Centers for Disease Control and Prevention

Key Facts About Seasonal Flu Vaccine

Flu Vaccination

Why should people get vaccinated against flu?

Influenza is a potentially serious disease that can lead to hospitalization and sometimes even death. Every flu season is different, and influenza infection can affect people differently, but millions of people get flu every year, hundreds of thousands of people are hospitalized and thousands to tens of thousands of people die from flu-related causes every year. An annual seasonal flu vaccine is the best way to help protect against flu. Vaccination has been shown to have many benefits including reducing the risk of flu illnesses, hospitalizations and even the risk of flu-related death in children.

How do flu vaccines work?

Flu vaccines cause antibodies to develop in the body about two weeks after vaccination. These antibodies provide protection against infection with the viruses that are used to make the vaccine.

The seasonal flu vaccine protects against the influenza viruses that research indicates will be most common during the upcoming season. Most flu vaccines in the United States protect against four different flu viruses (“quadrivalent”); an influenza A (H1N1) virus, an influenza A (H3N2) virus, and two influenza B viruses. There are also some flu vaccines that protect against three different flu viruses (“trivalent”); an influenza A (H1N1) virus, an influenza A (H3N2) virus, and one influenza B virus. Two of the trivalent vaccines are designed specifically for people 65 and older to create a stronger immune response.

What kinds of flu vaccines are available?

CDC recommends use of any licensed, age-appropriate influenza vaccine during the 2020-2021 influenza season, including inactivated influenza vaccine [IIV], recombinant influenza vaccine [RIV], or live attenuated influenza vaccine (LAIV). No preference is expressed for any influenza vaccine over another. Both trivalent (three-ingredient) and quadrivalent (four-ingredient) influenza vaccines will be available.

Trivalent flu vaccines include:

A trivalent flu shot made using an adjuvant (an ingredient that helps create a stronger immune response), approved for people 65 years of age and older.

Quadrivalent flu vaccines include:

Standard-dose quadrivalent influenza shots that are manufactured using virus grown in eggs. These include Afluria Quadrivalent, Fluarix Quadrivalent, FluLaval Quadrivalent, and Fluzone Quadrivalent. Different influenza shots are licensed for different age groups. These four vaccines are approved for people 6 months of age and older. Most influenza shots are given in an arm muscle with a needle. One quadrivalent influenza shot (Afluria Quadrivalent) can be given either with a needle (for people aged 6 months and older) or with a jet injector (for people aged 18 through 64 years only).

A quadrivalent cell-based influenza shot (Flucelvax Quadrivalent) containing virus grown in cell culture, which is licensed for people 4 years and older. This vaccine is egg-free.

Recombinant quadrivalent influenza shot (Flublok Quadrivalent), an egg-free vaccine, approved for people 18 years and older.

A quadrivalent flu shot using an adjuvant (an ingredient that helps create a stronger immune response), approved for people 65 years of age and older.

A quadrivalent high-dose influenza vaccine (Fluzone High-Dose), licensed for people 65 years and older.

A live attenuated influenza vaccine (FluMist Quadrivalent), which is given intranasally. This vaccine is approved for people 2 through 49 years of age. Live attenuated influenza vaccine should not be given to people who are pregnant, immunocompromised persons, and some other groups.

There are many flu vaccine options to choose from, but the most important thing is for all people 6 months and older to get a flu vaccine every year. If you have questions about which vaccine is best for you, talk to your doctor or other health care professional. More information on approved flu vaccines for the 2020-2021 flu season, and age indications for each vaccine are available in CDC's Table: U.S. Influenza Vaccine Products for the 2020-2021 Season.

Are any of the available flu vaccines recommended over others?

For the 2020-2021 flu season, the Advisory Committee on Immunization Practices (ACIP) recommends annual influenza (flu) vaccination for everyone 6 months and older with any licensed, influenza vaccine that is appropriate for the recipient's age and health status, including inactivated influenza vaccine (IIV), recombinant influenza vaccine (RIV), or live attenuated nasal spray influenza vaccine (LAIV4) with no preference expressed for any one vaccine over another.

