

Vaccination for Women



Thomas A. Edison



The doctor of the future will give no medication, but will interest his patients in the care of the human frame, diet and in the cause and prevention of disease. ~

AZ QUOTES

**Vaccination for Women
(Adolescent to Adult)
– Importance and recommendations**

Back to Basics - Overview (1/2)



What is a Vaccine?

A vaccine is a biological preparation that provides active acquired immunity to a particular infectious disease



How it works?

- Vaccines help develop immunity by imitating an infection, causing the immune system to produce
- T Lymphocytes (memory cells) which attack the infected cells
 - B Lymphocytes: Produce antibodies against the antigens of the infecting organism

TYPES OF VACCINES

LIVE ATTENUATED VACCINE

- MMR, Varicella
- Contain virus/bacteria that has been weakened (closest to natural infection hence good teachers of immune system)
- Cannot be given during pregnancy

INACTIVATED VACCINE

- E.g. Influenza
- Made by inactivating/killing the germ

TOXOID VACCINES

- Tetanus/Diphtheria
- In this the bacterial toxins are weakened which are called Toxoids, which fights the natural toxin

SUBUNIT VACCINES

- E.g.: Pertussis
- Contains only parts of virus/bacteria

Why vaccinate women?



Helps in improving the women's health in general¹

Vaccination before, during and after pregnancy helps protect women from maternal morbidity & mortality related to serious infections^{1,2}



Vaccination not only protects the mother but also provides immunity to the young infants³



The Ob-Gyn Role⁴



Studies consistently demonstrate, when recommendations are coming **directly from gynecologists**, the vaccine acceptance is **5 to 50 folds higher**




Vaccination for women – FOGSI Recommendations



Stage	Vaccine	Remarks
 <p>Vaccination in the adolescent age group</p>	Typhoid, Cholera	<ul style="list-style-type: none"> Can be given seasonally
	Rubella	<ul style="list-style-type: none"> Pregnancy should be avoided within 3 months of vaccination
	HPV	<ul style="list-style-type: none"> Catch up vaccination recommended in case of incomplete vaccination
	MMR, Hep B , Hep A, HPV, Tetanus, Diphtheria, Influenza, Varicella	<ul style="list-style-type: none"> Catch up vaccination recommended from 11 years onwards
 <p>Vaccination as a part of pregnancy planning</p>	Rubella, Hepatitis B, Varicella	<ul style="list-style-type: none"> Pregnancy should be deferred for 3 months in case of Rubella vaccine
	Hepatitis B	<ul style="list-style-type: none"> Vaccination with an ongoing pregnancy is safe and does not warrant a termination
	HPV	<ul style="list-style-type: none"> In case the woman becomes pregnant after receiving the first dose of HPV vaccination, the next dose should be deferred. The rest of the dosages can be completed after delivery
	Tetanus, Diphtheria	<ul style="list-style-type: none"> Can be considered

Vaccination for women – FOGSI Recommendations



Stage	Vaccine	Remarks
 Vaccination during pregnancy	Tetanus, Diphtheria, Pertussis	<ul style="list-style-type: none"> • 2 doses of TT at least 28 days apart commencing from 2nd trimester • Tdap vaccination can be considered instead of the 2nd dose of TT • The regular pertussis vaccine is contraindicated in pregnancy
	Influenza	<ul style="list-style-type: none"> • Recommended from 26 weeks onwards • Can be given in case of a pandemic
 Postnatal vaccination	Rubella, Hepatitis B, Varicella, Influenza, Tetanus, HPV	<ul style="list-style-type: none"> • Recommends postnatal vaccinations to all non immunized postnatal mothers
 Adult & elderly women	HPV, Tetanus, Diphtheria & Influenza	<ul style="list-style-type: none"> • HPV vaccine is licensed to be used up to 45 years of age • Tetanus booster dose to be given once every 10 years throughout the life • Influenza vaccination annually can be offered to all women

