

Compliance with OSHA Standards

- Law and regulations-Title 29 Code of Federal Regulation (29 CFR)
- Bloodborne Pathogens Standard (29 CFR1910.1030)
- Hazard Communication (29 CFR1910.1200)
- Ionizing Radiation (29 CFR1910.1096)
- Exit Routes (29 CFR Subpart E 1910.35, 1910.36, 1910.37, and 1910.38 and 1910.39)
- Electrical (Subpart S-Electrical 29 CFR1010.301 to 29 CFR1910.399)

OSHA- Occupational Safety and Health Administration

- Federal agency regulates safety and health in the workplace, requires formal training for anyone working with human blood, body fluids or tissues.
- Federal Law and Regulation: originated from the United States Occupational Safety and Health Act of 1970 (OSH Act).

OSHA Bloodborne Pathogen Standards

- 1991- OSHA Bloodborne Pathogens Standard-29(CFR) 1910.1030 http://www.osha-slc.gov/OshStd_data/1910_1030.html
- 2001- Occupational Exposure to Bloodborne Pathogens: Needlesticks and Other Sharps injuries; final Rule: <http://www.osha-slc.gov/FedReg_osha_data/FED20010118A.html>

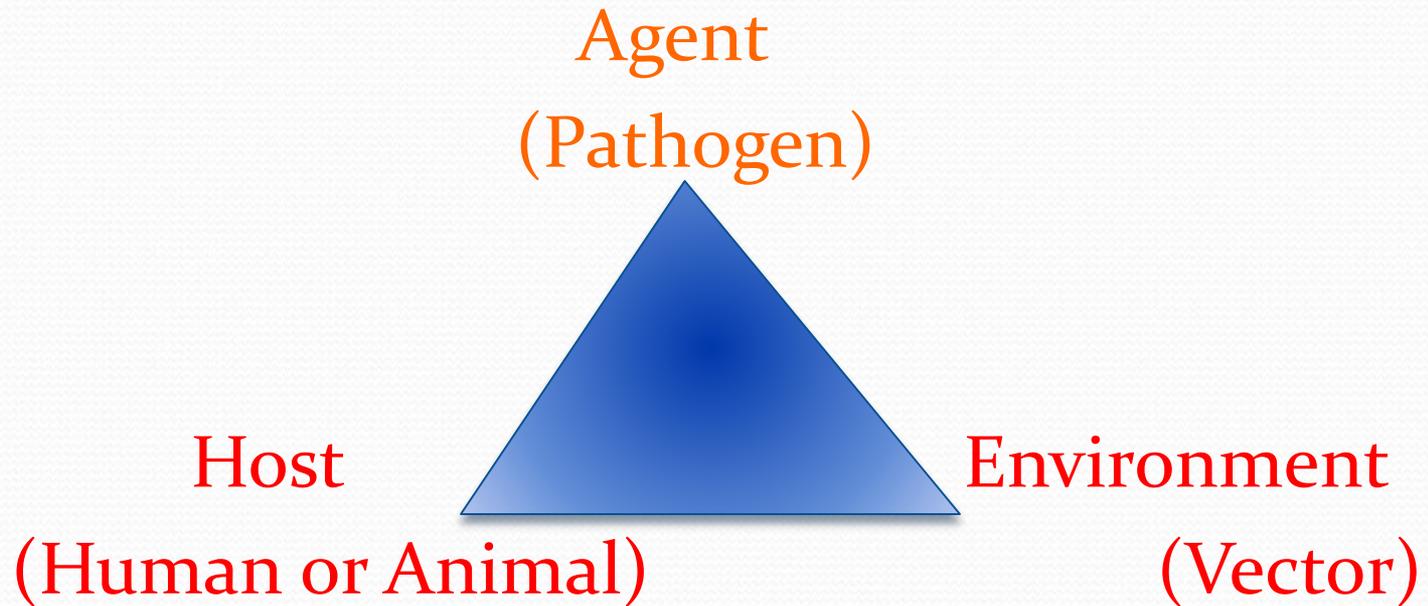
Bloodborne pathogen

- Bloodborne pathogens are infectious microorganisms in human blood that can cause disease in humans.
- Most concerned bloodborne pathogens include: Hepatitis B (HBV), Hepatitis C (HCV) and human immunodeficiency virus (HIV)
- Less talked about: Malaria, Syphilis, Leprosy, Lyme, Colorado Tick Fever