There are many vaccine options to choose from, but the most important thing is for all people 6 months and older to get a flu vaccine every year. If you have questions about which vaccine is best for you, talk to your doctor or other health care professional.

Who Should Not Be Vaccinated?

Different influenza (flu) vaccines are approved for use in different age groups. In addition, some vaccines are not recommended for certain groups of people. Factors that can determine a person's suitability for vaccination, or vaccination with a particular vaccine, include a person's age, health (current and past) and any allergies to flu vaccine or its components. For more information, visit Who Should and Who Should NOT get a Flu Vaccine.

When should I get vaccinated?

When should I get vaccinated?
You should get a flu vaccine before flu viruses begin spreading in your community, since it takes about two weeks after vaccination for antibodies to develop in the body and provide protection against flu. Make plans to get vaccinated early in fall, before flu season begins. CDC recommends that people get a flu vaccine by the end of October. However, getting vaccinated early (for example, in July or August) is likely to be associated with reduced protection against flu infection later in the flu season, particularly among older adults. Vaccination should continue to be offered throughout the flu season, even into January or later. Children who need two doses of vaccine to be protected should start the vaccination process sooner, because the two doses must be given at least four weeks apart.

Where can I get a flu vaccine?

Flu vaccines are offered in many doctor's offices, clinics, health departments, pharmacies and college health centers, as well as by many employers, and even in some schools.

Even if you don't have a regular doctor or nurse, you can get a flu vaccine somewhere else, like a health department, pharmacy, urgent care clinic, and often your school, college health center, or workplace.

Visit the HealthMap Vaccine Finder to locate where you can get a flu vaccine.

Why do I need a flu vaccine every year?

A flu vaccine is needed every season for two reasons. First, a person's immune protection from vaccination declines over time, so an annual vaccine is needed for optimal protection. Second, because flu viruses are constantly changing, flu vaccines may be updated from one season to the next to protect against the viruses that research suggests may be most common during

the upcoming flu season. For the best protection, everyone 6 months and older should get vaccinated annually.

Does flu vaccine work right away?

No. It takes about two weeks after vaccination for antibodies to develop in the body and provide protection against influenza virus infection. That's why it's best to get vaccinated before influenza viruses start to spread in your community.

Flu and COVID-19

Does a flu vaccine increase your risk of getting COVID-19?

There is no evidence that getting a flu vaccine increases your risk of getting sick from a coronavirus, like the one that causes COVID-19.

You may have heard about a study published in January 2020 that reported an association between flu vaccination and risk of four commonly circulating seasonal coronaviruses, but not the one that causes COVID-19. This report was later found to be incorrect.

The results from that initial study led researchers in Canada to look at their data to see if they could find similar results in their population. The results from Canada's study showed that flu vaccination did not increase risk for these seasonal coronaviruses. The Canadian findings highlighted the protective benefits of flu vaccination.

The Canadian researchers also identified a flaw in the methods of the first study, noting that it violated the part of study design that compares vaccination rates among patients with and without flu (test negative design). This flaw led to the incorrect association between flu vaccination and seasonal coronavirus risk. When these researchers reexamined data from the first study using correct methods, they found that flu vaccination did not increase risk for infection with other respiratory viruses, including seasonal coronaviruses.

Vaccine Effectiveness

Influenza (flu) vaccine effectiveness (VE) can vary. The protection provided by a flu vaccine varies from season to season and depends in part on the age and health status of the person getting the vaccine and the similarity or "match" between the viruses in the vaccine and those in circulation. During years when the flu vaccine match is good, the benefits of flu vaccination will vary, depending on factors like the characteristics of the person being vaccinated (for example, their health and age), what influenza viruses are circulating that season and, potentially, which type of flu vaccine was used. For more information, see Vaccine Effectiveness – How well does the Flu Vaccine Work. For information specific to this season, visit About the Current Flu Season.

