Why you need to vaccinate your child?

1. Vaccination prevents diseases which may be very serious and life threatening.
2. Timely age specific vaccination is essential to provide immunity before your child is exposed to the disease.
3. Vaccines are tested for efficacy and safety before they are marketed.
4. Millions of lives are being saved every year by vaccination.
5. Eradication of small pox and polio free world has been possible because of vaccines.

Protect your child at every age from birth till 18 years of age:

1. Govt. of India is providing vaccines through all health centres and hospitals free of cost and anybody can avail the facility.
2. Vaccination schedule as per Govt. of India is the minimum that should be taken by all infants and children in the country.
3. Timely vaccination shall prevent against ten life-threatening diseases that are included in Govt. of India's immunization schedule. In addition, certain vaccines are given in highly endemic region, e.g., Japanese encephalitis vaccine in 268 districts of the country. Rabies vaccine is recommended after dog bites as post- exposure prophylaxis.
4. Most of the dreaded diseases that cause serious illness, disability and death are covered under National immunization schedule as shown in the following table

Diseases that are included in National immunization schedule for prevention by vaccines:

1. Tuberculosis (BCG vaccine)
2. Hepatitis B (HBV)
3. Poliomyelitis [Oral polio vaccine (OPV) & Inactivated polio vaccine (IPV)]
4. Diphtheria
5. Whooping cough (Pertussis) (As DPT, containing diphtheria, pertussis and tetanus)
6. Tetanus
7. *Hemophilus Influenzae* b (Hib) [DPT & Hib as pentavalent vaccine]
8. Rota virus
9. Pneumococcal (PCV—Pneumococcal conjugate vaccine)
10. Measles
11. Rubella (Measles & Rubella as MR vaccine)
12. Japanese encephalitis (JE vaccine) in selected districts

5. Indian Academy of Pediatrics has recommended some additional vaccines e.g., Hepatitis A, Inactivated Polio, Chicken pox, Typhoid and Human papilloma virus (HPV). Consult your pediatrician for these vaccines and their timings.
6. All pulse polio vaccine doses, as recommended, should be taken. MR (Measles and Rubella) vaccine has been introduced in the National schedule at 9 months of age and for catch up vaccination, all children from 9 mo till 15 years of age should be given vaccination. MR is a safe and effective vaccine.

National Immunization Schedule (NIS) for Infants, Children and Pregnant Women

Age	Vaccine
Birth	BCG, OPV0, HepB
6 wk	DPT- HepB-Hib1(pentavalent 1), OPV1, fIPV1, Rota1, PCV1
10 wk	Pentavalent2, OPV2, Rota2
14 wk	Pentavalent3, OPV3, fIPV2, Rota3, PCV2
9-12 mo	Measles-Rubella (MR), PCV3
16-24 mo	DPT Booster 1, OPV4, measles 2nd dose or MR/MMR and JE vaccine in select districts
5-6 y	DPT 2nd booster
10 y	TT
16 y	TT
Pregnant women	TT1 (early in pregnancy) TT2 (1 mo later) TT booster (if vaccinated in past 3 y)

Frequently asked questions by the parents:

Isn't vaccination an unnatural way of producing immunity?

Vaccination produces immunity exactly in the same mechanism as the natural disease process. The natural disease can be life-threatening and fatal at times. Therefore, without suffering from the disease, the body's immune mechanism produces antibodies to protect from the illness.

Won't so many vaccines produce overwhelming response to the body's immune mechanism?

A baby after birth is exposed to a wide variety of innumerable germs and the immune system responds to the exposure. Although one is not sure about how many hundreds or thousands of germs a baby's immune system can handle simultaneously, the number of vaccines that are given to an infant has been found to produce enough protective antibodies without creating any adverse effects.

Why some vaccines require many doses while others only single or two doses?

There are mainly two types of vaccines namely, inactivated and live. Most of the inactivated vaccines like DPT require several doses to have booster effect whereas most of the live attenuated vaccines require less number of doses. However, exceptions are there even with live vaccines e.g, Polio and Rota which require more doses.

Is there any painless injectable vaccine?

