

OSHA Bloodborne Pathogen and Tuberculosis Training

Office of Prospective Health



BRODY
SCHOOL of MEDICINE

Updated 2/17/21

FINE ART

Who is OSHA?

- Occupational Safety and Health Admin.
- Requires employers to provide a safe working environment
- Developed “Occupational Exposure to Bloodborne Pathogens” standard

Standard Requirements

- Limit occupational exposure to human blood and other potentially infectious materials in the workplace
- Provide employees with knowledge of job-associated risks
- Provide protective devices/measures that can prevent most exposures
- Written Exposure Control Plan – online at Prospective Health – Infection Control
- Annual training – online

Exposure Control Plan

- Defines who is at risk
- Outlines procedures to prevent or minimize employee exposure
- Outlines procedures to follow in event of blood exposure
- Available online at:
(www.ecu.edu/prospectivehealth) – Under Infection Control

What are bloodborne pathogens?

- Infectious materials in the blood which can cause disease in humans
- Exposure can result in serious illness or death

Who's at risk?

- Anyone who handles blood, blood components or body fluids
- Anyone who touches potentially contaminated equipment or surfaces

Job duties involving possible exposure

- Surgery
- Patient exams
- Phlebotomy and injections
- Cleaning and sterilizing instruments
- Emergency first aid
- Handling infectious waste
- Cleaning blood spills
- Handling soiled linen
- Cell, tissue, or organ culture

How are bloodborne diseases transmitted?

Bloodborne pathogens may enter your system through:

- Contaminated sharps injuries (needle sticks, broken glass, scalpel blades)
- Mucous membrane splash (eye, mouth, nose)
- Contact on non-intact skin (open cuts, rash, blisters, hangnails)

Infectious body fluids

- Human blood or serum
- Semen
- Vaginal secretions
- Amniotic, pericardial, pleural, synovial and cerebrospinal fluids
- Unfixed tissue or organ

Not infectious for bloodborne pathogens **

- Feces
- Urine
- Tears
- Saliva
- Vomitus
- Sputum
- Sweat

** unless visible blood is present

Bloodborne Pathogens of Concern

- Hepatitis B
- Hepatitis C
- HIV/AIDS

Other Bloodborne Pathogens

- Malaria
- Babesiosis
- Brucellosis
- Leptospirosis
- Syphilis
- Arboviral infections
- Relapsing fever
- Creutzfeldt-Jakob disease
- Viral hemorrhagic fever

Hepatitis B

- Infection of the liver
- Can lead to cirrhosis, liver cancer and death
- 20% risk of infection from a contaminated sharp
- Virus can survive in dried blood up to 7 days

Symptoms of Hepatitis B

- Fatigue
- Loss of appetite, nausea
- Jaundice (yellowing of skin and eyes)
- Fever
- Abdominal pain, joint pain
- 30% have no symptoms
- Preventable

Hepatitis B Vaccine

- Recommended for all high-risk groups
- Free - provided by employee health at Prospective Health
- Safe
- 3 shots series - initial, 1 month, 6 months.
- After the 3-shot series, you will be considered to have life-long immunity
- Decline - must sign OSHA waiver

Hepatitis C

- Most common chronic bloodborne infection in US
- Causes liver damage, cirrhosis and liver cancer
- Leading reason for liver transplants
- 2% risk of infection by contaminated sharp

Symptoms of Hepatitis C

- Same as Hepatitis B
- May occur within 2 weeks to many years
- 85% don't know they are infected

Hepatitis C Vaccine

- **There is NO vaccine for prevention**
- Treatment available after infection, 95% cure rate
- There are 50,000 needle sticks annually related to HCV-infected patients

Major Risk Factors for Hepatitis B and C

- Sexual activity with multiple partners
- IV drug use
- Hep B
 - neonatal transmission
- Hep C
 - blood transfusion prior to 1990

Other Risk Factors for Hepatitis B and C

- Tattooing
- Body piercing
- Shared nasal cocaine paraphernalia

HIV/AIDS

- Attacks the body's immune system
- Unable to fight off other infections
- NO vaccine and NO cure
- 1.2 million people in the US are living with HIV infection and almost 1 in 8 are unaware of their infection.
- 50,000 new cases per year

HIV/AIDS

Human immunodeficiency is:

