne Pathogens

- Urine
- Vomit
- Sweat
- Tears
- Nasal secretions
- Sputum
- Feces

BBPs of Concern to Healthcare Providers

- Hepatitis "A" (HAV)
- Hepatitis "B" (HBV)
- Hepatitis "C" (HCV)
- Other Emerging Viral Hepatitis
- Human Immunodeficiency Virus (HIV)

Hepatitis

Hepatitis means inflammation of the liver. Hepatitis has a variety of causes including drugs, poisons and other toxins, and bloodborne pathogens.

Hepatitis A (HAV)

- Viral infection of the liver caused by the hepatitis A virus. It can occur in isolated cases to widespread epidemics.
- Signs/Symptoms
 - Fever, loss of appetite, fatigue, and jaundice
- Transmission
 - Ingestion of substances contaminated by fecal material of an infected patient
- Prevention
 - Vaccine
 - PPE
 - Proper food preparation
 - Hand washing

Hepatitis B (HBV)

- Infection of the Liver caused by the hepatitis B Virus. 1-1.25 million Americans are infected.
- Spread by contact with blood or other potentially infectious materials
- Among the most infectious of all Bloodborne pathogens
- Is preventable- vaccine available since 1982

Hepatitis B (HBV) Symptoms

Symptoms may be mild or absent

- Jaundice (eyes or skin turn yellow)
- Fatigue
- Loss of appetite
- Fever/Vomiting
- Dark colored urine
- Light colored stool

Hepatitis B (HBV) Treatment

- No cure
- Fluids
- Rest
- Appropriate diet that avoids alcohol and some types of medications

Hepatitis B (HBV) Prevention

Get vaccinated

Avoid exposure: Body Substance Isolation/Universal Precautions remain your best protection against Hepatitis "B" (HBV) and other Bloodborne Pathogens.

Assume every patient is infected

- Use appropriate PPE
- Follow all Departmental policies and procedures

Hepatitis C (HCV)

- Infection of the Liver caused by the Hepatitis "C" Virus
- Spread by contact with blood or other potentially infectious materials
- Most common BBP Infection and leading cause of Liver transplants in the United States today
- Very prevalent among IV drug users

Hepatitis C (HCV) Symptoms

- Symptoms may be mild or absent
 - Tiredness
 - Loss of appetite
 - Fever/Vomiting
 - Abdominal pain
 - Jaundice
 - Dark colored urine
 - Light colored stool

- Most infected people have no symptoms and do not know they are infected.
- 75% of infected patients develop some type of chronic liver disease
 - Liver cancer
 - Cirrhosis

Hepatitis C (HCV) Treatment

No cure

- Treatment is limited
 - Rest
 - Fluids
 - Chemotherapy (ribovirin/interferon)
 - Avoid alcohol and some types of medication

Hepatitis C (HCV) Prevention

- No Vaccine is available
- Avoid exposure: Body Substance Isolation/Universal Precautions remain your best protection against Hepatitis "C" (HCV) and other Bloodborne Pathogens

Assume every patient is infected

- Use appropriate PPE
- Follow all Departmental policies and procedures

Hepatitis

Infection with one form of hepatitis does not prevent infection with another form of hepatitis. For example, a person with HCV infection may still become infected with HBV.

Human Immunodeficiency Virus (HIV)

- A virus that affects a patients immune system and causes Acquired Immunodeficiency Syndrome (AIDS)
- Spread by contact with blood or other potentially infectious materials
- Has a 0.3% risk of seroconversion following percutaneous (skin puncture) exposure
 - High risk needle sticks/deep puncture wounds
- Like HCV, HIV can be associated with IV drug users

Human Immunodeficiency Virus (HIV)

Currently there are more than 8,000 people living in the State of Maryland with HIV

Human Immunodeficiency Virus (HIV) Symptoms

- Certain signs/symptoms may be associated with AIDS/HIV:
 - Fever
 - Weight loss
 - Swollen lymph nodes
 - Oral Thrush
 - Cancers- Kaposi's sarcoma, certain lymphomas
 - Infections-pneumocystis pneumonia, TB, etc.