Other Potentially Infectious Materials

- Human Body Fluids- saliva in dental procedures, any fluid contaminated with blood
- Human cell culture
- Unfixed human tissue or organ (except skin)
- Blood, organ, or other tissues from infected with bloodborne pathogens
- Breast milk

Concepts of Disease Occurrence- Epidemiologic Triad



Exposure to Bloodborne Pathogens

- Percutaneous injury- needle, or sharp injury
- Infections materials in direct contact with eyes, inner surface of nose or mouth-splash and splatter
- Blood or infectious materials in contact with non-intact skin (scrape, paper cut, dermatitis)

HIV/AIDS

- HIV-Human Immunodeficiency Virus
- AIDS-Acquired Immune Deficiency Syndrome
- At the end of 2012, CDC estimated 1.2 million persons aged 13 and older living with HIV infection in the United States, among them 156,300 never been diagnosed.
- Every year, 50,000 new HIV infection

HIV Transmission (in U.S.)

- Sexual behavior, anal sex, vaginal sex
- Sharing needles or syringes, rinse water or contaminated equipment
- HIV can live in a used needle up to 42 days
- From mother to child during pregnancy birth or breastfeeding
- Stuck by HIV-contaminated needle or other sharp object

HIV NOT Spread by

- Mosquitoes, ticks, or other insects
- Not-infected human saliva, tears, or sweat
- Hugging, shaking hands, sharing toilets or sharing dishes
- Closed-mouth kissing

HIV Infection

- Initial Phase: 4-6 weeks after exposure
 - Flu-like symptoms as the “worst Flu ever”, fatigue, fever(common symptom), swollen lymph glands, sore throat, skin rash, muscle and joint aches and pain, weight loss.
- Second Phase: Clinically asymptomatic
- Third Phase: Symptomatic Infection
- Fourth Phase: HIV to AIDS

HIV Prevention

- Avoid risky behaviors
- Pre-exposure prophylaxis-take oral medicines daily to lower chances of infection
- Post-exposure prophylaxis- take antiretroviral medicine (ART) after being potentially exposed (with 72 hours) to HIV to prevent becoming infected.

Hepatitis B/C Infection

- Phase 1 – Flu-like symptom, feeling very tired, loss of appetite, mild fever, vomiting, belly pain, muscle/joint aches, pain
- Phase 2- Jaundice, dark urine, clay colored stools
- Infection can cause your liver damage(Cirrhosis)
- **Incubation periods** for hepatitis C virus is from 2 weeks to 6 months.

Hepatitis B (HBV)

- In 2013, 3050 cases acute Hep B reported to CDC, severe under-reported
- Newly infected was estimated 19,764 cases in 2013 with highest in male, aged 25-44 years
- Chronic Hep B was estimated 700,000- 1.4 million in the U. S. and 240 million worldwide, with 786,000 deaths related to Hep B liver disease per year

