

# Q&A INFLUENZA: WHAT YOU SHOULD KNOW

Volume 13  
Fall 2018

Seasonal epidemics of influenza (flu) occur every year in the United States, beginning in the fall. Typically, the epidemics cause thousands to tens of thousands of deaths and about 200,000 hospitalizations each year. Since the 1940s, a vaccine has been available to prevent influenza; unfortunately, the vaccine is not used as much as it should be. To prevent the hospitalizations and deaths caused every year by influenza virus, the Centers for Disease Control and Prevention (CDC) has recommended that all U.S. citizens more than 6 months of age receive the influenza vaccine. This recommendation has the potential to save thousands of lives.

## Q. What is influenza (flu)?

A. Influenza (flu) is a virus that infects the nose, throat, windpipe and lungs. The virus is highly contagious and is spread from one person to another by coughing, sneezing or talking. Influenza infections typically occur between October and April each year.

## Q. What are the symptoms of influenza?

A. Typical symptoms of influenza include fever, chills, muscle aches, congestion, cough, runny nose and difficulty breathing. Other viruses can cause symptoms similar to influenza. But, influenza virus is a more common cause of severe, fatal pneumonia.

Most, but not all, people who die from influenza are older than 65. Sadly, each year about 50 to 150 children die as a result of influenza. Children younger than 4 often require hospitalization because of high fever, wheezing, croup or pneumonia.

Because influenza is a virus, it can't be successfully treated with antibiotics. While some antiviral medications are available by prescription, not all strains of influenza are susceptible to them, and they work best when used early in the infection.

## Q. Who should get the influenza vaccine?

A. The influenza vaccine is recommended for everyone 6 months of age and older.

Children under 9 years of age require two doses of influenza vaccine separated by four weeks if they have never received an influenza vaccine or have an uncertain vaccination history.

## Q. Does the influenza vaccine work?

A. The influenza vaccine typically prevents about 70 of every 100 people who receive it from developing moderate-to-severe influenza infection. Even though the vaccine might not completely prevent influenza infection, it will still lessen the length and severity of the illness.

## Q. When should I get the influenza vaccine?

A. Immunizations should be administered throughout the season because the peak incidence of influenza can occur as late as February or March.

## Q. If I got the influenza vaccine last year, do I need this year's influenza vaccine?

A. Yes, getting the current vaccine is still of benefit for a few reasons. First, some people are not protected after getting the vaccine, so another dose will increase their chance of being protected. Second, antibody levels wane, particularly in the elderly, so another dose will boost antibody levels before the start of influenza season. Finally, sometimes influenza viruses change significantly from one year to the next, so immunization or natural infection the previous year is not protective.

## Q. Are the influenza vaccines safe?

A. Yes. Influenza vaccine shots can cause pain, redness or tenderness at the site of injection as well as muscle aches and low-grade fever, but because the vaccine viruses are completely inactivated or the vaccine contains only individual proteins, they cannot possibly cause influenza.

Although most versions of the influenza vaccine are made in eggs and some people are severely allergic to eggs, the quantity of egg proteins is typically insufficient to cause a severe allergic response. But just to be sure, it is suggested that people with egg allergies remain at the provider's office for 15 minutes after vaccination.

## Q. Does the influenza vaccine contain thimerosal?

A. Some multi-dose preparations of the inactivated influenza vaccine given as a shot still contain a small quantity of the mercury-based preservative known as thimerosal. However, the quantity contained in vaccines does not cause harm. Influenza infections can cause severe illness and death, so the benefits of receiving the vaccine clearly outweigh the theoretical risks.

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## Q. How is the vaccine made?

A. Several types of influenza vaccines are available:

**Trivalent inactivated influenza vaccine** – This is the traditional influenza vaccine shot used in the past; it is made by taking three different influenza viruses, growing them (individually) in eggs, purifying them and completely inactivating them with the chemical formaldehyde. A few brands of this vaccine are available with specific ages for use; however, this version is typically given to the broadest group of individuals, including infants.

**Quadrivalent inactivated influenza vaccine** – This version is made in the same way as the trivalent version; however, it contains four types of influenza viruses. This vaccine is given as a shot and can be used for people 6 months and older.

**Cell culture-based influenza vaccine** – This version contains four different influenza viruses and is made in a manner similar to the other inactivated vaccines; however, instead of growing the viruses in eggs (avian cells), they are grown in mammalian cells. This vaccine represents an advance in technology because it contains less egg protein than the version grown in eggs. It is given as a shot.

**Recombinant influenza vaccine** – This version of influenza vaccine contains only one surface protein of the virus known as hemagglutinin. The protein is produced by inserting the gene for hemagglutinin into an insect virus that then produces large quantities of the hemagglutinin protein. The protein is purified and used as the vaccine. This version represents an advance in technology because it is the first egg protein-free influenza vaccine. This version is given as a shot and can be used in people 18 years or older. It is available with hemagglutinin proteins against three or four types of influenza virus.

**Live, weakened influenza vaccine** – Given as a nasal spray, this version was not recommended for use beginning in the fall of 2016 because it induced inadequate protection compared with other versions of the influenza vaccine between 2013 and 2016. The problem was that one of the strains used in the vaccine (H1N1) didn't reproduce well enough at the lining of the nose to induce an adequate immune response. However, in early 2018, experts at the Centers for Disease Control and Prevention reinstated their recommendation based on a new H1N1 strain that replicated better in nasal cells leading to an immune response similar to that found before 2013.

This information is provided by the Vaccine Education Center at Children's Hospital of Philadelphia. The Center is an educational resource for parents and healthcare professionals and is composed of scientists, physicians, mothers and fathers who are devoted to the study and prevention of infectious diseases. The Vaccine Education Center is funded by endowed chairs from Children's Hospital of Philadelphia. The Center does not receive support from pharmaceutical companies. ©2018 Children's Hospital of Philadelphia. All Rights Reserved. 18048-06-18.

## Q. What is the difference between epidemic, or seasonal, influenza and pandemic influenza?

A. Every year in the United States and throughout the world, influenza viruses cause epidemics. Because many people have some immunity, yearly epidemics don't infect everyone.

A pandemic is a worldwide epidemic caused when new strains of influenza virus form. This happens when genetic materials from both human and animal strains of influenza mix. Because virtually no one is immune to these new viruses, they have the potential to sweep across the world unchecked. Typically, many more people become ill and die during pandemics than during yearly epidemics.

## Q. Can pregnant women get the influenza vaccine?

A. Yes, in fact, this is one of two vaccines that pregnant women are urged to get during pregnancy; the other is Tdap. Because pregnant women are more likely to experience complications and hospitalization as a result of infection with influenza, it is important for them to be immunized. In addition, studies have shown that babies of women who were immunized with influenza vaccine during pregnancy are less likely to be infected with influenza during the first six months of life, before they are old enough to be vaccinated.

## Q. Can I avoid getting the vaccine and the virus by washing my hands and staying away from others who are ill?

A. While careful handwashing, covering coughs and sneezes, and staying home when ill can help prevent the spread of disease, we cannot be certain that others will do the same. Further, not everyone infected with influenza realizes they are transmitting it since infected people begin to spread the virus a day or two before they have symptoms.

So, while these measures can reduce your chance of getting influenza, they can only do so much to prevent influenza infections. The reality is that the only way to ensure protection from a specific disease is to have immunity acquired through immunization or previous exposure to it.

