

## ***COVID 19 Vaccination Details:***

### **1. Pfizer BioNTech**

The Pfizer-BioNTech vaccine (brand name: Comirnaty) was granted full FDA approval in August 2021. Before that, it was the first COVID-19 vaccine to receive FDA Emergency Use Authorization (EUA) back in December 2020, after the company reported that its vaccine was highly effective at preventing symptomatic disease. It must be stored in freezer-level temperatures, which can make it more difficult to distribute than some other vaccines.

- **Type:** mRNA
- **Country:** Germany
- **Ages Recommended:** 12+ years old
- **Efficiency:** 90%-94%
- **Dosage:** 2 dosage given 3 weeks apart
- **How it works:** It works by sending instructions to host cells in the body for making copies of a spike protein (like the spikes you see sticking out of the coronavirus in pictures). But our cells recognize that this protein doesn't belong, and the immune system reacts by activating immune cells and producing antibodies. This will prompt the body to recognize and attack the real SARS CoV-2 spike protein if you become exposed to the actual virus.

### **2. Moderna**

The FDA granted the Moderna vaccine (brand name: Spikevax) full approval for people 18 and older in January 2022, upgrading the vaccine's EUA, which was granted in December 2020 (a week after Pfizer-BioNTech). It had a similarly high efficacy at preventing symptomatic disease when the companies applied for authorization. It also needs to be stored in freezer-level temperatures.

- **Type:** mRNA
- **Country:** United State
- **Ages Recommended:** 18+ years old
- **Efficiency:** 90%-94%
- **Dosage:** 2 dosage given 4-8 weeks apart
- **How it works:** Similar to the Pfizer vaccine, this is an mRNA vaccine that sends the body's cells instructions for making a spike protein that will train the immune system to recognize it. The immune system will then attack the spike protein the next time it sees one (attached to the actual SARS CoV-2 virus).

### 3. Sinopharm

The Sinopharm COVID-19 is an inactivated vaccine made of virus particles grown in culture and lack disease-producing capability. The Sinopharm vaccine teaches the immune system to make antibodies against the SARS-CoV-2 beta coronavirus.

- **Type:** Inactivated virus
- **Country:** China
- **Ages Recommended:** 18+ years old
- **Efficiency:** 79%
- **Dosage:** 2 dosage given 4 weeks apart
- **How it work:** As an inactivated virus vaccine, CoronaVac works by using killed viral particles to expose the body's immune system to the virus, but without risking a serious disease response. The body responds by generating antibodies, helping the immune system to fight infection by a live coronavirus

### 4. Johnson & Johnson Janssen

The FDA authorized Johnson & Johnson's coronavirus vaccine (brand name: Janssen) in February 2021. A one-shot strategy made J&J's vaccine easier to distribute and administer to people who found it the be the most convenient vaccine to get. But in the spring of 2021, concerns over rare blood clots associated with the vaccine prompted the government to put a pause on it, which was soon lifted. Then, in December the CDC again responded to those concerns by expressing a preference for the Pfizer and Moderna shots.

- **Type:** Viral vector
- **Country:** Belgian
- **Ages Recommended:** 18+ years old
- **Efficiency:** 70%-85%
- **Dosage:** 1 dose
- **How it works:** This is a carrier vaccine, which uses a different approach than the mRNA vaccines to instruct human cells to make the SARS CoV-2 spike protein. Scientists engineer a harmless adenovirus (a common virus that, when not inactivated, can cause colds, bronchitis, and other illnesses) as a shell to carry genetic code on the spike proteins to the cells. The shell and the code can't make you sick, but once the code is inside the cells, the cells produce a spike protein to train the body's immune system, which creates antibodies and memory cells to protect against an actual SARS-CoV-2 infection.

## 5. Astrazenica

This Oxford-AstraZeneca vaccine, which is currently being distributed in the United Kingdom and other countries, is distinguished from some of its competitors by its lower cost. It's cheaper to make per dose, and while some of the other vaccines must be stored frozen, this one can be stored in normal refrigeration for at least six months, making it easier to distribute.

- **Type:** Viral vector
- **Country:** United Kingdom - Sweden
- **Ages Recommended:** 18+ years old
- **Efficiency:** 70%-90%
- **Dosage:** 2 dosage given 8-12 weeks apart
- **How it works:** Similar to the Johnson & Johnson vaccine, this is a carrier vaccine. Scientists engineer a harmless adenovirus as a shell to carry genetic code on the spike proteins to the cells. Once the code is inside the cells, the cells produce a spike protein to train the body's immune system, which creates antibodies and memory cells to protect against an actual SARS-CoV-2 infection.

## 6. Sputnik V

Sputnik V Vaccine, the Russian COVID-19 vaccine, is the world's first Covid-registered vaccine and is already registered in more than 60 countries. The vaccine has been developed by Moscow's Gamaleya National Center of Epidemiology and Microbiology. In India, along with import, Hyderabad-based Dr. Reddy's Laboratories (DRL) and a few other pharmaceutical companies will manufacture the vaccine.

- **Type:** Viral vector
- **Country:** Russia
- **Ages Recommended:** 18+ years old
- **Efficiency:** 85%-90%
- **Dosage:** 2 dosage given 8-12 weeks apart
- **How it work** -SARS-CoV-2 virus uses proteins called spike proteins to enter the cells of our body. Sputnik V Vaccine contains two different adenovirus vectors (rAd26 and rAd5), delivered separately in the first and second dose respectively. These contain the gene for making the SARS-CoV-2 spike protein but have been modified so that they cannot cause the disease. Thus once vaccinated, the body produces antibodies against the coronavirus that helps you fight the virus if exposed. This means there is a reduced risk of developing the illness and its consequences. Using different vectors boosts the immune system even more than using the same version twice and may give longer-lasting protection against the virus when exposed to it.

## 7. Sinovac

Sinovac easy storage requirements make it very manageable and particularly suitable for low-resource settings. World Health Organization's Strategic Advisory Group of Experts on Immunization (SAGE) has issued recommendation on Sinovac COVID 19 vaccine 01 June 2021.

- **Type:** Inactivated virus
- **Country:** China
- **Ages Recommended:** 18+ years old
- **Efficiency:** 85%-90%
- **Dosage:** 2 dosage given 2-4 weeks apart
- **How does it work:** The CoronaVac vaccine works on a similar principle to the Sinopharm, by teaching the immune system to generate antibodies to fight the SARS-CoV-2 and attaching these antibodies to the spike proteins of the virus studded on its surface. While the researchers gathered the virus samples from patients from Italy, Britain, Spain and Switzerland, the one that was used to design the vaccine came from China itself. The virus was then grown in large numbers in Monkey Kidney cells before they were doused with a chemical called beta-propiolactone, the compound that disabled the coronavirus and stopped its replication.

## 8. Covaxin

Covaxin was developed by Indian pharmaceutical company Bharat Biotech in collaboration with the Indian Council of Medical Research, a government funded biomedical research institute, and its subsidiary the National Institute of Virology.

- **Type:** Inactivated virus
- **Country:** India
- **Ages Recommended:** 18+ years old
- **Efficiency:** 70%-80%
- **Dosage:** 2 dosage given 4 weeks apart
- **How does it work:** Covaxin Vaccine contains an inactivated form of the virus itself (made up of killed coronaviruses, making it safe to be injected into the body). When administered, the dead virus acts as an antigen and provokes an immune response that can block or kill the virus, without actually causing the disease. Thus, Covaxin Vaccine is incapable of infecting people but still able to instruct the immune system to promote a defensive reaction if a person becomes infected just like the natural body immune mechanism in case of other infections.