VACCINATION IN ADOLESCENT WOMEN



Vaccination in Adolescent Women



VACCINE	DOSAGE
Typhoid – Typhoid Conjugated Vaccine Cholera	<ul style="list-style-type: none">• Can be given seasonally• 1 single dose given at age of 1 yr. Booster at age of 2 yr.• In case missed/immunization status not known, then single dose given• Cholera: Oral vaccine provide only ~60% of efficacy
HPV	<ul style="list-style-type: none">• Prevents Ca Cervix – 2nd most imp. Cause of death in women from cancer in India• Licensed from 9 yr. – 45 yr.• Ideally to be administered before sexual exposure• If <15 yrs. : 2 doses (0, 6 months)• If >15yrs. : 3 doses (0, ½, 6 months)
MMR	<ul style="list-style-type: none">• 1st dose: 9-12 months• 2nd dose: 15-18 months• 3rd dose: 4-6 yrs.• In Adolescents:<ul style="list-style-type: none">- If immune status not known – 2 doses 4 weeks apart- If immunised: 1 dose- FOGSI recommends that all adolescent girls should be vaccinated against rubella as H/o rubella is difficult to elicit

Vaccination in Adolescent Women



VACCINE	DOSAGE
MMR (Contd.)	<ul style="list-style-type: none">• Especially given to prevent incidence of CRS which occurs by vertical transmission from unimmunised woman if infected in 1st 3 months of pregnancy• Antibody testing for rubella not necessary• Avoid pregnancy for 3 months
T DAP	<ul style="list-style-type: none">• In children 3 doses of D Tap are given at 6 months, 10 months and 14 months of age• 1st booster: 16-24 months• 2nd booster: 4-6 yrs.• Booster dose of Td. Recommended after every 10 yrs. Instead of Td, T DAP can be given
Influenza	<ul style="list-style-type: none">• Single dose to be given annually during the flu season which is usually Oct – May• 2 types available:<ul style="list-style-type: none">- Live attenuated: Not to be given in pregnancy- Inactivated

Vaccination in Adolescent Women



VACCINE	DOSAGE
VARICELLA	<ul style="list-style-type: none">• In children:• 1st dose -12-15 months• 2nd dose – 4-6 years• As per Indian study 12-20% of adolescent & young women are sero negative for varicella, hence susceptible to infection• In adolescents if immune status not known then 2 doses with a gap of 4-6 weeks• Live attenuated vaccine: Avoid pregnancy for 3 months• To prevent congenital varicella syndrome in neonates
HEPATITIS B	<ul style="list-style-type: none">• In childhood- 1st dose at birth- 2nd dose at 6 weeks- 3rd dose at 6 months• In Adolescents:- Given, if not immunized- Dose schedules: 0, 1, 6-12 months

Vaccination in Adolescent Women



VACCINE	DOSAGE
HEPATITIS A	<ul style="list-style-type: none">• In childhood- 1st dose: 12-23 months- 2nd dose: At a min. interval of 6 months after 1st dose• In Adolescents In unvaccinated/Travelling to endemic countries/hostels- 2 doses at 6 months apart

KEY TAKEAWAYS



CATCHUP VACCINATION (RECOMMENDED AFTER 11 YRS. OF AGE)

- MMR
- VARICELLA
- HEPATITIS B
- HEPATITIS A – Special Situation

ROUTINE VACCINATION

- HPV
- INFLUENZA
- TDAP

VACCINATION IN PRECONCEPTION COUNSELLING



Vaccination – Preconception Counselling



Appropriate time for preventive vaccination which helps her to achieve healthy pregnancy and foetus.

Vaccination History:



**Previous
Vaccines**

**Allergy to
any
Vaccination**

**History of
occurrence of
vaccination
preventable
diseases e.g.
Mumps, measles,
varicella etc.**

Vaccination – Preconception Counselling



VACCINE	DOSAGE
Rubella (MMR) Varicella	<ul style="list-style-type: none">• Both these are live attenuated vaccines• Patient to totally avoid pregnancy for 3 months• If she still conceives within 4 weeks of vaccination, then she should be counselled regarding theoretical risk to foetus & should be followed closely. No need of termination.
Rubella	<ul style="list-style-type: none">• As per FOGSI GCPR, serological screening should be done & vaccine given if not immune.• <u>Doses:</u> Sc/Im in deltoid. 2 doses 4 weeks apart if unimmunised
Varicella	<ul style="list-style-type: none">• As per FOGSI GCPR, women to be screened for vaccine immunity in preconception period either by taking H/O past infection/vaccination or by seology• All non immune women should be vaccinated• 2 doses of Varilix Sc in deltoid region/anterolateral aspect of thigh, 6 weeks apart

Vaccination – Preconception Counselling



SEROLOGY FOR RUBELLA

Rubella IgG levels should be tested.

