

# Hepatitis B Facts: Testing and Vaccination

## — Who should be vaccinated? —

The following persons should receive routine hepatitis B vaccination, according to the Centers for Disease Control and Prevention (CDC):

### Routine vaccination:

- All newborns at birth prior to hospital discharge
- All children and teens ages 0 through 18 years
- All persons who wish to be protected from hepatitis B virus (HBV) infection. CDC states it is not necessary for the patient to disclose a risk factor to receive hepatitis B vaccine.

### Persons who are at risk for sexual exposure:

- Sexually active persons who are not in long-term, mutually monogamous relationships
- Sex partners of HBsAg-positive persons
- Persons seeking evaluation or treatment for an STD
- Men who have sex with men

### Persons at risk for infection by percutaneous or mucosal exposure to blood:

- Injection-drug users, current or past
- Household contacts of HBsAg-positive persons
- Residents and staff of facilities for developmentally challenged persons
- Healthcare and public safety workers with reasonably anticipated risk for exposure to blood or blood-contaminated body fluids
- Persons with end-stage renal disease and those receiving dialysis

### Others:

- Travelers to areas with moderate or high rates of HBV infection
- Persons with chronic (life-long) liver disease
- Persons with HIV infection

Refugees, immigrants, and adoptees from countries where HBV infection is endemic should have hepatitis B testing. Adults should discuss their need or desire for hepatitis B vaccination with their healthcare providers.

For certain people at risk, postvaccination testing is recommended. Consult ACIP recommendations for details (see references).

## — Hepatitis B lab nomenclature —

**HBsAg:** *Hepatitis B surface antigen* is a marker of infectivity. Its presence indicates either acute or chronic HBV infection.

**Anti-HBs:** *Antibody to hepatitis B surface antigen* is a marker of immunity. Its presence indicates an immune response to HBV infection, an immune response to vaccination, or the presence of passively acquired antibody. (It is also known as **HBsAb**, but this abbreviation is best avoided since it is often confused with abbreviations such as HBsAg.)

**Anti-HBc (total):** *Antibody to hepatitis B core antigen* is a nonspecific marker of acute, chronic, or resolved HBV infection. It is *not* a marker of vaccine-induced immunity. It may be used in prevaccination testing to determine previous exposure to HBV infection. (It is also known as **HBcAb**, but this abbreviation is best avoided since it is often confused with other abbreviations.)

**IgM anti-HBc:** *IgM antibody subclass of anti-HBc*. Positivity indicates recent infection with HBV (within the past 6 mos). Its presence indicates acute infection.

**HBeAg:** *Hepatitis B “e” antigen* is a marker of a high degree of HBV infectivity, and it correlates with a high level of HBV replication. It is primarily used to help determine the clinical management of patients with chronic HBV infection.

**Anti-HBe:** *Antibody to hepatitis B “e” antigen* may be present in an infected or immune person. In persons with chronic HBV infection, its presence suggests a low viral titer and a low degree of infectivity.

**HBV-DNA:** *HBV Deoxyribonucleic acid* is a marker of viral replication. It correlates well with infectivity. It is used to assess and monitor the treatment of patients with chronic HBV infection.

## — About hepatitis B serologic testing —

Serologic testing prior to vaccination may be undertaken based on your assessment of your patient’s level of risk and your or your patient’s need for definitive information (see information in the left column). If you decide to test, draw the blood first, and then give the first dose of vaccine at the same office visit. Vaccination can then be continued, if needed, based on the results of the tests. If you are not sure who needs hepatitis B testing, consult your state or local health department.

| Tests   | Results  | Interpretation                  | Vaccinate?                                    |
|---|--|---------------------------------|---|
| HBsAg<br>anti-HBc<br>anti-HBs                 | negative<br>negative<br>negative                       | susceptible                     | vaccinate if indicated                        |
| HBsAg<br>anti-HBc<br>anti-HBs                 | negative<br>negative<br>positive with $\geq 10$ mIU/mL | immune due to vaccination       | no vaccination necessary                      |
| HBsAg<br>anti-HBc<br>anti-HBs                 | negative<br>positive<br>positive                       | immune due to natural infection | no vaccination necessary                      |
| HBsAg<br>anti-HBc<br>IgM anti-HBc<br>anti-HBs | positive<br>positive<br>positive<br>negative           | acutely infected                | no vaccination necessary                      |
| HBsAg<br>anti-HBc<br>IgM anti-HBc<br>anti-HBs | positive<br>positive<br>negative<br>negative           | chronically infected            | no vaccination necessary (may need treatment) |
| HBsAg<br>anti-HBc<br>anti-HBs                 | negative<br>positive<br>negative                       | four interpretations possible*  | use clinical judgment                         |

- \*1. May be recovering from acute HBV infection
2. May be distantly immune, but the test may not be sensitive enough to detect a very low level of anti-HBs in serum
3. May be susceptible with a false positive anti-HBc
4. May be chronically infected and have an undetectable level of HBsAg present in the serum

## — Managing chronic HBV infection —

When you identify a patient who is chronically infected with HBV, make sure you consult a specialist knowledgeable in the treatment of liver disease so your patient’s care is optimized. Chronically infected persons need medical evaluation every 6–12 months to assess the status of their liver health and their need for antiviral therapy, as well as to screen for liver cancer. In addition, persons with chronic HBV infection should be educated about their disease and how to protect others.

Household members and sex partners should be tested for HBV infection (HBsAg and antiHBs) and given the first dose of hepatitis B vaccine at the same visit. (Vaccinating a person who has already been infected will do no harm). If testing indicates HBV susceptibility, complete the hepatitis B vaccination series. If testing indicates the presence of HBV infection, consultation and further care with a physician knowledgeable about chronic hepatitis B is needed.

### References

1. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the U.S.: Recommendations of the ACIP, Part I: Immunization of Infants, Children and Adolescents, *MMWR*, Dec. 23, 2005, Vol. 54(RR-16)
2. A Comprehensive Immunization Strategy to Eliminate Transmission of Hepatitis B Virus Infection in the U.S.: Recommendations of the ACIP, Part II: Immunization of Adults, *MMWR*, Dec. 8, 2006, Vol. 55(RR-16)