

OOSH BULLETIN

Hepatitis B Virus and Hepatitis B Vaccination-FAQ

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Hepatitis B Virus

Exposure prevention remains the primary strategy for reducing occupational bloodborne infections; however, occupational exposures will continue to occur. Employer should make available to their employees a system that includes written protocol to prompt reporting, evaluating, counseling, treatment, and follow-up of occupational exposure that might place employee at risk for acquiring a bloodborne infection.



What is Hepatitis B Virus (HBV)?

Hepatitis B virus is a potentially life-threatening bloodborne pathogen. According to Center for Disease Control and Prevention, currently over 1.25 million Americans are infected with HBV. The Number of new HBV infections per year is on the decline: 260,000 in the 1980s to 78,000 in 2003. The highest rate of disease occurs in those ages 20-49. The greatest decline occurred in children and adolescents. This decline is contributed to routine Hepatitis B vaccinations. Furthermore, some who contracted HBV will become carriers, passing the disease on to others. Hepatitis B disease is an inflammation of the liver caused by the Hepatitis B virus. About 90% of all adults who contract Hepatitis B recover fully after a period of rest; their bodies clear the infection and they become immune. These individuals will not contract Hepatitis B again, will no longer be contagious, and therefore can not pass on the virus to others.

Most patients who are infected with HBV recover; however, up to 10 percent of adults become chronic carriers capable of spreading the disease. These chronic carriers look healthy, can spread the disease, have no symptoms but usually develop long-term liver complications which can be fatal, such as cirrhosis of the liver, persistent hepatitis and primary liver cancer. Chronic carriers can only be identified through a blood test for the hepatitis B viral antigen or antibody.

How is it transmitted?

HBV is usually spread through exposure with *infected* blood or other infectious body fluids containing visible blood and tissues that enters the body of a person who is not infected. Anyone with occupational exposure to blood is at risk of contracting the infection. Therefore, employer must provide engineering controls, workers must use work practice and protective clothing and equipment to prevent exposure to potentially infectious materials. According to OSHA, the best defense against hepatic B is vaccination.

An exposure that might place an employee at risk for HBV, HCV and HIV infection is defined as percutaneous injury such

as, a needle stick or cut with a sharp object or contact of mucous membrane or non-intact skin where exposed skin is chapped, abraded, or afflicted with dermatitis with blood and body fluids containing visible blood. In infected persons, HBV can be found in:

- Blood
- Body tissue
- Cerebrospinal fluid
- Synovial fluid
- Pleural fluid
- Peritoneal fluid
- Pericardial fluid
- Amniotic fluid
- Semen
- Vaginal secretions

According to CDC, feces, nasal secretion, saliva, sputum, sweat, tears, urine, vomitus, are not considered potentially infectious unless they contain blood. The risk for transmitting of HBV, HCV and HIV infection from these fluids and materials are very low. For human bites, the clinical evaluation must include the possibility that **both** the person bitten and the person who inflicted the bite were exposed to bloodborne pathogens.

In the workplace, the three most prevalent means of transmission are puncture wounds from sharps; contaminated body fluids entering an open cut or break in the skin, or splashing into mucous membranes e.g. eye, nose or mouth; touching the eyes, nose, mouth, or other mucous membranes with contaminated hands. Outside the workplace, the most common forms of transmission are unprotected sex, intravenous drug use and blood transfusions.



What are the signs and symptoms?

Some people infected with HBV have no symptoms at all and may never know that they have been infected with the virus. Signs and symptoms are less common in children than adults. The symptoms usually appear two to six months after exposure. In phase one, if symptoms occur, they may include: a flu-like illness, aches, tiredness, hives or rash, fatigue, nausea, vomiting, and loss of appetite, dull abdominal pain, joint pain and occasional diarrhea. In phase two, some develop jaundice (a yellowing of the skin and whites of the eyes), dark urine, light colored stools and itchy skin.

What Are the Long-Term Effects Without Vaccination?