IgG +ve

- Patient already immunised
- Has antibody protection
- No action required

IgG -ve

- Make a note to immunize post delivery

- IgM +ve
- IgG -ve

- It is current infection

- IgM +ve
- IgG +ve

- Avidity should be done to know if infection is current or repeat

In Primary infection, avidity is low and high in secondary

Vaccination – Preconception Counselling

Vaccination greatly reduces disease, disability, death and inequity worldwide



VACCINE	DOSAGE
HPV	<ul style="list-style-type: none">• If the woman gets pregnant after the 1st dose, the rest of the dosages are deferred & given after delivery• Pregnancy need not be terminated
HEPATITIS B	<ul style="list-style-type: none">• Safe in pregnant women• Special Consideration:<ul style="list-style-type: none">- Healthcare & Public Safety workers who have exposure to blood products- Drug abusers- Partners of Hbs Ag carriers- Frequent travelers to endemic areas- Infants who acquire Hep B infection perinatally are at very high risk of developing Chronic Hepatitis B leading to Chronic liver disease (Girrhosis & primary hepato cellular carcinoma)
Td	<ul style="list-style-type: none">• Can be given• Booster is advised after every 10 years.

**VACCINATION
DURING
PREGNANCY**



Vaccination – During Pregnancy



VACCINE	DOSAGE
TETANUS DIPHTHERIA PERTUSSIS	<ul style="list-style-type: none">• 2 doses of tetanus to be given at least 28 days apart starting from 2nd trimester• 2nd dose of TT can be replaced with T-dap:<ul style="list-style-type: none">- T-Dap to be given between (27-36) weeks to maximise the transplacental transfer of antibodies to the foetus which offer protection to new born in first few months of life when they are susceptible to pertussis & its complications & cannot be vaccinated- Also Diphtheria is reappearing in pockets in India- T-Dap is now recommended in every pregnancy, irrespective of previous immunization
INFLUENZA	<ul style="list-style-type: none">• Recommended from 26 weeks onwards• To be given annually as “Antigenic Drift” causes seasonal epidemics• Inactivated influenza vaccine recommended in pregnancies• Offers protection to the pregnant women who is at higher risk of developing ARDS & to the new born who cannot be vaccinated for 1st 6 months of life• Reduces the risk of respiratory illness in infants by:<ul style="list-style-type: none">- Transplacental transmission of natural antibodies- Increased anti influenza Abs in breastmilk

POST NATAL VACCINATION



Vaccination – Post Natal Vaccination



VACCINE	DOSAGE
RUBELLA, HEPATTIS B, VARICELLA, INFLUENZA, TETANUS, HPV	<ul style="list-style-type: none">• Recommended to all non immunised Postnatal mothers• Post natal period is a good window of opportunity which should not be missed to protect mother & future progeny

ADULT & ELDERLY



Vaccination – In Adults & Elderly



VACCINE	DOSAGE
TETANUS BOOSTER	<ul style="list-style-type: none">To be given every 10 yrs.Td can also be given in place of TTT DAP to be given to all grandparents, parents, adults taking care of infants > 12 months
HPV	<ul style="list-style-type: none">Licensed to be used up to 45 yrs. of age
INFLUENZA	<ul style="list-style-type: none">To be given annually

Disease & Prevention

Tetanus, Diphtheria & Pertussis

Measles, Mumps & Rubella

Chickenpox

Cervical cancer

Tetanus, Diphtheria, Pertussis Vaccination for Women



TETANUS, DIPHTHERIA



Let us briefly review the diseases that we prevent with vaccinations in women to understand the implications of these vaccine preventable diseases