It is a myth and not true. All injections would cause some pain. In routine vaccination, syringe with needle is used and proper technique with appropriate size of the needle and certain additional steps like distracting the baby, putting the baby in mother's lap, breastfeeding the baby and giving sucrose water have been found to be helpful.

Read that certain ingredients in the vaccines are toxic, what are these ?

Vaccines are made of several substances in order to make them effective. The main ingredient is the antigen which causes the disease but this is in killed form or a very small amount is taken. Other substances e.g., Mercury, Formaldehyde and Aluminum are added to the vaccine to make it more effective. These are added in micrograms and as per the recommendation of World Health Organization. Please remember that what you read on internet is not always true. Each vaccine batch is tested for its safety and then marketed.

Read in newspapers and in Whatsapp group messages that certain vaccines were incriminated for deaths or severe adverse reactions. Can you explain?

Vaccines can cause some minor or major adverse reactions. However, all these reactions are treatable and if it occurs, preventive actions for the subsequent doses are decided. However, the deaths reported following administration of vaccines are not to be believed. If proper technique and right vaccines are administered, the chances of serious adverse reactions can be minimized. The reports of death following Polio and Rota vaccines are myths and not real. However, it is recommended that infants and children should be observed for at least 15-20 minutes after vaccination for any untoward adverse reaction and immediate treatment should be given for any serious reactions.

I have missed one dose of vaccine due to illness of my baby. What should be done?

Please consult your doctor/nurse/immunization center. There is no need to restart the vaccine series again even if there is a lapse of time. The remaining doses should be given and they shall have equal effectiveness.

Can my child get the disease from the vaccine administered?

The answer is almost never. Inactivated vaccines cannot give rise to a disease. Live attenuated vaccines can sometime produce mild illness e.g., Measles vaccine can cause mild disease and that would be an excellent demonstration that immunity shall surely develop.

Can a child get disease even after full course of vaccination?

It depends on the type of vaccine as well as the timing when the vaccine was given. In the first instance, we know that Measles vaccine given at 9 months of age would be effective in 85% cases and Typhoid vaccine's efficacy is approximately 70%. Following DPT primary and two booster doses, Whooping cough can occur about three times in a life time unless the adolescent booster dose is taken. However, even if disease occurs, it is mild in nature. In some situations, one may be harboring an infection e.g., Flu but the symptoms have not started and if the vaccine has been given during the prodromal period, it may not be effective at all.

What are the precautions that need to be taken after vaccination?

Follow the instructions given by the nurse or doctor who has administered the vaccine to your child. If there is high fever, irritability or excessive crying, give paracetamol as per the dose recommended. Do not rub or massage the injection site. If the child has very high grade fever, inconsolable crying episode, any convulsions, drowsiness, lethargy, rashes in the body, is not accepting feeds or any unusual symptoms, take him immediately to the doctor for advice. Many reactions are normal response of the vaccine e.g., following BCG vaccine, there may be a vesicle formation or ulceration at the site of injection.

Why vaccinate adult population?

- Successful universal immunization has resulted in decrease in mortality and morbidity in children.
- Adolescents and adults have become more susceptible and prone to get vaccine preventable diseases (VPD).

- Hepatitis B virus (HBV) is 100 times more infectious than HIV, Mumps and Varicella in adults – Serious complications are more.
- In our National schedule only Tetanus toxoid (TT) vaccine is included at 10 and 16 years and the coverage is extremely poor.
- Adults are not routinely given any preventive vaccination.
- Adolescents and adults constitute >70 % population in India.
- Vaccination in adults boosts the immunity that is decreasing and prevents specific diseases.
- Adults with chronic diseases like diabetes, heart disease, chronic obstructive pulmonary disease and conditions causing immune suppression always would be benefitted by appropriate vaccination.
- Vaccinating adults with vaccines like Pertussis vaccine prevents diseases in small children at home.
- Influenza and invasive Pneumococcal disease in high risk adults are the two most important diseases that kills many adults.
- Vaccination in pregnant females with Pertussis-diphtheria-tetanus (Tdap) vaccine prevents all the three diseases not only in the mother but also prevents the newborn from getting the disease in early infancy before the infant immunization starts its effect.