Chronic infection occurs in

- 90% of infants infected at birth
- 30% of children infected at age 1-5
- 6% of persons infected after age 5

Death from chronic liver disease occurs in:

- 15-25% of chronically infected persons

How is it treated?

There are no specific medications which can be used to treat person with acute infection. Resting is mostly needed in such cases. HBV infected persons should be evaluated by their medical care provider for liver disease. Adefovir dipivoxol, alpha interferon, and lamivudine are three drugs licensed for the treatment of persons with chronic hepatic B. These drugs should not be used by pregnant women. Drinking alcohol can make your liver disease worse

What are your chances of acquiring Hepatitis B if you are exposed?

Unlike HIV, which cannot live for long periods outside the body, HBV can survive outside the body, at room temperature, for over 7 days. HBV is spread more easily than HIV. HBV it is 100 times more contagious than HIV.

Can Hepatitis B be contracted from sharing drinking fountains?

No, Hepatitis B cannot be spread from drinking fountains. Hepatitis B is a bloodborne pathogen; there must be the presence of blood or other potentially infectious body fluids. Neither can it be contracted from swimming pools, insect bites, using the telephone, eating meals together, a sneeze or a cough. The virus cannot be contracted from areas such as toilet seats or door knobs that are not contaminated with blood. However, other viral and bacterial infections may be transmitted through these means. Therefore, good hygiene habits must be practiced at all times.

How can Hepatitis B disease be prevented?

- The most effective way to prevent bloodborne infections is to avoid contact with blood and body fluids. Since this may not be feasible, all employees must observe **universal precautions**. This approach assumes that all blood, body fluids or materials contaminated with blood are infectious. Employees must protect themselves by using gloves, disposable mouth-to-mouth barriers or other protective equipment to prevent the spread of disease.
- Practice good personal hygiene habits such as washing hands with soap and warm water before eating, after bathroom use or contact with blood or body fluids.
- A good housekeeping can minimize employees' risk of exposure to bloodborne pathogens by keeping work areas in a clean and sanitary condition and decontamination of blood or body fluid contaminated items with a solution of 1 part household bleach to 10 parts water and other Environmental Protection Agency (EPA) or Food and Drugs Administration (FDA) approved decontaminants.
- Dispose of all items that are contaminated with blood or body fluids as **regulated waste**. Regulated waste must be placed in specially marked red bags and containers for disposal and collected by a licensed contractor. Please note that soiled band-aids and sanitary napkins are not considered regulated waste.



- A vaccine is available for employees at increased risk of contracting HBV disease.
- Employees at risk of contracting HBV will receive training and information about the disease, its symptoms and methods of protection.

What should I know about the Hepatitis B vaccine?

A safe and effective vaccine to prevent hepatitis B has been available since 1982. Vaccination has been recommended for health-care workers regularly exposed to blood and other body fluids potentially contaminated with HBV. The bloodborne pathogens standard requires that employer to offer the three-injection vaccination series free to all employees who are exposed to blood or other potentially infectious material as part of their duties. The vaccine must be offered within 10 days of initial assignment to a job where exposure to blood or other potentially infectious materials can be "reasonably anticipate."



The Hepatitis B vaccine used by the New York City Department of Education is called Engerix-B and manufactured by GLaxoSmithKline. Engerix-B is a non-infectious, yeast-based vaccine. It is prepared from recombinant yeast cultures, rather than human blood or plasma. Thus, there is no risk of contamination from other bloodborne pathogens nor there is any chance of developing HBV from the vaccine. If you are allergic to yeast or yeast based products, you should not take this vaccine. Engerix-B is 92%-96% effective in preventing HBV infection and is administered by needle in the upper arm, in the deltoid muscle. The vaccination is administered in three doses. *All three doses are needed to provide the necessary protection.* According to CDC, if you receive dose #1 today, after 30 days you are ready for dose #2. Four to six months after the first dose, you are ready for dose #3; the vaccine is administered on a 0, 1, 4-6 month schedule.

