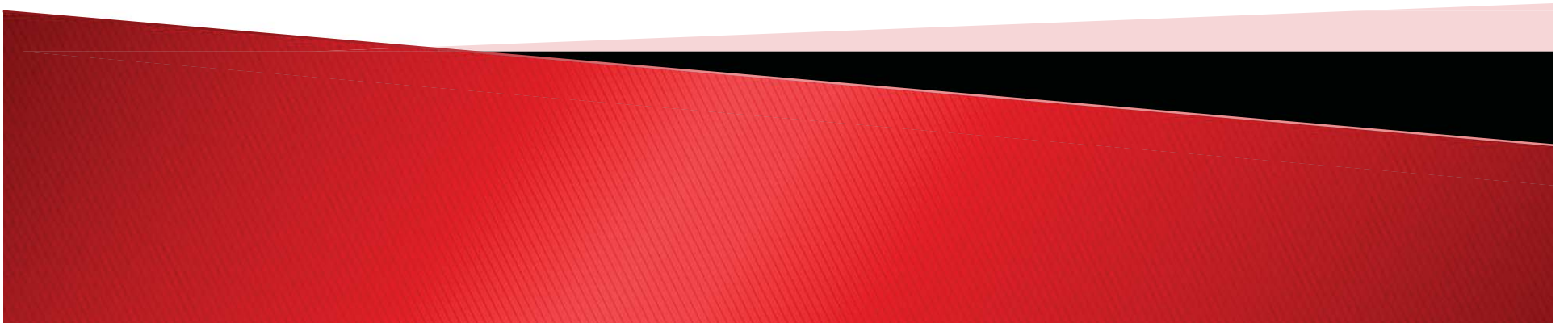


Bloodborne Pathogen and PPE Training



Overview

- What is the BBP standard and why do I need to be trained?
- BBP diseases
 - What are they, how are they transmitted, what are the symptoms, what are the treatments?
- How do I protect myself and others?
- What steps do I take if I have an exposure?



BBP Standard



- ♦ 1990: OSHA estimates that occupational exposure to BBPs cause >200 deaths & 9000 infections/year
- ♦ BBP standard took effect in March 1992
 - ♦ [29 CFR 1910.1030](#)
- ♦ Needlestick Safety and Prevention Act (April 2001)
- ♦ Covers all employees with potential exposure to blood or Other Potential Infectious Material (OPIM)



Bloodborne Pathogens

- ▶ Viruses, bacteria and other microorganisms that:
 - Are carried in the bloodstream or transmitted by Other Potentially Infectious Materials (OPIM)
 - Cause disease
- ▶ There are over 20 different bloodborne pathogens



Bloodborne Pathogens

- ▶ Of most concern are
 - Human Immunodeficiency Virus (HIV)
 - Hepatitis B Virus (HBV)
 - Hepatitis C Virus (HCV)



Additional Bloodborne Pathogens

- ▶ Human T-lymphotrophic virus Type 1
- ▶ Malaria
- ▶ Syphilis
- ▶ Babesiosis
- ▶ Brucellosis
- ▶ Leptospirosis
- ▶ Arboviral infections
- ▶ Relapsing fever
- ▶ Creutzfeldt-Jakob disease
- ▶ Viral hemorrhagic fever

Other Potentially Infectious Materials (OPIM) Include:

- ▶ Plasma
- ▶ Amniotic fluid
- ▶ Spinal fluid
- ▶ Semen
- ▶ Vaginal Secretions
- ▶ Peritoneal fluid
- ▶ Breast Milk
- ▶ Unfixed tissue or organs
- ▶ Fluids surrounding the brain, spine, heart and joints
- ▶ Other fluids containing visible blood (such as saliva in dental procedures)

How Do Bloodborne Pathogens Enter the Body?

Break in skin integrity

- ▶ Needle sticks
- ▶ Cuts, scrapes and breaks in skin

Mucous Membranes

- ▶ Splashes to eyes, nose and mouth
- ▶ Life style issues (IV drug use)

OSHA'S BLOODBORNE PATHOGENS STANDARD

- ▶ The purpose of OSHA'S Bloodborne Pathogens Standard is to reduce occupational exposure to Hepatitis B, Hepatitis C, HIV and other bloodborne pathogens that employees may encounter in their work place.
- ▶ Requires Exposure Control Plan to protect covered employees



WHO is Covered by the Standard?

