

# **Health Care Education Vaccinations**



## **Hidaya Foundation**

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### **Vaccines and Immunizations for children**

#### **Why do you need vaccines for your child?**

Nations suffer from a vast spectrum of diseases caused by infections. These diseases in many instances are the cause for the premature death of children.

Medical scientists have identified 6 killer diseases of childhood and named them ViP diseases (Vaccine Preventable diseases). These are

- Tuberculosis
- Polio (Poliomyelitis)
- Measles
- Tetanus
- Diphtheria
- Pertussis (Whooping Cough)

Fortunately, medical scientists have been able to prepare vaccines to help prevent children from acquiring these diseases.

#### **What is the scientific basis of Vaccination?**

Vaccination (or Immunization) is the process of utilizing the immune system of the body to build antibodies (either T Cell based or B Cell based) against the germ that we are trying to protect the body against.

The procedure involves introducing a small quantity of the same germ in the body in the form of a vaccine. Soon as the body recognizes this germ, the immune system comes into action and builds an antibody response against the germ. This is quite like a battle where the moment the foreign germ is recognized, the immune system is deployed and the germ is killed at the point of entry before it can spread and cause damage. The next time the body is attacked by the germ, the body already has a specific immune response available for the germ and the entry is arrested immediately.

If a germ infects the body of a child who was not immunized, this germ would be the first experience for the body. Since there was no immune defense available for the germ, the germ would multiply in the body and cause damage.

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## **Health Care Education Vaccinations**

Below is a table describing the order (beginning in infancy) and type of vaccines given to children. {This table specifically describes how the vaccination is given in India. Some vaccinations are given at a different age when compared to the United States. Some of the vaccines are not a part of the Programmers (primarily for cost factors) but are useful. }

<b>Age</b>	<b>Immunization</b>
<b>From birth to 2 weeks</b>	<ul style="list-style-type: none"> <li>- B.C.G.</li> <li>- Polio (Polio) – zero polio</li> <li>- Hepatitis B – first</li> </ul>
<b>1.5 months</b>	<ul style="list-style-type: none"> <li>- D.P.T. – 1<sup>st</sup> dose</li> <li>- Polio -- 1st dose</li> <li>- Hepatitis-B– 2<sup>nd</sup></li> <li>- HIB Meningitis – Brain Fever – 1<sup>st</sup> dose</li> </ul>
<b>2.5 months</b>	<ul style="list-style-type: none"> <li>- DPT – 2<sup>nd</sup> dose</li> <li>- Polio - 2nd dose</li> <li>- HIB Meningitis – 2<sup>nd</sup> dose</li> </ul>
<b>3.5 months</b>	<ul style="list-style-type: none"> <li>- DPT – 3<sup>rd</sup> dose</li> <li>- Polio – 3<sup>rd</sup> dose</li> <li>- HIB Meningitis – 3<sup>rd</sup> dose</li> </ul>
<b>6 months</b>	<ul style="list-style-type: none"> <li>- Hepatitis-B – 3<sup>rd</sup> dose</li> </ul>
<b>9 months</b>	<ul style="list-style-type: none"> <li>- Measles</li> <li>- Polio – 5<sup>th</sup> dose</li> </ul>
<b>1 year</b>	<ul style="list-style-type: none"> <li>- Chickenpox</li> </ul>
<b>15 months</b>	<ul style="list-style-type: none"> <li>- M M R</li> </ul>
<b>1.5 years</b>	<ul style="list-style-type: none"> <li>- DPT Booster</li> <li>- Polio – Booster</li> <li>- HIB Meningitis – Booster dose</li> </ul>
<b>2 years</b>	<ul style="list-style-type: none"> <li>- Typhoid</li> <li>- Hepatitis A</li> </ul>
<b>5 years</b>	<ul style="list-style-type: none"> <li>- D T</li> </ul>
<b>10 years</b>	<ul style="list-style-type: none"> <li>- TT (Tetanus Toxoid)</li> </ul>

## ***Health Care Education Vaccinations***

The immunization schedule below is a guideline and based on the most current recommendations from the Centers for Disease Control (CDC) and Prevention/Advisory Committee on Immunization Practices. Your physician may recommend changes to the schedule based on individual circumstances or need of your child.

