

Antibody to Hepatitis B Surface Antigen (HBsAb)

Antibody to hepatitis B surface antigen (HBsAb) is the antibody that best correlates with immunity to hepatitis B virus (HBV). The three most common reasons for testing are to determine if a person:

- 1) known to have been infected with hepatitis B has resolved their infection and is no longer infectious;
- 2) who is a candidate for immunization with hepatitis B vaccine has evidence of previous natural infection; and
- 3) immunized with hepatitis B vaccine has developed a protective antibody response.

In the first two situations, any level of HBsAb (except negative), combined with a negative hepatitis B surface antigen result, indicates a resolved infection without risk of transmission. Vaccine is of no benefit.

In the third situation, antibody levels ≥ 10 International Units/litre (IU/L) are considered protective. Antibody levels < 10 IU/L are not considered protective. Cadham Provincial Laboratory issues reports as follows:

HBsAb titre test result	Report
≥ 10 IU/L	positive – protected
1-9.9 IU/L	low – not protected
< 1 IU/L	negative – not protected

Seroconversion rates after appropriate hepatitis B vaccination usually exceed 90 per cent in adults and 98 per cent in children. As a result, post-immunization testing for universal programs is not necessary. Post-immunization testing is indicated for the following groups:

- infants born to infected mothers;
- sexual partners and household contacts of chronic carriers;
- those with sustained/probable occupational exposure; and
- eligible immunocompromised persons who may not respond.

HBsAb testing is ideally performed one to two months following receipt of the last dose of the three-dose primary immunization series. A protective result at this time suggests long-term protection with no need to repeat HBsAb testing in the future, even following exposure to an infected person.* A low or negative result suggests primary vaccine failure in which case a repeat three-dose series should be given followed by HBsAb testing one to two months later.

* except immunocompromised persons in which case protective titres should be considered valid for no more than one year

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If HBsAb testing is undertaken for the first time more than six months** following completion of a primary three-dose series with negative or low results, it is not known whether this represents failure to respond to the vaccine (primary vaccine failure) or gradual loss of antibody following an initial protective response. Since the latter is the most common scenario, it is recommended that an additional dose of hepatitis B vaccine be given followed by HBsAb testing one to two months later. Results indicating protection suggest long-term protection and obviate the need for future testing.

If results one to two months following receipt of the additional dose are still low or negative, then two additional doses of vaccine to complete a second three-dose series are recommended, followed by HBsAb testing one to two months later. Persons with low or negative results following the receipt of two complete, three-dose series, should be investigated for evidence of infection, current or past, with HBsAg and IgG core antibody.

In the event of an exposure to hepatitis B (ex: needle stick injury or sexual assault), the October 2000 *Manitoba Health Integrated Post Exposure Protocol* suggests that an exposed person only be tested for HBsAb if the exposed never tested positive (or it is unknown) for HBsAb or hepatitis B surface antigen. If testing is thus required, and demonstrates non-protective titres, HBV prophylaxis would include hepatitis B immune globulin (HBIG) plus vaccine. The number of doses of vaccine and subsequent testing depend on the previous number of HBV vaccine doses received. Please see the protocol for further information.

Booster doses in distantly vaccinated and unexposed persons are probably not necessary, as there is good anamnestic response with HBV vaccine.

** arbitrary limit beyond the recommended one to two months, see *Canadian Immunization Guide*, 6th Edition, 2002.