

## **PFIZER -BioNTech & MODERNA COVID-19 VACCINE Posted: 19 DEC 2020**

**There are now 2 vaccines that have been granted emergency use authorization by the FDA; the Pfizer-BioNTech & the Moderna COVID-19 Vaccines**

### **1. How do the COVID-19 vaccines work?**

Both vaccines use messenger RNA technology, which has been studied for more than 10 years. According to the CDC, it was developed years ago to try to combat other illness, but never used. It has now been refined and re-targeted for COVID-19.

The coronavirus mRNA vaccines do not contain live or inactivated virus. The vaccines both contain mRNA, but each vaccine uses a different mRNA molecule. This probably accounts for the differences in storage and handling characteristics discussed below.

### **2. Transportation & Storage Differences between the Pfizer-BioNTech Vaccine and the Moderna Vaccine**

The Pfizer-BioNTech vaccine requires shipping and storage at -70 degrees Celsius, which makes distribution more difficult, as few facilities have the capability for storage at this extremely frigid temperature. It can be stored in a normal refrigerator for only about five days before losing efficacy. The Moderna vaccine can be shipped and stored at -20 degrees Celsius and can be stored in normal refrigerator units for up to 30 days after that before losing efficacy.

### **3. Number of Doses Required to Achieve Immunity:**

The Pfizer-BioNTech vaccine is administered as two 30-microgram doses given 21 days apart. The Moderna vaccine is administered as two 100-microgram given 28 days apart.

### **4. Efficacy of the Pfizer-BioNTech Vaccine and the Moderna Vaccine**

Both vaccines have demonstrated similar efficacy levels of 94-95%. Both may produce partial protection about 2 weeks after the first dose is administered. The Pfizer-BioNTech vaccine is authorized for ages 16 and older, and the Moderna vaccine is authorized for ages 18 and over. This difference is based

primarily on the ages of participants in their respective clinical trials, and not because of proven variations of efficacy.

There have been some reports that the Moderna vaccine may have a lower efficacy in people older than 65, however the statistics on this are insufficient at this time to draw a definitive conclusion. The FDA stated in the December 17 advisory meeting that the “efficacy in the elderly is consistent with its efficacy in the overall population.”

Both vaccines may produce partial protection about 2 weeks after the first dose is administered. There have been reports that the Moderna vaccine may provide a higher efficacy after the first dose than the Pfizer-BioNTech vaccine. However, the statistics are insufficient at this time to draw a definitive conclusion.

Although different claims have been made with respect to whether one vaccine provides more protection against people becoming severely ill, the statistics are insufficient at this time to draw a definitive conclusion. Andrea Cox, a viral immunologist at Johns Hopkins University has stated that “it’s very clear for both the Moderna and Pfizer vaccines that symptomatic coronavirus cases and coronavirus infections requiring hospitalization are dramatically reduced.”

Stopping infections entirely, whether asymptomatic or symptomatic, is crucial to curb the coronavirus’ spread to build immunity in communities. Preliminary data from Moderna suggests that their vaccine might protect vaccinated people from asymptomatic infections as well as symptomatic disease. Although Pfizer has not yet released any data showing whether it has a similar effect, it is postulated that because the two vaccines work in such a similar manner, it may be that ultimately the data will indicate similar effects for both vaccines.

## **5. Side Effects of the Pfizer-BioNTech Vaccine and the Moderna Vaccine**

The two large-scale clinical trials of the vaccines did not turn up any serious long-term effects, but both have possible short-term effects, including pain at the injections site, headache, fever, fatigue, chills and muscle and joint pain, generally mild and temporary. The Pfizer-BioNTech vaccine has been linked with a few cases of severe allergic reactions in the UK and US as it has started being administered to the public, that were not observed in clinical trials. Concerns have been raised that isolated cases of Bell’s Palsy, a temporary weakness or paralysis of facial muscles, occurred rarely in trial participants for

both vaccines. The statistics are insufficient at this time to draw a definitive conclusion.

Below is a reference for a good general summary article from the Associated Press CNN:

[https://tucson.com/news/national/everything-you-need-to-know-about-the-new-covid-19-vaccines/article\\_07399f58-7af3-5167-b8e8-19cb7cb2d383.html?utm\\_medium=social&utm\\_source=email&utm\\_campaign=user-share](https://tucson.com/news/national/everything-you-need-to-know-about-the-new-covid-19-vaccines/article_07399f58-7af3-5167-b8e8-19cb7cb2d383.html?utm_medium=social&utm_source=email&utm_campaign=user-share)