



# DRYDEN

CENTRAL SCHOOL DISTRICT

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## COVID-19 Vaccine Information

### Statement:

The Dryden Central School District supports the use of the COVID-19 vaccination. The COVID-19 pandemic has been stressful and difficult for all of us; from job security, to food insecurity, to child care, to missing our loved ones, to coping with the loss of loved ones, we've all felt its effects. We feel it is our obligation to urge everyone in our community to receive this vaccination as soon as it becomes available.

### General Information Regarding the Vaccines:

Thousands of people have died and suffered lasting debilitating effects from this virus. Millions have had the disease and had a relatively easy experience with it. Documented experiences of reinfection have occurred. Some people are hoping that there is no need for a vaccine because herd immunity will naturally stop the spread of this virus. Herd immunity happens when a virus can't spread because it keeps encountering people who are protected against infection. Once a sufficient proportion of the population is no longer susceptible, any new outbreak peters out. The concept of herd immunity relies on the assumption that people who survive and infection will become immune. With COVID-19, there is some immunity following infection but no one is sure how long this immunity lasts. Because COVID-19 is a coronavirus, and is a variant of the same type of virus that can cause the common cold, we should assume that it will behave similarly in that our bodies will produce a waning immune response which will fade over the course of about a year. As it fades, we will once again be prone to infection by the same virus. Right now, it is believed that the COVID-19 vaccination may need to be taken every year, in the same way that we receive an annual flu shot. The good news is that because the COVID-19 works with the external structure of the virus (the 'corona'- or 'crown'), which is the same in all coronaviruses- including variants (or 'mutations', or 'new strains'), those that cause colds, and those that cause pneumonia. For natural herd immunity to occur, thousands of people will need to be infected, thousands will suffer serious consequences, and there will be fatalities. It is considered to be unethical to wait for naturally occurring herd immunity in the case of COVID-19. The only way to achieve this, without endangering the population further, is through mass vaccination. When you make the choice to be vaccinated, you are protecting not only yourself, but those around you from the risk of complications caused by COVID-19.

The COVID-19 vaccines that have been developed are mRNA (messenger RNA or messenger ribonucleic acid) vaccines. They both work the same way. These types of vaccines are a new type of vaccine used to protect against infectious diseases. To trigger an immune response, vaccines have until now, used a weakened or inactivated virus into our bodies. The mRNA vaccines instead, teach our bodies to make a harmless piece of what is called a "spike protein". The spike protein is found on the surface of all corona viruses (the crown). Once the 'instructions' for creating the spike protein are delivered to our bodies through the vaccination, the cells use them to make the protein piece. After the protein piece is made, the cell breaks down the instructions and eliminates them. (The mRNA strand never enters the cell's nucleus- which is where our DNA, or genetic material is found.) Then, the cell displays the protein piece on its surface. Our immune system recognizes that the protein doesn't belong and begins building an immune response and making antibodies- just like what happens in natural infection against COVID-19. At the end of the process, our bodies learn how to protect against future infection.



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There has been a lot of concern about the timeline involved with producing these vaccines; some say it was produced too quickly to study properly. The fact is that the vaccine has gone through the same process as any other vaccination but the barriers to distribution and administration that are normally in place were removed—allowing the vaccine to be approved for ‘emergency use’ more quickly than it might have been if there were not currently a global pandemic emergency. The companies producing the vaccine were already studying mRNA to make vaccines and medications against other diseases. There has been a great deal of research done on all the vaccine ingredients including the use of mRNA. Since the COVID-19 vaccines use a genetic sequence instead of killed or weakened viruses, they are much easier than those vaccines to manufacture.

Another concern that has been raised is the possibility of causing a reaction in our bodies that could cause female infertility. There is absolutely no data or physiologic reason to believe that the COVID-19 vaccines will cause infertility or fertility-related issues.

Common side effects of the vaccines include:

- Redness, swelling, and pain at the injection site
- Headache
- Tiredness
- Muscle and/or joint pain
- Chills
- Fever
- Nausea and vomiting
- Diarrhea
- Feeling unwell
- Swollen lymph nodes

Severe adverse reactions to the vaccine have been rare and have occurred at about the same rate as with any vaccine. A severe reaction would usually occur within a few minutes to an hour after receiving the vaccine and might include:

- Difficulty breathing
- Swelling of your face and throat
- A rapid heartbeat
- A bad rash all over your body
- Dizziness and weakness

Anyone with a history of severe allergic reaction (anaphylaxis) or allergies to any of the ingredients found in the vaccines should consult with their primary care provider as it may be contraindicated for them to receive these vaccines.