Employees who do not respond to the 3-dose vaccination series should complete a second 3-dose vaccine series or be evaluated to determine if they are Hepatitis B surface antigen (HBsAg) positive. Revaccinated employee should be retested at the completion of the second vaccine series. Employees who do not respond to an initial 3-dose series have a 30%-50% chance of responding to a second 3-dose series. Employees who prove to be HBsAg-positive should be counseled regarding how to prevent HVB transmission to others and regarding the need for medical evaluation.

Non-responders to vaccination who are HBsAg-negative should be considered susceptible to HBV infection and should be counseled regarding precautions to prevent HBV infection and the need to obtain hepatitis B immune globulin (HBIG) prophylaxis for any known or probable parental exposure to HBsAg-positive blood. Any blood or body fluid exposure sustained by an unvaccinated, susceptible person should lead to the initiation of the hepatitis B vaccine series.

If I missed one of my shots, Do I start over?

According to the Centers for Disease Control and Prevention (CDC), **there is no need to start over.** If a dose is missed, take the missed dose as soon as possible and continue to completion from there.

How long does the Hepatitis B vaccine last? When do I need a booster dose?

Originally it was stated that the vaccine lasts for 10-13 years. Research has documented that even though antibody levels will decline over time, for those with normal immune systems and "who have responded to a primary Hepatitis B vaccination course," the body's immune system will store the correct immune response and when necessary, the body will produce the correct antibody response. In essence, the body stores the antibodies produced by the vaccination and calls them out when needed. For this reason, there is no recommendation for regular booster doses and they are not administered at this time by the Department of Education.

For those who are immune-compromised or have a medical complication, talk to your medical care provider to ensure that you receive the proper care and are provided with adequate protection.

Who is the vaccine offered to?

As stipulated by the federal OSHA Bloodborne Pathogens Standard, the New York City Department of Education offers the HBV to its employees who face occupational exposure to bloodborne pathogens.

Employees categorized as occupationally exposed include those who are required to:

- administer first aid
- Provide medical aid to students
- Assist in bathroom care
- Work in medical or dental offices
- Perform custodial duties involving the cleaning and decontamination of surfaces that may be contaminated with blood and or other potentially infectious materials (OPIMs).
- Handling Regulated medical waste
- Serve as peace officers

What if I decline vaccination?

Employees who decide to decline must complete an *Employee Hepatitis B Vaccination Declination Form*. Employers must keep these forms on file so that they may know the vaccination status of everyone who is at risk of being exposed to blood or other potentially infectious materials. At any time after a worker initially declines to receive the vaccine, he/she may opt to take it.

How is Hepatitis B vaccine given?

- Hepatitis B vaccine is given as a series of three intramuscular doses.
- There is flexibility of the dosing schedule for hepatitis B immunization series, regardless of how long the intervals might be stretched.

- More than 95% of children and adolescents develop adequate antibody to the recommended series of three doses.

Is this vaccine safe?

As noted in the GlaxoSmithKline bulletin [Hepatitis B Q&A: Your Guide to Hepatitis B, Engerix-B](#), their in-house developed and manufactured product is "...a noninfectious recombinant DNA Hepatitis B vaccine". The vaccine is considered quite effective; three doses, administered on a 0, 1, and 4-6 month schedule "...resulted in immunity in more than 90% of healthy adults". The vaccine does not contain human substances, or blood products, thus one can not contract Hepatitis B by taking the vaccine.



According to GlaxoSmithKline, animal reproductive research has not been conducted. It is not known if administration of this vaccine causes fetal harm. However, the CDC has administered the vaccine to pregnant women. If this is your concern, contact your medical care provider to determine if this vaccine is right for you.

