



East Haven Fire Department 2009

BLOOD BORNE PATHOGENS

OSHA 1910.1030

BE SMART



STAY SAFE

BLOOD BORNE PATHOGENS

- REQUIREMENTS
 - Employer must have written policy
 - Employer must train all employees
 - Employer must provide necessary PPE
 - Employer will provide workplace practices
 - and engineering controls to reduce exposures
 - Employer will insure appropriate medical treatment to exposed employees at no cost.
 - All medical information will be kept confidential



BLOOD BORNE PATHOGENS

- Firefighters may be exposed to blood and/or other potentially infectious materials OPIM.
- Communicable Diseases- capable of being passed from person to person.
 - Hepatitis A, Hepatitis B, Hepatitis C, Hepatitis Non A, Non B, HIV



BLOOD BORNE PATHOGENS

- Modes of Transmission
 - Direct contact through skin or mucous membranes.
 - Blood or OPIM through open cuts or wounds.
 - Blood or OPIM into eyes, mouth, nares.
 - Unprotected sexual contact.
 - *Casual contact, eating utensils, beds, toilets is not a means of disease transmission.*



BLOOD BORNE PATHOGENS

- Risk of transmission extremely low or non-existent;
 - Feces
 - Saliva
 - Sweat
 - Urine
 - Nasal secretions
 - Sputum
 - Tears
 - Vomitus

Unless visible blood is present.



BLOOD BORNE PATHOGENS

- Putting yourself at risk
 - Having unprotected sexual contact via oral, anal or vaginal route with someone who is infected.
 - Sharing a needle with an infected person.
 - An infected female may pass disease to her baby during pregnancy or childbirth.



BLOOD BORNE PATHOGENS

- Occupational Risk Factors
 - Uncontrolled situations, fights, shootings, vehicle extrications.
 - Home deliveries of children
 - Cardiac arrests
 - Industrial Accidents



BLOOD BORNE PATHOGENS

- Protecting yourself
 - PPE
 - Minimum is a pair of gloves
 - Eye protection may be required
 - Full gown, booties may be required

If it's wet and it isn't yours don't touch it!!!



BLOOD BORNE PATHOGENS

- Diseases
 - HBV- Caused by a virus.
 - Attacks the liver
 - Severity ranges from mild to fatal.
 - 25% of infected individuals develop acute hepatitis
 - Of infected individuals 6-10% will become carriers
 - Carriers are at risk of developing chronic liver disease.



BLOOD BORNE PATHOGENS

- HBV (cont.)
 - Active hepatitis
 - Cirrhosis
 - Primary liver cancer
 - Infectious to others



BLOOD BORNE PATHOGENS

- How widespread is HBV
 - 1 out of 20 people in the US will become infected some time during their lives.
 - Estimated 1.25 million chronically infected Americans.

Greater risk if parents born in Southeast Asia, Africa, Amazon Basin of South America, the Pacific Islands or the Middle East.



BLOOD BORNE PATHOGENS

- Hepatitis c
 - Caused by a virus.
 - Attacks the liver.

Long Term Effects

- Chronic liver disease
- Cirrhosis
- Liver Cancer
- Fatal



BLOOD BORNE PATHOGENS

- HIV- Human Immunodeficiency Virus
 - Some individuals exhibit no signs.
 - More severe symptoms include loss of appetite, weight loss, fever, night sweats, skin rashes, diarrhea, tiredness, lack of resistance to infection, swollen lymph nodes.
 - May progress to AIDS- lowers the body's defense against disease.



BLOOD BORNE PATHOGENS

- HBV Vaccination Program
 - Free to all members
 - Declinations must be signed if not receiving vaccination
 - Boosters and Titer if indicated/ required by OSHA/CDC will be offered free of charge.
 - If vaccination initially refused may be rescinded anytime during employment.



MRSA & CA-MRSA

- What is MRSA & CA-MRSA?
- Who gets it?
- How do you fight it?



What is MRSA?

- Methicillin-resistant Staphylococcus aureus (MRSA)
 - A strain of staphylococcus aureus - also called “staph” - MRSA is a bacterium that causes infections in different parts of the body
 - The symptoms of MRSA depend on where you're infected, but most often it causes mild infections on the skin, causing pimples or boils
 - It can also cause more serious skin infections or infect surgical wounds, the bloodstream, the lungs, or the urinary tract
 - Though most MRSA infections aren't serious, some can be life-threatening



What is MRSA?