- A virus that does not currently have a cure but can be controlled with medication
- Is also known as the virus that causes acquired immune deficiency syndrome (AIDS)

Symptoms of HIV

- Mild flu-like symptoms initially (fever, swollen glands)
- May be free of symptoms for months to many years
- May lead to AIDS and death

HIV Transmission

- High risk sexual activity and IV drug abuse account for 80%
- Neonatal transmission
- Accidental occupational exposure

Chances of Infection

You can be exposed to HIV infected blood/body fluids by:

- A dirty needle/sharp 3 in 1000 (0.3%)
- Mucous membrane splash 1 in 1000 (0.1%)
- Non-intact skin 1 in 1000 (0.1%)

Prompt antiviral treatment after exposure can reduce risk of infection by 60 – 80%

Syphilis

- Sexually transmitted disease
- Transmitted via lesion contact or blood
- Considered if patient history suggestive
- Treatable with antibiotics

How can I protect myself?

- Standard Precautions - All blood and body fluids are treated as if infectious for bloodborne pathogens
- Personal protective equipment
- Safe work practices
- Engineering controls

Personal Protective Equipment (PPE)

- Provides a barrier between you and infectious material
- Should be available in appropriate size and type needed, at no cost to employee
- Fit testing annually to ensure fit
- Powered Air-Purifying Respirators (PAPR) must be seal checked prior to each use

Latex Allergy?

- Mild sensitivity can progress to life-threatening allergic reaction with continued exposure

Hospital supplies that may contain latex

- Adhesive tape
- Catheters
- Disposable syringes
- Elastic bandages
- Electrode pads
- Protective sheets
- Stethoscope tubing
- Stoppers on vials
- Wound drains

Household Products that may contain latex

- Baby pacifiers
- Wheelchair tires
- Tennis balls
- Condoms/Diaphragms
- Disposable diapers
- Balloons
- Dental Dams

Latex Allergy Determination at ECU

- Basic Health History at New Employee Orientation
- Annual Update of Health Care Workers

PPE Selection Based on Anticipated Exposure

Personal Protective Equipment (PPE) examples are:

- Gloves - any time contact with blood or other body fluids may occur
- Masks and eye protection - if there is any chance of splashing into the mouth, nose, or eyes
- Gowns/lab coats, shoe covers - risk of splattering or spilling on clothes or skin

Engineering Controls

- Devices that reduce employee risk by isolating or removing the hazard are known as Engineering Controls.

Examples are:

Sharps disposal containers

Safety medical devices

Biosafety cabinets

Negative pressure rooms

Work Practice Controls

- Work practice controls depend on you!
- Examples - proper handwashing,
 - getting Hep B vaccine
 - proper handling of sharps
 - proper disposal of infectious waste
 - wearing appropriate PPE

Work Practice Controls

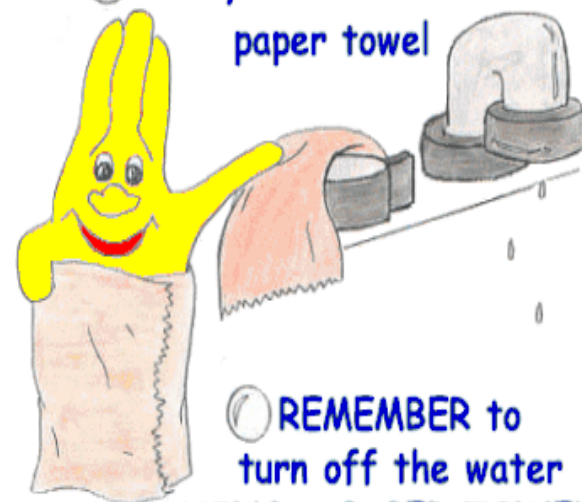


- Handwashing - Single most important means of preventing the spread of infection

○ **RINSE WELL**



○ **DRY** your hands with a paper towel



○ **REMEMBER** to turn off the water
USING A PAPER TOWEL
INSTEAD OF YOUR HANDS

* Waterless hand cleaner - unless visibly soiled or if no soap and water available

Breaking the chain of Infection



WASHING
HANDS
SAVES
LIVES!!!

Your health is in your hands!

