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**DEPARTMENT: ALLIED HEALTH SCIENCES**  
**COURSE NAME: PEADIATRIC**

**Topic:Special vaccines**



# Hepatitis B



Hepatitis B vaccine is a vaccine that prevents hepatitis B. The first dose is recommended within 24 hours of birth

**Contents**-hepatitis B vaccines contain one of the proteins from the surface of the hepatitis B virus (hep B surface antigen, or HBsAg). This protein is made by inserting the genetic code into yeast cells, which removes any risk of viral DNA getting into the final product.










- **Efficacy**-The good news is that the hepatitis B vaccine gives 80% to 100% protection to people who get the vaccine

- **Storage**-Store vaccine vials and syringes at 2°C to 8°C (36°F to 46°F); storage above or below the recommended temperature may reduce potency. DO NOT FREEZE since freezing destroys potency.
- **Route&Site**-Hepatitis B vaccine should be administered by intramuscular injection. The deltoid muscle is the recommended site of administration for adults



# Dosage of HBV



Vaccine	Dose 1 "Birth Dose"	Dose 2	Dose 3	Dose 4
 <b>3-dose vaccine series</b> Brand names: Engerix-B, Recombivax HB	Within 24 hours of birth 	1 month after dose 1 	6 months after dose 1 	
 <b>4-dose combination vaccine series (pentavalent or hexavalent)</b> Brand names: Vaxelis, Pediarix	Within 24 hours of birth (Hepatitis B vaccine) 	6 weeks of age (Combination vaccine) 	14 weeks of age (Combination vaccine) 	6 months of age (Combination vaccine) 



# Hepatitis A



**Hepatitis A vaccine** can prevent hepatitis A. Hepatitis A is a serious liver disease.

**Contents**-This vaccine consists of virosomes, artificial particles composed of synthetic lipids and influenza proteins in addition to the hepatitis A antigen. It does not contain aluminium. Havrix: made by GlaxoSmithKline. Inactivated hepatitis A virus produced in MRC-5 cells.

- **Efficacy**- Hepatitis A vaccine is very effective. It appears that all adults, adolescents, and children become immune to hepatitis A virus infection after getting two doses. After one dose, at least 94 out of 100 people become immune for several years.

- **Storage**-HepA vaccines should be maintained at refrigerator temperature between 2°C and 8°C (36°F and 46°F).
- **Dosage**-The HepA vaccine dose is 0.5 mL IM up to age 18 years or 1 mL IM for adults (age ≥ 19 years).

Children are given a 2-dose series typically at age 12 to 23 months and 6 to 18 months after the first dose.

- **Route&Site**-Hepatitis A Vaccine (Intramuscular Route). The deltoid is recommended rather than the gluteal. It is suggested that recipients of gluteal vaccinations receive revaccination in the deltoid.



# Chicken Pox



Varicella vaccine, also known as chickenpox vaccine, is a vaccine that protects against chickenpox. One dose of vaccine prevents 95% of moderate disease and 100% of severe disease.

**Contents-**Each 0.5 mL dose contains not less than 1350 plaque forming units of varicella virus (Oka/Merck). Inactive ingredients Sucrose, hydrolysed gelatin, urea, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic and potassium chloride.

- **Efficacy-** Two doses of the chickenpox vaccine are more than 90% effective at preventing the disease. Some people who are vaccinated can still get chickenpox. However, the symptoms are usually milder with fewer or no blisters (they may have just red spots) and low or no fever.

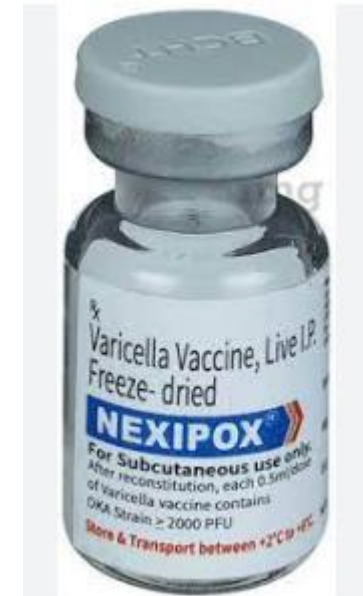
- **Storage-**Most vaccines (all inactivated vaccines and live nasal spray influenza vaccine) must be stored between 2° to 8°C (36° to 46°F), which is the recommended refrigerator temperature. Live varicella (chickenpox) and Zostavax (shingles) vaccines must be stored frozen between -50° to -15°C (-58° to +5°F).
- **Dosage-**The varicella vaccine dose is 0.5 mL given subcutaneously in 2 doses: at age 12 to 15 months and at age 4 to 6 years. If children, adolescents, or adults have been given only 1 dose, a catch-up dose is recommended. The recommended minimum interval between the first dose and the catch-up second dose is 3 months for children aged ≤ 12 years and 4 weeks for people aged ≥ 13 years; the second dose may be given at any interval longer than the minimum.
- **Route&Site-**VARIVAX can be administered either subcutaneously or intramuscularly. VARIVAX is administered as an approximately 0.5 mL dose by intramuscular or subcutaneous injection into the outer aspect of the upper arm (deltoid region) or the anterolateral thigh.



