



## Infection Control

### - Prevention of Transmission of Viral Hepatitis in Healthcare - Setting

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- Hepatitis virus transmission is a significant hazard to healthcare workers and patients

**Parenteral exposure is the main source of infection. -**

	<b>HIV</b>	<b>HCV</b>	<b>HBV</b>
Minimum volume of blood needed to transmit infection	0.1 mL	0.01mL	0.00004 mL
Risk of infection following contaminated needle stick	0.5%	1-5%	7-30%

**The risk of HBV infection is 37-62% with HBeAg-positive blood and 23-37% with HBsAg-positive blood .**

#### **Hospital must provide:**

- Free hepatitis-B vaccine
- Gloves, gowns, masks, and other necessary protective equipment

- Immediate medical evaluation and follow-up if exposed

Confidential treatment and protection of staff medical records

### **Hospital must:**

- Make sure that universal precautions are practiced institution-wide
- Make sure that employees know which materials are potentially infectious
- Provide puncture- and leak-proof containers for sharps disposal
- Train employees during orientation and annually about hazards and prevention

### **Health care workers who are positive for HCV or HBV infection:**

Should know that performing "non-invasive procedures" poses

- no risk of transmission to patients

- Have an ethical responsibility to protect your patient from possible harm

### **- Staff Responsibilities**

#### **Always use universal precautions --**

- . Even with a needle stick injury, the use of gloves may reduce the volume of blood transferred.

#### **Respect sharps --**

- . Recap needles only if absolutely necessary,
- . Properly dispose of all sharp items immediately after use.

#### **Get immunized against hepatitis-B --**

- . You must make the choice to be vaccinated and complete the 3-injection series.

- **Staff Responsibilities**

- **Immediately report all exposures**

- . Don't wait. The time frame for beginning this treatment is critical

- **Comply with post-exposure follow-up**

- . The difficult period following exposure requires frequent blood testing
- . Following recommendations is crucial in order to benefit from treatment

- . Either alone is 75% effective in preventing HBV infection
- . The effectiveness of using both together is unknown
- . the increased efficacy observed in the perinatal setting with both may apply to the adult setting
- . Neither HBIG nor hepatitis B vaccine is contraindicated in pregnancy

- . **HCV Post-Exposure Management**

- The HCV status of the source and exposed person should be determined, and follow-up HCV testing should be performed to determine if infection develops .
- There is no role for immunoglobulins in HCV PEP
- Neither interferon nor antiviral agents (e.g., ribavirin) is recommended for PEP of hepatitis C

- The goal of PEP management is to identify hepatitis C infection early and refer for treatment
- Interferon is not effective until there is an established infection;
- The earlier interferon is introduced once there is established infection, the higher the rate of resolved infection.

**. Which workers in the health care setting need hepatitis B vaccine?**

- Health care workers (HCWs) who have a reasonable expectation of being exposed to blood on the job should be offered hepatitis B vaccine.
- This does not include receptionists, clerical and billing staff, etc., as these individuals are not expected to be at risk for blood exposure

**. If a HCW's only dose of hepatitis B vaccine was six months ago, should the series be restarted?**

- No
- The hepatitis B vaccine series should not be restarted when doses are delayed; rather, the series should be continued from where it left off
- The vaccine recipient should receive the second dose of vaccine now and the third dose 2–5 months later

**. Is it safe to be vaccinated during pregnancy?**

- Yes. Pregnant women in occupations with a high risk of hepatitis B virus (HBV) infection (e.g., HCWs who have a potential for exposure to blood) should be vaccinated
- Hepatitis B vaccine contains no risk to the fetus at any time during gestation

**. Which HCWs need serologic testing after receiving 3 doses of hepatitis B vaccine?**

- All HCWs should have serologic testing 1–2 months .

An anti-HBs serologic test result of  $\geq 10$  mIU/mL indicates immunity.

No further routine doses or testing are indicated.