The vaccine causes no harm to those who are already immune or those who may be HBV carriers. Although employees may opt to have their blood tested for antibodies to determine the need for the vaccine, employer may not make pre-screening a condition for receiving vaccination nor required to provide pre-screening or post-screening. Each employee must receive counseling from a health care provider when vaccination is offered. The discussion will help the employee whether inoculation is necessary.

What are the side effects of the Hepatitis B vaccines?

The vaccine is usually well tolerated. However, common side effects include redness and soreness of the injection site. Some experience fatigue, headache, dizziness, or fever. If you are ill after taking the vaccine, contact your medical care provider and the Office of Occupational Safety and Health at (718) 935-2319 and call Vaccine Adverse Event Reporting System (VAERS) at 1-800-822-7967 or visit their website at <http://www.vaers.org> to report any side effects.

Is there an association between Hepatitis B Vaccine and serious side effects?

There is no confirmed scientific evidence that hepatitis B vaccine causes:

- Chronic illness
- Chronic fatigue syndrome
- Guillain-barre syndrome
- Transverse myelitis
- Optic neuritis
- Seizures
- Sudden infant death syndrome
- Multiple sclerosis
- Rheumatoid arthritis
- Autoimmune disorders

Can I donate blood after receiving the Hepatitis B vaccine?

Yes. The CDC recommends that potential donors wait at least two weeks after being immunized before they donate blood.

What if I am exposed and I have not yet been vaccinated?

If an employee experiences an exposure incident, wounds and skin sites that have been in contact with blood or body fluids should be washed with soap and water; needle stick or a blood splash in the eye or mouth should be flush with water. The employee must receive a confidential medical evaluation from a licensed health care professional with appropriate follow-up. To the extent possible by law, the employer is to determine the source of the individual for HBV as well as human immunodeficiency virus (HIV) infectivity. The employee's blood will also be screen if he/she agrees.

The health care professional is to follow the guidelines of the U.S. Public Health Service in providing treatment. This would include Hepatitis B vaccine series and/or the hepatitis B immune globulin (HBIG). Hepatitis B vaccines also are 70%-88% effective when given within 1 week after HBV exposure. HBIG is prepared from human plasma with high titer levels of antibody to HBV (anti-HBs). The process used to prepare

HBIG is screened for HBV, HIV and Hepatitis C virus (HCV). Hepatitis B immune globulin (HBIG) provides temporary passive protection following exposure to HBV. Combination treatment with hepatitis B vaccine and HBIG is over 90% effective in preventing hepatitis B following a documented exposure. Serious side effects from HBIG when administered as recommended have been rare. Local pain and tenderness at the injection site, urticaria, and angioedema might occur; anaphylactic reactions, although rare, have been reported following the injection of human globulin preparations. Persons with a history of anaphylactic reaction to immune globulin should not receive HBIG should According to CDC, no evidence exist that HBV, HCV, or HIV have ever been transmitted by HBIG commercially available in the United Stated. The health care professional must give a written opinion on whether or not vaccination is recommended and whether the employee received it. Only this information is to be reported to the employer. Employee medical records must remain confidential. HIV or HBV status must NOT be reported to the employer.

If my doctor administers the vaccine, will I be reimbursed?

It depends. The vaccine is offered to employees who meet specified criteria; are occupationally exposed to bloodborne pathogens. If you meet these criteria, and are eligible for the vaccine, the vaccine will be offered to you free of charge by the New York City Department of Education. However, employees are reimbursed for uncovered expenses incurred due to medical treatment sought because of a job-related exposure to blood or other potentially infectious body fluids - the employee experienced a bloodborne pathogens exposure.

Am I responsible for providing my own personal protective equipment (PPE)?

No, it is the employer's responsibility to provide PPE to protect employees against bloodborne pathogen and chemical hazards. Examples of PPE are gloves, masks, aprons, goggles or face shields.

How do I clean up areas contaminated with blood?

