



HEPATITIS A (HAV) - A blood test showing the presence of IgM anti-HAV in serum confirms the diagnosis of acute hepatitis A infection. Symptoms of this virus strain include nausea, vomiting, jaundice (in adults) and diarrhea. After recovery, the antibodies to the virus provide protection from future infection with HAV. Following this, HAV blood tests will always return a positive result. 99% of those infected will recover without treatment.

Prevention of Hepatitis A - Individuals exposed to hepatitis A through household and close personal contact (anal/oral contact) or who plan to travel to developing countries where sanitary conditions are poor can receive temporary immunity (less than 3 months) by inoculation with immune globulin (IG) administered intramuscularly. For those exposed to HAV, IG should be given as soon as possible and no later than 2 weeks after initial exposure. Vaccines to prevent HAV infection prior to exposure provide protection against the virus as early as 2 - 4 weeks after vaccination. Hands should be washed with soap and water following bowel movements and before food preparation. Immunization of children (2-18 years of age) and adults consists of 2 doses of the vaccine. The second dose is given 6-12 months following the initial dose of vaccine. The vaccine is thought to be effective for at least 15 - 20 years.

Other individuals who should be vaccinated include: persons engaging in anal/oral sex; users of illegal injectable drugs; children living in communities that have high rates of hepatitis; certain institutional workers; workers in day-care centers; and laboratory workers who handle live hepatitis A virus. Patients with chronic liver disease and those with clotting factor disorders should be vaccinated against hepatitis A as well.

HEPATITIS B (HBV) - Acute HBV infection is diagnosed by the presence of hepatitis B surface antigen (HBsAg) and IgM antibody to hepatitis B core antigen (anti-HBc IgM) which develop in the serum in the early stages of infection at the time symptoms appear. Antibody to HBsAg (anti-HBs) develops after active infection and serves as an indicator of immunity.

Anti-HBs + - individual has been vaccinated, has received immune globulin, is immune, or is an infant who has received

antibodies from its mother.

Anti-HBc + - indicates past or present infection and lasts indefinitely. May be detected in an infant who has received antibodies from its mother.

IgM anti-HBc + - indicates recent infection with HBV, usually within 4-6 months.

HBeAg + - indicates active viral replication and high infectivity.

HBsAg + HBV - acute or chronic HBV; persistence for 6 months after acute infection indicates progression to chronic HBV.

Treatment for Hepatitis B - While there is no approved treatment for acute hepatitis B, there are four approved treatments for chronic hepatitis B: interferon alfa-2b, lamivudine, entecavir, and adefovir dipivoxil. Only patients with active HBV replication are candidates. About 35% of patients treated with injections of interferon for 4 to 6 months will have a long-term response. The response to oral lamivudine, given for at least one year, may be somewhat lower. Lamivudine is very well tolerated but viral resistance to treatment may occur. Adefovir dipivoxil is less likely to induce resistance but, like lamivudine, must usually be given for prolonged periods. Interferon therapy often results in a number of side effects including flu-like symptoms, fatigue, headache, nausea and vomiting, loss of appetite, depression, and hair thinning. Because interferon may depress the bone marrow, blood tests are needed to monitor white blood cells, platelets. Liver enzymes are monitored during treatment. Patients with chronic hepatitis B should be vaccinated against hepatitis A.

Prevention of Hepatitis B - Safe and effective vaccines provide protection against hepatitis B for at least 15-20 years and possibly much longer. Three injections over a 6-12 month period are usually required to provide full protection. All children and young adults should be vaccinated since most cases of HBV occur in sexually active young adults. Those who engage in high-risk behaviors should be vaccinated as well.



Unvaccinated individuals who have been exposed to HBV infected persons through unprotected sex or contact with infected blood or body fluids should receive an intramuscular injection of hepatitis B immune globulin (HBIG) within 14 days of

exposure and the hepatitis B vaccine. Newborns exposed to HBV at birth by an infected mother should receive HBIG plus the hepatitis B vaccine within 12 hours of birth and two additional doses of vaccine at one and six to twelve months of age.

Infected individuals should practice safe sex. Avoiding contact with infected blood or other body fluids directly or on objects such as needles, razors, toothbrushes, etc., may reduce the risk of transmission. Sores and rashes should be covered with bandages and blood on any surface should be cleaned up with household bleach.

HEPATITIS C (HCV)

Infection by the hepatitis C virus can be determined by a blood test that detects HCV antibodies in the blood. People must ask their doctor for the hepatitis C test. If the initial test is positive, a second test should be done to confirm the diagnosis and liver enzymes (a blood test) should be measured. Anti-HCV may not be present in the first four weeks of infection in about 30% of patients. HCV infection may be identified by the presence of anti-HCV in approximately 60% of people as early as 5-8 weeks after exposure. In some individuals HCV antibodies may not be detected for 5 – 12 months. HCV-RNA RT-PCR tests can determine HCV presence in as little as 1-2 weeks after infection.

About 55-85% infections become chronic, which means liver inflammation persists for six months or more after the initial acute infection. The enzymes alanine aminotransferase (ALT) and aspartate aminotransferase (AST) are released when liver cells are injured or die, but they do not reliably predict the severity of the liver injury. Elevated ALT and AST levels may appear and disappear throughout the course of the infection. Current tests can indicate that the infection is chronic (infections that do not clear up within six months). High ALT and AST levels reveal ongoing liver damage but liver damage may progress even if these levels are normal. A liver biopsy can determine the severity of the disease. The disease may gradually progress over a period of 10-40 years.

Treatment for Hepatitis C - Currently, pegylated interferon combined with ribavirin is used to treat hepatitis C. Selection of patients for treatment may be determined by virologic, biochemical, and when necessary, liver biopsy findings, rather than presence or absence of symptoms. Interferon is given by injection, and may have a number of side effects including flu-like symptoms including headaches, fever, fatigue, loss of appetite, nausea, vomiting, depression and thinning of hair. It may also interfere with the production of white blood cells and platelets by depressing the bone marrow. Periodic blood tests are required to monitor blood cells and platelets. Ribavirin can cause sudden, severe anemia and birth defects so women should avoid pregnancy while taking it and for 6 months following treatment. The severity and type of side effects differ for each individual. Treatment of children with HCV is not currently approved but is under investigation. Permanent clearance of HCV can be achieved in 45% to 85% of treated patients.

Currently, almost one half of all liver transplants in the U.S. are performed for end-stage hepatitis C. However, reinfection of the transplanted liver by HCV occurs at a high rate and progressive liver disease may recur.

Anyone with hepatitis C should be vaccinated against hepatitis A and B and should not drink alcohol.

Try to maintain as normal a life as possible by eating a well balanced diet, drinking plenty of fluids, exercising and keeping a positive attitude. Avoid depressing or overwhelming tasks and learn how to pace yourself, rest when you feel tired. Plan physically exhausting tasks in the morning when your energy level is at its peak.

HEPATITIS D (HDV) - A positive test for anti-HDV in a patient with acute hepatitis B indicates HBV/ HDV co-infection. Patients with chronic hepatitis B and a positive HDV test are super-infected.

Treatment for Hepatitis D - Interferon alfa-2b treatments may be beneficial to a small proportion of patients. Vaccination against HBV will prevent HDV.

HEPATITIS E (HEV) - Testing for anti-HEV is usually reserved for returning travelers from the developing world in whom hepatitis is present but other hepatitis viruses cannot be detected. Currently there is no treatment for HEV. A vaccine for HEV is under development.