

# Bloodborne Pathogens

Presented by:

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## Overview of presentation

Every employee of the district will be required to have some training on bloodborne pathogens every year they are employed in a public school district.

This training is required by the Texas Department of Health in compliance with OSHA regulations—Chapter 96, Bloodborne Pathogen Control.

This training is provided to you in the form of this power point presentation with a quiz to follow.

Each year after this, a refresher course only will be required, except for new employees, who will begin with this course.

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*The sudden appearance of the foreign proteins was the molecular equivalent of the Black Plague. Entering the bloodstream, the [pathogen] coursed out into Cedric's body. No cell was immune...Cedric Harring was about to disintegrate...*  
(excerpt from Mortal Fear by Robin Cook)

While, most of us will never be exposed to the kind of dangers Robin Cook dreams up in his mystery novels, we do interact in ways each day that can expose us to a real-life bit of mystery—the threat of bloodborne pathogens.

As sure as children fall while learning to walk, students experience cuts, bruises and other injuries. In times past, little thought was given to treatment of such injuries. However, in today's environment it is critical that school professionals plan a safe response to children in need. Whether in the classroom, on a playing field or on a school bus, all school employees must know the potential danger of bloodborne pathogens.

The Occupational Safety and Health Administration (OSHA) has issued a standard called the OSHA Bloodborne Pathogen Final Rule that provides definitions of methods to reduce the risk of exposure to bloodborne pathogens. Through HB 2085, the Texas Department of Health was given the task of writing rules related to bloodborne pathogens exposure for employees of governmental entities.

Under House Bill #2085, which was passed by the Texas Legislation in 1999, Texas public schools are now required to implement bloodborne pathogen exposure control plans. Until this bill passed, these regulations pertained only to the private sector. These plans outline ways employees in the district have to obtain timely, confidential, medical treatment for a person who is accidentally exposed.

So... How do you protect yourself?

By doing several things:

- Take training classes like this one that is being offered.
- Following guidelines as listed in the Exposure Control Manual and using Universal Precautions.
- Using protective equipment as needed.
- Developing an understanding of how bloodborne pathogens affect everyone.

# What are Bloodborne Pathogens?

Definition: A bloodborne pathogen is any microscopic organism that is carried in the blood and causes disease.

Bloodborne pathogens travel from person to person when the blood of a sick person gets inside another person.

Among the more common bloodborne diseases that you could be exposed to on the job are:

- non-A, non-B hepatitis (also called hepatitis C)
- hepatitis B
- human immunodeficiency virus
- syphilis
- malaria

The two most significant are hepatitis B and human immunodeficiency virus and are the two diseases specifically addressed by the OSHA Bloodborne Pathogen Standard.

# Where are the Bloodborne Pathogens Found?

The pathogens are present in blood, tissue, blood products, and other potential infectious materials defined by the Centers for Disease Control as:

- Semen
- Vaginal secretions
- Cerebrospinal fluid
- Pleural fluid
- Peritoneal fluid
- Pericardial fluid
- Amniotic fluid
- Synovial fluid
- Breast milk (not all authorities agree)
- Saliva in dental procedures

Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they contain blood.

# Modes of Transmission

- Sexual contact
- Sharing of hypodermic needles
- From mothers to their babies at/before birth
- Accidental puncture from contaminated needles, broken glass, or other sharps
- Contact between broken or damaged skin and infected body fluids
- Contact between mucous membranes and infected body fluids
- Anytime there is **blood-to-blood** contact with infected blood or body fluids

## Exposure...

Unbroken skin forms an impervious barrier against bloodborne pathogens. However, ***infected blood can enter your system through:***

- Open sores
- Cuts
- Abrasions
- Acne
- Any sort of damaged or broken skin such as sunburn or blisters

Bloodborne pathogens may also be transmitted through the ***mucous membranes*** of the:

- Eyes
- Nose
- Mouth

For example, breaking up a fight at school and a student's potentially infectious blood gets on your fingers or hand and you have recently cut yourself.

# Hepatitis B

- "*Hepatitis*" means "*inflammation of the liver*".
- As its name implies, Hepatitis B is a virus that infects the liver.
- HBV causes the most serious form of viral hepatitis.
- Approximately 300,000 cases of HBV are reported each year in the US.
- HBV is spread predominantly through exposure to blood, from an infected mother to her unborn infant, or via sexual contact.
- Hepatitis can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death.
- There is no "cure" or specific treatment for HBV, but many people who develop the disease will develop antibodies, which help them get over the infection and protect them from getting it again.
- The Hepatitis B virus is very durable, and can survive in dried blood for up to seven days or more.

