

2012 Infection Control Update

**Satellite Conference and Live Webcast
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**Produced by the Alabama Department of Public Health
Video Communications and Distance Learning Division**

Faculty

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Objectives

- **Discuss the latest CDC guidelines for Standard Precautions, Personal Protective Equipment (PPE), and infectious disease prevention in healthcare settings**

Objectives

- **Identify the primary actions of the infectious process, including transmission**
- **Discuss viral hepatitis characteristics, including signs and symptoms, transmission, and prevention**

Steps in the Infectious Process

- **For an infection to occur, an organism MUST:**
 - 1. Enter the body**
 - 2. Grow and multiply**
 - 3. Cause a response**

Routes of Transmission

- **Contact:**
 - **Direct**
 - **Indirect**

Routes of Transmission

- Droplet and airborne

Diseases Spread by Droplet / Airborne Routes

- Droplet:
 - Influenza, mumps, bacterial meningitis (*Neisseria meningitidis*) = mask
- Airborne:
 - Measles, Smallpox, chickenpox, TB = N95 mask

Routes of Transmission

- Vehicle

What Is a Vehicle?

- An inanimate source that carries the organism to a susceptible host
 - A form of indirect transmission
- Example
 - Food, water

Food As a Vehicle

- The contamination of food can occur at any point
 - Growing, harvesting, processing, handling, and cooking

Routes of Transmission

- Vector – indirect transmission
- Insects carry organism to host

A Vector Spread Disease

- **West Nile Virus (WNV)**
 - As of September 11, 2012, 48 states have reported WNV infections in people, birds, or mosquitoes
 - 2,636 cases in people, including 118 deaths, have been reported to the CDC

West Nile Virus (WNV)

- **Two-thirds of these WNV cases have been reported from:**
 - Texas, Louisiana, South Dakota, Mississippi, Michigan, and Oklahoma
- **Alabama – 18 cases reported**

WNV Clinical Presentation

- **Neuroinvasive symptoms**
 - High fever, headache, neck stiffness, altered mental state, tremors, convulsions, vision loss, muscle weakness, numbness and paralysis (meningitis or encephalitis)

WNV Clinical Presentation

- **Non-neuroinvasive**
 - Fever, headache, body aches, nausea, vomiting, and sometimes swollen lymph glands or a skin rash on chest, stomach, and back
 - 80% of people infected show no symptoms

Preventing WNV

- **Stay indoors, especially during the dusk to dawn hours, when mosquitoes are most active**
- **When going outside wear tightly woven, loose clothing and insect repellent**

Preventing WNV

- **Use an insect repellent that has the active ingredients:**
 - DEET, Oil of Lemon Eucalyptus/PMD, IR3535, or any EPA approved ingredient
- **Spray repellent on hands first, then apply it on children and faces**

Preventing WNV

- **Never apply repellent to eyes or mouth, and apply sparingly around ears**
- **After returning indoors wash skin with soap and warm water**

Preventing WNV

- **Keep window and door screens shut and in good condition**
- **Eliminate mosquito breeding sites from your property by removing anything that will allow water to collect**
 - **Buckets, tubs, old tires, clogged gutters**

Common Infectious Diseases Encountered in the Workplace

- **Viral Hepatitis**
 - **Hepatitis A (HAV)**
 - **Hepatitis B (HBV)**
 - **Hepatitis C (HCV)**
- **Human Immunodeficiency Virus (HIV)**

Liver: A Vital Organ

- **Produces and excretes bile to help digest fats**
- **Cleans the blood of drugs and other poisonous substances**
- **Stores iron and produces plasma proteins**
 - **Albumin and clotting factors**

Viral Hepatitis

- **Involves widespread inflammation of the liver with liver cell damage consisting of hepatic cell degeneration and necrosis**

Viral Hepatitis Clinical Presentation

- **Typically seen as an abrupt onset of:**
 - **Fever**
 - **Malaise (generalized weakness)**
 - **Anorexia (loss of appetite)**
 - **Nausea**

Viral Hepatitis Clinical Presentation

- Dark urine
- Abdominal discomfort
- Pruritus (itching)
- Jaundice – yellow discoloration of skin and sclera (white portion of the eyes)

Hepatitis A (HAV)

- HAV is spread primarily by the fecal-oral route by either person-to-person contact or by ingesting contaminated food or water

Hepatitis A (HAV)

- Infected persons are most likely to spread HAV 1 to 2 weeks before the onset of symptoms, when the viral concentration in the stool is highest
- 1 week after the onset of jaundice the risk of spread is minimal

Groups at Risk for HAV

- International travelers
- Persons engaging in forms of oral-anal sex
- Users of illegal drugs
- Household members or caregivers of persons infected with HAV

Ways to Prevent HAV

- Get vaccinated
 - CDC recommends that all children at age 1 year be vaccinated
 - 2 shots, given 6 months apart