When to wash hands

- Before and after touching every patient
- After removing gloves
- After handling potentially infectious material
- After using the bathroom
- Before eating, smoking, applying cosmetics, handling contact lens

Did you know.....

- One in three people *do not* wash their hands after using the restroom.

Centers for Disease Control Sharps Injury Statistics

- 385,000 needlesticks/year involving HCW's
- 56 contract HIV
- 2000 become infected with Hep C
- 400 contract Hep B
- 20 contract additional types of infectious diseases

Handling Sharps

- Needles should NOT be bent, recapped, removed, or broken
- Use tongs, or dustpan and broom to pick up contaminated broken glass (not hands!)
- Discard all needles and sharps in closable, leak-proof, puncture resistant sharps containers immediately after use!!



WARNING:

**DO NOT OVERFILL
OR FORCE SHARPS
INTO CONTAINER!!**

**Change when no
more than 2/3 full**

Needlestick Safety and Prevention Act

- Mandates adoption of safety devices (self-sheathing needles, scalpels, blood or retracting needles, drawing devices, and needleless IV systems)
- Replace glass with plastic
- No mouth pipetting
- Do not reuse blood tube holders

Needlestick Safety and Prevention Act

What to do if you are stuck by a used needle contaminated with human serum:

- Immediately wash the area with soap and water
- Notify your supervisor
- Call the Office of Prospective Health at 744-2070 to request a blood exposure evaluation

Personal Hygiene

- No eating, drinking, smoking, applying cosmetics, or handling contact lens in areas where blood and body fluids are handled
- Do not keep food and drinks in refrigerators/freezers where infectious material may be stored
- Artificial nails/tips are NOT allowed for direct patient care givers

Biohazardous Waste

- Discard contaminated sharps in approved sharps containers
- Discard all other infectious material in red biohazard trash bags
- Picked up by biohazard waste technicians
- Incinerated
- Do NOT throw regular trash in red bags!



International Biohazardous Waste Symbol



Housekeeping/Decontamination

The best way to clean a major blood spill is:

- Wipe up all visible blood with absorbent, and then clean the area with soap and water. Finally, clean the area with a disinfectant or bleach solution spray (Dispatch)
- Disinfect equipment and surfaces with approved disinfectant (Dispatch, 10% bleach solution, Saniwipes) when....
 - Surfaces become contaminated
 - At the end of the work shift
 - After any spill of blood or other potentially infectious material (OPIM)

Blood or OPIM Spill Procedure

- Prevent accidental exposure to others
- Wear appropriate PPE
- Absorb spill (paper towels or biohazard spill kit)
- Spray Dispatch or bleach solution, set for 10 min. or air dry
- Dispose of all cleaning materials and PPE in biohazard trash bag

What if I am exposed?

- Wash with soap and water
- Splash to mucous membranes - rinse or flush with water for 15 min.
- Have source patient remain available

Who needs to know?

Contact:

ECU Office of Prospective Health

744-2070

Contact Vidant Occupational Health if exposed at hospital
(After hours contact Vidant Nursing Coordinator)

847-4386

For exposure at ECU

After 5:00 pm, on weekends or holidays, use the Vidant
Emergency Department for follow-up

See ECU Infection Control Policy for Source Patient
Evaluation Algorithm

Post Exposure Follow Up

- Review medical histories
 - risk factors, vaccinations
- Baseline blood tests - CBC, CMP, HIV, HEP B & C, syphilis
- HIV results in less than 2 hrs
- Confidentiality is maintained

HIV/AIDS Exposure

- Baseline labs drawn 6 weeks, 3 months, and 6 months
- Referral to Infectious Disease Specialist
- Evaluation for post-exposure prophylaxis (PEP)
- PEP reduces risk of infection 60-80%

Tuberculosis

Airborne Pathogen

Old Enemy

New Battle

Transmission

- Caused by a tiny germ called *mycobacterium tuberculosis*
- Tuberculosis is spread when someone with active TB disease coughs, talks, sings, laughs, sneezes, or spits TB bacteria into the air
- Uninfected person breathes in TB bacteria

Signs & Symptoms

- Signs and Symptoms of TB include:
- Chronic Cough > 2 weeks
- Fever
- Weight loss
- Night sweats
- Bloody sputum