- Garden-variety staph are common bacteria that can live on our bodies.
 - Plenty of healthy people carry staph without being infected by it. In fact, 25-30% of us have staph bacteria in our noses
 - But staph can be a problem if it manages to get into the body, often through a cut. Once there, it can cause an infection
 - Staph is one of the most common causes of skin infections in the U.S.



What is MRSA?

- It's tougher to treat than most strains of staph
 - Over the decades, some strains of staph -- like MRSA -- have become resistant to antibiotics that once destroyed it
 - MRSA, first discovered in 1961, is now immune to methicillin, amoxicillin, penicillin, oxacillin, and many other antibiotics
 - While some antibiotics still work, MRSA is constantly adapting.
 - Researchers developing new antibiotics are having a tough time keeping up.



Who Gets MRSA?

- MRSA is spread by contact
 - You could get MRSA by touching another person who has it on their skin, or you could get it by touching objects that have the bacteria on them
 - MRSA is carried, or "colonized," by about 1% of the population, although most of them aren't infected
 - Infections are most common among people who have weak immune systems and are living in hospitals, nursing homes, and other health care centers



Who Gets MRSA?

- Community-Associated MRSA (CA-MRSA)
 - MRSA is also showing up in healthy people who have not been living in the hospital
 - This type of MRSA is called community-associated MRSA, or CA-MRSA
 - The CDC reports that in 2003, 12% of people with MRSA infections had CA-MRSA
 - Rates of MRSA infection are rising. In U.S. hospitals, MRSA causes up to 40%-50% of staph infections



How do you fight it?

There are several things you should be doing to minimize the risk of CA-MRSA infections in your facility:

- MRSA Prevention Education Programs
- Hand Washing Programs
- Cleaning program utilizing good infection control procedures



Symptoms of MRSA

- MRSA most often appears as a skin infection, like a boil or abscess. Many people who actually have staph skin infections often mistake it for a spider bite.
 - The infected area would look:
 - Swollen, Red, Painful, Puss-filled
 - If staph infects the lungs and causes pneumonia, you might have:
 - Shortness of breath, Fever, Chills





BE SMART



STAY SAFE

Hand Washing Programs

The first line of defense against the spread of any infectious disease is proper and frequent hand washing.



BLOOD BORNE PATHOGENS

Exposures

- Exposures
 - Actual- needle stick, blood or OPIM in open cut or in mouth, nose, eyes.
 - Medical treatment- hospital or Occupational Medicine
 - Injury report form.
 - Communicable disease report form.



BLOOD BORNE PATHOGENS

Exposures

- Suspected
 - Blood or OPIM in contact with intact skin.
 - Wash area with soap and water or appropriate cleansing agent.
 - Document incident.



BLOOD BORNE PATHOGENS

- Equipment Maintenance
 - Protect yourself during equipment decon and cleansing.
 - Some viral agents may survive up to 7 days in dried blood.
 - Gloves should always be worn.
 - Eye protection may be required when using solutions.



ENHANCING PERSONAL PROTECTION AGAINST AIRBORNE PATHOGENS

OSHA 1910.1030



East Haven Fire Department 2009

COMMUNICABLE DISEASES

DISEASES MAY BE TRANSMITTED FROM PERSON TO PERSON BY SEVERAL ROUTES:

- DIRECT CONTACT
- INDIRECT CONTACT
- BLOOD AND BLOODY BODY FLUIDS
- VECTORS
- DROPLET INFECTIONS
- AIRBORNE INFECTIONS



HANDWASHING

THE SINGLE MOST IMPORTANT
CONSIDERATION IN AVOIDING THE
SPREAD OF ANY DISEASE IS FREQUENT
AND THOROUGH HANDWASHING



THE FOLLOWING OTHER DISEASES ARE AMONG THOSE TRANSMITTED BY THE RESPIRATORY ROUTE

- INFLUENZA (INCLUDING AVIAN FLU & H1N1 AKA Swine)
- COMMUNITY ACQUIRED PNEUMONIA
- COMMON VIRAL UPPER RESPIRATORY INFECTION
- RHINOVIRUS
- MEASLES



AIRBORNE PATHOGENS

- Communicable diseases
Spread by inhalation of airborne droplets from cough of infected persons.



