Medical Standard: Hepatitis B Vaccine

BACKGROUND

Hepatitis B is a serious disease caused by a virus that attacks the liver. Hepatitis B is transmitted through percutaneous or mucosal contact with infectious biological fluids. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure and death. HBV remains infectious for at least 7 days on environmental surfaces and is transmissible in the absence of visible blood. Incubation period 60 to 90 days. Direct, percutaneous inoculation of HBV by needles is an important mode of transmission. Breaks in the skin without overt needle puncture, such as fresh, cutaneous scratches, abrasions, burns or other lesions, may also serve as routes for entry. Routine hepatitis B immunization is recommended for susceptible persons potentially exposed to blood or bodily fluids containing HBV.

PURPOSE

Biological hazards exist at King Abdullah University of Science and Technology (KAUST) labs, clinical settings and in daily operations of facilities and buildings. Immunizations are recognized as an administrative control for biological hazards. KAUST has an obligation to control hazards in the workplace to protect the health and safety of our workforce.

GUIDANCE AND SCOPE

This Standard is a component of the Occupational Health Management System and Post exposure management as outlined in the Occupational Health Policy. Hepatitis B immunization should be offered to workers who are at increased risk of infection through occupational exposure to blood, blood products and bodily fluids that may contain HBV.

Pre-exposure vaccination

Hepatitis B vaccination is recommended for adults aged 19–59 years and adults aged ≥60 years with risk factors for hepatitis B. Persons traveling internationally to regions with high or intermediate levels (HBsAg prevalence of 2% or higher) of endemic HBV infection, including those who may engage in high-risk behaviors or provide health care while traveling. Hepatitis B vaccines are administered by intramuscular injection.
All unvaccinated adults at risk for or requesting protection from HBV infection:

- 2-dose series at 0 and 1 month (Heplisav-B) or 3-dose series at 0, 1 and 6 months (Engerix-B and Recombivax HB)
- 3-dose series at 0, 1 and 6 months (Twinrix)
- 3-dose series with doses at 0, 7, 21-30 days, and booster 12 months after dose 1 (Twinrix, accelerated)

Post-exposure vaccination

For post-exposure prophylaxis (PEP), hepatitis B vaccine is the most important intervention, providing 90% of the protection from hepatitis B. HBIg, through immediate short-term passive immunity, may provide additional protection. PEP should be offered to susceptible individuals who have had percutaneous or mucosal exposure to blood or body fluids potentially containing HBV.

Following potential exposure to HBV, workers with a documented adequate anti-HBs titre do not require post-immunization serologic testing, unless they are immunocompromised or have chronic renal disease. These workers

should be tested for anti-HBs after a potential HBV exposure and given additional vaccine and HBIg if their anti-HBs titre is less than 10 IU/L.

Contraindications and precautions

HBV-containing vaccines and HBIg are contraindicated in persons with a history of anaphylaxis after previous administration of the product and in persons with proven immediate or anaphylactic hypersensitivity to any component of the product. Routine administration of HBV-containing vaccine should be postponed in persons with moderate or severe acute illness. If hepatitis B immunization is recommended for post-exposure management, the risk to benefit ratio should be evaluated and consultation may be advised. Persons with minor acute illness, with or without fever, may be vaccinated.

POST EXPOSURE FOLLOW-UP

Percutaneous (needle stick, bite) or mucosal exposure
The management of potential percutaneous or mucosal exposure to HBV should be based on the immunization and antibody status of the injured person and the infectious status (if known) of the source (refer to Appendix).

APPENDIX

Vaccination and antibody response status of exposed workers*	Source HBsAg Positive	Source HBsAg Negative	Source Unknown or not available for testing
Unvaccinated	HBIG* x 1 and initiate HB vaccine series	Initiate HB vaccine series	Initiate HB vaccine series
Vaccinated:			
Known responder**	No treatment	No treatment	No treatment
Known nonresponder***	HBIG*** x 1 and initiate revaccination or HBIG x 2 ****	No treatment	If known high risk source, treat as if source were HBsAg positive.
Antibody response unknown	Test exposed person for anti-HBs: 1. If adequate,** no treatment is necessary. 2. If inadequate, administer HBIG x 1 and vaccine booster.	No treatment	Test exposed person for anti-HBs: 1. If adequate,** no treatment is necessary. 2. If inadequate, administer vaccine booster and recheck titer in 1-2 months.

** Persons who have previously been infected with HBV are immune to reinfection and do not require post-exposure prophylaxis.*
*** A responder is a person with adequate levels of serum antibody to HBsAg (i.e., anti-HBs > 10 miU/ml).*
**** Hepatitis B immune globulin, dose is 0.06 ml/kg intramuscularly.*
***** The option of giving one does of HBIG and reinitiating the vaccine series is preferred for non-responders who have not completed a second 3-dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred.*
******A nonresponder is a person with inadequate levels to vaccination (i.e., serum anti-HBs < 10 mlU/ml)*

DEFINITIONS

Biological Hazards: Biological substances that pose a threat to the health of living organisms, primarily that of humans. This can include medical waste or samples of a microorganism, virus or toxin (from a biological source) that can affect human health.

Blood: means human blood, human blood components, and products made from human blood.

Bloodborne Pathogens: pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Clinical Laboratory: means a workplace where diagnostic or other screening procedures are performed on blood or other potentially infectious materials.

Contaminated: means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Contaminated Sharps: means any contaminated object that can penetrate the skin including, but not limited to, needles, scalpels, broken glass, broken capillary tubes and exposed ends of dental wires.

Decontamination: means the use of physical or chemical means to remove, inactivate or destroy biological hazards.

Intramuscular: Situated or taking place within, or administered into, a muscle. An intramuscular (IM) medication is given by needle into the muscle.

Immunization: The process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine.

Intradermal: Situated, occurring, or done within or between the layers of the skin. An intradermal injection involves the injection of an amount of fluid into the dermis.

Vaccine: vaccine is a biological preparation that improves immunity to a particular disease.

REFERENCES:

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https://www.moh.gov.sa/en/HealthAwareness/EducationalContent/HealthTips/Documents/Immunization-Schedule.pdf