



## COVID-19

# Moderna COVID-19 Vaccine Overview and Safety

Updated Dec. 3, 2021

## General Information

**Manufacturer:** ModernaTX, Inc.

**Type of Vaccine:** mRNA

**Number of Shots:** 2 shots, 28 days apart

**How Given:** Shot in the muscle of the upper arm

[Moderately to severely immunocompromised people](#) should get an additional primary shot (third dose) at least 28 days after their second shot.

**Does NOT Contain:** Eggs, preservatives, latex, metals  
[See Full List of Ingredients Below](#)

**Booster Shot:** People ages 18 years and older who received a Moderna primary series should get a [booster shot](#) at least 6 months after completing their primary series. You can get [any of the COVID-19 vaccines](#) authorized in the United States for your booster shot.

**Name:** mRNA-1273

### Who Should Get Vaccinated

- The Moderna vaccine is recommended for people ages 18 years and older.
- Learn more about [how CDC is making COVID-19 vaccine recommendations](#).

### Who Should NOT Get Vaccinated

- If you have had a [severe allergic reaction](#) to any ingredient in an mRNA COVID-19 vaccine (such as polyethylene glycol), you should not get an mRNA COVID-19 vaccine (Moderna or Pfizer-BioNTech).
- If you had a severe allergic reaction after getting the first dose of an mRNA COVID-19 vaccine, you should not get a second dose of either of the mRNA COVID-19 vaccines (Moderna or Pfizer-BioNTech).
- A severe allergic reaction can cause a rapid heartbeat, difficulty breathing, swelling of the throat, or a generalized rash or hives. A person with a severe allergic reaction needs to be treated with epinephrine (often given as an EpiPen®) and should seek immediate medical attention.

If you cannot get an mRNA COVID-19 vaccine, you may still be able to get a different type of COVID-19 vaccine. Get more [information for people with allergies](#).

## Moderna COVID-19 Vaccine Ingredients

All COVID-19 vaccine ingredients are safe. Nearly all the ingredients in COVID-19 vaccines are ingredients found in many foods—fats, sugars, and salts. The Moderna COVID-19 vaccine also contains a harmless piece of messenger RNA (mRNA). The COVID-19 mRNA teaches cells in the body how to create an effective [immune response](#) to the virus that causes COVID-19. This

response helps protect you from getting sick with COVID-19 in the future. After the body produces an immune response, it discards all the vaccine ingredients, just as it would discard any substance that cells no longer need. This process is a part of normal body functioning.

All COVID-19 vaccines are manufactured with as few ingredients as possible and with very small amounts of each ingredient. Each ingredient in the vaccine serves a specific purpose as seen in the table below.

## Full list of ingredients

The Moderna COVID-19 vaccine contains the following ingredients:

Type of Ingredient	Ingredient	Purpose
Messenger ribonucleic acid (mRNA)	<ul style="list-style-type: none"> <li>Nucleoside-modified mRNA encoding the viral spike (S) glycoprotein of SARS-CoV-2</li> </ul>	Provides instructions the body uses to build a harmless piece of a protein from the virus that causes COVID-19. This protein causes an immune response that helps protect the body from getting sick with COVID-19 in the future.
Lipids (fats)	<ul style="list-style-type: none"> <li>PEG2000-DMG: 1,2-dimyristoyl-rac-glycerol, methoxypolyethylene glycol</li> <li>1,2-distearoyl-sn-glycero-3-phosphocholine</li> <li>BotaniChol® (non-animal origin cholesterol)</li> <li>SM-102: heptadecane-9-yl 8-((2-hydroxyethyl) (6-oxo-6-(undecyloxy) hexyl) amino) octanoate</li> </ul>	Work together to help the mRNA enter cells.
Salt, sugar, acid stabilizers, and acid	<ul style="list-style-type: none"> <li>Sodium acetate</li> <li>Sucrose (basic table sugar)</li> <li>Tromethamine</li> <li>Tromethamine hydrochloride</li> <li>Acetic acid (the main ingredient in white household vinegar)</li> </ul>	Work together to help keep the vaccine molecules stable while the vaccine is manufactured, frozen, shipped, and stored until it is ready to be given to a vaccine recipient.

## Ingredients that are NOT used in COVID-19 vaccines

The above table lists ALL ingredients in the Moderna COVID-19 vaccine. There are NO ingredients in this vaccine beyond what is listed in the table. The Moderna COVID-19 vaccine has

- **No preservatives** like thimerosal or mercury or any other preservatives.
- **No antibiotics** like sulfonamide or any other antibiotics.
- **No medicines or therapeutics** like ivermectin or any other medications.
- **No tissues** like aborted fetal cells, gelatin, or any materials from any animal.
- **No food proteins** like eggs or egg products, gluten, peanuts, tree nuts, nut products, or any nut byproducts (COVID-19 vaccines are not manufactured in facilities that produce food products).
- **No metals** like iron, nickel, cobalt, titanium, rare earth alloys, or any manufactured products like microelectronics, electrodes, carbon nanotubes or other nanostructures, or nanowire semiconductors.