<b>Age</b>	<b>Immunization</b>
<b>BIRTH</b>	- HEP B #1
<b>2 MONTHS</b>	- DTaP/IPV/HepB #1 - HIB #1 - Pneumococcal #1 - Rotavirus #1
<b>4 MONTHS</b>	- DTaP/IPV/HepB #2 - HIB #2 - Pneumococcal #2 - Rotavirus #2
<b>6 MONTHS</b>	- DTaP/IPV/HepB #3 - Pneumococcal #3 - Rotavirus #3
<b>12 MONTHS</b>	- MMR/V #1 - Pneumococcal #4 - Hepatitis A #1
<b>15 MONTHS</b>	- DTaP #4 - HIB #3
<b>18 MONTHS</b>	- Hepatitis A #2
<b>4 YEARS</b>	- MMR/V #2
<b>5 YEARS</b>	- DTaP #5 - IPV #4 - PPD
<b>11-12 YEARS (or before entering high school or college)</b>	- Meningococcal
<b>&gt; 11 Years</b>	- TdaP
<b>6 MONTHS to 5 YEARS and high-risk children</b>	- Flu

# ***Health Care Education Vaccinations***

## **About the Vaccines:**

### **BCG Vaccine**

#### **What is BCG?**

*Bacille Calmette Guerin* (BCG) is the most widely used vaccination in the world. BCG is made of a live, weakened strain of *Mycobacterium bovis*, (a cousin of *Mycobacterium tuberculosis*, the TB bacteria). It was developed in the 1930's and it remains the only vaccination available against tuberculosis today.

#### **Are there any side effects after administering the vaccination?**

Usually there will be no fever or pain after vaccination. This vaccine is always given on the left shoulder. About 1.5 months after vaccination there will be a small painless nodule (like a boil) and will persist for approximately 1 month. The appearance of a nodule is an indication of a good response to the vaccine. Usually this nodule will diminish in some 1 month and a small scar will be left. Doctors advise against applying any ointment to the boil.

#### **What should one do if the vaccine does not produce a nodule?**

If there is no swelling followed by nodule formation for 2-3 months after vaccination - please consult your pediatrician.

#### **How many times is the vaccine administered?**

Normally this vaccine is given only once in a lifetime. In some cases, the pediatrician may advise a person to get another test done. If the test result is negative, he/she may consider re-vaccination with BCG.

#### **What happens if a person misses the vaccination right after birth?**

One must get the vaccination as soon as possible.

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***Vaccinations***  
**POLIO VACCINE**

**What is Polio?**

Polio is a viral disease and affects the nerves. It transmits from person to person through the fecal - oral route (i.e. polio viruses from an infected child pass out through his stools and are transmitted from the stool contaminated objects/foods/water etc to the next child.) Polio spreads rapidly and tends to form clusters of affected children from one infected child. The most common form is the Paralytic Poliomyelitis in which the limbs (mostly the legs) get affected and the child develops permanent leg lameness. The other, and less known forms are the ones which spread further in the nervous system of the child and may cause paralysis of the respiratory muscles causing death. Furthermore, some other forms affect the brain.

**How does one protect their child from Polio?**

General hygiene, clean water, and clean food are the primary means through which one can protect their children. However, poor level of hygiene coupled with our inability in control a child's activity leaves us with no choice but to use Polio Drops.

**How many doses of Polio Drops does a child need?**

A child needs a minimum of 5 doses of Polio Drops and **MUST** take the doses that are arranged in the Pulse Polio Program as additional doses. Even if one has been adhering regularly to the standard polio schedule – he/she needs to take the Pulse drops. This Program has been designed for complete eradication of polio.

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## ***Vaccinations***

### **D P T VACCINE**

#### **What is DPT Vaccine?**

D = Diphtheria

P = Pertussis Whooping Cough

T = Tetanus

This vaccine protects your child against the above three dangerous and potentially life threatening illnesses.

The DPT vaccine is also known by the name “Triple Vaccine”.

#### **When is the DPT vaccine administered?**

The first dose is given at the age on 1.5 months and then two more doses at monthly intervals are given. The fourth dose is given at 1.5 years of age as a booster. The vaccine is given at the buttock of the child - however many Pediatricians choose to give it at the thigh also. The thigh site tends to cause less pain and the vaccine is somewhat more effective at this site.

#### **What are the side effects of this vaccination?**

After administration, the child usually develops a fever and in some children may cause some irritability and crankiness. These symptoms usually last for 12 - 24 hours. Some children may develop a small, painless nodule (swelling under the skin) that may last a few days or weeks. The child should not be allowed to touch or break open the nodule.