# Symptoms of Hepatitis B

- The symptoms are very much like a mild "flu".
- Initially, there is a sense of fatigue, possible stomach pain, loss of appetite, and even nausea, occasional vomiting, moderate fever, and chills.
- As the disease develops, jaundice (a distinct yellowing of the skin and eyes), and a darkened urine will often occur.
- However, some people who are infected with HBV will often show no symptoms for some time.
- After exposure, it can take 1-9 months before symptoms become noticeable.
- Most people either develop immunity and clear the infection or become chronic carriers.
- 1-3% will develop rapidly progressive, fatal liver disease.
- 3% develop chronic active hepatitis, who are then at risk of developing cirrhosis, liver cancer, or both.

# Hepatitis C

- Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have the disease.
- The infection is spread by contact through exposure to the blood of an infected person, and is generally **not** transmitted efficiently through occupational exposure to blood.
- Most common cause of Hepatitis C is from post-transfusion hepatitis.
- Hepatitis C is serious for some persons, but not for others, 15 -25% of patients with acute infection spontaneously resolve their infection.
- Most people who get Hepatitis C carry the virus for the rest of their lives. Most of these people have some liver damage, but many do not feel sick from the disease.
- Some persons with liver damage due to Hepatitis C may develop cirrhosis of the liver and liver failure which may take many years to develop, and others have no long term side effects.

# Symptoms of Hepatitis C

- Clinical signs and symptoms of acute HCV infection cannot be distinguished from those of other types of acute viral hepatitis.
- Chronic liver disease develops in 50% of individuals with acute HCV infection.
- About 20% of those with chronic liver disease will develop chronic active hepatitis which is associated with an increased risk of cirrhosis and liver cancer.

# Human Immunodeficiency Virus (HIV)

- HIV is the virus that causes AIDS. This virus is passed from one person to another through blood-to-blood and sexual contact.
- Infected pregnant women can pass HIV to their baby during pregnancy or delivery, as well as through breast-feeding.
- Once a person has been infected with HIV, it may be years before AIDS actually develops.
- HIV attacks the body's immune system, weakening it so that it cannot fight other deadly diseases.
- AIDS is a fatal disease, and while treatment for it is improving, there is no known cure.
- The HIV virus is very fragile and will not survive very long outside the human body.