Can I get seasonal flu even though I got a flu vaccine this year?

Yes. It's possible to get sick with flu even if you have been vaccinated (although you won't know for sure unless you get a flu test). This is possible for the following reasons:

- You may be exposed to a flu virus shortly before getting vaccinated or during the period that it takes the body to gain protection after getting vaccinated. This exposure may result in you becoming ill with flu before the vaccine begins to protect you. (Antibodies that provide protection develop in the body about 2 weeks after vaccination.)
- You may be exposed to a flu virus that is not included in the seasonal flu vaccine. There are many different flu viruses that circulate every year. A flu vaccine is made to protect against the three or four flu viruses that research suggests will be most common.
- Unfortunately, some people can become infected with a flu virus a flu vaccine is designed to protect against, despite getting vaccinated. Protection provided by flu vaccination can vary widely, based in part on health and age factors of the person getting vaccinated. In general, a flu vaccine works best among healthy younger adults and older children. Some older people and people with certain chronic illnesses may develop less immunity after vaccination. Flu vaccination is not a perfect tool, but it is the best way to protect against flu infection.

What protection does a flu vaccine provide if I do get sick with flu?

Some people who get vaccinated may still get sick. However, flu vaccination has been shown in some studies to reduce severity of illness in people who get vaccinated but still get sick. A 2017 study showed that flu vaccination reduced deaths, intensive care unit (ICU) admissions, ICU length of stay, and overall duration of hospitalization among hospitalized adults with flu. Another study in 2018 showed that a vaccinated adult who was hospitalized with flu was 59 percent less likely to be admitted to the ICU than someone who had not been vaccinated. Among adults in the ICU with flu, vaccinated patients on average spent 4 fewer days in the hospital than those who were not vaccinated.

Vaccine Benefits

What are the benefits of flu vaccination?

There are many reasons to get an influenza (flu) vaccine each year. Because of the on-going COVID-19 pandemic, getting a flu vaccine during 2020-2021 will be more important than ever. Flu vaccines will not prevent COVID-19, but they will reduce the burden of flu illnesses, hospitalizations and deaths on the health care system and conserve scarce medical resources for the care of people with COVID-19.

Below is a summary of the benefits of flu vaccination and selected scientific studies that support these benefits.

- **Flu vaccination can keep you from getting sick with flu.**
  - Flu vaccine prevents millions of illnesses and flu-related doctor's visits each year. For example, during 2019-2020, flu vaccination prevented an estimated 7.5 million influenza illnesses, 3.7 million influenza-associated medical visits, 105,000 influenza-associated hospitalizations, and 6,300 influenza-associated deaths.
  - During seasons when the flu vaccine viruses are similar to circulating flu viruses, flu vaccine has been shown to reduce the risk of having to go to the doctor with flu by 40 percent to 60 percent.
- **Flu vaccination can reduce the risk of flu-associated hospitalization for children, working age adults, and older adults.**
  - Flu vaccine prevents tens of thousands of hospitalizations each year. For example, during 2019-2020 flu vaccination prevented an estimated 105,000 flu-related hospitalizations.
  - A 2014 study showed that flu vaccine reduced children's risk of flu-related pediatric intensive care unit (PICU) admission by 74% during flu seasons from 2010-2012.
  - In recent years, flu vaccines have reduced the risk of flu-associated hospitalizations among older adults on average by about 40%.
  - A 2018 study showed that from 2012 to 2015, flu vaccination among adults reduced the risk of being admitted to an intensive care unit (ICU) with flu by 82 percent.
- **Flu vaccination is an important preventive tool for people with chronic health conditions.**
  - Flu vaccination has been associated with lower rates of some cardiac events among people with heart disease, especially among those who had had a cardiac event in the past year.
  - Flu vaccination can reduce worsening and hospitalization for flu-related chronic lung disease, such as in persons with chronic obstructive pulmonary disease (COPD).
  - Flu vaccination also has been shown in separate studies to be associated with reduced hospitalizations among people with diabetes and chronic lung disease .
  - Many people at higher risk from flu also seem to be at higher risk from COVID-19.
- **Flu vaccination helps protect women during and after pregnancy.**
  - Vaccination reduces the risk of flu-associated acute respiratory infection in pregnant women by about one-half.
  - A 2018 study that included influenza seasons from 2010-2016 showed that getting a flu shot reduced a pregnant woman's risk of being hospitalized with flu by an average of 40 percent.