Human Immunodeficiency Virus (HIV) Prevention

No Vaccine is available

- Avoid exposure: Body Substance Isolation/Universal Precautions remain your best protection against Human Immunodefiency Virus (HIV) and other Bloodborne Pathogens
 - Assume every patient is infected
 - Use appropriate PPE
 - Follow all Departmental policies and procedures

Human Immunodeficiency Virus (HIV) Treatment

There is no cure

- Treatment is limited with a combination of anti-viral medications (Combivir: Azt & 3TC)
 - Vericet
- Studies have shown that these medications can delay the progression of the disease in some cases

Human Immunodeficiency Virus (HIV) Treatment

All decisions about post exposure laboratory testing and prophylaxis are made in consultation with your health professional. Testing for the HIV antibody should be done as soon as possible after exposure and then periodically for at least 6 months. Antibodies usually become detectable within 3 months of infection.

Other Common Infectious Diseases

- Tuberculosis
- Meningococcal Meningitis
- Mononucleosis

Tuberculosis

- Lung disease/infection
- No vaccine available
- Signs/Symptoms
 - Fever, night sweats, weight loss, bloody sputum
- Transmitted
 - Through aerosolized airborne droplets from an infected patient
- Treatment
 - Isoniazid
 - Rifampin
 - Pyrazinamide
- Prevention
 - N95 HEPA Mask
- Test
 - PPD

Meningococcal Meningitis

Bacterial infection

- Signs/Symptoms
 - Fever, stiff neck, sore throat, severe headache, and a rash.
 - Transmitted
 - contact with respiratory secretions of an infected patient (usually as a result of some high risk procedure such as intubations, suctioning, etc.).
- Prevention
 - N95 HEPA mask

Mononucleosis

Viral infection

- Signs/Symptoms
 - Fever, sore throat, fatigue, swollen lymph nodes/spleen
 - Transmitted
 - contact with respiratory secretions of an infected patient (usually as a result of some high risk procedure such as intubations, suctioning, etc.).
 - Prevention
 - PPE: N95/100 HEPA Mask
 - Hand washing.

What Constitutes an Exposure?

Exposure Incident means a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties. OSHA 1910.1030(b)

Routes of Transmission

- Direct Contact
- Indirect Contact (airborne/droplet)
- Common Vehicle Transmission (objects/equipment)

Types of Bloodborne Pathogen Exposures

- Percutaneous through the skin
- Mucocutaneous through a mucus membrane (eyes, nose, and mouth)
Examples of Potential Exposures

Percutaneous

- Needle Stick Injuries
- Cuts/punctures with other contaminated sharps devices
- Direct contact with blood on non-intact skin (abraded, chapped, dermatitis, and eczema)

Mucocutaneous

 Blood or other potentially infectious material contact with the mucus membranes of the eyes, nose, and mouth.

BREAKING THE CHAIN OF INFECTION



What Doesn't Constitute an Exposure?

- Simple handling/transport of a patient with a known Bloodborne pathogen
- Incidents where an employee/member receives a small amount of blood or other potentially infectious material on their intact skin
- Vomit, saliva, urine or fecal exposures where there is no blood involvement

When are You at Risk for a Bloodborne Pathogen Exposure?

- You are at risk whenever you perform various tasks and procedures:
 - Patient assessment
 - Airway management
 - Bleeding control
 - Clean up of equipment and scene
 - Establishing IV's
 - Child Birth
 - Any other activity where contact with blood or other potentially infectious material is present.

Actions to take in the event of an Exposure

- Remain unavailable.
- Contact your respective EMS Supervisor EMS-1, EMS-2 or EMS-3.
- If your EMS Supervisor is unavailable contact Fire Communications @ ext 8271.
 - Ask the Fire Communications Supervisor to page the next closest available EMS Officer or Battalion Officer and have them contact you ASAP.

Actions to take in the event of an Exposure

When the EMS Supervisor contacts you:

- Answer all questions about the exposure incident
 - Type of Exposure
 - Source Patients:
 - Name, Medical Hx, Type of call
 - Disposition of Source Patient:
 - Hospital transported to
 - Unit transported
 - Area of hospital where patient was left (bed #, ER, Fast track, etc.)
- Follow his/her directions

Post-Exposure Evaluation (fire department personnel)

- All medical evaluations and follow up treatment will be conducted in accordance with the treatment recommendations of the:
 - U.S. Department of Health and Human Services
 - Public Health Service
 - Centers for Disease Control
- All potential exposures will be recorded in the department's Infection Control Database and the Employee's Confidential Medical File.