# HIV continued....

## Nationwide Statistics.....

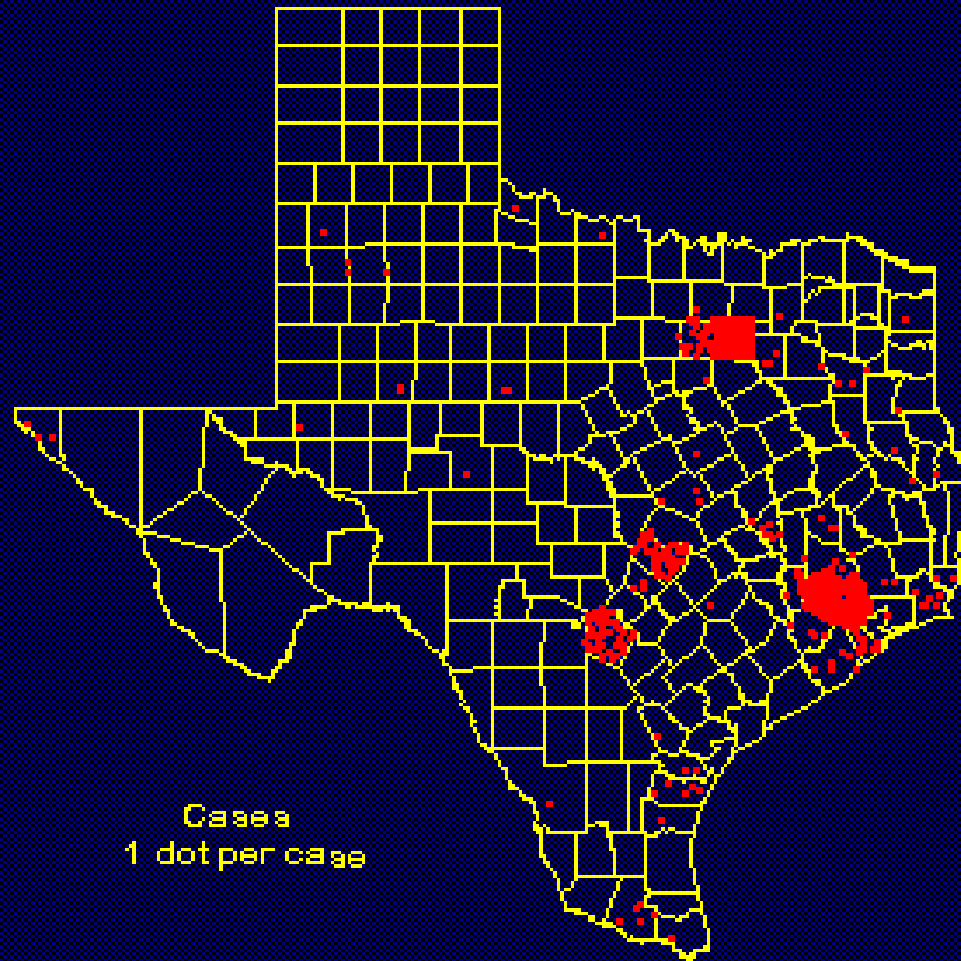
- As of December 2001, Texas ranked 4<sup>th</sup> in the nation for AIDS cases with 56,730. New York was first, California second, and Florida third. ([About. COM AIDS Statistics](#))
- Houston (only city in Texas to reach nationwide top 10) ranks 8<sup>th</sup>, down one place from 2000 statistics, with 19,898 cases reported.

# HIV continued.....

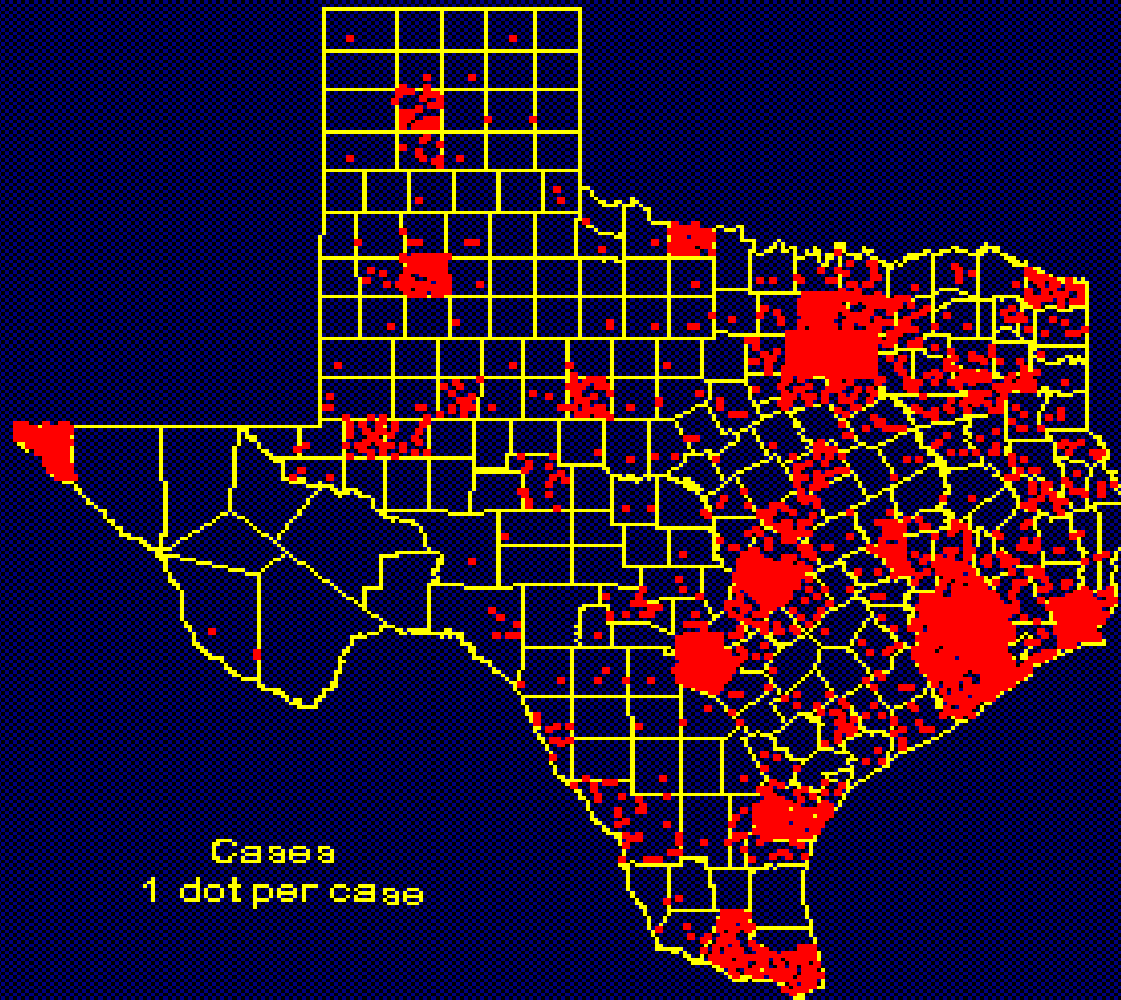
## State of Texas Statistics.....