  - A number of studies have shown that in addition to helping to protect pregnant women, a flu vaccine given during pregnancy helps protect the baby from flu for several months after birth, when he or she is not old enough to be vaccinated.

- **Flu vaccine can be lifesaving in children.**

  - A 2017 study was the first of its kind to show that flu vaccination can significantly reduce a child's risk of dying from flu.

- **Flu vaccination has been shown in several studies to reduce severity of illness in people who get vaccinated but still get sick.**

  - A 2017 study showed that flu vaccination reduced deaths, intensive care unit (ICU) admissions, ICU length of stay, and overall duration of hospitalization among hospitalized flu patients.
  - A 2018 study showed that among adults hospitalized with flu, vaccinated patients were 59 percent less likely to be admitted to the ICU than those who had not been vaccinated. Among adults in the ICU with flu, vaccinated patients on average spent 4 fewer days in the hospital than those who were not vaccinated.
- **Getting vaccinated yourself may also protect people around you,** including those who are more vulnerable to serious flu illness, like babies and young children, older people, and people with certain chronic health conditions.

- *References for the studies listed above can be found at Publications on Influenza Vaccine Benefits. Also, see the A Strong Defense Against Flu: Get Vaccinated ! fact sheet.

Vaccine Match

What is meant by a "good match" between viruses in the vaccine and circulating influenza viruses?

A "good match" is said to occur when the flu vaccine viruses used to produce flu vaccine and the viruses circulating among people during a given influenza season are "like" one another such that the antibodies produced by vaccination protect against infection with circulating viruses.

What if circulating viruses and the vaccine viruses are different?

During seasons when one or more of the circulating viruses are different or "drifted" from the vaccine viruses, vaccine effectiveness against the drifted viruses can be reduced. It's important to remember that flu vaccine protects against three or four different flu viruses and multiple viruses usually circulate during any one season. Even if the effectiveness of the vaccine is reduced against one virus it can still be effective at preventing flu illness caused by the other circulating viruses. For these reasons, CDC continues to recommend flu vaccination for everyone 6 months and older even if vaccine effectiveness against one or more viruses is reduced.

Why is there sometimes not a good match between a vaccine virus and circulating viruses?

Flu viruses are constantly changing (called "antigenic drift") – they can change from one season to the next or they can even change within the course of one flu season. Experts must pick which viruses to include in the vaccine many months in advance in order for vaccine to be produced and delivered on time. (For more information about the vaccine virus selection process visit Selecting the Viruses in the Influenza (Flu) Vaccine.) Because of these factors, there is always the possibility of a less than optimal match between circulating viruses and the viruses used to produce vaccine.

The production process for some seasonal vaccines also may impact how well vaccine works against certain viruses, especially influenza A (H3N2) viruses. Growth in eggs is part of the production process for most seasonal flu vaccines. While all influenza viruses undergo changes when they are grown in eggs, changes in influenza A(H3N2) viruses are more likely to result in antigenic changes compared with changes in other influenza viruses. These so-called "egg-adapted changes" are present in

most of the vaccine viruses recommended for use in egg-based vaccine production and may reduce their potential effectiveness against circulating influenza viruses. Advances in vaccine production technologies (for example, cell-based and recombinant technology) and advanced molecular techniques are being explored as ways to improve flu vaccine effectiveness. Learn more by visiting, Advancements in Influenza Vaccines.