TETANUS

- Potentially fatal bacterial infection caused by Clostridium Tetani which produces a neurotoxin causing painful muscular contraction which can interfere with the ability to breathe causing death – Easily Preventable by Vaccine

DIPHTHERIA

- Serious bacterial infection caused by Corynebacterium diphtheria
- Affects mucous membrane of nose and mouth
- Bacteria also releases toxins which can also damage other organs including heart, brain & kidneys leading to potentially life threatening complications
- It's a matter of concern that after reaching a plateau in 2012 pockets of diphtheria are again resurfacing in developing countries



**Triple protection against
Diphtheria, Tetanus and
Pertussis**

PERTUSSIS (WHOOPIING COUGH)



Highly contagious respiratory infection caused by *Bordetella Pertussis*



- Age group at highest risk of complications are New-borns and Young Infants esp. within 2 months of age



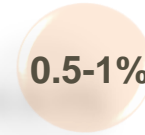
HOSPITALIZATION



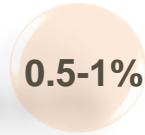
PNEUMONIA



SEIZURES



ENCEPHALOPATHY



DEATH

- According to WHO Reports, India ranks No.1 globally in incidence of Pertussis
- New-borns are at higher risk of neonatal pertussis as they cant be vaccinated before 6 weeks
- Vulnerable to contract infection esp. from mother & family member taking care

Measles, Mumps & Rubella Vaccination for Women



MMR – Complications



Why vaccinate with MMR vaccine?

Measles^{1, 2}

- Children **younger than 5 years of age** and adults **older than 20 years of age** are more likely to suffer
- Complications include ear infection and pneumonia



Complications During Pregnancy⁴

- Can lead to **increased rates of premature labor & spontaneous abortion**
- Low birth weight and also birth defects

Mumps²

- Severe consequences include Deafness, swelling of the brain and/or spinal cord covering, painful swelling of the testicles or ovaries



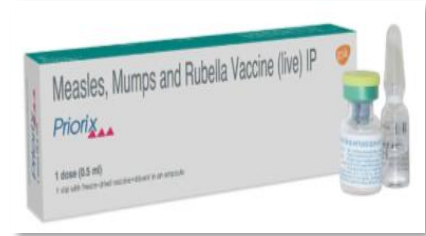
- Developed in women during the 1st trimester
- Can lead to an **increased risk for fetal death**

Rubella³

- Infected adults, **more commonly women**, may develop arthritis and painful joints that usually last from 3–10 days



- Can lead to **Congenital Rubella Syndrome**



Congenital Rubella Syndrome



Congenital Rubella Syndrome (CRS)

- Arises when women get infected with the **rubella virus** in the early stages of pregnancy¹
- Infection of the fetus occurs when the rubella virus spreads from the placenta and enters the fetal circulation¹

A child with expanded or acute CRS who had hepatosplenomegaly, thrombocytopenia, cataracts, deafness, Congenital heart disease, Cutis marmorata and mental retardation⁴



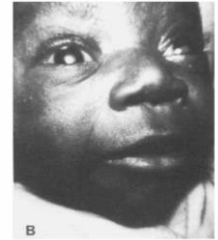
Incidence of CRS

- **85% of infants are affected born to women infected with rubella** during the 1st trimester of pregnancy²
- Over **100,000 cases per year** of CRS occur in the developing world alone³
- CRS is associated with **spontaneous abortion, premature delivery and stillbirth**²

CRS - Complications

Consequence of CRS ¹²	Incidence (%)
Hearing Impairment	60
Heart Defect	45
Microcephaly	27
Cataracts	25
Low Birth Weight (<2500g)	23
Mental Retardation	13

CRS patient showing cataracts⁴



Chickenpox Vaccination for Women



PREGNANCY & CHICKENPOX



1st & 2nd Trimester



Varicella infection during the 1st & 2nd trimester may **increase the risk for congenital varicella syndrome.**⁵

3rd Trimester



Varicella infection during the 3rd trimester may lead to **maternal pneumonia.**⁵

Perinatal Varicella



Newborns whose mothers develop chickenpox from 5 days before to 2 days after delivery are at risk of chickenpox shortly after birth⁵

Chickenpox in Neonates

1. Classic cicatricial scarring is visualized in an infant with congenital varicella syndrome¹.



2. The right lower leg has significant bone and muscle hypoplasia. The classic cicatricial scarring is also visualized¹.



3. Infant aged 14 months with herpes zoster in the classic dermatomal pattern. There was a maternal history of varicella at 28 weeks of pregnancy¹.



