



# 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

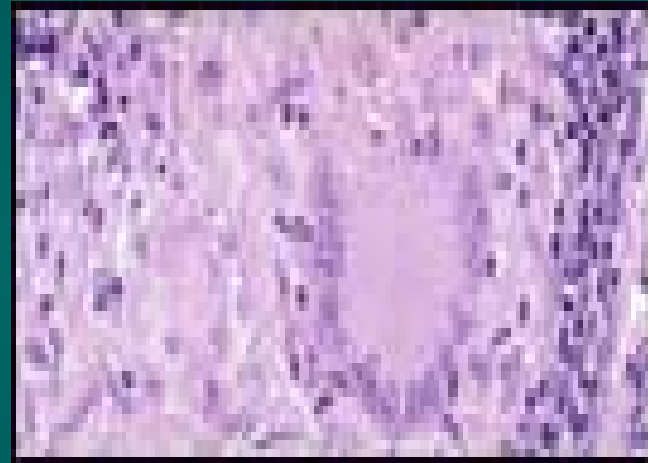


# Occupational Exposure to Tuberculosis (TB)



# 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



# AIRBORNE PATHOGENS

- 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.