Paracetamol is usually prescribed for fever and for the swelling an ice pack can be placed to reduce swelling at the injection site.

In case a child has a neurological problem that involves convulsions (seizures / unconsciousness) or other illnesses, one must inform the Pediatrician before he/she administers the vaccine.

In rare instances this vaccine may cause convulsions, collapse, prolonged high fever, blueness or whiteness of the skin. In these instances the Pediatrician may advise one NOT to take DPT on the next date and take DT instead.

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## **MEASLES VACCINE**

### **What is Measles?**

Measles is a highly contagious infection of the respiratory system. Measles is caused by the measles virus. Measles usually manifests as a fever of 2-3 days followed by a red rash on the body - beginning from behind the ear- spreading to the face and then going downwards to reach the feet finally - this entire rash progression may take some 3-4 days. It may take 4-5 days for the rash to disappear. All these are the usual symptoms of typical Measles. The complications in Measles account for a major number of childhood illnesses and deaths.

### **What are the symptoms of Measles?**

- Pneumonia: This is the most common complication of measles that may lead to death
- Meningitis: (Brain fever) Manifesting as fits/ fainting/ loss of consciousness/ paralysis/ coma
- Bloody Diarrhea
- Pus discharge from ears (suppurative otitis media)

Infected children become more prone to Tuberculosis from the environment since Measles suppresses their immune system.

### **When is the Measles vaccine administered?**

The vaccination is administered at 9 months after birth.

One must remember that even after vaccination protective immunity takes approximately 10 days for development – it is implied that the child is susceptible for approximately 10 days after vaccination.

### **How many times in a lifetime is the Measles vaccine given?**

It is given only once in a lifetime. In case it has been given before the age of 9 months then you need to repeat a dose at the age of 9 months.

### **Are there any side effects?**

There are no side effects to this vaccine.

# ***Health Care Education***

## ***Vaccinations***

### **MMR VACCINE**

#### **What is MMR?**

M = Measles

M = Mumps

R = Rubella(German Measles)

The MMR is a combination of 3 vaccines in one. Mumps has a serious complication of damaging the testes of males and this may cause sterility in later married life. Rubella effects a female in the similar manner as the male. The developing fetus may get what is known as Congenital Rubella Syndrome (CRS) which may damage the brain and lead to mental retardation, convulsions (fits), deafness and blindness.

#### **What are the signs and symptoms of Rubella?**

Rubella infection may begin with 1 or 2 days of mild fever (99–100° Fahrenheit, or 37.2–37.8° Celsius) and swollen, tender lymph nodes, usually in the back of the neck or behind the ears. A rash then appears that begins on the face and spreads downward. As it spreads down the body, it usually clears on the face. This rash is often the first sign of illness that a parent notices.

The rubella rash can look like many other viral rashes. It appears as either pink or light red spots, which may merge to form evenly colored patches. The rash can itch and lasts up to 3 days. As the rash clears, the affected skin occasionally sheds in very fine flakes.

Other symptoms of rubella, which are more common in teens and adults, may include: headache; loss of appetite; mild conjunctivitis (inflammation of the lining of the eyelids and eyeballs); a stuffy or runny nose; swollen lymph nodes in other parts of the body; and pain and swelling in the joints (especially in young women). Many people with rubella have few or no symptoms at all.

#### **What is the vaccination administered for MMR?**

15 months is the appropriate age for administration. If for some reason this age / date has been missed – it should be taken at the next earliest opportunity.

Booster dose is needed for girls. At the age of puberty (say some 12-13 years ) a booster is recommended.

#### **Are there any side effects to the MMR vaccine?**

There are no side effects to this medication.



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## ***Vaccinations***

### **TYPHOID**

#### **What is Typhoid?**

Typhoid fever is a life-threatening illness caused by the bacterium *Salmonella* Typhi bacteria. In some cases it may be caused by *Salmonella* Paratyphi A, B or C also. Since it affects primarily the intestines it is known also as Enteric Fever.

#### **How does Typhoid Spread?**

The germs are spread through contaminated food, water or through contact with a patient.

#### **What are the symptoms of Typhoid?**

Mainly high grade fever, headache, upset tummy or pain in the abdomen, general pains / aches in legs and arms and nose bleeds.