- ▶ All employees who could be “reasonably anticipated” to face contact with blood or other potentially infectious materials as the result of job duties
- ▶ “Good Samaritan” acts such as assisting a co-worker with a nosebleed would not be considered occupational exposure



Parenteral Exposure Occurs

- ▶ When blood splashes in a worker's eyes
- ▶ When a worker sticks himself or herself with a contaminated needle



Universal Precautions

- ▶ Promote a safety climate that is a cornerstone of prevention of transmission of pathogens in health care.
- ▶ Assume that everyone's blood is infected with harmful pathogens
- ▶ Implement source control measures for all persons with respiratory symptoms through promotion of respiratory hygiene and cough etiquette.



Universal Precautions

- ▶ Risk assessment is critical. Assess all health-care activities to determine the personal protection that is indicated.
- ▶ Standard precautions should be the minimum level of precautions used when providing
- ▶ care for all patients.



Universal Precautions May Include

- work practice controls, such as hand washing after exposure to blood or other potential infectious materials
- engineering controls, such as using blunt-tip suture needles
- wearing personal protective equipment, such as scrubs, gloves, and face protection



HIV

- virus that causes AIDS
- incubation period 1 to 3 months
- person is infectious from onset of infection throughout life
- all persons are susceptible
- Symptoms in acute stage include fever, rapid weight loss, night sweats, pneumonia



HIV

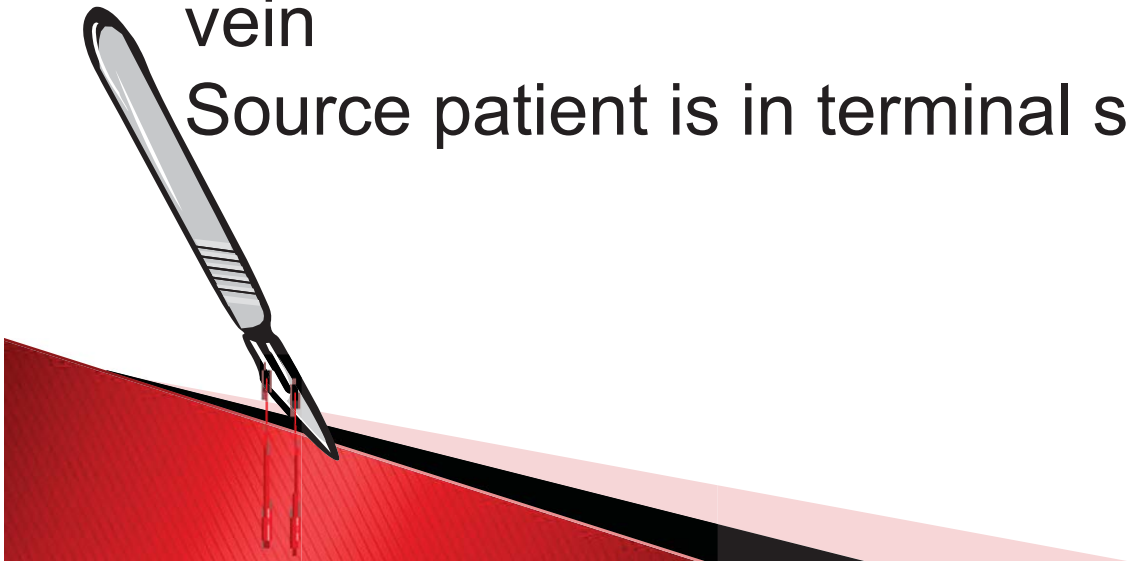
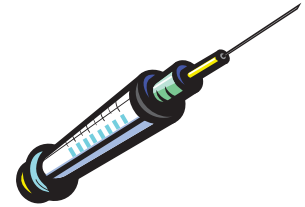
- risk of transmission
 - needlestick: 0.3%
 - splash/spray to mucous membranes: 0.09%
 - non-intact skin: less than mucous membrane exposure