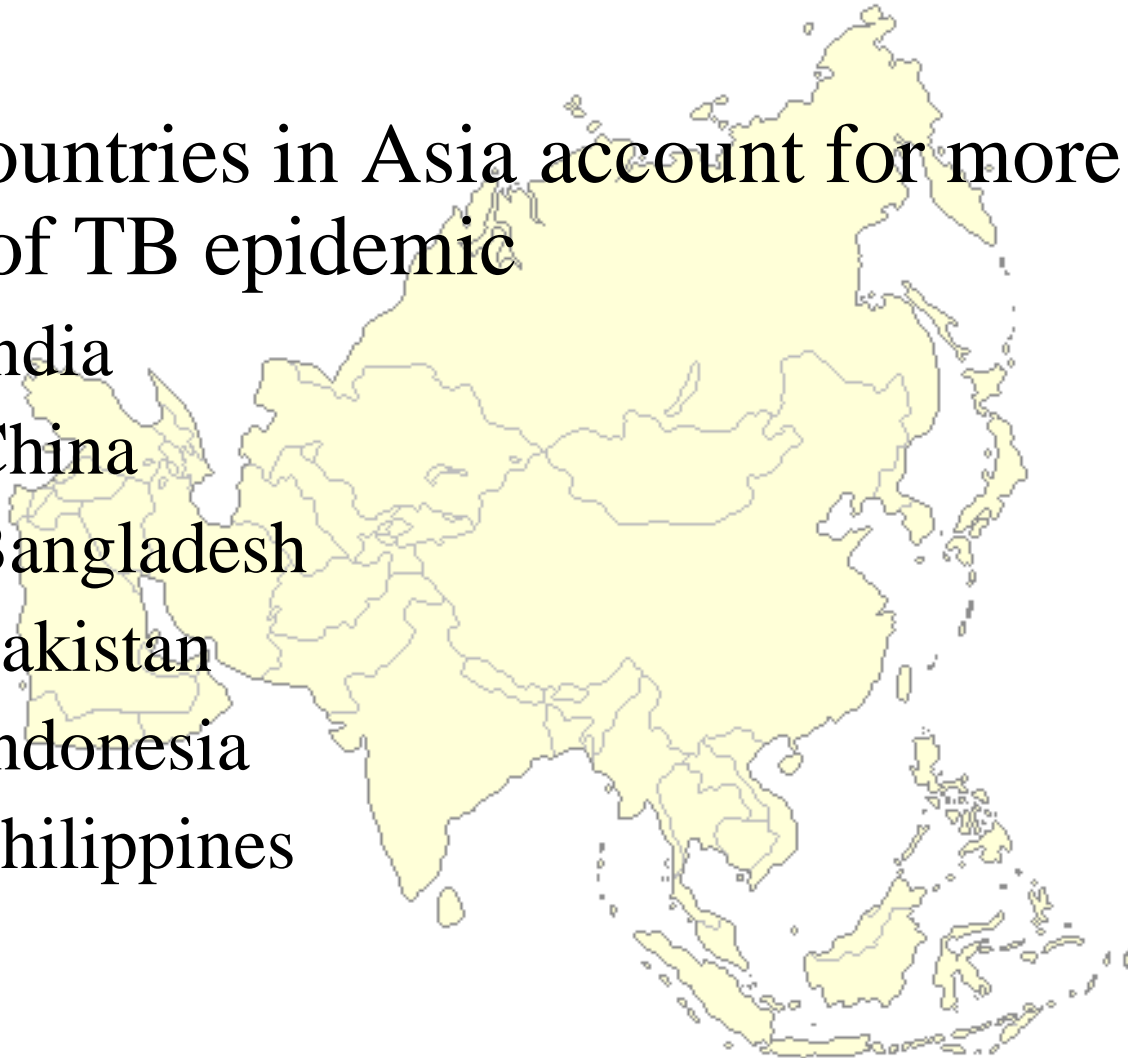
High Risk for TB

- Immunocompromised (HIV/AIDS)
- People living in close conditions (prisons, nursing homes)
- Homeless
- Foreigners
- Economically/medically disadvantaged

MTB in the World

Six countries in Asia account for more than 50% of TB epidemic

- India
- China
- Bangladesh
- Pakistan
- Indonesia
- Philippines



MTB in North Carolina

- North Carolina's number of MTB cases rank about average.
- Foreign-born persons account for 53% of TB cases in US.
- Hispanics account for 17% of TB cases in NC

LATENT TB INFECTION	ACTIVE TB DISEASE
Exposed to active TB disease	Infection has progressed to active disease
Positive TB skin test	Positive TB skin test
No symptoms	Will have symptoms
Negative chest xray	Positive chest X-ray
WILL NOT INFECT OTHERS	CAN INFECT OTHERS

How do you test for TB?