## Contraindication



- **Contraindications** for varicella vaccine include
- A severe allergic reaction (eg, anaphylaxis) after a previous dose of the vaccine or to a vaccine component
- Known severe primary or acquired immunodeficiency (eg, due to leukemia, lymphomas, solid tumors, tumors that affect bone marrow or the lymphatic system, AIDS, severe HIV infection, treatment with chemotherapy, or long-term use of immunosuppressants)
- Unless people are known to be immunocompetent, family history of first-degree relatives who have congenital hereditary immunodeficiency
- Confirmed or suspected pregnancy
- The single-antigen varicella vaccine may be given to children aged 1 to 8 years who have HIV infection if their CD4 percentage is  $\geq 15$ ; it may be given to those  $> 8$  years if their CD4 percentage is  $\geq 15$  and CD4 count is  $\geq 200$ /mL with no evidence of immunity.





## H influenza B



**H influenza B**-There are 2 basic types of influenza virus vaccine:

- Inactivated influenza vaccine (IIV)
- Live-attenuated influenza vaccine (LAIV)

**Contents**-influenzae is composed of a polysaccharide, a key virulence factor. Six antigenically and biochemically distinct capsular polysaccharide types have been described; these are designated serotypes a through f. Hib capsule is composed of polyribosyl-ribitol- phosphate (PRP), a polysaccharide used in Hib vaccines.

**Efficacy**-Hib conjugate vaccines are highly effective in producing immunity to Hib bacteria. More than 95% of infants develop protective antibody levels after receiving a primary series of 2 or 3 doses.

- **Storage**-Store all Hib-containing vaccine refrigerated between 2°C and 8°C (36°F and 46°F).
- **Dosage% Site**-The influenza vaccine is given yearly.
- For **IIV**, the dose is
- 0.25 mL or 0.50 mL IM (depending on vaccine) for children aged 6 to 35 months
- 0.5 mL IM for people  $\geq 3$  years
- 0.1 mL for people aged 18 to 64 years, given intradermally
- Children age 6 months to 8 years who have received fewer than 2 influenza vaccine doses or whose influenza vaccination history is unknown should receive 2 doses, separated by at least 4 weeks.



## Contraindication



- A severe allergic reaction (eg, anaphylaxis) after previous dose of IIV or to a vaccine component, including egg protein
- Moderate or severe acute illness with or without fever (vaccination is postponed until illness resolves)
- Guillain-Barré syndrome (GBS) within 6 weeks after a previous dose of an influenza vaccine







# Meningococcal vaccine



**Meningococcal vaccine** refers to any vaccine used to prevent infection by *Neisseria meningitidis*. There are 3 types of meningococcal vaccines available in the United States:

- Meningococcal conjugate or MenACWY vaccines (Menveo<sup>®</sup> and MenQuadfi<sup>®</sup>)
- Serogroup B meningococcal or MenB vaccines (Bexsero<sup>®</sup> and Trumenba<sup>®</sup>)
- Pentavalent meningococcal or MenABCWY vaccine (Penbraya<sup>™</sup>)

**Contents-** Meningococcal Conjugate or MenACWY Vaccines Each dose contains 10 micrograms ( $\mu\text{g}$ ) each of meningococcal A, C, W, and Y polysaccharides conjugated to approximately 55  $\mu\text{g}$  of tetanus toxoid protein carrier. It does not contain a preservative or an adjuvant.

- **Efficacy-** Complete vaccination resulted in an effectiveness of 71% (95% CI, 45 to 85) against meningococcal serogroup B disease
- **Storage-** Store meningococcal vaccines refrigerated between 2°C and 8°C (36°F and 46°F). Do not freeze vaccine or diluents, or expose to freezing temperatures. If the vaccine has been exposed to inappropriate conditions/temperatures or handled improperly: Store the vaccine at the appropriate temperature.
- **Dosage & Site-** Menactra is given as a 0.5ml dose by intramuscular injection. Do not administer Menactra intravenously or subcutaneously.



## Contraindication



A severe allergic reaction (eg, anaphylaxis) after previous dose or to a vaccine component

- The **main precaution** with meningococcal vaccines is
- Moderate or severe illness with or without a fever (vaccination is postponed until illness resolves if possible)
- Meningococcal conjugate vaccines may be given to pregnant women who are at increased risk of serogroups A, C, W, or Y meningococcal disease. Meningococcal serogroup B vaccines are recommended to be deferred during pregnancy unless women are at increased risk of serogroup B disease and the benefits of vaccination are thought to outweigh potential risks.
- For children with functional or anatomic asplenia, MenACWY and pneumococcal conjugate vaccine should not be given during the same visit but should be separated by  $\geq 4$  weeks.

**Adverse effects** are usually mild. They include pain and redness at the injection site, fever, headache, and fatigue.





# Pneumococcal Vaccine



The pneumococcal conjugate vaccine (PCV13) and the pneumococcal polysaccharide vaccine (PPSV23) protect against pneumococcal infections. The bacteria that cause these infections spread through person-to-person contact. They can lead to serious infections like pneumonia, blood infections, and bacterial meningitis.