Risk Factors for Acquiring HIV Infection in Health Care

- ▶ Sustaining a deep injury
- ▶ Sustaining an injury with a device which is visibly contaminated with blood
- ▶ Being injured with a needle which had been placed directly into the source patient's artery or vein

Source patient is in terminal stages of AIDS



Hepatitis B Virus (HBV)

- virus that causes hepatitis B
- incubation period 45 to 180 days
- person is infectious if test for antigen (HBsAG) is positive
- unvaccinated persons are susceptible
- Symptoms, if present, include fever, muscle ache, fatigue, jaundice



HBV

- risk of transmission
 - needlestick: 22-31%
 - direct or indirect contact with non-intact skin or mucous membranes is an important source of occupational exposure



Hepatitis C Virus (HCV)

- most common chronic bloodborne infection in the U.S., according to the Centers for Disease Control and Prevention.
- virus that causes hepatitis C
- incubation period 6 to 9 weeks
- most persons are infectious for life
- leads to chronic liver disease, liver cancer
- all are susceptible
- symptoms, if present, include fever, muscle ache, fatigue, jaundice



HCV

- risk of transmission
 - needlestick: 1.8%
 - mucous membranes: rare
 - non-intact skin: very rare



HCV Treatment

- Treatment with a combination of antiviral medicines can fight the viral infection and prevent serious liver problems like cirrhosis or liver cancer.
- The antiviral medicines are used for 12 weeks to a year and help your body get rid of the virus.



White Sands Treatment Center Exposure Control Plan

- ▶ Written plan is available in the Infection Control Policy & Procedure Book
 - Section 1:030
- ▶ Reviewed and updated annually



White Sands Treatment Center Exposure Control Plan

Exposure Determination

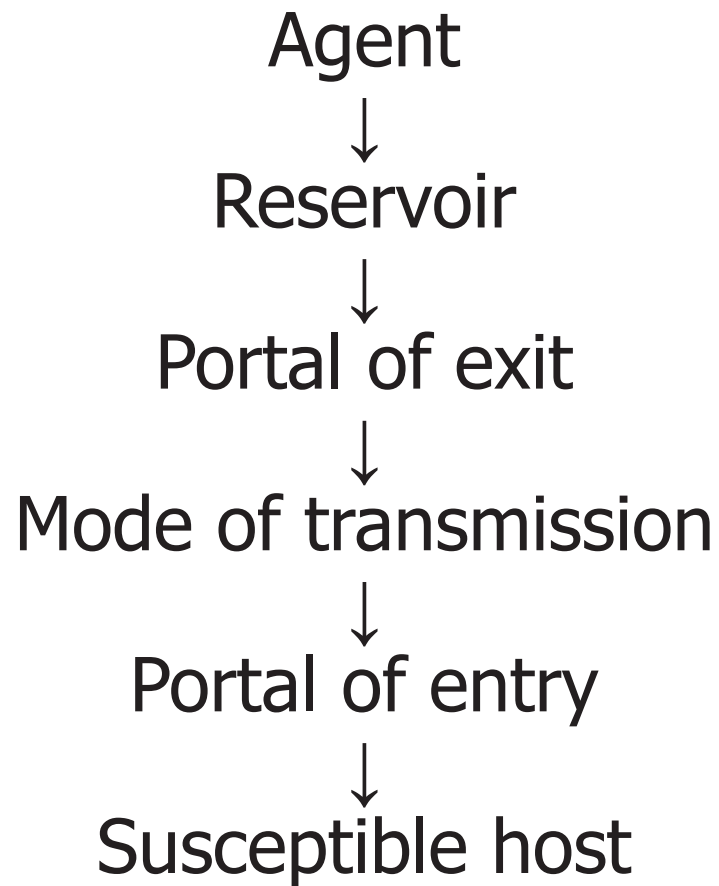
Any White Sands employee who:

- performs phlebotomies
- does finger sticks
- administers immunizations (including smallpox vaccinations)
- collects or handles specimens of blood or body fluids

has occupational exposure to blood borne
pathogens



Chain of Infection



White Sands Treatment Center Exposure Control Plan

- universal/standard precautions
 - hand hygiene
 - PPE
 - waste disposal
 - cleaning/disinfection
 - laundry/linen
 - respiratory hygiene/cough etiquette
 - safe injection practices



White Sands Treatment Center Exposure Control Plan

- ▶ engineering controls
- ▶ work practices
- ▶ HBV vaccination
- ▶ post-exposure management



Standard Precautions

- ▶ used on ALL individuals
- ▶ used for ALL contact with:
 - blood, all body fluids (except sweat)
 - mucous membranes
 - non-intact skin
- ▶ If it's wet and it comes from the human body—
treat as infectious!