THE FOLLOWING OTHER DISEASES ARE AMONG THOSE TRANSMITTED BY THE RESPIRATORY ROUTE

- **MENINGITIS**
- **TUBERCULOSIS**
- **INHALATIONAL ANTHRAX**
- **SARS**
- **Whooping cough**
- **Flu**

- **THE DISEASE WE DON'T KNOW ABOUT YET...**



DO YOU WANT YOURSELF OR YOUR
FAMILY EXPOSED TO ANY OF THOSE?

NO?

YOU CAN PROTECT YOURSELF...

MOST OF THE DISEASES ON THE LAST SLIDES
REQUIRE A RELATIVELY SIMPLE LEVEL OF
PROTECTION, BUT.....

BECAUSE OF THE NATURE OF THE RESPIRATORY
VIRUS AND CONSIDERATIONS FOR
PROTECTING AGAINST AN FLU EPIDEMIC A
HIGHER LEVEL OF PROTECTION NEEDS TO BE
SECOND NATURE



MASKS

TWO LEVELS OF AIRBORNE PERSONAL PROTECTIVE EQUIPMENT (APPE) ARE AVAILABLE & PRACTICAL FOR EMS:



SURGICAL MASK



N-95 MASK

HOW WILL YOU KNOW WHICH TO USE?

THE USE OF AIRBORNE PPE (APPE) MUST BECOME A ROUTINE PRACTICE FOR INTERACTIONS WITH **ALL** AT-RISK RESPIRATORY AND FEVER PATIENTS



HOW WILL YOU KNOW WHICH TO USE?

THEREFORE....

THE GUIDELINES ADVOCATE THE USE OF N-95 MASKS AS *THE* DEVICE OF CHOICE FOR EMS PROVIDERS TO WEAR FOR CONTACT WITH *ALL* PATIENTS WITH *ANY* POSSIBLE RESPIRATORY COMMUNICABLE DISEASE



SO REMEMBER...

N-95 MASK FOR YOURSELF

&

**SURGICAL MASK OR O2 MASK FOR YOUR
PATIENT**



YOU REALLY WANT ME TO PUT A SURGICAL MASK ON A PATIENT?

- YES, BASED ON THE CRITERIA WE'RE ABOUT TO DISCUSS
- IF THE PATIENT DOESN'T NEED O2 PUT A SURGICAL MASK ON THEM
- IF THEY DO REQUIRE OXYGEN APPLY A FACE MASK AT THE PROPER LITER FLOW



YOU REALLY WANT ME TO PUT A SURGICAL MASK ON A PATIENT?

- OXYGEN FACE MASKS MAY BLOCK DROPLETS BUT PROBABLY NOT AIRBORNE PATHOGENS
- YOU MIGHT CONSIDER PUTTING A SURGICAL MASK OVER THE OXYGEN MASK
- DRAWBACK - CAN'T OBSERVE FOR CYANOSIS OF LIPS



WHEN SHOULD YOU BE THINKING ABOUT APPLYING APPE?

- DISPATCH INFORMATION
- SCENE SAFETY ASSESSMENT
- PATIENT ASSESSMENT



WHEN SHOULD YOU CONSIDER APPLYING APPE?

DISPATCH INFORMATION

- RESPIRATORY DISTRESS, SOB, DIFFICULTY BREATHING
- FEVER
- RASH
- “SICK PERSON” or “ILL CALL”

SHOULD GET YOU THINKING AND PREPARED TO DON APPE ON SCENE



WHEN SHOULD YOU CONSIDER APPLYING APPE?

SCENE SAFETY ASSESSMENT

- AT THE DOORWAY ENTERING THE ROOM
 - IS THE SCENE SAFE?
- IS THE PATIENT COUGHING?
 - IF YES, YOU SHOULD APPLY YOUR MASK BEFORE PROCEEDING



WHEN SHOULD YOU CONSIDER APPLYING APPE?

PATIENT ASSESSMENT

- IN ADDITION TO ROUTINE QUESTIONS BASED ON CHIEF COMPLAINT (AND EARLY IN THE ASSESSMENT) THE EMS PROVIDER SHOULD DETERMINE:
- DOES THE PATIENT HAVE A FEVER?
 - PT/CAREGIVER HAS TAKEN A TEMP
 - PT THINKS HE/SHE HAS A FEVER
 - DOES IT FEEL LIKE THE PT HAS A TEMP?
- IS THE PATIENT COUGHING?
- DOES THE PATIENT HAVE A RASH?



