

Covid-19 Vaccination: Part Played in Pregnancy

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Abstract

Covid-19 pandemic has taken the world by storm. An effective vaccine against the virus has been the need of the hour and need of the world, since measures like testing, hand hygiene, social distancing have worked only partially to contain the pandemic. This article is an overview about the types of vaccines available worldwide, the two vaccines available in India: Covishield and Covaxin; and the role they currently play in protection of pregnant women. Comparison of the two vaccines and guidelines on vaccination have been elaborated. A brief section on other immunizations along with Covid-19 vaccine during pregnancy is also presented.

Keywords: Covid-19, covaxin, covishield, vaccine, pregnancy, immunization

Background: Why Vaccines?

As we all know, Covid-19 which started as an atypical pneumonia from the Wuhan district of China quickly turned into a global pandemic over the course of 3 months and had resulted in casualty of 22,37,848 deaths worldwide as of January 31, 2021. In India, from 3rd January 2020 to 10th March 2021, there have been 11,262,707 confirmed cases of COVID-19 with 158,063 deaths, reported to WHO.^[1] Since the beginning of the pandemic and lockdown in March 2020 till date, our understanding of the disease has evolved to find ways to fight this disease. An effective vaccine against the virus has been the need of the hour and need of the world, since measures like testing, hand hygiene, social distancing have worked only partially to contain the pandemic.

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What Do We Have? ^[2]

1. Covishield Vaccine by Oxford Astrazeneca, UK
2. Pfizer-BioNTech, Covid-19 vaccine by Pfizer, USA
3. mRNA-1273 by Moderna, USA
4. Sputnik V by Gamaleya Research Institute, Russia
5. Coronavac by Sincovac, China
6. Covishield, Oxford, Astrazeneca, (Serum Institute of India)
7. Covaxin, Bharat Biotech, India
8. Johnson and Johnson (single dose vaccine)

India's drug regulator has given emergency approval to Covishield and Covaxin vaccines in the national program launched under guidance of PM Narendra Modi. For both, currently 2 separate doses – 0.5 ml Intramuscular, deltoid (ideally), at a 4-week interval is recommended.

Our centers (Cooper and Nair) are giving Covishield through MCGM supply free of cost, and in Cooper hospital alone over 22,000 doses have been given from the start of the program. As of 2nd March 2021, a total of 15,620,749 vaccine doses have been administered in India.^[1]

Covishield ^[3]

1. It is a non-replicating viral vector vaccine made up of weakened version of a common cold virus i.e. adenovirus from chimpanzee (modified to look more like coronavirus but cannot cause illness).
2. The vaccine contains genetic sequence of the surface spike protein which is found on the outer surface of coronavirus which after vaccination, the surface spike protein is produced in the body which primes the immune system to attack coronavirus if it later infects the body.

Why Chimpanzee Adenovirus is taken for preparing the Covishield vaccine? ^[4]

- It generates strong immune response.
- It is not a replicating virus, hence cannot cause ongoing infection in vaccinated individuals.
- It is safe for children, elderly and persons with pre-existing conditions like diabetes etc.
- Well studied vaccine vector is safely used in thousands of vaccines.

Researchers have shown, in participants who received two standard doses, vaccine efficacy was 62.1% and in participants who received a low dose followed by a standard dose, efficacy was 90%. Overall vaccine efficacy across both the groups was 70.4 %.^[5]

Covaxin ^[6]

1. Covaxin is developed by Bharat Biotech in collaboration with ICMR and NIV.
2. It is a killed vaccine (inactivated) made up of killed coronavirus. (strain NIV 2020-770)
3. The sample of the coronavirus used was isolated by India’s National Institute of Virology, Pune.
4. When administered, immune cells recognize the dead virus prompting the immune system to make antibodies against the virus but the virus does not replicate and cause pathological effects.
5. Some studies suggest this may be more effective against the evolving newer strains (e.g.- South African, Brazilian).

Clinical trials are still underway to judge or make final comments on the efficacy of the vaccine. ^[7]

Women’s Health and Vaccination

We have just celebrated Women’s Day on 8th March, 2021 and need to focus on special groups since CDC has included pregnancy as a factor that leads to increased risk for severe Covid-19 illness. ^[8]

American College of Obstetrics and Gynaecology (ACOG) recommends that Covid-19 vaccines should not be withheld from pregnant individuals who meet the criteria for vaccination based on Advisory Committee on Immunization practices (ACIP) recommended priority groups. The available data does not indicate any safety concern or harm to pregnant women, there is insufficient evidence to recommend routine use of Covid-19 vaccines during pregnancy. However, inadvertent vaccination in early pregnancy is not an indication for termination of pregnancy.

Table 1 discusses the risk benefit analysis for vaccination in pregnancy.

What are the benefits of the vaccination in pregnancy?	What are the risks of the vaccination?
Studies have shown that hospital admission and severe illness may be more common in pregnant women as well as pregnant women with underlying medical conditions (compared to those not pregnant), especially those in the third trimester of pregnancy and that preterm birth is more likely (compared to pregnant women without Covid-19)	Side effects of vaccine are common. These do not affect pregnancy, but may include- Injection site reaction (sore arm). Fatigue Headache Muscle pain Fever chills and joint pain
Vaccination is effective in preventing Covid-19 infection.	No specific testing of the vaccine in pregnant women is done.
You cannot get Covid-19 from vaccination.	
Covid-19 vaccines do not contain live coronavirus or any additional ingredients that are harmful to pregnant women.	

Whom to vaccinate in Pregnancy?

Government of India recommendations:

Phase 1a- Healthcare workers and long-term care facility residents. (CDC 2020)

Phase 1b- Persons aged ≥ 75 years and frontline essential workers. ^[9]

Phase 1c- Persons aged 60-75 years and persons aged 45-60 years with high-risk medical conditions (including pregnancy)

RCOG Guidelines ^[10]

Covid-19 vaccination is being offered to two groups

of pregnant women: Those with high-risk medical conditions who have a greater risk of severe illness from Covid-19; and health or social care workers who are at a very high risk of catching Covid-19.

Covid-19 Vaccine and Other Immunization Schedules ⁽¹¹⁾

Considerations if Covid-19 vaccine is taken:

1. Pregnant woman who are healthcare workers are encouraged to take Covid-19 vaccine. Those experiencing fever following vaccination should be counselled to take acetaminophen. Acetaminophen is proved to be safer in pregnancy and doesn't impact the antibody response to Covid -19 vaccines.
2. Vaccines including Combined tetanus, diphtheria and acellular pertussis (Tdap) and influenza should be deferred for 14 days after administration of Covid-19 vaccines.
3. Anti D (Rhogam) should not be withheld from an individual who is planning or has received Covid-19 vaccine dose as it does not interfere with immune responses.

Regardless of receiving or not receiving the vaccine the importance of handwashing, physical distancing and wearing a mask remains imperative.

Summary

- The start of Covid-19 vaccination proves that the advancements in science and technology is significant enough to deliver quality products quickly to help tackle this pandemic.
- Multiple types of vaccines with varied molecules and vectors are used to generate an immune response in the recipient.
- In India, Covishield and Covaxin have received emergency approval. Both of them have good efficacy and few side effects.
- However, safety in pregnant women is not yet established and long-term adverse effects are not yet fully known.
- Vaccination is to be taken as part of the preventive measures in addition to social distancing, hand hygiene and masks.

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