Hand Hygiene

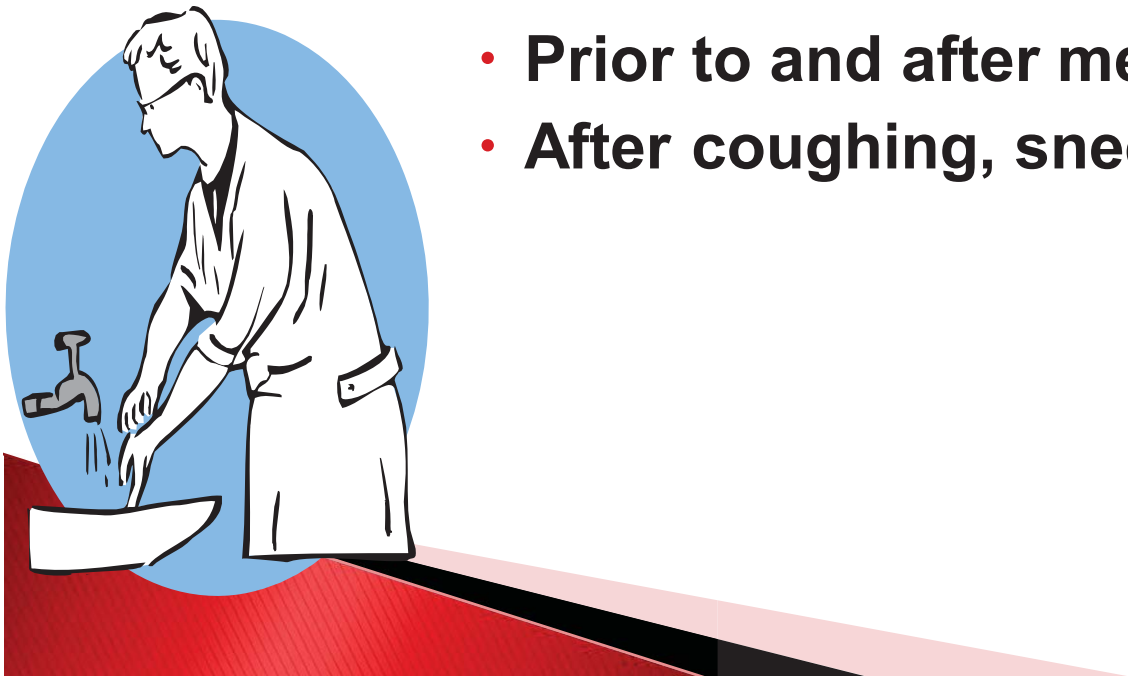
▶ Hand washing technique

- turn on faucets to comfortable water temperature
- wet hands, apply soap
- rub with friction for at least 15 seconds, making sure to wash back of hands, fingers, fingertips, nails, in between fingers
- rinse with fingertips pointing downward
- dry hands with paper towel
- discard paper towel and turn off faucets with clean paper towel



Hand Hygiene

- When to wash hands:
 - Before and after patient contact
 - When ever you remove gloves
 - Before and after use of the bathroom
 - Prior to and after meal breaks
 - After coughing, sneezing



PPE

- used when there is a reasonable anticipation of exposure to blood, body fluids, mucous membranes, non-intact skin
- provides protection for clothing, skin, eyes, mouth, nose



Personal Protective Equipment



- ▶ Requirement for all potential spraying / splashing / dripping with blood or OPIM
 - goggles/glasses
 - masks/face shields
 - gloves
 - gowns



Personal Protective Equipment

- In order to protect employees from bloodborne pathogens goggles or other eye protection are required if the eye's mucous membrane may be splashed with blood