IF YES TO ANY OF THE PREVIOUS QUESTIONS....

- AND YOU HAVEN'T PUT APPE ON YET - YOU SHOULD BE DOING IT NOW
- ALSO, ASK IF THE PATIENT HAS BEEN OUTSIDE THE USA WITHIN THE PAST 10 DAYS. IF SO, DOCUMENT WHERE THEY TRAVELED



YOU MADE THE DECISION TO APPLY APPE NOW EVALUATE THE EFFECTIVENESS

- IS THE PATIENT'S MOUTH & NOSE COVERED?
- ARE ALL PROVIDERS IN CONTACT WITH PT WEARING MASKS?



OTHER RESPIRATORY PROTECTION STEPS

- LIMITATION OF PERSONNEL
- LIMITING SOME PROCEDURES (i.e. Nebulizer)
- HEPA FILTRATION – BVM
- DISINFECTION PRACTICES
- BIOHAZARD WASTE DISPOSAL PRACTICES - MANY HEALTHCARE WORKERS HAVE BECOME CONTAMINATED BY IMPROPER REMOVAL OF PPE



OTHER CONSIDERATIONS

- ADVISE THE EMERGENCY DEPT. THAT RESPIRATORY PRECAUTIONS ARE IN PLACE, EITHER ROUTINE OR REPORT SPECIFIC CLINICAL FINDINGS
- ADVISE THE PATIENT AND FAMILY THAT RESPIRATORY PRECAUTIONS ARE A ROUTINE PRACTICE NOW TO PROTECT EVERYONE



CLEANING / DISINFECTION

- WEAR PPE DURING CLEANING & DISINFECTION PROCESS
- WIPE UP FLUIDS USING PAPER TOWELS. DISCARD PAPER TOWELS IN RED BAG.
- SATURATE AREA WITH DISINFECTANT. WIPE UP AREA AGAIN, REMOVING ALL POSSIBLE ORGANIC MATERIAL. REPEAT UNTIL AREA LOOKS CLEAN.



CLEANING / DISINFECTION

- SATURATE AREA WITH DISINFECTANT. ALLOW MINIMUM 10 MINUTES CONTACT TIME.
- WIPE UP DISINFECTANT, RINSE, AIR DRY.
- DISPOSE OF CONTAMINATED MATERIALS AND PPE IN BIOHAZARDOUS WASTE CONTAINER.
- WASH YOUR HANDS !!!



CLEANING / DISINFECTION

- DISINFECTANTS MUST BE LIQUID OR PUMP SPRAY AND RATED AS TUBERCULOCIDAL
- A SOLUTION OF 1 PART BLEACH TO 10 PARTS WATER IS ACCEPTABLE IF MIXED AT THE TIME OF USE OR WITHIN THE PREVIOUS 24 HOURS.
- CONSULT CONTAINER LABEL, MSDS, OR MANUFACTURER'S SAFETY RECOMMENDATIONS BEFORE USING CHEMICALS.



SAFE REMOVAL / DISPOSAL OF PPE

- SOME HEALTHCARE WORKERS APPEAR TO HAVE ACQUIRED RESPIRATORY INFECTION DUE TO THE IMPROPER REMOVAL & DISPOSAL OF PPE.
- PROVIDERS MUST USE CARE TO AVOID THE OUTER PART OF PPE (MASK, DISPOSABLE GOWNS, BOOTIES, ETC.) FROM COMING INTO CONTACT WITH SKIN OR CLOTHING.
- ITEMS SHOULD GO DIRECTLY INTO BIOHAZARD DISPOSAL BAGS.



SAFE REMOVAL / DISPOSAL OF PPE

- MASKS SHOULD BE THE SECOND TO LAST ITEM REMOVED, FOLLOWED BY GLOVES.
- THOROUGH HANDWASHING WITH EITHER SOAP & WATER OR WATERLESS DISINFECTANT SHOULD TAKE PLACE IMMEDIATELY AFTER ALL PPE IS REMOVED.