**Moderna:** The vaccine is composed of mRNA that encodes the spike protein, lipids, and stabilizers.

**no latex.** The vial stoppers used to hold the vaccine also do not contain latex.

## Possible Side Effects

In the arm where you got the shot:

- Pain
- Redness
- Swelling

Throughout the rest of your body:

- Tiredness
- Headache
- Muscle pain
- Chills
- Fever
- Nausea

These side effects are normal signs that your body is building protection and should go away within a few days. Talk to a doctor about taking over-the-counter medicine, such as ibuprofen, acetaminophen, aspirin (only for people ages 18 years or older), or antihistamines for any pain or discomfort experienced after getting vaccinated.

Learn more about [possible side effects after getting a COVID-19 vaccine](#).

### Other authorized or approved COVID-19 vaccines in the United States and eligible age groups

- [Pfizer-BioNTech](#) (ages 5 years and older)
- [Johnson & Johnson's Janssen](#) (ages 18 years and older)

You should get a COVID-19 vaccination as soon as possible. All currently approved or authorized COVID-19 vaccines are [safe](#) and [effective](#), and CDC does not recommend one vaccine over another.

CDC does not recommend mixing products for a two-dose primary series or additional primary doses. [Mixing and matching](#) COVID-19 vaccines is allowed for booster shots.

## Safety Data Summary

- Side effects that happen within 7 days of getting vaccinated are common but are mostly mild to moderate. Some people have reactions that affect their ability to do daily activities.
- Side effects throughout the body (such as fever, chills, tiredness, and headache) are more common after the second dose of the vaccine.
- Rare cases of myocarditis and pericarditis in adolescents and young adults have been reported after receipt of one of the two mRNA COVID-19 vaccines, Pfizer-BioNTech or Moderna. These cases occur more often after getting the second dose than after the first dose of one of these vaccines. **These reports are rare** and the known and potential benefits of COVID-19 vaccination outweigh the known and potential risks, including the [possible risk of myocarditis or pericarditis](#).

All FDA-approved or authorized COVID-19 vaccines have undergone and continue to undergo the most intensive safety monitoring in U.S. history. This monitoring includes using both [established and new safety monitoring systems](#)  to make sure that COVID-19 vaccines are safe.

Learn more about [vaccine safety monitoring](#) after a vaccine is authorized or approved for use.

## How Well the Vaccine Works

- Based on [evidence from clinical trials](#), in people ages 18 years and older, the Moderna COVID-19 vaccine was 94.1% effective at preventing laboratory-confirmed COVID-19 infection in people who received two doses and had no evidence

effective at preventing laboratory-confirmed COVID-19 infection in people who received two doses and had no evidence of being previously infected.

- The vaccine was also effective in clinical trials at preventing COVID-19 among people of diverse age, sex, race, and ethnicity categories and among people with underlying medical conditions.
- Evidence shows mRNA COVID-19 vaccines offer similar protection in real-world conditions as they have in clinical trial settings—reducing the risk of COVID-19, including severe illness, by 90% or more among people who are fully vaccinated.
- CDC will continue to provide updates as we learn more.

## Clinical Trial Demographic Information

Clinical trials for the Moderna vaccine included people from the following racial, ethnic, age, and sex categories:

### Race

- 79% White
- 10% African American
- 5% Asian
- <3% other races/ethnicities
- <1% American Indian or Alaska Native
- <1% Native Hawaiian or Other Pacific Islander

### Ethnicity

- 79% not Hispanic or Latino
- 20% Hispanic or Latino
- 1% unknown

### Sex

- 53% male
- 47% female

### Age

- 75% 18 through 64 years
- 25% 65 years and older

Twenty-two percent (22%) of people who participated in the clinical trials had at least one condition that put them at risk of severe illness from COVID-19. The most frequent underlying medical conditions among participants were lung disease, heart disease, obesity, diabetes, liver disease, or HIV infection. Four percent (4%) of participants had two or more high-risk conditions.

Most people who participated in the trials (82%) were considered to have an occupational risk of exposure, with 25% of them being healthcare workers.

Learn more about [demographic information for people who participated in the trials \[PDF – 54 pages\]](#) [↗](#).

## Related Pages

- › [Possible Side Effects](#)
- › [Safety of COVID-19 Vaccines](#)
- › [Benefits of Getting Vaccinated](#)

› [How Vaccines Work](#)

› [mRNA Vaccines](#)



## For Healthcare Workers

[Moderna COVID-19 Vaccine](#): General information, schedule and administration overview.

## More Information

[Moderna's COVID-19 Vaccine Fact Sheet for Recipients and Caregivers \[PDF - 6 pages\]](#) 

*MMWR*: [Allergic Reactions Including Anaphylaxis After Receipt of the First Dose of Moderna COVID-19 Vaccine — United States, December 21, 2020–January 10, 2021](#)

[Safety and Reactogenicity Data](#)

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