EPIDEMIOLOGY & SYMPTOMS OF HEPATITIS & HIV

INTRODUCTION: Hepatitis B, Hepatitis C and HIV are spread through contact with the blood and body fluids of people who are infected with the virus. In the health care setting, the most common exposures are from needle sticks (80%). Exposure can also be transmitted through splashing to the mucus membranes, contact with non-intact skin and contact with contaminated surfaces.

There are more than 20 other bloodborne diseases that are covered by this standard. Examples are malaria, syphilis, smallpox, babesiosis, brucellosis, leptospirosis, arboviral infections, relapsing fever, Creutzfeldt-Jakob disease and viral hemorrhagic fever. OSHA has concluded that if the regulations of the bloodborne standard are followed, exposure to these diseases also can be prevented or greatly reduced.

HEPATITIS

There are several types of Hepatitis - A, B, C, D & E. In addition, four more viruses associated with acute hepatitis have recently been identified: hepatitis GBV which has 3 varieties (GBV-A, GBV-B and GBV-C) and Hepatitis G (HGV). The following are some important facts about each virus.

Hepatitis A (HAV): Formerly called infectious hepatitis, this is most common in children in developing countries but is frequently seen in both children and adults the western world as well. Patients with HAV are most contagious when they are asymptomatic. By the onset of jaundice, they are usually no longer infectious.
Transmission: HAV is often suspected after the ingestion of contaminated food (e.g. shellfish). It is transmitted via the fecal-oral route. Diagnosis is confirmed by the presence of the IgM antibody directed against HAV in serum during the acute illness. Immunoglobulin is recommended for all people who have had household and sexual contact with the patient.
Prevention: A HAV vaccine has been approved by the Food and Drug Administration (FDA). There is no regulation requiring an employer to offer this vaccine to employees.

Hepatitis B (HBV): Formerly called serum hepatitis. Annually 200,000 - 300,000 people become infected with HBV. Many who become infected remain asymptomatic, however there are more than 10,000 hospital admissions each year from this virus. HBV is transmitted through contact with contaminated blood or blood products, intravenous drug use and sexual contact with an infected partner. Nearly one-third of the individuals infected deny all known risk factors. It is estimated that there are 1.2 million carriers in the United States. Prior to the Bloodborne Pathogen Standard approximately 8,000 - 12,000 health care workers were infected each year. That number has been reduced by 95% due to the law requiring the employer to offer the hepatitis B vaccine! Diagnosis can be made by testing for HBV surface antigen (anti-HBsAg), anti-HBc (IgM, IgG) and anti-HBe. Less than ten percent of people who contract HBV go on to be chronic carriers.

Transmission: Accidental exposure to blood and body fluids in a health care setting is the most common form of transmission among health care workers. Outside the health care setting, the virus is commonly spread through sexual transmission, shared needles, transfusion and mother to baby. The virus can stay active in dried form for up to two weeks! Chances of transmission from a needle stick is 5 to 30%
Signs/symptoms: The incubation period after exposure is 45 to 180 days. Symptoms can be flu-like if mild. Weight loss, fatigue, vomiting and nausea are early indicators. More serious cases exhibit malaise, painful joints, muscular pain, headache, loss of appetite, enlarged liver and jaundiced. Full recovery can take up to six months.
Treatment: There is no standard treatment other than supportive therapy for symptoms.
Prevention: Hepatitis B is preventable! HBV vaccination must be offered (free of charge) within 10 working days of initial assignment to all employees occupationally exposed (job classification 1 & 2) to blood or other potentially infectious materials, unless the employee had a previous record of HBV vaccination or unless antibody testing has revealed that employee is immune or the vaccine is contraindicated for medical reasons. Pre-screening is not a prerequisite for receiving the vaccine. The vaccine is given in three doses - initial, 1 month and 6 months. The CDC recommends follow up testing one month after completing vaccine series to confirm the employee has developed immunity since 10% do not. If the blood test comes back negative, the vaccine series should be re-given. If immunity has not developed after the second series, this should be documented and no further vaccines will be given. If the employee initially declines the HBV vaccination, but at a later date decides to accept it, the vaccine is provided at that time. Any employee who declines the HBV vaccinations MUST sign the declination statement found in the record keeping section of this manual. The vaccine is believed to be good for life.

