

Hepatitis tests

Hepatitis

Hepatitis is inflammation of the liver which may be caused by **a virus, bacteria or a toxic substance**. There are five major types of viral hepatitis which have been identified. Each is caused by a different virus and differs in its incubation period, mode of transmission and severity, they are hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). Hepatitis E clinically similar to hepatitis A, mostly restricted to endemic areas and occasionally causes chronic infection in immunosuppressed people and transmitted by the fecal – oral route.

General considerations for ordering laboratory tests

Prior to ordering tests for hepatitis, consider the patient's history, age, risk factors, hepatitis vaccination status, and any available previous hepatitis test results.

Risk factors for viral hepatitis include:

- Substance use (includes sharing drug snorting, smoking or injection equipment)
- High-risk sexual activity or sexual partner with viral hepatitis
- Travel to or from high-risk hepatitis endemic areas or exposure during a local outbreak
- Immigration from hepatitis B and/or C endemic countries
- Household contact with an infected person especially if personal items (e.g., razors, toothbrushes, nail clippers) are shared
- Recipient of unscreened blood products
- Needle-stick injury or other occupational exposure (e.g., healthcare workers)
- Children born to mothers with chronic hepatitis B or C infection
- Attendance at daycare
- Contaminated food or water (**hepatitis A and E only**)
- Tattoos and body piercing
- History of incarceration
- HIV or other sexually transmitted infection
- Hemodialysis

Testing for hepatitis

Hepatitis A antibody, IgM and IgG (HAV- Ab)

This test measures antibodies to the hepatitis A virus. If the antibodies are found to be of the **IgM type**, this is indicative of **a current infection** with hepatitis A. If the antibodies are of the **IgG type**, this indicates **a past infection** with hepatitis A and probable immunity to the disease. The IgG antibodies are the second type of immunoglobulins which appear in

an immune response. These immunoglobulins are present for life, which provides immunity from reinfection with this type of hepatitis.

Hepatitis B surface antigen (HBsAg)

This test measures the surface antigen of the hepatitis B virus. It is used to screen potential blood donors and to diagnose hepatitis B virus. The HBsAg is the earliest indicator of hepatitis B, often rising before clinical symptoms appear. This antigen is indicative of active hepatitis B. If the level of HBsAg continues above normal, the person is considered to be a carrier of hepatitis B. A negative result indicates that the person has never been exposed to the virus or has recovered from acute hepatitis and has rid themselves of the virus. A positive result indicates an active infection but does not indicate whether the virus can be passed to others.

Hepatitis B surface antibody (HBsAb, anti-HBs)

This test measures antibodies to the hepatitis B surface antigen. The presence of this antibody demonstrates immunity to the hepatitis B virus, except for a few rare subtypes. This test is used to determine if a vaccine is needed for persons at risk for hepatitis. A positive result indicates immunity to hepatitis B from vaccination or recovery from an infection.

Hepatitis B core antigen (HBcAg)

This test measures a core antigen of the hepatitis B virus in liver cells. It is used only for research purposes.

Hepatitis B core antibody (HBcAb, anti-HBc)

This test measures antibodies to the core antigen of hepatitis B. It rises during the chronic phase of the illness, and remains present for the patient's lifetime. The HBcAb is elevated during the time between the disappearance of the HBsAg and the appearance of HBsAb. This time period is the "core window" phase. Thus, it is the most reliable test to determine the presence of hepatitis B infection when both the surface antibody and surface antigen are absent.

Hepatitis B e antigen (HBeAg)

This test measures the e antigen of the hepatitis B virus. Unlike the surface antigen, the e antigen is found in the blood only when there are viruses also present. The HBeAg level correlates with titers of the virus, so the test is used primarily to evaluate the degree of infectivity. Thus, the presence of HBeAg indicates the virus can be passed to others. Measurement of HBeAg may also be used to monitor the effectiveness of HBV treatment, since successful treatment should lead to no HBeAg remaining in the blood and to the presence of anti-HBe.

Hepatitis B e antibody (HBeAb, anti-HBe)

This test measures antibodies to the e antigen of the hepatitis B virus. The presence of this antibody along with a positive result in testing for the hepatitis B surface antigen (HBsAg) usually indicates a carrier state.

Hepatitis C antibody (anti-HCV)

This test measures the antibodies to the hepatitis C virus. **Most cases of transfusion hepatitis are hepatitis C in nature.** The presence of anti-HCV antibodies indicate exposure to HCV, but do not indicate where there is acute, chronic or resolved disease.

Hepatitis D antibody (anti-HDV)

This test measures the antibodies to the hepatitis delta virus. A positive test result suggests recent infection or carrier state for the virus, which **only occurs in conjunction with the hepatitis B virus infected patients.** HDV is rare.

Normal values (negative result)

Possible meanings of abnormal values (positive result)

Hepatitis A antibody (HAV- Ab)

Positive, IgM: Acute hepatitis A infection

Positive, IgG: Past exposure to hepatitis A, probable immunity

Hepatitis B surface antigen (HBsAg)

Either active/chronic hepatitis B or a carrier state

Hepatitis B surface antibody (HBsAb, anti-HBs)

Immunity to hepatitis B (due to natural infection or hepatitis B vaccination)

Hepatitis B core antibody (HBcAb, anti-HBc) means hepatitis B infection

Hepatitis B e antigen (HBeAg) means hepatitis B infection

Hepatitis B e antibody (HBeAb, anti-HBe) means hepatitis B infection or carrier state

Hepatitis C antibody (anti-HCV) means hepatitis C (acute, chronic, or resolved)

Hepatitis D antibody (anti-HDV) means hepatitis D infection or carrier state

Contributing factors to abnormal values

Diagnostic testing in which radionuclides were used within 1 week prior to this test may falsely elevate test results.

Intervention/ Implications

- No fasting is required before the test.