


Novel H1N1: What you should know

 The Children's Hospital
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 VACCINE EDUCATION CENTER

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In April 2009 a strain of influenza virus entered the United States that worried public health officials. The strain has variously been labeled “swine flu,” “H1N1,” “novel H1N1,” and “pandemic H1N1.” Health officials were concerned that this particular virus has the potential to infect virtually everyone in the world.

Q. Why are public health officials worried about novel H1N1?

A. Health officials are concerned because very few people in the world have immunity to novel H1N1. This means that the virus has the capacity to cause a pandemic, which is a worldwide epidemic. Typically, many more people become ill and die during pandemics than during yearly, seasonal epidemics of influenza. Some pandemics are more damaging than others. For example, the pandemics of 1957 and 1968 killed 4 million and 6 million people, respectively. On the other hand, the pandemic of 1918 killed between 20 million and 50 million people.

Q. Where did this novel H1N1 virus come from?

A. Novel H1N1 virus was created in nature. Influenza viruses, like all viruses, reproduce themselves in cells. But influenza doesn't just grow in human cells; it also can grow in cells of pigs and birds. When two or three different influenza viruses grow in the same cell, they can exchange genetic material, creating an entirely new virus. The current H1N1 virus is a combination of bird, human and pig influenza strains. Because it's new, virtually no one has immunity to this strain.

Q. What does H1N1 mean?

A. Influenza viruses have two proteins that sit on their surface: the hemagglutinin (H) and neuraminidase (N). These particular proteins are important in inducing antibodies that protect people against disease. Influenza viruses may contain many different combinations of H and N proteins. For this reason, all influenza strains are labeled by the types of H and N proteins on their surface (e.g., H1N1, H3N2).

Q. Why is the new strain called “novel H1N1” instead of just H1N1?

A. This new strain is very different from the H1N1 influenza viruses that circulate in the United States every year. Every year health officials in the United States recommend an influenza vaccine that includes three different influenza strains to protect against those most likely to cause disease. H1N1 viruses are typically included in the vaccine every year. To distinguish the current strain from the H1N1 viruses that typically circulate, the term “novel H1N1” is used.

Q. Why is this new strain occasionally called “swine flu”?

A. Some of the new virus's genes were derived from pigs. However, most of the genes of the virus were derived from birds and humans. Novel H1N1 virus does not cause disease in pigs and isn't spread from pig to pig; so, to some extent, the term “swine flu” is a misnomer. Also, novel H1N1 is clearly distinct from a strain of swine flu that infected some people in the United States in 1976. That particular virus caused disease in pigs and humans.

Q. Are the symptoms of novel H1N1 infection different from those of typical seasonal flu?

A. No. The symptoms are indistinguishable. All influenza infections include symptoms such as fever, chills, muscle aches, congestion, cough, runny nose and difficulty breathing.

Q. Is novel H1N1 more dangerous than other influenza virus strains?

A. Because novel H1N1 virus will infect more people than other influenza virus strains circulating this winter, it is more dangerous. Every year hundreds of thousands of people are infected with influenza virus. And every year some of those infected will be hospitalized or die. Influenza viruses that are particularly dangerous — like the strain of influenza that caused the 1918 pandemic — cause a greater number of infected people to suffer hospitalization or death. All of the information to date suggests that novel H1N1 is not more virulent than typical seasonal influenza. But, because virtually everyone is susceptible to the virus, more people will get infected with it than with typical seasonal influenza. Indeed, novel H1N1 has already infected more than 1 million people in the United States, causing thousands of hospitalizations and hundreds of deaths.

Q. Is there a vaccine to prevent novel H1N1?

A. Yes. A vaccine to prevent novel H1N1 has been approved for use in the United States. The vaccine is very similar to the current seasonal flu vaccine, except that it contains one vaccine virus instead of three.

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Q. Who should get the novel H1N1 vaccine?

A. The novel H1N1 vaccine is recommended for people most likely to get severe pneumonia and those who care for them. This includes pregnant women, people between 6 months and 24 years of age, people who care for children less than 6 months of age, healthcare and emergency medical personnel, and people between 25 years and 64 years of age who have chronic medical conditions (like heart, lung or kidney problems) or who are immune compromised.

As vaccine supply increases, it is likely that additional groups will be recommended for immunization.

Q. Why aren't people who are more than 65 years old recommended to receive the novel H1N1 vaccine?

A. Surprisingly, many older citizens appear to be less susceptible to novel H1N1, probably because they have been exposed to a similar virus in the distant past. For this reason, this group is not recommended to receive the novel H1N1 vaccine at this time.

As vaccine supply increases, it is likely that additional groups will be eligible for the vaccine.

Q. Is the novel H1N1 vaccine safe?

A. Yes. The novel H1N1 shot is made using the exact same technology as has been used to make influenza vaccines for more than 60 years. The vaccine virus strain is grown in eggs (because influenza viruses commonly infect birds and, therefore, grow very well in avian cells), purified and treated with the chemical formaldehyde to completely inactivate the virus. The vaccine is then given as a shot and subjected to the same safety testing as seasonal vaccine. Because the virus is completely inactivated it cannot reproduce itself and cannot cause disease.

The nasal spray version of the novel H1N1 vaccine is similar to the seasonal influenza vaccine called FluMist. This is a live form of the virus that is weakened so that it cannot reproduce itself efficiently at body temperature, but can still induce protection.

Although some childhood vaccines contain an adjuvant to enhance immune responses, the novel H1N1 vaccines do not.

Q. Does the novel H1N1 vaccine contain thimerosal?

A. Some multidose preparations of the novel H1N1 vaccine, which could be given to children more than 6 months of age, contain preservative levels of thimerosal. To prevent inadvertent contamination with bacteria, multidose vials of vaccines always contain a preservative. Thimerosal, an ethylmercury-containing preservative, has been used in vaccines since the 1930s. It was added to make multidose vials safer to use.

Although large quantities of mercury can be toxic to the central nervous system, several facts about thimerosal in vaccines are reassuring. First: The quantity of mercury in thimerosal contained in vaccines is less than that to which children are typically exposed in breast milk or infant formula. Second: Many studies have now examined children who received thimerosal-containing vaccines and compared them with children who received the same vaccines that were free of thimerosal; all of these studies found no evidence that thimerosal causes even subtle signs of mercury poisoning.

Q. Are antiviral drugs effective against novel H1N1?

A. Yes. All currently circulating strains of novel H1N1 virus are susceptible to antiviral medicines called oseltamivir (Tamiflu) and zanamivir (Relenza). These medicines are recommended for the following groups of people infected with the virus: people with severe illness and those who are hospitalized; children less than 2 years of age; adults greater than 65 years of age; pregnant women; people with chronic lung, heart or kidney disease; people who are immune compromised; and children receiving long-term aspirin therapy.

The benefit of antiviral medicines to otherwise healthy people with mild H1N1 influenza is minimal.

Q. Other than vaccines and medicines, is there anything else I can do to protect myself and my family during an influenza pandemic?

A. Yes, several simple strategies are effective. Careful hand-washing, covering your mouth when sneezing and staying home for at least one day after the fever is gone will help to reduce the spread of influenza viruses.