#### **How does Typhoid affect a person?**

Inflammation (swelling) of the intestines, ulcers in the intestines leading to perforation of the intestines (this becomes a serious surgical emergency), unconsciousness, and brain fever, involvement of the liver or heart may occur.

#### **How does one prevent Typhoid?**

Clean water, clean and fresh food and avoiding coming in contact with patients of Typhoid are the main precautionary measures. In countries where this is not easily possible and during natural disasters, this may not always be possible. Therefore vaccination is the most reliable method of protection.

#### **What are the vaccines used against Typhoid?**

- T A B Vaccine: This is an older form of vaccination. Its side effects and relatively less effectiveness have led to the development and popularity of more modern and effective vaccines.
- Vi Polysaccharide Typhoid Vaccine: This is a very effective vaccine and has very few side effects. It is given at the age (or soon after) 2 years. This vaccine stays effective for approximate 3 years and needs to be repeated after that.
- Oral Typhoid Vaccine (Ty - 21 Typhoid Vaccine): This is available as a capsule and is given at age beyond 6 years in the form of 3 doses given alternate days.

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## **HEPATITIS- A VACCINE**

### **What is Hepatitis A?**

Hepatitis is the scientific word for the more commonly known word Jaundice. This involves infection, swelling and inflammation in the Liver.

This is the most common cause of Jaundice and is Hepatitis - A virus. It spreads through contaminated / stale food and water and by contact with a jaundiced person. Usually it takes an epidemic form during monsoons and after floods.

### **What are the common manifestations?**

Vomiting or nausea, distaste for food, yellow urine - pale stools and yellow eyes are some of the usual symptoms. It may take up to 1-1.5 months for regaining one's normal lifestyle and to be able to get back to work.

### **What are the complications of Jaundice?**

Unconsciousness, seizure, swelling of the abdomen, bleeding - these are some of the life threatening complications of Jaundice.

### **When does a child get this vaccination?**

This vaccination can be given at any age after 2 years. The booster is administered 6 months to 1 year from the first dose. It is given in the form of an injection.

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## **HEPATITIS - B VACCINE**

### **What is Hepatitis B?**

Hepatitis B is caused by a virus that attacks the liver. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death.

### **How does it spread?**

- Blood Contact : (infected blood) : contaminated needles (hence the absolute necessity of disposable syringes and needles), blades of hair dressers, drug addicts using the same needle over and again situations and diseases where blood transfusion is taken (and happens to be contaminated) : especially diseases like Hemophilia , Thalassemia where blood is transfused frequently
- Sexual Contact
- Vertical Transmission (from mother to child): an infected mother can transmit this virus during delivery and the newborn may get infected right at birth.

### **What are the lethal features of this virus?**

- This infection is peculiar in that very often it does not manifest as jaundice and the affected individual (known as a Hepatitis B Carrier) does not go to seek medical help. The virus, however, progressively spreads within the liver and slowly erodes the liver cells.
- A Carrier does not know that he/she is carrying the virus and unknowingly transmits it to persons whom he comes in contact with (in the modes of transmission mentioned above).

### **How does one prevent Hepatitis – B?**

- Insist on disposable syringe - needles. Use the best quality available
- In case you need a blood transfusion - make sure the blood is tested HBV negative. All blood banks are directed to do this test before releasing the blood for transfusion
- In case your barber / hair dresser is using a razor - make sure he changes the blade.
- Safe sexual practices

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## **HIB MENINGITIS VACCINE**

### **What is HIB?**

HIB stands for Hemophilus Influenza - B

### **What diseases does HIB cause?**

- Meningitis (Brain Fever: it is dangerous and can be lethal.)
- Pneumonia
- Septicemia
- Inflammation of the covering layer of the heart (pericarditis)
- Suppurative Otitis (ear discharge)

Meningitis (Brain Fever)

### **When should my child get the Hib vaccine?**

Your child's doctor will give your child the Hib vaccine at her 2-, 4-, 6-, and 12- or 15-month checkups (except in the case of one brand of the vaccine that doesn't need to be given at 6 months).

### **Who shouldn't get the Hib vaccine?**

Children younger than 6 weeks old shouldn't get the Hib vaccine. And no one who has had a serious allergic reaction to a previous dose should get the vaccine.

### **What precautions should I take, if any?**

If your child is moderately to severely ill at the time the shot is scheduled, you should probably wait until she recovers, just so she'll be better able to tolerate the shot.