- Compare the dot maps of the state of Texas on the following slides which represent reported cases of AIDS from 1986 to 2001.
- Note the increase in reported cases. One dot represents one case. In 1986, most of the cases reported were in metropolitan areas like Dallas, Houston, Austin and San Antonio.
- In 1992, concentrations were still seen in the above cities, with more cases reported, but a spread was seen other areas like Lubbock, Amarillo, El Paso, and the Valley area.
- In 2001, 54,117 cases of AIDS were reported throughout the state with the heaviest concentration throughout the eastern part of Texas.

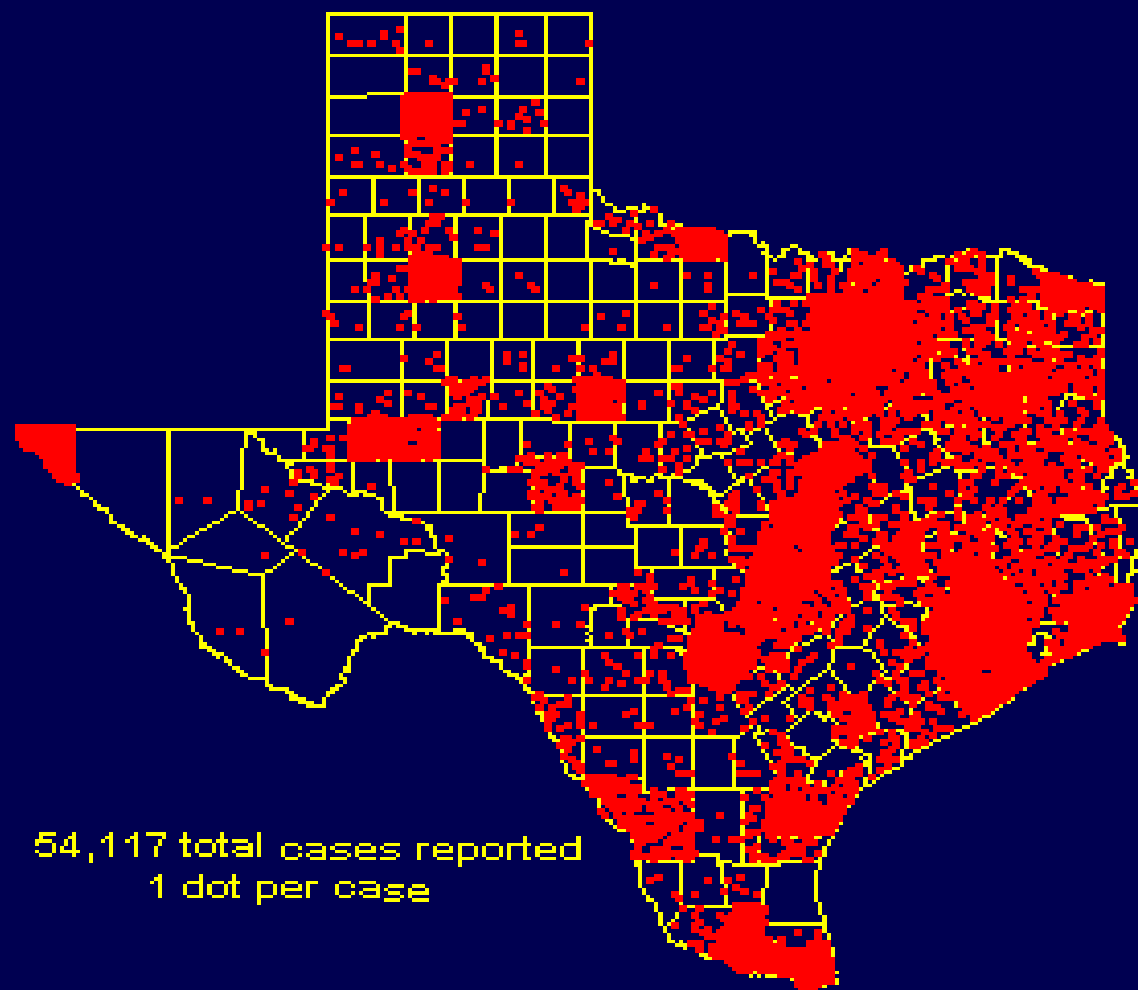
## Cumulative AIDS Cases January 1, 1986



