

# COVID-19 Vaccines: Questions and Answers

January 5, 2021

This document provides frequently asked questions about COVID-19 vaccines and provides the facts to help you make an informed decision about getting vaccinated. This list will be updated as new vaccines are approved.

## Learn about the COVID-19 vaccines

### How do COVID-19 vaccines work?

Vaccines teach your immune system how to protect you from diseases. It's much safer for your immune system to learn this through vaccination than by catching the diseases and attempting to treat them.

mRNA technology has been studied for more than 10 years, most often in cancer research and treatment as well as in the development of new vaccines against such infections as pandemic influenza and rabies. Shortly after COVID-19 was identified scientists were able to map the genes that make up the COVID-19 virus. Once the structure of the genes was known, especially of the spike protein that allows that virus to fuse with and enter our cells, scientists were able to quickly create the vaccine and start the clinical trials that have resulted in the Pfizer and Moderna vaccines that have been approved for use by Health Canada.

Below is an explanation of how the approved Pfizer-BioNtech and Moderna mRNA COVID-19 vaccines work with your body's immune response to fight off the COVID-19 virus.

COVID-19 mRNA vaccines tell your body to make "spike proteins" (these cover the outside of the virus and allow it to attach to and enter our cells) specific to virus that causes COVID-19.

- Your immune system responds to spike proteins by making antibodies that bind to and block the spike protein on the virus's surface. This is important for protection from disease because the spike protein is what attaches to human cells, allowing the virus to enter. Blocking this entrance prevents infection.
- Your new antibodies will attack the spike proteins
- Your new antibodies and immune cells will protect you from illness if you are exposed to COVID-19 virus in the future by remembering how to attack the spike protein

## Will I have to get more than one dose of the COVID-19 vaccine?

Building up immunity takes time. One dose of vaccine may not be enough to provide individual protection. You may need to get a second shot to allow your body to develop adequate immunity.

For the currently approved Pfizer-BioNtech COVID-19 vaccine, two doses of the vaccine are required for better protection, given 21 days apart. It can be given to people 16 years of age and older, including seniors. After completing the two-doses, it may take another seven days to achieve maximum protection against COVID-19. The Pfizer-BioNtech clinical studies included over 43,000 participants and was 95% effective in preventing COVID-19 beginning 2 weeks after the second dose.

Two doses are also required for the Moderna vaccine. Based on studies in about 30,000 participants, the Moderna COVID-19 vaccine was 94.1% effective in preventing COVID-19 beginning 2 weeks after the second dose. This means that people may not be

fully protected against COVID-19 until at least 14 days after the second dose. The Moderna vaccine is approved for people 18 years or older at this time.

### **Will the COVID-19 vaccines be free?**

The vaccines will be provided free to everyone who wants it. It will take some time to get the vaccine to everybody, and vaccines will be distributed to priority groups first (such as acute healthcare workers and residents of long-term care facilities) but, when you are able, you will be able to get it for free.

### **Will I still have to follow other COVID-19 measures once I get the vaccine?**

Yes, it is essential that you still act to prevent the spread of COVID-19 in the community so it is important to follow public health measures until we have reached a level of community vaccination that represents widespread immunity. This includes wearing a mask when indoors, or when you cannot physically distance from others, continuing to avoid crowded spaces and social gatherings, regular handwashing, and staying home when sick.

### **If I get vaccinated will I be immune to COVID-19 for my entire lifetime?**

At this time, the duration of protection from the vaccines remains unknown, and further doses may be necessary. The duration of immunity from contracting the infection also remains unknown. Ongoing monitoring of the COVID-19 vaccines and their effects on long-term immunity continues.

### **I've already had COVID-19/have COVID-19 antibodies. Do I need the vaccine?**

Yes. You should still get vaccinated. At this time, we do not know the length of immune response in those who've had the COVID-19 infection. When you have the COVID-19 vaccine, it can help protect you against re-infection and may, we hope, also prevent you from transmitting the virus to others.

## How do I decide if this is right for me and my family?

Get informed and make your decisions based on evidence and what makes sense for your family. Note that the Pfizer-BioNtech COVID-19 vaccine is currently only approved for people over 16 years of age. The Moderna vaccine is approved for people who are 18 years of age and older.

Vaccination is a personal choice that the vast [majority of Canadians](#) agree is part of good health and important for prevention of serious disease.

Public Health recommends that everyone who is eligible gets the vaccine once it is available but recognize that the choice is not always as easy as following this advice. Take the time to read and understand the vaccine information on this page and from other reliable sources.