### **What are the possible side effects or risks of an adverse reaction?**

Up to a quarter of children have some redness, warmth, or swelling at the site of the injection. One in 20 children has a fever of 101 degrees F (38.3 Celsius) or higher. These symptoms may show up within a day of vaccination and can last two to three days.

Severe allergic reactions are rare but possible with any vaccine. Symptoms — which include difficulty breathing, hoarseness or wheezing, hives, paleness, weakness, faster heartbeat, and dizziness — would occur from a few minutes to a few hours after the shot was administered. Call your doctor immediately if your child shows any of these signs.

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## **CHICKENPOX (VARICELLA) VACCINE**

### **What is Chickenpox?**

Chickenpox is a viral infection and is highly communicable. Out of all the communicable diseases this is the most communicable. The virus is known as Varicella Zoster. This infection may occur at any age but is more common in childhood.

### **How is the severity of Chickenpox related to age of onset?**

Generally speaking one may understand that as age advances the severity of the illness keeps increasing. In younger children it may usually be mild and may turn out to be severe and even life threatening in older children and adults.

### **What are the symptoms?**

- Usually there would be several pearly white water filled boils on the body with itching associated - these boils spread very rapidly and may soon cover the entire body. Involvement of the tongue, throat, penis and anus may make the child miserable.
- Varicella pneumonia can be lethal.
- Spread to the brain may lead to encephalitis (unconsciousness, fits, paralysis.)
- Later on in adult life or old age, whenever the body's immunity is low - it may spring up as Varicella Zoster and involve the eyes and may cause very painful Herpes.

### **When should the vaccination be administered?**

From 1 year age to 13 year age - only 1 dose and if taken after 13 years of age - 2 doses separated 6-12 months apart.

This vaccine is given subcutaneously (under the skin).

### **What are the side effects of the Chickenpox vaccine?**

There are no side effects to the vaccination.

# ***Health Care Education Vaccinations***

## **SOME MYTHS ABOUT VACCINATIONS**

Child is unwell - vaccine should not be taken:

- Mild colds, coughs, mild fevers, diarrhea-vomiting - there is no reason to delay vaccination.
- Child is weak or malnourished - vaccination should be postponed:
- Is the child is born premature - vaccines should be taken at the suggested dates without any interruption. In weak, malnourished children the immunity of the body is anyway low and they are even more prone to infections - vaccination is especially important for these children.

If the vaccine has not been taken at the correct age then it can not be taken at all:

- If for some reason vaccination has been delayed it does not at all mean that the vaccine can not be taken. All the dates recommended are the lowest ages at which the particular vaccine can be taken. In case of delay please do take the vaccines and follow the same standard schedule. The only exception is DPT vaccine - in case the child is over 2 years and DPT has not been taken at all - then replace DPT with DT.

The gap between 2 doses can be adjusted as per convenience:

- In case of DPT / Polio and HIB Meningitis (the ones that need multiple dosing) you may notice a gap of 1 month has been recommended. This gap can not be reduced to less than 1 month. On the other hand in case there has been a delay beyond 1 month - you may take the dose soon as possible. In no case does it mean it that the previous dose has been wasted - no way does it mean a repetition all over again.

Can all the vaccines be taken at one sitting?

- Except MMR and Chickenpox - all other vaccines can be taken at one sitting. Please do ensure using separate and disposable syringes for all.

Vaccination causes side effects - one should not take vaccines:

- Whatever the side effects are faced by the individual, they are insignificant compared to the dangerous and possible lethal outcome of the diseases. The only one that causes discomfort, crankiness and fever is the DPT vaccine - this too can be taken care of by plain and simple Paracetamol.

For every injury one must take Tetanus injection:

- In case the complete 3 dose schedule of DPT has been taken and the Booster at 1.5 years has been taken then the child is protected till 5 years age. There is thus no need for any tetanus injection at

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these injuries. At 5 years age do take the DT vaccine - your child is now protected for a further 5 years.

In case Measles has erupted already - then I can avoid Measles vaccine:

- There are several fevers in children in which eruptions like that of measles may appear on the body. In case you feel your child has already had Measles - it is still wise to take Measles vaccine.

At times disease occurs even after vaccination - why vaccinate then?

- Though all vaccines are effective they have their limitations. There is no vaccine that gives 100% protection.