Ways to Prevent HAV

- Frequent hand washing with soap and warm water after using bathroom, changing a diaper, or before preparing or eating food

Hepatitis B (HBV), Hepatitis C (HCV), and HIV

- Is usually spread when blood, semen, vaginal, or other body fluids from an infected person enters the body of someone who is not infected

Hepatitis B (HBV), Hepatitis C (HCV), and HIV

- Also, spread by getting tattoos or body piercings in informal settings with non-sterile instruments
 - Example: correctional or unlicensed facilities
- No vaccine available to prevent HCV and HIV

Human Immunodeficiency Virus (HIV)

- Attacks the immune system, resulting in impairment of the immune system due to loss of functioning CD4 T-helper cells
- As immune system shuts down, opportunistic infections develop and leads to AIDS

Preventing HBV

- Get vaccinated: 3 shot series
 - Children: Birth, 1-2 months, 6 -18 months
 - Adults: 0 month (initial shot), 1 month, 6 month
 - HAV / HBV combo vaccines are available: 3 shots
 - 0, 1 month, 6 months

Occupational Safety and Health Administration (OSHA)

- Mandates that employers make available HBV vaccine to all healthcare providers who are susceptible to HBV infection and urge that these employees be vaccinated

Occupational Safety and Health Administration (OSHA)

- OSHA requires that the employer provide post-exposure evaluation and follow-up to all employees who have an exposure incident

CDC Vaccination Recommendations

- All infants at birth
- Healthcare and public safety workers exposed to blood
- Persons with chronic liver disease, end stage renal disease, HIV infection, or STDs

CDC Vaccination Recommendations

- IV drug users
- People living with or caring for a HBV infected person
- People with multiple sex partners or engage in any form of unprotected sex

2012, CDC HCV Recommendations

- All baby boomers get tested for HCV
 - Baby boomers are persons born between 1945 and 1965

Why Test Baby Boomers for HCV?

- Rationale:
 - More than 75% of adults with HCV are baby boomers
 - Liver disease, liver cancer, and deaths from HCV increasing

Why Test Baby Boomers for HCV?

- Most baby boomers are believed to have become HCV infected in the 1970s – 1980s, when rates of HCV were the highest

Why Test Baby Boomers for HCV?

- Many could have gotten HCV through contaminated blood and blood products before screening of blood supply began in 1992 and standard (universal) precautions were adopted

Why Test Baby Boomers for HCV?

- **Social and political events of era**
 - **Enjoyed sexual freedom**
 - **Drug experimentation**
 - **Vietnam War**

Why Test Baby Boomers for HCV?

- **Testing promotes early detection and treatment that can help prevent liver damage, cirrhosis, and liver cancer**
- **People with HCV often have no symptoms and can live for decades without feeling sick**

Current CDC Recommendations

- **To prevent the spread of bloodborne pathogens in healthcare settings, CDC recommends use of proper hand hygiene, strict standard precautions, and implementing safe work practices**
 - **i.e. not recapping needles**

Current CDC Recommendations

- **Prenotification of patients about healthcare provider's chronic HBV infection is not recommended**
- **Discourages the restriction of persons with chronic HBV from practicing or studying medicine, dentistry, or surgery**

Current CDC Recommendations

- **Opposes mandatory antiviral therapy, arbitrary exclusion from exposure-prone procedures, or any forced change in practice that essentially prohibits the chronic HBV healthcare provider or student from practice or study**

Current CDC Recommendations

- **Supports adherence to rigorous Standard Precautions in all healthcare settings to protect both the patient and provider from acquiring a bloodborne pathogen**
- **Supports double-gloving during surgical procedures**

Standard Precautions?

- **Treat all blood, body fluids, secretions, excretions, non-intact skin, and mucous membranes as potentially infectious material**
- **Requires the use of hand hygiene, and the proper personal protective equipment (PPE) for the anticipated exposure**

Standard Precautions

- **Gloves**
 - **Wear when touching blood, body fluids, secretions, excretions, and contaminated items**

Standard Precautions

- **Change between tasks on same patient and after contact with any material that may contain a high concentration of organisms**

Standard Precautions

- **Face Protection**
 - **Wear mask and eye protection, or face shield to protect mucous membranes of the eyes, nose, and mouth from splashes or sprays of body fluid during patient care activities**

Standard Precautions

- **Gown**
 - **Wear during patient care activities that are likely to generate splashes of body fluids or cause soiling of clothing**

Respiratory Hygiene

- **Cover nose and mouth with tissue when coughing or sneezing**
- **Contain respiratory secretions in tissue and dispose of in trash**

Respiratory Hygiene

- **If tissue is unavailable, sneeze or cough into your arm or sleeve**
- **Avoid touching eyes, nose, or mouth**
- **After sneezing / coughing, perform hand hygiene**

Standard Precautions

- **Hand washing is the most important measure you can use to prevent the spread of infection**