Hepatitis C

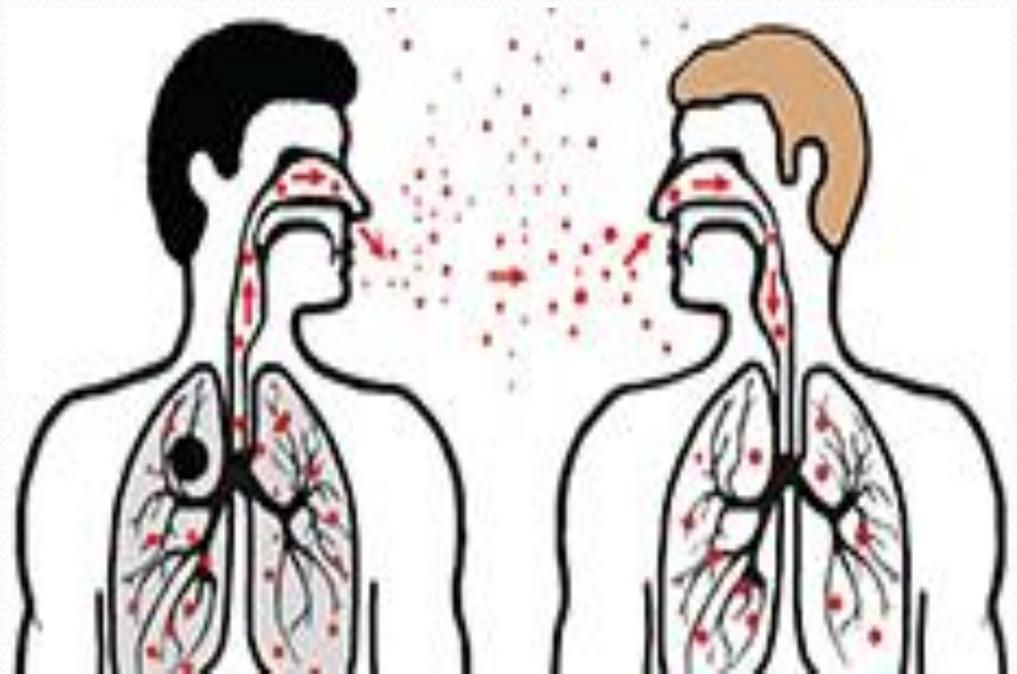
- In 2013, 2138 acute Hep C cases reported to CDC, but estimated 29,718 new cases
- In 2015, 3.5 million (2.5-4.7 million) infected
- High risk populations are IV drug users, recipients of blood clotting factor before 1987, blood donation or organ transplants before 1992, chronic hemodialysis patients, HIV infection, HCV exposure
- 15-25% infected clear infection spontaneously
- 75-85% vHCV infection becomes chronic
- 1-5 in 100 infected HCV will die

Transmission of HIV Hep B&C

- Sexual contact
- Sharing the needle (as Tattoo)
- HIV enters the body through open cuts, breaks in the skin
- A mother who has the virus can pass it to her baby during delivery.
- Sharing the tooth brash and Razor
- HBV stay alive outside the body at least 7 days

Tuberculosis (TB)

Mycobacterium tuberculosis infection, usually spread through airdrops from one infected person to another person when coughs, sneezes, speaks, or sings.



Tuberculosis

- Tuberculosis can spread through the lymph nodes and bloodstream to any organ in your body. It is most often found in the lungs.
- Latent TB infection- TB bacteria live in the body but without any symptom
- TB Disease- When immune system weakens, such as in people with HIV or elderly adults, TB bacteria can become active (5-10%). In their active state, TB bacteria cause death of tissue in the organs they infect.
- Active TB disease can be fatal if left untreated

TB

- In the U. S., 9 – 14 million infected with M. Tuberculosis
- In 2010, over 11,000 people developed TB disease
- An estimated 2 billion infected globally, 9 million people develop TB disease, 1.4 million die of it, on average 1 TB death per 15 seconds
- Drug-resistant TB is major public health threat