The two vaccines that are available at the time of this writing are produced by Pfizer and Moderna. The benefit of mRNA vaccines, like all vaccines, is that those vaccinated gain this protection without risking the serious consequences of getting sick with COVID-19. There is no chance that you will get COVID-19 from the vaccine. The components of both vaccines are as follows:

The Pfizer BioNTech COVID-19 Vaccine contains ingredients that break down quickly and it needs to be stored at below freezing temperatures, thawed, and mixed with saline shortly before it is administered to patients. It is given in two doses, at least 21 days apart. Each dose is 0.3mL. It has been approved for all people 16 years of age and older. It contains the following ingredients:



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- mRNA, [this is the instruction for the cell on how to make the piece of spike protein. It does not do any harm to the vaccinated but promotes an immune response in the body.]
- Lipids (4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate), 2 [(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 1,2-Distearoyl-sn-glycero-3-phosphocholine, and cholesterol) [These are 'fats' that coat the mRNA and protects it from enzymes in the body that would otherwise break it down. They protect the fragile mRNA on its journey to your cells. It also helps the mRNA to enter the lymph nodes near the vaccination site, thereby allowing it to more easily circulate throughout the body.]
- Potassium chloride, monobasic potassium phosphate, sodium chloride, and dibasic sodium phosphate dihydrate [These are all electrolytes. They are common and harmless, used by the body and found in many foods we eat and supplements we take. Added to the vaccine in trace amounts, they help to maintain its pH balance and help to keep the components suspended (once rehydrated) in the liquid (sterile saline- water and sodium chloride) so that they don't settle, thereby improving an even distribution of components throughout the vaccine before injection and improve distribution throughout the body following injection. They also help to make the vaccine more comfortable to receive by mimicking the normal body fluid environment.]
- Sucrose [This is sugar. It acts as a buffer, preventing damage to the mRNA component, especially when it is frozen.]
- \*\*\*This vaccine does not contain preservatives or fetal tissue and the vial stopper does not use latex.

The Moderna COVID-19 Vaccine can be held at regular freezer temperatures for up to 6 months, making it easier than the Pfizer vaccine to ship and store. It also doesn't need to be diluted right before it's given. This vaccine is also given in two doses. Each dose is 0.5mL and will need to be administered at least 28 days apart. It has been approved for all persons aged 18 years and older. The vaccine contains the following ingredients:

- mRNA [see above]
- Lipids (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC] [see above]
- Tromethamine, tromethamine hydrochloride, acetic acid, sodium acetate, sucrose [Used in combination, this is called a 'tris buffer'. It makes the pH level of the vaccine close to that of our bodies, makes receiving the vaccine more comfortable, and helps to protect the mRNA. Tromethamine and tromethamine hydrocholine are amines. They are ubiquitous in biology. The breakdown of amino acids releases amines. They are basic nitrogenous compounds and will improve distribution of the vaccine throughout the body. Acetic acid is a common, simple acid. It will help to keep vaccine components equally distributed, assist in comfortable administration of the vaccine, and help to prevent bacterial growth. Sodium acetate is an organic salt, and used in the vaccine to maintain pH. Sucrose, as above, is a sugar which acts as a buffer- preventing damage to the mRNA.]
- \*\*\*This vaccine does not contain preservatives or fetal tissues and the vial stopper does not use latex.

## V-Safe:

The CDC has developed a program called V-Safe. It is a text messaging and web-survey program in which patients are monitored after vaccination. It is designed to be used with any phone with texting capabilities and can also be used on a computer.

V-Safe will ask you for demographic information which is protected. After you receive your first vaccination, you will be contacted daily by the CDC during the first week, then weekly for six weeks, then at 3,6, and 12 months.



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After you receive the second vaccination (booster), the timeline will reset. Currently, the recommendation is that the second dose be received at three-four months. During these check-ins, you will report any side-effects you're experiencing from the vaccination. You should report any adverse effects, even if you're unsure that they can be attributed to the vaccine, and all will be received as part of the data collection. A CDC representative will follow-up on a clinically important health impacting event such as missing work, difficulties with activities of daily life, or hospitalization. Information about this program can be found at <https://www.cdc.gov/vsafe>.

The CDC will regularly report the results of the V-Safe program to the public on their website.

#### References:

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html>  
<https://www.cdc.gov/vaccines/covid-19/hcp/mrna-vaccine-basics.html>  
<https://www.fda.gov/media/144414/download>  
<https://www.fda.gov/media/144638/download>  
<https://covidvaccine.mo.gov/facts/>  
<https://www.technologyreview.com/2020/12/09/1013538/what-are-the-ingredients-of-pfizers-covid-19-vaccine/>  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/late-sequelae.html>  
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>

#### Resources:

<https://covid19vaccine.health.ny.gov/frequently-asked-questions>  
<https://www.fda.gov/media/144414/download>  
<https://www.modernatx.com/covid19vaccine-eua/eua-fact-sheet-recipients.pdf>  
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html>  
<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines>  
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines>  
<https://www.who.int/news-room/feature-stories/detail/how-do-vaccines-work>  
<https://www.who.int/news-room/feature-stories/detail/how-are-vaccines-developed>  
<https://www.who.int/news-room/feature-stories/detail/manufacturing-safety-and-quality-control>  
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/myth-busters>  
<https://forward.ny.gov/covid-19-vaccine-distribution>  
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>