Follow-up by asking questions **and reaching out to trusted medical experts like your family doctor, nurse practitioner, or health care provider.**

## Does the vaccine contain a "microchip" and have the ability to track or gather personal information into a database?

No, the vaccine does not contain a "microchip". This concern started after comments made by Bill Gates from The Gates Foundation about a digital certificate of vaccine records. A digital certificate is not something that can be contained within a vaccine and is not a microchip. The technology referred to by Gates has nothing to do with the development, testing or distribution of the COVID-19 vaccine.

## Safety and effectiveness of the COVID-19 vaccines

On December 9, 2020 Health Canada authorized the first COVID-19 vaccine in Canada made by Pfizer-BioNTech. The COVID-19 vaccine from Moderna was also authorized for use in Canada on December 23, 2020. Several other vaccines are currently at various stages of regulatory approval by Health Canada. Health Canada's independent evaluation of scientific and medical evidence for safety, efficacy and quality of COVID-19 vaccines is a continuous process, and Health Canada will make publicly available any safety and efficacy evidence used to issue expedited authorization.

### This feels rushed – can we trust that the COVID-19 vaccines are safe?

While creating and testing a new vaccine has usually taken a number of years, the progress on COVID-19 vaccines happened more quickly for many reasons, including:

- advances in science and technology
- focused teamwork among scientists, health professionals, researchers, industries, and governments from all over the world
- increased funding (money) specifically to make a vaccine

**For any vaccine to reach the general public it must pass careful [evaluation by Health Canada](#) and will have to pass all safety standards.** What made this vaccine approval feel rushed compared to other vaccines is the result of a highly focused, and shared effort by researchers and scientists in every part of the world - combined with new processes for review and evaluation of clinical trial data, plus the increased funding for vaccine research.

No corners were cut while creating the vaccines. One minor change to the usual process was put in place: clinical trials were run at the same time as the vaccines were being made/manufactured; that way, vaccines could be shipped out to different countries as soon as the vaccines were approved by the different countries' health authorities.

## Who participated in the clinical trials?

The different clinical trials included over 70,000 people. 43,448 people were included in the Pfizer trials; 30,000 people were included in the Moderna vaccine trials.

**Between 35-40% of the participants were Black or African American, Latinx and Hispanic in both vaccine clinical trials (Pfizer BioNtech and Moderna).**

Source: [\*Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. Polack et al. The New England Journal of Medicine\*](#)

Clinical trials make efforts to include a wide range of people to make sure that the evidence would support a wide range of people benefitting from vaccination. There are some groups that were not included in the clinical trials, including people who are pregnant or breastfeeding, people under the age of 16, or people who have weaker immune systems. Often vaccine clinical trials start with healthier people and, if successful, go on to other at-risk populations, for example, people with chronic illnesses. This can take additional time to decide if a vaccine is effective but is very important as these people are at greater risk of adverse COVID-19 impacts.

Clinical trials in children older than 12 years old have begun. Canadian guidelines for COVID-19 vaccines in people who are pregnant, breastfeeding or are immunocompromised can be found [here](#).

**The vaccine trials included people over the age of 65 and the vaccine was found to be safe and effective in this age group.**

Source: [\*https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-conclude-phase-3-study-covid-19-vaccine\*](https://www.pfizer.com/news/press-release/press-release-detail/pfizer-and-biontech-conclude-phase-3-study-covid-19-vaccine)

## Is there long-term evidence on potential harms?

As part of the vaccine safety program in Canada, ongoing, careful [monitoring of the COVID-19 vaccines](#) will continue. Very careful and continuous post-marketing tracking of those vaccinated will be carried out by the healthcare and public health systems at local, provincial and national levels. There is also longer-term follow-up of those who were vaccinated as part of the clinical trials. Health Canada has committed to being transparent with this monitoring of vaccine safety.

## Have COVID-19 vaccines been linked to infertility or miscarriage?

There is no science-based reason why a COVID-19 vaccine would lead to infertility or miscarriage.

The best evidence comes from women who got sick with COVID-19 while pregnant. Studies show that pregnant women are more likely to be hospitalized when they have COVID-19, but they are not more likely to miscarry.

If you were to get COVID-19, your body creates the same immune response as it does when you receive the vaccine. If this immune response caused miscarriages, we would have already seen more miscarriages in women naturally infected with COVID-19. **This has not happened.**

## Can I get the COVID-19 virus from the vaccine?

**The vaccine will not make you sick with COVID-19.**

The Pfizer and Moderna vaccines rely on mRNA (messenger RNA) - this means that the vaccine does not contain a live version of the COVID-19 virus. Instead it delivers the genetic information (mRNA or a 'recipe') about the 'spike' protein that surrounds the COVID-19 virus and teaches your body how to spot and respond to this protein so when the real virus comes along, the body can fight it off.