Hepatitis C: Formerly called non-A, non-B hepatitis, this is now the most commonly acquired hepatitis. It is estimated that over 4 million Americans are infected. It is responsible for 8,000 - 10,0000 deaths each year. Today it is one of the most common reasons for future liver transplantation due to cirrhosis and/or hepatocellular carcinoma due to HCV. The diagnosis can be made by one test - a positive IgG antibody to HCV (IgG anti-HCV). Over 80% of people with HCV become chronic carriers.
Transmission: The transmission is the same as hepatitis B - contaminated blood products, intravenous drug use and sexual contact with an infected partner. In addition, contamination from receiving a blood transfusion is very common. This problem is being rectified by testing all donors for the virus. Approximately 50% of those infected deny all risk factors. In the health care setting, the most common reason for infection would be exposure to contaminated blood or blood products. Chances of transmission from a needle stick is 5 to 10%
Signs/Symptoms: Hepatitis C usually lies dormant in the liver for many years (10-20 years!) before any significant symptoms appear. Liver problems and abnormal liver function tests are the most common symptoms.
Treatment: Interferon and ribavirin have been approved for treatment. Many drug companies are working on new treatments.
Prevention: No vaccine is available. Universal and Standard precautions must be strictly followed.

Hepatitis D: Formerly called delta hepatitis, this virus is found mainly in IV-drug users who are carriers of the hepatitis B virus and multiple transfused individuals. Hepatitis B must be present for the hepatis D virus to spread. HDV may be diagnosed by detecting IgM anti-HDV and IgG anti-HDV in serum during early infection and by the appearance of total or IgM-specific delta antibody (anti-HDV) during or after infection. No vaccine is available.

Hepatitis E: Formerly called enteric, or epidemic, non-A, non-B hepatitis, this virus resembles hepatitis A. HEV occurs most frequently in children and young adults. The clinical course is similar to that of hepatitis A. It is transmitted via the fecal-oral route. No vaccine is available. A test for Anti-HEV is not commercially available at this time.

Reference: MLO, "A lesson in the ABCs of hepatitis", Joyce Schwartz, MD and Kathy Stellato, MT(ASCP), January 1997.
Hepatitis Foundation International, Hepatitis C.
Will Dula and Steven Anderson, Hepatitis C infection, Advance Laboratory. June 1998.

ACQUIRED IMMUNE DEFICIENCY SYNDROME (AIDS)

Cause: Acquired Immune Deficiency Syndrome is a disease caused by the Human Immunodeficiency Virus (HIV). The virus is carried, reproduced and spread to others in blood or blood products. Persons infected with HIV are initially asymptomatic for an average of 10 years.

Transmission: Among health care workers, direct blood contact through needle stick injury, open wound contact or mucus membrane contact is the most common cause. Contracting HIV from a single needle stick is less than 0.3%. HIV will only stay active for a matter of seconds upon exposure to air. Causes of transmission outside this setting would be sexual, shared needles, mother to baby and transfusion.

Signs/Symptoms: Most personnel who acquire infection following percutaneous exposure develope the HIV antibody within 6 - 12 weeks after exposure. Some general signs and symptoms of AIDS include fatigue, malaise, fever, loss of appetite, weight loss, night sweats, bruising or bleeding, anemia and long-lasting viral, bacterial or fungal infections. The disease is always fatal.

Treatment: Researchers have yet to find a safe and effective cure for AIDS. Supportive treatment such as antibiotics, anti-fungal agents, and proper nutrition can temporarily relieve some of the symptoms. There is no vaccine available for this disease.

Prevention for Health Care Workers:
Personal protective equipment will be used when handling ALL blood. ALL blood and body fluids will be treated as potentially infectious. Universal precautions will always be observed. All needle stick injuries or exposures will be reported at once, documented and followed up as outlined in the post-exposure plan.

Medical Consultation and Examination:
All medical examinations, consultation, vaccinations and post-exposure management are performed by or under the direct supervision of a licensed physician without cost or loss of pay to the employee and at a reasonable time and place. The employee must be cooperative and follow the regulations for post-exposure evaluation as outlined in the Bloodborne Pathogen Standard. All results from evaluations are private and confidential. It is imperative that the work up following exposure starts as quickly as possible. The CDC recommends within 2 hours if possible. If indicated post exposure prophylaxis (PEP) treatment will be administered. The extent of the follow-up will be determined after the injury is thoroughly evaluated. A post exposure hot line has been set up to assist physicians providing follow-up evaluations - (888) 448-4911.

Post Exposure:
Most reported seroconversions take place within 6 to 12 weeks. The exposed health care worker must take proper precautions during the initial 12 weeks (or longer) to prevent the possible transmission of HIV or HBV to others. The CDC and the Surgeon General's recommendations include:

- Do not donate blood or plasma
- Inform potential sex partners of possible exposure and take adequate precautions.
- Clean up and disinfect any spills of your blood or bodily fluids.
- Refrain from sharing any items which may be contaminated with blood, such as razors or toothbrushes.