SUMMARY

BASIC INFECTION CONTROL PRACTICES -
UNIVERSAL PRECAUTIONS, FREQUENT
HANDWASHING, DISINFECTION, ETC. ARE AN
IMPORTANT PART OF EMS PRACTICE

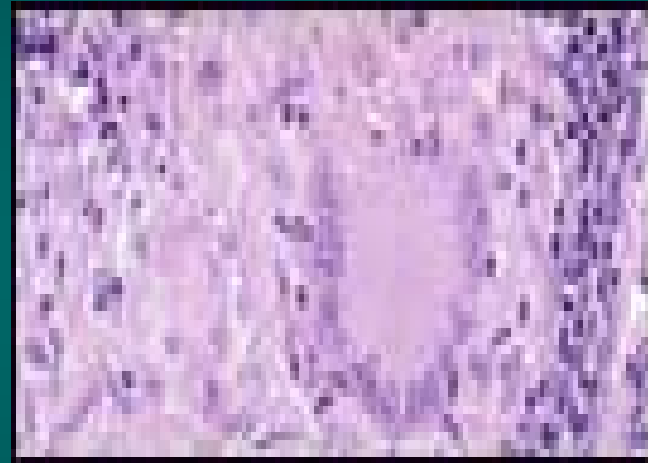


Occupational Exposure to Tuberculosis (TB)



Tuberculosis

- Infectious disease cause by the bacterium, *Mycobacterium tuberculosis*.
- Spread by airborne droplets, “droplet nuclei,” which may be generated when a person with TB disease coughs, sneezes, or sings.



Occurrence

- Nearly one-third of the world's population is infected with TB, which kills almost 3 million people per year.



Why Is TB Increasing?

Multiple contributing factors:

- Homelessness
- Intravenous drug use
- Overcrowding in institutional settings
- HIV infection
- Drug-resistant strains of TB
- Reduced TB control and treatment resources
- Immigration from high TB prevalence areas



What are the symptoms of TB?

- A cough that won't go away
- General malaise
- Weight loss
- Loss of appetite
- Fever
- Coughing up blood
- Night sweats



How does TB disease develop?

- If a person has been infected for years and is healthy . . .
 - A sudden change in health may allow the disease to “break through”
 - The change in health may be from AIDS, diabetes, or drug or alcohol abuse, etc.
 - The time from infection to disease state in these cases is usually many, many years



How else can TB disease develop?

- The person who breathes in TB bacteria and is unable to protect themselves from the disease

The infection can
become a disease in just a few
weeks



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- The Path of Transmission
 - The air droplets are inhaled by people in the close proximity of the infected person.
 - In some individuals the tubercle bacilli will enter the alveoli and establish an infection.
 - Within weeks of the initial infection, it can spread through the lymphatic system to distant tissues and organs.
 - Develops an active infection



AIRBORNE PATHOGENS

– Latent TB Infection

- Tubercle bacilli enters the body through alveoli
- Immune response limits multiplication and spread of the bacterium.
- Some bacterium remain dormant and viable for years or decades.
- May become “active”.



What is the TB skin test?

- It is the way to find out if you are infected with TB, it does not tell you if you have TB disease
- The preferred screening is the Mantoux Test using a purified protein derivative (PPD)
- A small injection is made in the forearm, and then examined 48 to 72 hours later to determine if the test is positive



What is multi-drug resistant TB?

- Multi-Drug Resistant TB (MDR TB) is a dangerous form of tuberculosis
- Some TB bacteria become resistant to the medications used to treat TB, usually when a patient does not take their medications properly
- MDR TB spreads just like regular TB, but is much harder to treat
- In 1997, the CDC found that 47% of all MDR TB in the U.S. was found in New York City and Los Angeles



How do I protect myself?

- Regular TB testing & follow up
- Appropriate history taking
- Appropriate personal protective equipment - the N95 Respirator



Where Is TB Found in the Workplace?

- Healthcare Facilities
- Correctional Institutions
- Homeless Shelters
- Long-term Care Facilities for the Elderly
- Drug Treatment Centers



OSHA's TB Policy

- Employers must comply with the provisions of the following requirements whenever an employee may be occupationally exposed to TB:
 - Section 5 (a)(1) - General Duty Clause and Executive Order 12196, Section 1-201(a) for federal facilities;
 - 29 CFR 1910.134 - Respiratory Protection;



TB and Respiratory Protection (Continued)

Covered establishments must comply with 29 CFR 1910.134 when using respirators for protection from TB.