## What are the potential side effects of the vaccine?

After being vaccinated, it's common to have mild side effects. This is the body's natural response, as it's working hard to build immunity against the disease. This is known as the inflammatory response or reaction. Side effects will likely be moderate and resolve after a few days.

Common side effects that have been reported in the clinical trials for the Pfizer BioNtech COVID-19 vaccine include:

<b>very common ≥10%</b> <b>(more than 1 in 10 doses)</b>	<b>common 1%-10%</b> <b>(1 in 100 to 1 in 10 doses)</b>	<b>uncommon 1%</b> <b>(1 in 100 doses)</b>	<b>very rare</b>
<ul style="list-style-type: none"> <li>• pain at the injection site</li> <li>• headache</li> <li>• feeling tired</li> <li>• muscle or joint pain</li> <li>• fever or chills</li> </ul>	<ul style="list-style-type: none"> <li>• redness &amp; swelling at the injection site</li> </ul>	<ul style="list-style-type: none"> <li>• enlarged lymph nodes</li> </ul>	<ul style="list-style-type: none"> <li>• serious allergic reactions such as anaphylaxis</li> </ul>

These effects are **more likely after the second dose of vaccine** and will typically **go away in a day or two**. These effects are a normal part of your body's response to most vaccines – it is a sign that your body's immune system is learning how to recognize and fight the virus that causes COVID-19. Some people may experience more serious allergic reactions to the vaccine, but these are unlikely and tracked closely by Health Canada as part of on-going monitoring of vaccine safety.

If you have questions about these effects, reach out to a trusted health care provider, like your family doctor, nurse or local pharmacist.

In rare cases, serious allergic reactions (anaphylaxis) can occur. Allergic reactions can be treated and are usually temporary. Seek medical attention if you have trouble breathing, have hives or swelling of the face and throat. Vaccine side effects will continue to be monitored as people receive the vaccine. If you get a reaction to the vaccine, contact your health care provider who will report the

side effect directly to public health. Public health will keep track of the reported side effects to make sure the vaccine continues to be safe.

#### Precautions

- Delay getting vaccinated if you have a fever, are sick with COVID-19 symptoms, or have received a vaccine in the past 14 days.
- Avoid trying to get pregnant for at least two months after getting both doses of the vaccine.
- Consult your health care provider if you have a bleeding disorder or are on blood thinner medication.

Do not get this vaccine, if you:

- have allergies to any vaccine ingredients, including polyethylene glycol; or
- have had a severe reaction to a previous dose of this vaccine.

Do not get this vaccine without consulting your health care provider, if you:

- are under 16 years of age (you may be able to be vaccinated if you are 12 to 15 years of age);
- are pregnant or breastfeeding; or
- have an autoimmune disorder or a weakened immune system due to illness or treatment.

Visit [Health Canada](#) for more information on the side effects of the Pfizer BioNTech COVID-19.

Common side effects that have been reported in the clinical trials for the Moderna COVID-19 vaccine include mild to moderate: pain at the site of injection, body chills, feeling tired and feeling feverish.

Visit [Health Canada](#) for more information on the potential side effects of the Moderna COVID-19 vaccine.

## Could the vaccine side effects be worse than getting COVID-19?

**Some people's experience of COVID-19 may be mild, but it can also cause some people to become very sick or even lead to death.** There is some [research](#) to show that even a mild case of COVID-19 can be harmful to a person's lungs (which makes breathing hard) and to their heart and cardiovascular system (your heart and how blood flows through your body). There is also a worrisome number of people experiencing on-going and at times debilitating symptoms for weeks or months after their initial COVID-19 infection (sometimes called 'long COVID').

On social media, some people are saying that only 1%-2% of people with COVID-19 die from it and that people should not be vaccinated because the chance of dying is low. However, even if only 1% of people with COVID-19 die, that is 10 times more than the seasonal flu. Your risk of dying from COVID-19 also increases as you age, is you are male or if you have chronic health conditions such as heart or lung disease or diabetes.

No vaccine is 100% effective, but they are far better than not getting a vaccine. The benefits are greater than the risks.

## I have some other health conditions. How can I be sure the vaccine is safe?

Some individuals may consider themselves more vulnerable to side effects or negative effects from the vaccine.

When it is confirmed which vaccines will be used, we will be open and transparent about characteristics of each vaccine and details of which vaccines will be most suitable for each group.

Doctors, nurses and vaccinators will be fully informed of vaccine characteristics, effectiveness and risks. Individuals are advised to discuss any concerns when they are invited to be vaccinated.

Information will be provided to people before vaccination (and will be available online) to reassure about safety and allow informed decisions.