***. What should be done if a HCW's serologic test (anti-HBs) is negative 1–2 months after the last dose of vaccine?***

- The 3-dose series should be repeated and then test for anti-HBs 1– months after the last dose of vaccine
- If the HCW is still negative after the second vaccine series the HCW is considered a non-responder to hepatitis B vaccination
- The HCW should be counseled that non-response to the vaccination series most likely means the HCW is susceptible to HBV infection

***. How often should we test health care workers after they've received the hepatitis B vaccine series to make sure they're protected?***

- Post-vaccination testing should be done 1–2 months after the last dose of hepatitis B vaccine
- If adequate anti-HBs is present ( $\geq 10$  mIU/mL), nothing more needs to be done
- Periodic testing or boosting is not needed.
- If the post-vaccination test result is less than 10 mIU/mL the vaccine series should be repeated and testing done 1–2 months after the second series

***. Should a HCW who performs invasive procedures and who once had a positive anti-HBs result be revaccinated if the anti-HBs titer is rechecked and is  $< 10$  mIU/mL?***

- No.
- Post-vaccination testing needs to be done only once at 1–2 months after the vaccine series is completed

- If test result indicated protection (anti-HBs  $\geq 10$  mIU/mL) as a result of the original vaccination series, no further serologic testing is indicated
- Adequate response to the 3-dose series of hepatitis B -- vaccine provides long-term immunologic memory that gives long-term protection.
- Only immuno-compromised persons (e.g., hemodialysis patients, HIV-positive persons) need to have anti-HBs testing and booster doses of vaccine to maintain their anti-HBs concentrations of at least 10 mIU/mL to be protected against HBV infection.

Either alone is 75% effective in preventing HBV infection

***. If HCWs were vaccinated for hepatitis B in the past and not tested for immunity, should they be tested now?***

No.

In this case, a HCW does not need to be tested unless he or she has an exposure

If antibody response is inadequate and the source is +ve, HBIG and vaccine must be given

The person should receive post-vaccination testing 3–6 months afterwards because testing earlier may only measure antibody from HBIG

***. Does being infected with HBV prevent one from becoming a health professional?***

- No.

- All health professionals should practice standard precautions.

Those who are HBsAg-positive and HBeAg-positive, or HBV-DNA positive should not perform exposure-prone invasive procedures (e.g., gynecologic, cardiothoracic surgery) unless they have been counseled by an expert review panel and been advised under what circumstances, if any, they may perform these procedures

**. American College of Surgeons Recommendations**

**. Relevant to all blood-borne pathogens**

- Surgeons should continue to use the highest standards of control, involving the most effective known sterile infection barriers, universal precautions, and scientifically accepted measures to prevent blood exposure
- This practice should extend to all sites where surgical care is rendered and should include safe handling practices for needles and sharp instruments.
- During every operation, maximum effort should be exerted to prevent patients' exposure to the blood of members of the surgical team and to protect the surgical team from exposure to the blood of patients.

**. American College of Surgeons Recommendations**

**. Relevant to all potentially infected patients:**

- Surgeons have the same ethical obligation to render care to hepatitis-infected patients as they have to care for other patients.

**. American College of Surgeons Recommendations**

**. Relevant to hepatitis B (HBV):**

- Surgeons should know their HBV immunization and antibody status
- Surgeons with acquired antibody from successful immunization are protected from future infection and are not infectious to their patients

Surgeons who have not been immunized and have not had — previous infection with HBV (that is, no antibodies to HBV), should be immunized for HBV.

Documentation of seroconversion to a positive antibody test — for the surface antibody for HBV should be obtained one month after completion of the immunization process.

Failure to seroconvert should result in a second attempt at immunization.

Failure to respond should be known to surgeons so that full use of strategies to prevent blood exposure may be employed to avoid future blood contact.

**. American College of Surgeons Recommendations**

**. Relevant to hepatitis B (HBV):**

- Surgeons who are positive for the HBV-surface antigen, should be tested for the HBeAg and HBV-DNA
- If they are positive for HBsAg but are negative for HBeAg, then they can continue medical practice but should consult expert medical advice for their own personal health
- If the chronically infected HBV surgeon is positive for HBeAg or has high viral counts in his or her blood, then an expert panel should be convened to make recommendations about the continuation of clinical practice.
- The HBeAg-positive surgeon and the panel should discuss and agree on a strategy for protecting patients who are at risk for disease transmission

**American College of Surgeons Recommendations**

**Relevant to hepatitis C (HCV):**

- Surgeons should know their antibody status for HCV infection
- Surgeons who are negative for HCV antibodies are at risk for HCV infection and should employ all strategies to prevent blood exposure for the future
- Surgeons who have chronic HCV infection have no reason to alter their practice based upon current information
- They should seek expert medical advice because current medical therapy with interferon-Alfa and ribavirin can successfully treat this infection in some patients.

***Thank You***