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## Hepatitis B Screening and Vaccination Recommendations for Health Care Personnel

### Background

Hepatitis B virus (HBV) is a highly transmissible blood-borne virus.<sup>1</sup> Health care personnel (HCP) are at risk for acquiring HBV and transmitting it to others in the health care setting. As such, the Advisory Committee on Immunization Practices has recommended pre-exposure HBV vaccination for HCP since 1982.<sup>2</sup> HCP are defined as all paid and unpaid persons working in health care settings who have the potential for exposure to patients and/or infectious materials, including body substances, contaminated medical supplies, and equipment.<sup>2</sup> HCP include medical staff, allied health professionals, and other support staff. The U.S. Occupational Safety and Health Administration (OSHA) requires that hepatitis B vaccine be offered to HCP who have a reasonable expectation of being exposed to blood or body fluids on the job.<sup>3</sup>

Pre-vaccination screening of HCP to identify those employees who are at higher risk for HBV due to their birthplace, their parents' birthplace, select risky behaviors, or select medical conditions is useful to identify HCP for whom vaccination may not be necessary due to a current or past HBV infection (Box).

#### Box. HCP at Higher Risk for HBV<sup>2,4,5</sup>

- HCP born in geographic regions with intermediate or high HBsAg prevalence (e.g., Eastern Europe, Asia, Africa, the Middle East, and the Pacific Islands)
- Unvaccinated U.S.-born HCP whose parents were born in geographic regions of high HBsAg prevalence (e.g., Africa, Asia, and the Middle East)
- HIV-positive HCP
- HCP who report current or prior engagement in high-risk substance abuse or sexual behaviors
- HCP who are on immunosuppressive therapy or hemodialysis

### Recommendations

1. Employers should have a facility-specific exposure control plan that follows federal guidelines for protecting HCP and defining job classifications where occupational exposure to blood or other potentially infectious materials occurs.
2. Employers, including both host and staffing agencies, should only accept written and dated records as evidence of prior hepatitis B vaccination and immunity.
3. Upon hire or enrollment, most unvaccinated or incompletely vaccinated HCP who do not have risk factors for HBV infection (Box) generally do not need HBV serologic screening ahead of completing a vaccine series.
4. Pre-vaccination serologic testing is indicated for HCP in certain high-risk populations (Box) without serologic evidence of immunity. Pre-vaccination screening can identify those high-risk HCP for whom vaccination may not be necessary due to a current or past HBV infection. Testing high-risk HCP should consist of a serologic assay for surface antigen (HBsAg), in addition to either core antibody (HBcAb) or surface antibody (HBsAb; Table). Drawing all three helps interpret immune status. If possible, draw blood for screening before administering the first dose of hepatitis B vaccine. A dose of vaccine should then be administered during the same health care visit; subsequent doses should be administered based on interpretation of screening results.
5. Persons who are HBsAg-positive are either acutely or chronically infected (Table). These individuals should not receive any subsequent doses of hepatitis B vaccine. Instead, they should receive counseling regarding how to prevent HBV transmission to others and be referred for further evaluation (e.g., HBV viral load testing), care, treatment, and other services, as appropriate.<sup>2</sup>

6. HCP who are HBsAg-positive should not be excluded from work. Those who perform exposure-prone procedures should seek counsel from a review panel comprised of experts (e.g., the HCP's personal physician and infectious disease specialists or risk management) regarding the procedures that they can perform safely.<sup>2</sup>
7. HBsAg-positive students may be accepted to schools for health care career training.
8. Consider referring persons whose only positive serologic marker is HBcAb to a specialist for further evaluation if unable to interpret results. The presence of HBcAb may indicate previous or ongoing infection with HBV in an undefined time frame (Table).
9. HCP at high likelihood for exposure to blood or body fluids should have postvaccination serologic testing (PVST) for HBsAb, generally performed 1–2 months after the last dose of vaccine. The PVST method should quantitatively assess HBsAb antibody concentration (mIU/mL).
  - a. Persons with anti-HBs concentrations of  $\geq 10$  mIU/mL are considered immune.
  - b. Persons with anti-HBs concentrations of  $< 10$  mIU/mL should be revaccinated. Administration of all doses in the second series, on an appropriate schedule, followed by anti-HBs testing 1–2 months after the final dose, is usually more practical than serologic testing after one or more doses of vaccine.
  - c. PVST for HCP at low-risk for mucosal or percutaneous exposure to blood or body fluids may not be cost effective. Such persons should be counseled to immediately report exposures to occupational health.<sup>2</sup>
10. Report suspected and confirmed cases of acute and chronic HBV to the Section of Epidemiology (7 AAC 27.005 and .007) by phone 907-269-8000 or fax 907-561-4239. See: <http://dhss.alaska.gov/dph/Epi/Pages/pubs/conditions/default.aspx>

**Table. Hepatitis B Virus Screening Result Interpretation<sup>5</sup>**

HBsAg	HBcAb	HBsAb	Interpretation	Hepatitis B Vaccination
-	-	-	Susceptible	Vaccinate if indicated
-	-	+	Immune due to vaccination	No vaccination necessary
+	+	-	Acutely or chronically infected*	No vaccination necessary (may need treatment)
-	+	+	Immune due to natural infection	No vaccination necessary
-	+	-	Three possible interpretations <sup>†</sup>	Confer with a specialist

\*Additional testing for the HBcAb-IgM marker is needed to determine acute vs. chronic HBV infection.

<sup>†</sup>1. May be distantly immune with a serum antibody level below the level of detection of the anti-HBs test. 2. May be susceptible with a false-positive anti-HBc. 3. May be chronically infected and have an undetectable level of HBsAg present in the serum.

### References

1. Lewis JD, et al. Hepatitis B in healthcare workers: transmission events and guidance for management. *World J Hepatol* 2015;7(3):488–97.
2. CDC. Immunization of health-care personnel: Recommendations of the ACIP. *MMWR* 2011;60(8):3–8. Available at: [https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6007a1.htm?s\\_cid=rr6007a1\\_w](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr6007a1.htm?s_cid=rr6007a1_w)
3. U.S. Department of Labor. OSHA. Standard for Bloodborne Pathogens 1992; 29CFR 1910.1030(f)(2)(i). Available at: [https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030#1910.1030\(f\)\(2\)\(i\)](https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1030#1910.1030(f)(2)(i))
4. CDC. Prevention of hepatitis B virus infection in the United States: Recommendations of the ACIP. *MMWR* 2018;67(1);1–36. Available at: <https://www.cdc.gov/mmwr/volumes/67/rr/pdfs/rr6701-H.PDF>
5. CDC. Recommendations for identification and public health management of persons with chronic HBV infection. *MMWR* 2008;57(7):1–20. Available at: <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5708a1.htm>