- A TB skin test or PPD will show if you have any TB bacteria in your body.
- All employees or students that are potentially exposed to TB are required to receive a skin test annually.

What if I have Latent TB Infection?

- 90% of healthy people with TB infection will never develop TB disease.
- Should be evaluated for prophylaxis medications by the health department or a private physician.
- Prophylaxis meds reduce lifetime risk of developing active TB disease by 95%
- Be aware of signs and symptoms of active TB disease

Multi-drug resistant TB strains (MDR TB)

- Occurs when patients do not complete treatment; all TB germs in body not killed
- Occurs when TB germs mutate, can survive standard TB treatment
- Difficult to diagnose, control, and cure
- MDR-TB becoming more prevalent

Prevent MDR TB

- **Must take antibiotics as directed for active TB disease**
- **Therapy directly observed by Public Health**
- **It's the Law!**

How do Healthcare Workers avoid exposure to TB?

- If you see any symptoms of TB, place a mask on the patient immediately
- Give the patient tissues to contain coughed secretions
- Move patient to “negative pressure” rooms to isolate them
- Patient should wear mask outside room and during transport to other departments
- All employees who work with potential TB patients must be fit tested annually for an approved respirator to wear when working with infectious individuals.

N-95 Respirator

- Remember your mask size
- Properly fitted PPE equipment is used to protect you from airborne TB particles.
- For TB protections, perform Powered Air-Purifying Respirator (PAPR) seal check to ensure there are no air leaks around the edges of the mask prior to each use.
- Fit testing is required annually at Prospective Health for those who perform high risk procedures or have direct contact with patients.

N-95 Respirator

- Notify Prospective Health of facial changes due to:
 - Large amount of weight gain or loss
 - facial trauma and/or surgery
 - growth or shaving of beard
- Men with full beards will wear a Powered Air-Purifying Respirator (PAPR)
- If unable to wear mask, you will be instructed in the use of a Powered Air-Purifying Respirator (PAPR).

N-95 Respirator

Your respiratory protection (mask or Powered Air-Purifying Respirator) can be used to prevent exposure to infectious agents in addition to TB. These include:

- Severe Acute Respiratory Syndrome (SARS)
- Smallpox
- Anthrax Spores (on patient contaminated with a suspicious white powder)
- Meningococcus while intubating a meningitis patient

Power Air-Purifying Particulate Respirators (PAPR)



What do I do if I'm exposed to TB?

- You are notified by Infection Control of suspected/confirmed exposure to patients seen in your area that have been diagnosed with TB
- After notification, call Prospective Health Employee Health to schedule a TB skin test 252-744-2070.
- A TB skin test is done at the time of exposure and 2 months after the exposure

TB Exposure Continued

If you develop a positive TB skin test after exposure:

- You will be assessed for active TB (CXR, symptoms)
- If CXR is negative, consider latent TB infection
- Referral to private physician or local health department for preventive antibiotics

What if I am diagnosed with TB disease?

You will receive antibiotics which will eventually kill the TB bacteria in your body

You cannot work until no longer infectious (usually 2-3 weeks after starting antibiotics)

TB Exposure Continued

- Patients presenting with fever, cough, and hemoptysis should immediately be treated as if they are infectious to prevent exposure of staff and other patients in the clinic.
- To prevent infection transmission of HIV positive patients presenting to the clinic with chronic cough and blood in their sputum, staff should immediately:
 - Place a mask on the patient
 - Place patient in a negative pressure room
 - Providers will don N-95 mask or PAPR while examining the patient.
- Healthcare workers should be screened/tested for TB:
 - At least once a year
 - After an exposure to an infectious patient

Office of Prospective Health
THE BRODY SCHOOL OF MEDICINE AT EAST CAROLINA UNIVERSITY