PPE – Masks/Face Shields

- cover eyes, nose, and mouth when anticipating splash or spray to face
- eye glasses are not protective
- if you need to protect one area of face, you need to protect all



PPE – Disposable Gloves

- wear for phlebotomies, finger sticks, smallpox vaccinations, when handling specimens
- disposable, non-latex
- remove between clients, wash hands
- select correct size
- have readily available at work station



PPE - Gowns

- ▶ Gowns are used to protect clothing
- ▶ Needed to prevent penetration of blood
 - If the only anticipated splatter is a dot of blood, a lab coat is satisfactory
 - If it's anticipated that the splatter could penetrate to the skin, an impervious gown, or plastic apron is needed



PPE - Resuscitation devices

- Resuscitation Devices
 - Know where these devices are kept
 - **Use pocket masks whenever performing CPR** – they must have a filter and mouth piece
 - Must be cleaned after each use
 - A new one-way valve must be placed after each use



Removal of PPE after use

- 1) Remove gloves by grasping outside of one glove with other gloved hand and peel off. Hold removed glove in gloved hand.
- 2) Slide fingers of ungloved hand under remaining glove to remove. Discard both gloves.
- 3) Remove any PPE from face next, handling by head bands, ear pieces, or ties. Discard.
- 4) Remove gown by pulling away from neck and shoulders, touching ties only. Pull arms out of sleeves, turning the gown inside out and away from body. Discard.



Removal of PPE after use

Wash hands!



Medical Waste

**Only pourable, dripable, flakable
blood or OPIM**

Must be:

Disposed of in red biohazard bags

Kept covered

Emptied when 3/4 full

Taped closed (no twist tie)

Medical Waste Cont.

Never:

- ▶ Mix Medical Waste with General Waste!
- OR
- ▶ Place your hand in a red bag or sharps container to retrieve an item!



Cleaning/disinfection

▶ Blood spills

- wear PPE as needed: gown, gloves
- wet cloth with the disinfectant
- wipe item/area with wet cloth
- apply disinfectant on item/area
- wipe with clean cloth, let air dry



Cleaning/disinfection

- ▶ Clean/disinfect areas with visible contamination of blood/body fluids
- ▶ Clean/disinfect re-usable patient care equipment before next use



Cleaning/disinfection

- ▶ Cleaning must be done before disinfection can occur
- ▶ Disinfectant must remain on item or surface for specified contact time



Laundry

- ▶ place dry laundry in bags at point of use
- ▶ handle with minimal agitation
- ▶ laundry that is wet from blood or OPIM is placed in plastic bags
- ▶ send to professional cleaners
 - lab coats
 - personal clothing visibly soiled with blood or OPIM



Respiratory hygiene/cough etiquette

- ▶ Cough or sneeze into tissue or curve of elbow
- ▶ Toss tissue
- ▶ Decontaminate hands
- ▶ Wear mask if infected with respiratory illness



Safe injection practices

- ▶ Use aseptic technique
- ▶ Do not use same syringe for multiple patients, even if needle is changed
- ▶ Use single dose vials whenever possible
- ▶ If multi dose vials are used, needles, cannulas, syringes used to access vials must be sterile





Engineering Controls

Safety Devices

Sharps Containers

Safety Devices

Where a safety device exists, you must use it

- Primary defense against bloodborne pathogens
- Do not tamper or alter
- Do not activate safety device by hand, use hard surface to activate
- Dispose of in sharps container
- Report device failure to infection control epidemiologist



Sharps Containers

- ▶ Wall mounted/countertop/portable
- ▶ Must be:
 - Labeled with the Universal Biohazard Symbol and the word “Biohazard”
 - Puncture resistant
 - Kept covered at all times
 - Stable - unable to tip over
 - Replaced when 2/3 full
 - Have secure lid for disposal
 - Disposed of at SLH



Work Practice Controls

- ▶ Do not eat, drink, apply make-up, handle contact lenses, or smoke in areas with likely exposure to blood or OPIM
 - specimen collection rooms
 - testing areas
 - areas where specimens located
- ▶ Do not store food or beverages in refrigerators, freezers, coolers, shelves, cupboards where specimens are located