**Contents-** Pneumococcal polysaccharide vaccine or PPSV23 (Pneumovax 23<sup>®</sup>) includes purified preparations of pneumococcal capsular polysaccharide. PPSV23 contains polysaccharide antigen from 23 types of pneumococcal bacteria. It contains 25 µg of each antigen per dose and contains 0.25% phenol as a preservative.

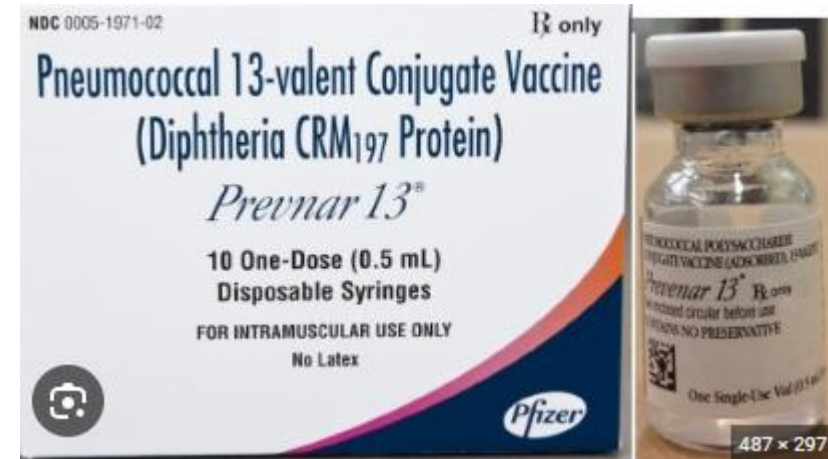
- **Efficacy**-the vaccine is 60% to 70% effective in preventing invasive disease caused by serotypes in the vaccine.
- **Storage**-Store pneumococcal vaccines refrigerated between 2°C and 8°C (36°F and 46°F). Do not freeze vaccine or diluents, or expose to freezing temperatures. If the vaccine has been exposed to inappropriate conditions/temperatures or handled improperly: Store the vaccine at the appropriate temperature.
- **Dosage & Site**- Pneumococcal vaccines are administered intramuscularly as a 0.5 mL dose.



## Contraindication



- A severe allergic reaction (eg, anaphylaxis) after a previous dose of PCV7 or PCV13, to a vaccine component, or to any vaccine containing diphtheria toxoid
- The **main contraindication for PCV15** is
- A severe allergic reaction (eg, anaphylaxis) to any component of PCV15 or to diphtheria toxoid
- The **main contraindication for PCV20** is
- A severe allergic reaction (eg, anaphylaxis) to any component of PCV20 or to diphtheria toxoid
- The **main contraindication for PPSV23** is
- A severe allergic reaction after a previous dose of the vaccine or to a vaccine component
- **Adverse effects** are usually mild and include fever, irritability, drowsiness, anorexia, vomiting, and local pain and erythema.





# Rabies Vaccination



**The rabies vaccine** is a vaccine used to prevent rabies

Two types of vaccines to protect against rabies in humans exist - nerve tissue and cell culture vaccines. WHO recommends replacement of nerve tissue vaccines with the more efficacious, safer vaccines developed through cell culture as soon as possible.

**Contents**-One dose of reconstituted vaccine contains less than 100 mg human albumin, less than 150 mcg neomycin sulfate and 20 mcg of phenol red indicator. Beta-propiolactone, a residual component of the manufacturing process, is present in less than 50 parts per million.

**Efficacy**-The rabies vaccine works remarkably well. Studies indicate that if the vaccine is given immediately and appropriately to someone who was bitten by a rabid animal, it is 100 percent effective

- **Storage**-Vaccines licensed for refrigerator storage should be stored at 2°C-8°C (36°F-46°F). Liquid vaccines containing an aluminum adjuvant permanently lose potency when exposed to freezing temperatures.
- **Dosage & Site**- A regimen of four 1-mL doses of HDCV or PCEC vaccines should be administered intramuscularly to previously unvaccinated persons.
- The first dose of the four-dose course should be administered as soon as possible after exposure. Additional doses should be administered on days 3, 7, and 14 after the first vaccination. For adults, the vaccination should always be administered intramuscularly in the deltoid area (arm). For children, the anterolateral aspect of the thigh is also acceptable. The gluteal area should never be used for rabies vaccine injections because observations suggest administration in this area results in lower neutralizing antibody titers.



# Contraindications



- Vaccination is not contraindicated in pregnancy and breast feeding. Different studies confirm that anti rabies vaccination are safe during pregnancy.

## Chills.

- dizziness. **Adverse effect-**
- fever.
- general feeling of discomfort or illness.
- headache.
- itching, pain, redness, or swelling at the injection site.
- muscle or joint aches.
- nausea.





## Reference



- The Text book of Paediatric author Santhosh kumar