See below for the full list of ingredients in the Pfizer-BioNtech and Moderna COVID-19 vaccines.

## Vaccine Ingredients and Facts

**What is in the COVID-19 vaccines? The Pfizer/BioNTech vaccine and Moderna vaccine do not contain egg.**

[Health Canada](#) has full lists of ingredients for both vaccines.

The ingredients in the **Pfizer BioNtech COVID-19 vaccine** authorized for use in Canada are:

- Medicinal ingredient
  - mRNA
- Non-medicinal ingredients
  - ALC-0315 = ((4-hydroxybutyl)azanediyl)bis(hexane-6,1-diyl)bis(2-hexyldecanoate)
  - ALC-0159 = 2-[(polyethylene glycol)-2000]-N,N-ditetradecylacetamide
  - 1,2-Distearoyl-sn-glycero-3-phosphocholine
  - cholesterol
  - dibasic sodium phosphate dihydrate
  - monobasic potassium phosphate
  - potassium chloride
  - sodium chloride
  - sucrose
  - water for injection

### Recommendations for people with serious allergies

The ingredients in the **Moderna COVID-19 vaccine** authorized for use in Canada are:

- Medicinal ingredient
  - mRNA
- Non-medicinal ingredients
  - 1,2-distearoyl-sn-glycero-3-phosphocholine (DSPC)
  - acetic acid
  - cholesterol
  - lipid SM-102
  - polyethylene glycol (PEG) 2000 DMG
  - sodium acetate

- sucrose
- tromethamine
- tromethamine hydrochloride
- water for injection

### **Pfizer/BioNTech and Moderna have reported that their vaccines contain no preservatives.**

Different vaccines have different storage needs. For example, the [Pfizer/BioNTech](#) vaccine must be stored at minus 70 degrees Celsius, and the [Moderna](#) vaccine needs to be stored at minus 20 degrees Celsius. Both of these vaccines use messenger RNA, or mRNA, to teach your cells how to make a protein that will cause an immune response to COVID-19. However, messenger RNA is fragile and can break down easily. Storing messenger RNA vaccines in an ultracold environment keeps them stable and safe.

You should not worry about these temperatures. Vaccines are thawed before injection.

### **Will these COVID-19 vaccines work on new strains of the disease?**

Both Pfizer and Moderna are looking into whether or not the vaccine will work on the new strain of the virus. So far, there is no evidence that shows the vaccine will not work. More research is needed, and Health Canada will watch this closely.

### **Will the vaccine will interact with your DNA in any way?**

mRNA is a short-form of 'messenger RNA' – meaning that it's a messenger.

DNA is contained in the nucleus of our cells and mRNA cannot get into the nucleus or interact with our DNA.

mRNA cannot change your DNA, it is a part of our genetic material that gives instructions to the body, like a recipe. It simply delivers a message.

- For COVID-19, the mRNA vaccine tells the body to make a harmless “spike protein”. This spike protein is found on the outside of the COVID-19 virus (but is not the virus itself). Our immune system recognizes the spike protein as something that shouldn’t be there and quickly works to attack it by building antibodies and immune cells that will attack the COVID virus if you are exposed in the future.
- Human cells break down and get rid of the mRNA soon after they have finished using the instructions. mRNA does not interact with the part of our cells that holds our DNA and cannot be ‘swapped out’ or change the DNA sequence (there only function is to deliver the message of the spike protein to the cell).

### Spot misinformation:

Resources to help you decide if the information you’re getting is fact:

1. Check out this [Mythbusting Youtube channel](#) – from the [Coronavirus Prevention Network](#).
2. COVID19MisInfo.org Portal Social Media Lab at Ted Rogers School of Management, Ryerson University, 2020  
<https://covid19misinfo.org/>
3. Myths & Misinformation – COVID-19 Information Guide, University of Toronto Libraries  
<https://guides.library.utoronto.ca/c.php?g=715025&p=5097957>

### Get your COVID info on social channels?

Many people rely on social media to get information. We want to help you find reliable, truthful, and accurate information about COVID-19 vaccines, so follow these accounts to stay informed:

- @CityofHamilton
- @HamHealthSci
- @STJOESHAMILTON
- @GovCanHealth
- @CPHO\_Canada
- @mch\_childrens
- @HamiltonFHT
- @McMasterFamMed
- @ONThealth
- @OnCOVID19 (Instagram)
- @healthycdns (Instagram)

### Stay informed:

More frequently asked questions about COVID-19 vaccines are answered on Hamilton’s COVID-19 vaccines page:

[www.hamilton.ca/COVIDvaccines](http://www.hamilton.ca/COVIDvaccines)

Ontario Ministry of Health [latest COVID-19 Vaccine Information](#)