Work Practice Controls

- ▶ Do not place hands into used sharps containers
- ▶ Use a brush or tongs to place broken glass or other sharp items into a dust pan for disposal
- ▶ Shearing, breaking, bending, re-capping of contaminated sharps is prohibited
- ▶ Do not remove needle from used tube holder after phlebotomy



Labels

- ▶ Infectious waste: red bag with biohazard label
- ▶ Sharps containers: biohazard label
- ▶ blood specimens: biohazard label on storage bag, storage containers
- ▶ refrigerators, coolers where blood or OPIM is stored: biohazard label



Biohazard Warning Labels

- ▶ Warning labels required on
 - Containers of regulated waste
 - Refrigerators and freezers containing blood or other potentially infectious material
 - Containers used to store, transport, ship blood or other potentially infectious material
- ▶ Red bags or containers may be substituted for labels



Specimens

- ▶ label with appropriate information
- ▶ wrap in material to prevent breakage
- ▶ place in plastic biohazard bag
- ▶ place paperwork in outside pouch of bag
- ▶ do not place specimens back into clean collection kits



Hepatitis B Vaccine

Any one with occupational exposure to blood or OPIM should be vaccinated recommended unless:

- antibody testing shows immunity
- employee has documentation of receipt of series
- employee has severe allergic reaction to vaccine components



Hepatitis B Vaccine

- ▶ available within 10 working days of work start date
- ▶ if employee declines, must sign statement of declination
- ▶ employee may request the series later



Hepatitis B Vaccine Safety

- ▶ very safe vaccine
- ▶ serious reactions are rare
- ▶ mild symptoms may occur: soreness at injection site, low-grade fever
- ▶ may be given during pregnancy



Hepatitis B Vaccine Effectiveness

- ▶ at least 90% of adults are immune after completing the three doses of vaccine
- ▶ since 1985, 90% reduction of number of HCW infected with HBV, largely due to vaccine



Hepatitis B Vaccine

- ▶ administered by deep intramuscular injection
- ▶ 3 doses given: 1st two doses 1 month apart, last dose is given 5 months after second dose
- ▶ SLH will test antibody levels at 1-2 months after last dose to test for immunity
- ▶ non-responders will be-revaccinated



What to do When an Exposure Incident Occurs

- Clean the site.
 - percutaneous injuries: wash with soap and water
 - mucous membranes: rinse copiously with water
- Report to your supervisor immediately.
- Seek medical attention
 - Get a blood test for HIV and HBV infection
 - post-exposure medical evaluation by a health care professional along with post-exposure counseling
- Complete an incident report and exposure incident report



Transmission Based Precautions

- ▶ Contact
- ▶ Droplet
- ▶ Airborne
- ▶ Used in addition to standard precautions



Contact precautions

- ▶ For infections transmitted by direct or indirect contact with an infected person or contaminated environment
- ▶ Wear gown, gloves for all contact with patient or potentially contaminated environment



Contact precautions

► Examples

- Norovirus
- Other GI illnesses when infected person is incontinent
- Draining wounds
- Drug-resistant organisms
 - Vancomycin resistant enterococcus
 - Methicillin resistant *staph aureus*



Droplet precautions

- ▶ For infections transmitted by close respiratory or mucous membrane contact with respiratory secretions
- ▶ Spatial separation of > 3 feet
- ▶ Use of surgical mask when within three feet of infected person



Droplet precautions

► Examples

- Influenza
- Pertussis
- Adenovirus
- Rhinovirus
- Group A Streptococcus



Airborne precautions

- ▶ For infections carried over long distances (up to 25 feet) when suspended in the air
- ▶ In hospitals, airborne isolation with negative pressure are used
- ▶ Use of N-95 respirators is used when sharing air with infected person



Airborne precautions

- ▶ N-95 respirators
 - Must have respiratory protection plan
 - Medical evaluations
 - Fit testing
 - Only those who are fit-tested may enter space of the infected person



Airborne precautions

- ▶ Examples
 - Tuberculosis
 - Measles
 - Chickenpox
 - Smallpox
- ▶ Non-immune persons should not be in contact with infected persons



Transmission Based Precautions

- ▶ Examples of diseases spread by multiple means:
 - SARS—airborne and contact plus eye protection
 - Adenovirus—droplet and contact