Will this season's vaccine be a good match for circulating viruses?

It's not possible to predict with certainty if a flu vaccine will be like circulating flu viruses because flu viruses are constantly changing. A flu vaccine is made to protect against the flu viruses that research and surveillance indicate will likely be most common during the season. Over the course of flu season, CDC studies samples of circulating flu viruses to evaluate how close a match there is between viruses used to make the flu vaccine and circulating flu viruses. More information about the 2019-2020 flu season and recommended vaccines is available.

Vaccine Side Effects (What to Expect)

Can a flu vaccine give me flu?

No, a flu vaccine cannot cause flu illness. Flu vaccines that are administered with a needle (flu shots) are currently made in two ways: the vaccine is made either with a) flu vaccine viruses that have been killed (inactivated) and are therefore not infectious, or b) with proteins from a flu vaccine virus instead of flu vaccine viruses (which is the case for recombinant influenza vaccine). Nasal spray vaccine is made with attenuated (weakened) live flu viruses, and also cannot cause flu illness. The weakened viruses are cold-adapted, which means they are designed to only cause infection at the cooler temperatures found within the nose. The viruses cannot infect the lungs or other areas where warmer temperatures exist.

What side effects can occur after getting a flu vaccine?

While a flu vaccine cannot give you flu illness, there are different side effects that may be associated with getting a flu shot or a nasal spray flu vaccine. These side effects are mild and short-lasting, especially when compared to symptoms of bad case of flu.

A flu shot: The viruses in a flu shot are killed (inactivated), so you cannot get flu from a flu shot. Some minor side effects that may occur are:

- Soreness, redness, and/or swelling where the shot was given
- Headache (low grade)
- Fever
- Muscle aches
- Nausea
- Fatigue

The nasal spray: The viruses in the nasal spray vaccine are weakened and do not cause severe symptoms often associated with influenza illness. In children, side effects from the nasal spray may include:

- Runny nose
- Wheezing
- Headache
- Vomiting
- Muscle aches
- Fever (low grade)

In adults, side effects from the nasal spray vaccine may include:

- Runny nose
- Headache

- Sore throat
- Cough

If these problems occur, they begin soon after vaccination and usually are mild and short-lived. A flu shot, like other injections, can occasionally cause fainting. Tell your provider if you feel dizzy or have vision changes or ringing in the ears. As with any medicine, there is a very remote chance of a vaccine causing a severe allergic reaction, other serious injury, or death. People who think that they have been injured by a flu vaccine can file a claim for compensation from the National Vaccine Injury Compensation Program (VICP) .

More information about the safety of flu vaccines is available at Influenza Vaccine Safety.

Vaccine Supply and Distribution

How much influenza vaccine is projected to be available for the 2020-2021 influenza season?

Flu vaccine is produced by private manufacturers, so supply depends on manufacturers. Vaccine manufacturers have projected that they will supply as many as 194 to 198 million doses of influenza vaccine for the 2020-2021 season. These projections may change as the season progresses. Most of this will be quadrivalent vaccine (99%) and thimerosal-free or reduced vaccine (87%). About 20% of flu vaccines will be egg-free.

Where can I find information about vaccine supply?

Information about vaccine supply is available on CDC's Vaccine Supply & Distribution.

People with egg allergies can receive any licensed, recommended age-appropriate influenza vaccine (IIV, RIV4, or LAIV4) that is otherwise appropriate. People who have a history of severe egg allergy (those who have had any symptom other than hives after exposure to egg) should be vaccinated in a medical setting, supervised by a health care provider who is able to recognize and manage severe allergic reactions. Two completely egg-free (ovalbumin-free) flu vaccine options are available: quadrivalent recombinant vaccine and quadrivalent cell-based vaccine.

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