4. Newborn with varicella acquired from the mother in the prenatal period¹.



MATERNAL PNEUMONIA

- Maternal pneumonia is a complication in about **10–20%** of cases of Varicella infection during **3rd trimester** of pregnancy, resulting in a higher mortality and morbidity than in non pregnant adults
- Pregnant women with VZV pneumonia **should be hospitalized** for monitoring and administered antiviral therapy, because up to **40% of women may need mechanical ventilation**
- **Mortality in severe cases is estimated to be 3–14%**
- The risk for pneumonia also increases with increasing gestational age

PRENATAL VARICELLA

- Newborns whose mothers develop chickenpox rash from 5 days before to 2 days after delivery are at risk for chickenpox shortly after birth, with the chance of **death as high as 30%**⁸



← Classic case of neonatal varicella.

PREVENTION OF VARICELLA INFECTION

Women of Childbearing Age

The best way to protect against chickenpox is to get the *chickenpox vaccine*.
(1-3 months prior to pregnancy)

Pregnant Women who is not protected against Chickenpox

Vaccination of close contacts is the most effective way to protect a pregnant woman against chickenpox

Postpartum

As soon as a pregnant woman delivers her baby, she should be vaccinated against chickenpox with 1st dose & the 2nd dose at the 6-8 weeks post partum visit

Vaccinate women against chickenpox with Varilrix



100% sero-conversion with 2 doses of Varilrix

Long and extensive experience of >30 years

Proven safety in 53 clinical trials with >1000 individuals

2 Doses

Subcutaneous administration in deltoid region of arm 6 weeks apart

88 Countries registered



Varilrix™ (Varicella Vaccine Live)

HPV Vaccination for Women



Cervical cancer– Disease and Incidence



Why vaccinate with Cervical cancer vaccine?

Serious complications from HPV infection¹:

- Cancers of the cervix, vagina, and vulva in women
- Cancers of the anus and back of the throat

HPV vaccination prevents more than just cervical cancer. In addition, the vaccines may reduce the need for screening and subsequent medical care, biopsies and invasive procedures^{1,2}

Widespread HPV vaccination has the potential to reduce cervical cancer incidence around the world by as much as 90%²

Incidence³



- 1 out of 4 women who die due to Cervical Cancer in the world is from India
- Cervical cancer **ranks No. 2** among cancers in Indian women followed by breast cancer (All ages)
- Every year **122000** Indian women are diagnosed with Cervical cancer and around **67477** die from the disease

Prevention Strategies



Cervical Cancer Prevention Strategies

Cervical Cancer Screening

Pap Smear¹

Colposcopy¹

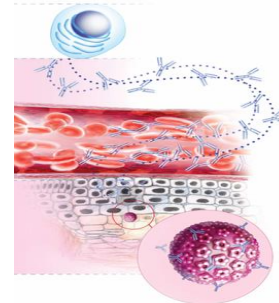
Biopsy¹

Severity of lesion evaluated using cytology & histopathology¹



Vaccination

Vaccination induces higher antibodies in the blood and site of infection



- Vaccine induces higher antibody levels in the blood which means higher antibody levels at the site of infection¹
- These Antibodies neutralize the virus & prevent entry into cells^{2,3}



GSK Vaccines Portfolio



GSK Vaccines

Pediatricians



Gynecologists





I want women to control

**THEIR OWN
HEALTH CHOICES**

just like I want

MY DAUGHTERS

to have the same

**OPPORTUNITIES
AS YOUR SONS**

-President Obama