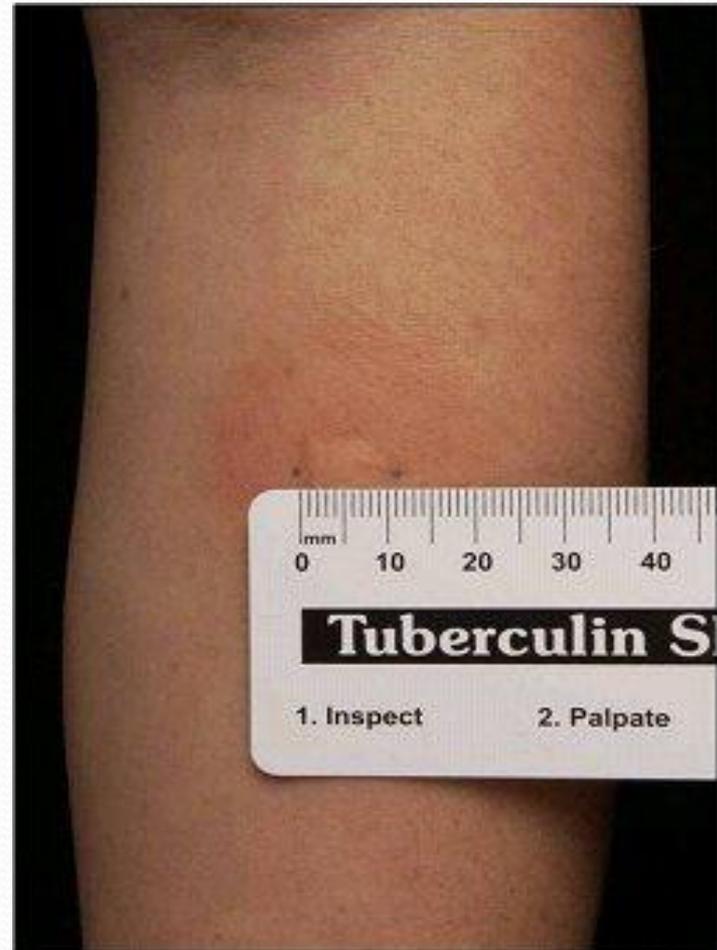
Symptoms of TB

- Bad cough lasts 3 weeks or longer
- Pain in the chest
- Coughing up blood or sputum
- Weakness or fatigue
- Weight loss
- No appetite
- Chills
- Fever
- Sweating at night

Tuberculosis Test & Treatment

- TST- TB skin test
 - PPD test also call Mantoux tuberculin skin test
- TB blood test- 2 Interferon-gamma release assays (IGRAs), QuantiFERON[®]-TB In-Tube (QFT-GIT) and T-SPOT[®]TB
- Chest X Ray
- Sputum culture
- Treatment- oral medication 6 to 9 months

Mantoux Tuberculin Skin Test (TST)



CDC- High risk groups

- Children younger than 5 years of age
- On immunosuppressive therapy
- Persons with silicosis, DM, chronic renal failure, leukemia, lymphoma, cancer of head, neck or lung
- h/o gastrectomy or jejunioileal bypass
- Weight less than 90% of ideal body weight
- Alcohol and drugs abuser

Comparison

- Latent TB infection-
 - Do not feel sick
 - Do not have any symptoms
 - Cannot spread TB to others
 - Are at risk for developing TB disease
- TB disease
 - usually feel sick
 - usually have one or more symptoms
 - may be able to spread TB bacteria to others

Bloodborne Pathogens Standard

- Written exposure control plan
- Universal precautions
- Consideration of safer, engineered needles and sharps
- Appropriate personal protective equipment (glove, face and eye protection, gowns)
- Medical follow-up of an “exposure incident”
- Use of color-coding sharp disposal boxes, containers for regulated waste
- Employee training
- Proper containment of all regulated waste

Infection Control

Good hand wash to protect self and clients

- Liquid soap (Rubbing hands) and Rinse with running water;
- Hand wash between the clients.
- Hand wash before and after change of gloves

Hazard Communication

- Employee right-to-know
- Written hazard communication program
- A list of used or stored hazardous chemicals
- A copy of the Material Safety Data Sheet (MSDS) for each used or stored chemical
- Employee training

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普遍預防UNIVERSAL PROCAUTIONS



General Safety

- Proper lift objective skills
 - How to prevent/avoid to slip, fall
- slips and trips result from some a kind of unintended or unexpected change in the contact between the feet and the ground or walking surface. This shows that good housekeeping, quality of walking surfaces (flooring), selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents

Ionizing Radiation

- A survey of the types of used radiation, ie X-ray
- Restricted areas to limit employee exposures
- Must wear personal radiation monitors such as film badges or pocket dosimeters while working in restricted areas
- Rooms and equipment may need to be labeled and equipped with caution signs

Exit Routes

- Safe and accessible building exit
- Exit routes sufficient for the number of employees in any occupied space
- A diagram of evacuation routes posted in a visible location

Electrical

- Safety of electrical equipment
- Safe wiring in hazardous locations

Reporting Occupational Injuries and Illnesses

Must report any work-related Fatality or hospitalization of 3 or employees in a single incident to the nearest OSHA Office; call 1800-321OSHA or California State OSHA office