  Successful immunization in high risk adults prevents morbidity and mortality.
- There is no National schedule of vaccination in adults in India except for Td (tetanus-diphtheria) in pregnant women.

High risk adults for Influenza and Pneumococcal disease are as follows:

- Pregnancy
- Some adults 19 through 64 years old are also at an increased risk, including those:
  - With chronic illnesses (lung, heart, liver, or kidney disease; asthma; diabetes; or alcoholism)
  - With conditions that weaken the immune system (HIV/AIDS, cancer, or damaged/absent spleen)
  - With cochlear implants or cerebrospinal fluid (CSF) leaks
  - Who smoke cigarettes

Following tables show the adult vaccination schedule in USA by Center for Disease Control (CDC) 2019 and Association of Physicians in India 2014 respectively and any of the schedule may be followed in practice. In addition, Federation of Obstetrics and Gynecology in India recommends routine use of Influenza and Tdap vaccines during pregnancy.

Recommended Immunization Schedule for Adults (CDC–2019)

Vaccine	Age group 19 to > 65 years
Influenza vaccine, inactivated or live attenuated nasal spray	Yearly vaccination one dose (any one vaccine) from 19 to > 65 years
Tetanus-diphtheria-pertusssis (Tdap) or Tetanus-diphtheria (Td)	One dose of Tdap, if not given earlier at 10 years followed by Td every ten years for all adults and in each pregnancy, one dose of Tdap injection
Measles-Mumps-Rubella (MMR)	1 or 2 doses from 19-60 years of age depending upon the previous doses
Varicella (Chicken pox)	Two doses at 3 month interval from 19-35 year if not vaccinated earlier
Zoster recombinant /Zoster live	Two doses from 50 to > 65 years/ one dose from 55 to > 65 years
Human Papilloma virus (HPV)	Two to three doses depending upon initial vaccination from 19 till 26 years of age in both females and males
Pneumococcal conjugate vaccine	One dose is indicated in high risk groups but one dose is essential after the age of 60 years
Pneumococcal polysaccharide vaccine	1-2 doses depending upon the indication in high risk group but one dose is indicated 6-12 months after PCV in > 60 years
Hepatitis B	2-3 doses depending on previous vaccination status
Hepatitis A	2-3 doses depending upon vaccination status but is not given routinely
Meningococcal ACWY	1-2 doses depending upon previous vaccination status; high risk individuals may require booster every 5 years
Meningococcal B vaccine	2 -3 doses depending upon vaccine and indication
Hemophilus influenzae b vaccine	1-3 doses depending upon indication

Association of Physicians of India(API)

Adult Immunization Guidelines – 2014

Risk group	Underlying medical condition	PCV13 Recommended	PPSV23 Recommended	PPSV23 Revaccination 5 yrs after first dose
Immunocompetent persons	Chronic heart disease		✓	
	Chronic lung disease		✓	
	Diabetes mellitus		✓	
	Cerebrospinal fluid leak	✓	✓	
	Cochlear implant	✓	✓	
	Alcoholism		✓	
	Chronic liver disease, cirrhosis		✓	
	Cigarette smoking		✓	
Persons with functional or anatomic asplenia	Sickle cell disease/other hemaglobinopathy	✓	✓	✓
	Congenital or acquired asplenia	✓	✓	✓
Immunocompromised persons	Congenital or acquired immunodeficiency	✓	✓	✓
	Human immunodeficiency virus infection	✓	✓	✓
	Chronic renal failure	✓	✓	✓
	Nephrotic syndrome	✓	✓	✓
	Leukemia	✓	✓	✓
	Lymphoma	✓	✓	✓
	Hodgkin disease	✓	✓	✓
	Generalized malignancy	✓	✓	✓
	Iatrogenic immunosuppression	✓	✓	✓
	Solid organ transplant	✓	✓	✓
	Multiple myeloma	✓	✓	✓

Reference adapted from Adult immunization 2014, issued by The Association of Physicians of India

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