Exposure Treatment Facilities:

Concentra Medical Center

- BWI
- Baltimore County
- Baltimore Washington Medical Center

Exposure Treatment Timetable

- All potential Exposures must be reported to your respective EMS Supervisor immediately; however, employee evaluation and treatment times will vary depending on the type of infectious exposure.
- Sample Time Table:
 - Immediate
 - Bloodborne Pathogen Exposures
 - 48–72 hours
 - Meningitis (nyceria, meningococcal)
 - Chicken pox (only those that have not had chicken pox or the vaccine)

Exposure Treatment Timetable

4-7 days

- Small Pox
- 14 days
 - TB
- Treatment with symptoms only
 - ie- mono, mumps, measles, SARs etc.

Post-exposure Prophylaxis/Treatment

Post-exposure Prophylaxis (PEP).

- Blood exposures: four week treatment regimen with one or more antiviral medications that is prescribed in accordance with the CDC guidelines for high risk exposures to prevent the transmission of HIV
- Has been shown to reduce the risk of seroconversion by up to 81%
- Should be administered with two (2) hours post exposure for best results

Post-exposure Prophylaxis/Treatment

Post-exposure Prophalaxis is frequently administered when:

- Source patient is known to be HIV positive
- Source patient considered to be high risk due to multiple risk factors:
 - Medical History
 - Life Style (IV Drug User, etc.)
- In cases where the source's status is unknown and the risk is determined to be low by the Healthcare Provider managing your case, Post Exposure Prophalaxis may not be given

Post-exposure Prophylaxis/Treatment

Other medications and/or vaccinations may also be administered for other types of exposures.

CDC guidelines

Source Patient Testing

- Will be initiated/performed by Hospital where the Source Patient was transported.
- Will be requested and performed simultaneously with provider's post exposure treatment. Rapid HIV test results in 20 minutes.
- HIV Status:
 - SB 718 effective 10/1/05 permits an available sample of the patient's blood that was gathered for other testing purposes to be tested for the presence of HIV in the event of an exposure of a health care worker.

Source Patient Testing

Test results will be communicated to exposed employee via:

- Healthcare provider managing their case
 - Infection Control Officer in their absence
- Results strictly confidential
 - Do not reveal the source patient testing results to anyone else

Third Party Exposure Notifications

- Local Health Department
- Local Hospitals
- State Medical Examiner's Office

Notification Laws

State

 Maryland Notification Law: Health General 18-213

Hospitals are required to:

- Develop written notification procedures
- Provide notification of possible exposures within 48 hours of confirmation of diagnosis.
 - Notification must be made to Department's designated officer.
 - Protect confidentiality of source patient

18-213 Reportable Diseases

- All forms of Viral Hepatitis
- HIV
- Meningococcal Meningitis (bacterial)
- TB
- Mononucleosis
- Diphtheria
- Plague
- Hemorrhagic fevers
- Rabies

Reducing Bloodborne Pathogen Exposures

- Hepatitis "B" Vaccination Series
- Engineering Controls
- Work Practice Controls
- Personnel Protective Equipment

Hepatitis "B" Vaccination Series

- Vaccine is a dead virus vaccine that has been shown to provide adequate protection against the Hepatitis "B" Virus
- Vaccine is provided to all employees/members of the department free of charge.
- Vaccine is contraindicated if you are allergic to yeast or any other component of the vaccine.
- Vaccine should be administered to all members prior to working in any area where occupational exposure could occur.
 - Declination must be signed if you have been previously vaccinated or you choose to refuse the vaccine

Hepatitis "B" Dosing Schedule

The Hepatitis "B" Immunization is delivered in a three (3) shot series.

- Today
- Thirty (30) days
- Four (4) Months
- The Anne Arundel County Fire Department offers its employees and members a combination vaccine (Twinrex Hep "A/B")

Mandatory Titer Testing

- All recipients of the Hepatitis "B" Vaccine will be required to submit to mandatory titer testing 1-2 months after your third hepatitis shot.
 - This test is required by State and Federal Law
 - Test shows if adequate antibodies are present to prevent Hepatitis "B" Virus
 - Recipients will also be screened for the Hepatitis "C" virus at this time
 - Protection is believed to be good for a lifetime

What if Your Titer Test is Negative?