## Cumulative AIDS Cases January 1, 1992



## Cumulative Reported AIDS Cases as of January 1, 2001



# AIDS....

- Occurs in three broad stages:
  1. First stage happens when a person is actually infected with HIV. The person may show few or no signs of illness for many years.
  2. Second stage occurs when an individual may begin to suffer swollen lymph glands or other lesser diseases, which began to take advantage of the body's weakened immune system. The second stage is believed to eventually lead to AIDS.
  3. AIDS is the third and final stage. The body becomes completely unable to fight off life-threatening diseases and infections.

# Symptoms of HIV/AIDS

In some individuals, a flu-like illness occurs within 1 to 6 weeks after exposure to the virus.

Fever, sweats, malaise, muscle pains, loss of appetite, nausea, diarrhea, and a sore throat are common symptoms.

After a long, symptom free (latent) period of up to 7 to 10 years, HIV infected individuals become symptomatic with development of enlarged lymph nodes, malaise, headache or diarrhea.

AIDS develops when the HIV has destroyed many of the immune cells that protect us: Individuals with AIDS develop certain types of tumors or infections caused by "opportunistic" bacteria, fungi, viruses, and parasites that infrequently cause infections in otherwise healthy people. These opportunistic infections are the usual cause of death.

AIDS is uniformly fatal.

# Reducing Your Risk...How?

- PPE (Personal Protective Equipment)
- Work Practices (Universal Precautions)
- Engineering Controls (Housekeeping)
- Hepatitis B Vaccine

# Personal Protective Equipment

## ■ Rules to follow:

- Always wear personal protective equipment (PPE) in exposure situations.
- Remove PPE that is torn or punctured, or has lost its ability to function as a barrier to bloodborne pathogens.
- Replace the PPE that is torn or punctured.
- Remove PPE before leaving the work area.

# Personal Protective Equipment

## Gloves--

- Should be made of latex, nitril, rubber, or other impervious materials.
- If you have cuts or sores on your hands, these areas should be covered with band aids prior to donning gloves
- When taking contaminated gloves off, do so carefully as so the outside of the gloves do not come in contact with any bare skin.
- Always inspect gloves for tears or punctures prior to putting them on – if the glove is damaged in any way, don't use it!

## Other PPE...

Goggles--worn when there is a risk of splashing contaminated fluids i.e. cleaning up a spill or providing first aid or medical assistance.

Face Shields--worn in addition to goggles to further protect face especially in the nose and mouth area.

Aprons--usually worn to protect clothing and to keep fluids from soaking through to the skin

In general, public school districts would not have situations that would reasonably be expected to require any additional types of personal protective equipment for bloodborne pathogens other than gloves, but appropriate goggles, face masks, and aprons are available in every janitorial closet on campus. Gloves are available there and in each campus office in addition to the athletic offices in the gym.

Your employer will provide the necessary personal protective equipment you require to do your job.