Blood and other potentially infectious body fluids must be cleaned up by a person who is equipped to do the job effectively and safely. Before clean up begins, the employee should put on the appropriate PPE. Blood or other potentially infectious body fluids should be first absorbed with absorbent material such as sawdust or towels and then the area cleaned with soap and water. The contaminated area must be disinfected by using a freshly made bleach and water solution (1 part bleach to 10 parts of water).

Does the Hepatitis B vaccine protect against the other types of viral hepatitis?

Yes and no, the Hepatitis B vaccine offers protection against Hepatitis B virus. However, Hepatitis D occurs only in the presence of Hepatitis B and thus by taking the Hepatitis B vaccine, one is also protected against Hepatitis D. Currently, there is no vaccine against the Hepatitis C and E viruses.

***Note:** There is a new vaccine on the market called **Twirix** that provides combined protection against Hepatitis A and B. For more information on this vaccine, contact your health care provider. This vaccine is **not** used by the Department of Education.

I have never seen the Exposure Control Plan. How may I obtain a personal copy?

The Exposure Control Plan, a document prepared and distributed by the Office of Occupational Safety and Health for the DOE, is to be accessible to all employees and their representatives, and representatives from the New York State Department of Labor's Public Employees Safety and Health Bureau and the Office of Occupational Safety and Health. See your Site Administrator for the exact location of the plan in your facility.

Must I attend bloodborne pathogens training every year?

Yes, the law requires that employees with occupational exposure to bloodborne pathogens be trained annually. Training must include information on bloodborne diseases, their modes of transmission, symptoms, the employer's exposure control plan, and methods of prevention

What factors to consider in assessing the need for post-exposure evaluation and follow-up of occupational exposures?

- **Type of exposure**
 - Percutaneous injury
 - Mucous membrane exposure
 - Non-intact skin exposure
 - Bites resulting in blood exposure to either person involved
- **Type and amount of blood/tissue**
 - Blood
 - Fluids containing blood
 - Potentially infectious fluid or tissue (semen; vaginal secretions; and cerebrospinal fluid, synovial fluid,

pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid)

- Direct contact with concentrated virus

■ **Infectious status of source**

- Presence of HBsAg
- Presence of HCV antibody
- Presence of HIV antibody

■ **Susceptibility of exposed person**

- Hepatitis B vaccine and vaccine response status
- HBV, HCV, and HIV immune status

Besides the vaccine, how do I protect my self day-to-day at work?

There is more than one way to protect yourself against Hepatitis B. Practicing **Universal Precautions (treating all blood and body fluids as though they were infectious)**, and washing your hands with soap and warm water often are things that we can all do, everyday.

Where Can I Get More Information?

See your Principal, your Site Administrator, or contact the Office of Occupational Safety and Health.

What steps must be taken in case of an exposure incident?

In the event of an exposure incident (a specific eye, mouth or other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials), the following procedures will be followed:

1. The exposed employee will **IMMEDIATELY** wash the affected skin with soap and water or germicidal towellette and/or flush mucous membranes with water. The scene of the incident, including any equipment, floors and sinks, will be immediately and thoroughly cleaned and disinfected with an appropriate disinfectant.
2. The employee will inform his/her supervisor or manager of the incident as soon as possible.
3. The supervisor or manager will:
 - a. Arrange for the employee to receive a Hepatitis B. vaccination if the employee has not received one previously. If the employee declines the vaccination, he/she will be required to sign a declination statement.
 - b. Upon consent of the employee, arrange to have the employee's blood collected for testing at the designated healthcare facility for that site.
 - c. Arrange to have the blood of the source individual tested, if a specimen is available or upon consent of the source individual, if the infectious status is unknown.
 - d. Assure that the employee is informed of the results of the source individual's blood test.
 - e. Arrange for the employee to have post-exposure prophylaxis, counseling and medical evaluation if necessary.

- f. Provide the employee with a copy of the healthcare professional's written opinion within 15 days of the evaluation.

4. An exposure incident report must be filled on the appropriate forms within 24 hours and reported to Human Resources, Office of Occupational Safety and Health and the Regional Health Director.



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