- All recipients that receive a negative titer test will be given the opportunity to receive the complete vaccination series a second time.
 - There is an 50% conversion rate for personnel who receive the series a second time.
- Personnel who do not receive a positive titer test after the second series will be considered to be susceptible to the Hepatitis "B" virus and will be counseled on how best to prevent HBV exposure.

Where can I get the Hepatitis "B" Vaccine?

The Hepatitis "B" vaccination series is offered to all career/volunteer personnel during the following:

Career

- Fire Academy Class
- Appointment with Infection Control Officer

Volunteer:

- "All you need to ride program"
- Vo-tech program
- Monthly Infection Control Class
- Appointment with the Infection Control Officer

Engineering Controls

- Engineering controls are equipment and supplies that were designed / developed to help reduce your chance of exposure.
- Examples of Engineering Controls:
 - Isolation supplies (PPE)
 - Hand washing facilities
 - Waterless hand cleaners
 - Sharps containers
 - Self sheathing needles
 - Medical waste containers

Work Practice Controls

- Work Practice Controls are policies and procedures that define a particular way you should perform a task to reduce your chance of exposure.
- Examples of Work Practice Controls:
 - Hand washing
 - No eating, drinking, or smoking in work areas (ambulance)
 - No bending, breaking or recapping of needles; no sticking needles in a mattress or seat cushion
 - Avoiding splatters and splashes
 - Proper handling of contaminated items

Personal Protective Equipment (PPE)

- Personal Protective Equipment (PPE) are barrier devices that are employed to prevent or reduce your risk of exposure.
- PPE shall be of an appropriate size/fit and be provided to all employees free of charge.
- PPE is considered to be "appropriate" if it does not permit blood or other potentially infectious material to pass through.
 - Work uniforms are not appropriate (NFPA 1851)
 - Turnout gear OK

Examples of PPE

- Nitrile Gloves
- Face Shields
- Medical/Surgical Masks
- Safety Glasses

- Pocket Masks
- Disposable Gowns
- Gauntlets/Sleeves
- Turnout Gear

Anne Arundel County Fire Dept Minimum PPE Standard

The Anne Arundel County Fire Department has established a minimum level of PPE for all medical calls:

- Gloves
- Safety Glasses
- Infection Control Fanny Pack



N-95 HEPA Mask

- Shall be carried in the Infection Control Fanny Pack
 - Shall be worn by all personnel in cases of suspected TB, SARS, or other droplet spread diseases, during intubations/suctioning and aggressive airway management where spatters or splashes may occur



Gauntlets/Sleeves

- Shall be carried in the Infection Control Fanny Pack
- Shall be worn by all personnel while wearing short sleeves when a provider may be exposed, splashed, sprayed, or spattered by infectious materials



Gowns

- Shall be carried in the Infection Control Fanny Pack
- Shall be worn by all personnel when a provider may be exposed, splashed, sprayed, or spattered by infectious materials.



Coveralls

Shall be carried on all Departmental apparatus

Shall be worn by all personnel when a provider may be exposed, splashed, sprayed, or spattered by infectious materials.



Proper Removal of PPE





Contaminated Turnout Gear

- In accordance with OPM 5: Contaminated turnout gear shall be immediately bagged in a red/orange medical waste/bio-hazard bag.
- PPE should then be placed in a Turnout gear cleaning bag.
 - Label should read: Bio Hazard
 - QM should be contacted in accordance with Departmental Rules & Regulations: Operations Support section.
Disposal of PPE/Medical Waste

- All PPE and medical waste shall be disposed of in an appropriate container.
- Medical waste shall be disposed of at approved drop off sites.



Labels/Color Coding

Warning labels shall be affixed to containers of regulated waste.

- Bags/contaminated sharps containers should be labeled with a universal red/orange biohazard symbol
- Red/orange waste bags can be substituted for labels

Warning Signs

- Signs must be posted at the entrance to all work areas where occupational exposures may occur.
 - Medical waste storage
 - Cleaning/decon areas
- CAUTION MEDICAL WASTE & DESIGNATED DECON. AREA ECOHAZARD
- Contaminated equipment storage



For more information, please reference OPM 4 Health & Safety: Infection Control.

Thank You!