# Work Practices

- Universal Precautions
- Hygiene Practices

# Universal Precautions

- The name used to describe a prevention strategy in which all blood and potentially infectious materials are treated as if they are, in fact, infectious, regardless of the perceived status of the source individual.
- In other words, whether or not you think the blood/body fluid is infected with bloodborne pathogens, ***you treat it as if it is!***

# Hygiene Practices

- Handwashing
- Decontamination
- Sharps
- Broken Glass
- Regulated Waste
- Resuscitation

# Hand washing

- One of the most important (and easiest) practices used to prevent transmission of bloodborne pathogens.
- Hands or other exposed skin should be thoroughly washed as soon as possible following an exposure incident and upon removal of gloves.
- Use soft, antibacterial soap, if possible. Avoid harsh, abrasive soaps, as these may open fragile scabs and other sores.
- If hand washing is not feasible, an appropriate antiseptic hand cleaner in conjunction with clean towel or paper towel will work.

# Decontamination

- All surfaces, tools, equipment and other objects that come in contact with blood or potentially infectious materials must be cleaned as soon as possible.
- A solution of household bleach--at least a quarter cup of bleach per one gallon of water is sufficient to use for cleaning.
- If you are cleaning up a spill of blood, you can carefully cover the spill with paper towels or rags, then gently pour the bleach solution over the towels or rags, and leave it for at least 10 minutes. This will help ensure that any bloodborne pathogens are killed before you actually begin wiping the spilled material up.

# Sharps and Broken Glass

- It is especially important to handle and dispose of all sharps carefully in order to protect yourself as well as others.
- Broken glassware must not be picked up directly with the hands. Sweep or brush the material into a dustpan

# Regulated Waste

- Schools are not viewed by TDH or the Texas Commission on Environmental Quality (TCEQ) as being generators of "regulated medical waste" and are therefore not required to use these types of signs and labels.
- Schools may dispose of waste in the regular trash receptacle or dumpster.
- If red sharps containers are used, the container should be wrapped and labeled as non-regulated medical waste and disposed of in the dumpster.
- Watch for fluorescent orange-red labels, red bags and containers with a biohazard symbol. This symbol will warn you when the contents of containers used for waste, storage or shipping contain blood or other potentially infectious materials. Below are some of the labels you might come across.



# Resuscitation

- Always use barrier protection if you have to resuscitate a victim.
- Emergency respiratory devices and pocket masks isolate you from the victim's saliva and body fluids.
- Avoid using unprotected mouth-to-mouth resuscitation. Students or co-workers may have blood or other infectious materials in their mouth and may expel them during resuscitation.

# Housekeeping

- All equipment and environmental working surfaces must be cleaned and decontaminated with an appropriate disinfectant as soon as possible after contact with blood or other potentially infectious materials.
- Use a broom and dustpan to pick up broken glass, not your hands.
- Handle contaminated laundry as little as possible and with minimal agitation.
- Bins, pails, cans and similar receptacles that are reused and have a reasonable likelihood for being contaminated with blood or other infectious materials shall be inspected and decontaminated on a regularly scheduled basis.

# Hepatitis B Vaccine

- The hepatitis B vaccine is a series of three shots given intramuscularly over a span of 6 months. The vaccine is very safe and effective.
- It is available to employees who have been identified in the Exposure Control Plan as those employees who a reasonable risk of having an occupational exposure to bloodborne pathogens, which means if on a regular basis as part of your job, you come into contact with blood.
- The hepatitis B vaccine prevents HBV infection if the immunization is completed appropriately.

# So... What happens if an exposure occurs?

- Wash the exposed area thoroughly with soap and running water. Use non-abrasive antibacterial soap if possible.
- If blood is splashed in the eye or mucous membrane, flush the affected area with running water for at least 15 minutes.
- Report the exposure to your supervisor as soon as possible.
- Fill out Employee Accident First Injury Report
- Go to the School Nurse

# What Happens Then??

- You will be sent to the doctor who will then:
  - Document the route (s) of exposure and the circumstances under which the exposure incident occurred.
  - Identify and document the source/individual.
  - Obtain permission to test the source/individual's blood for HBV and HIV as soon as possible. If the source/individual is known to be positive for HBV or HIV, testing for that virus need not be done.
  - Collect your blood.
  - Your doctor will discuss with you what your options are and what post exposure prophylaxis is available if medically indicated.
  - Help you obtain counseling
  - Evaluate any reported illness you may have subsequent to the exposure incident.
  - Remember.....***most exposures do not result in infection!***

# The Exposure Control Plan

- Copies of our Exposure Control Plan are available in each campus office.
- The plan determines who is at highest risk of occupational exposure and which tasks within their job creates the risk of exposure.
- The plan describes methods of compliance as have been described in this presentation (i.e....Universal precautions, Work Practices, Post Exposure Follow-up).
- The Exposure Control Plan contains a copy of OSHA's Chapter 96, Bloodborne Pathogen Control and contains a copy of OSHA's Bloodborne Pathogen Final Rule.
- This plan is reviewed yearly and updated as necessary.

# How would you protect yourself if...

- A student has a nosebleed?
- A student or co-worker is bleeding from a cut or wound?
- A student was injured or bleeding during an athletic class or participation in an athletic event?
- One student bit another student and caused some bleeding?
- A student has thrown-up in the hallway or classroom?
- A student finds a used needle on the bus, playground or in the building?

# Bloody Noses

- Students with bloody noses should sit up, keep their heads slightly forward, pinch the nostrils to stop the bleeding, and hold a tissue under the nose to catch any blood.
- If an adult needs to assist, gloves should be put on first.
- Students should dispose of their own bloody tissues in the trash, then wash the blood off their hands and skin.
- If blood is on their clothes, arrangements should be made for a change of clothes, and the bloody clothes should be placed in a heavy plastic bag to be laundered at home.
- If the blood is on athletic clothes and towels, these should be handled separately and washed with hot water. The person doing the laundry should wear gloves to protect themselves.

# Open wounds or cuts

- Use universal precautions for all first-aid emergencies. Treat everything as though it is infected with a bloodborne pathogen.
- When you are faced with a bleeding student or co-worker, take a minute to collect yourself.
- Be calm and reassure the victim.
- For minor cuts and scrapes, encourage the victims to administer their own first-aid, by applying pressure with gauze to stop the bleeding. No gauze? Use paper towels, or their own shirt to apply pressure.
- Once bleeding is under control, cleansing and bandaging the wound can occur.
- If adult assistance is needed, gloves must be put on first or use another type of barrier. Then administer first aid.
- After the emergency, remove gloves and wash your hands.
- For major bleeding wounds, apply pressure with whatever is available. Remember the ABC's of first-aid—Airway, Breathing and Circulation. Call for help as soon as possible.
- If there is an impalement of an object—do not remove the object!

# Athletic Injuries

- Athletes should bandage existing cuts or scrapes before participation.
- An athlete who is injured and bleeding should stop play immediately, have the wound cleaned and bandaged securely, and replace any clothing wet with blood before returning to competition.
- This is the same for an injured student on the playground.
- Contaminated clothing or towels should be placed into a plastic bag until laundered.
- Equipment and playing areas contaminated with blood should be cleaned until all visible blood is gone, then disinfected with an appropriate germicide.
- People assisting with first aid, handling contaminated laundry, or disinfecting equipment must wear gloves and wash their hands afterward.

# Body Fluids

- If you have to deal with body fluids, either due to an accident in the classroom or soiled surfaces in the restroom, you must wear gloves. Wash your hands upon removal of the gloves.
- Feces, urine, vomit, sputum, nasal secretions, saliva and used tampons can harbor infectious organisms, including bloodborne pathogens if visibly bloody.
- For spilled fluids, first use an absorbing material which reduces fluids to a solid, which can then be swept into dust pan and disposed of in trash receptacle.

# Syringes or needles

- Used needles have been found in public places.
- Use caution.
- Do not break, bend or recap the needle.
- Use a dustpan and broom to pick up and discard to an appropriate puncture-resistant sharps container.
- If accidentally stuck, wash the needle stick area with soap and water, then report as an exposure as outlined in this presentation and in the Exposure Control Plan.

# Summary

Fortunately, your risk of exposure to bloodborne pathogens at school is low. Although there have been rare cases of HBV transmission in school settings, no cases of HIV transmission have been reported.

Remember to treat all blood and body fluids containing visible blood as though infected with bloodborne pathogens.

Use gloves when handling any body fluids since they may contain a variety of pathogens.

Disinfect any spills with an appropriate germicidal agent and dispose of all contaminated materials according to school policy.

By following simple safety guidelines, you can deal with blood safely while treating the person in need with compassion.