

Flu Season in EMS

By Greg Schaffer, BA, EMT-P

This year the flu, and the reduced supply of vaccination have received a lot of attention. It has been discussed on morning talk shows, the evening news, and the presidential debates. Chances are, it has been discussed at your local fire and EMS station as well. Let's take a look at the flu, the threat it poses to you and your patient, as well as what you can do to reduce your chances of contracting the flu this season.

The flu is a contagious respiratory illness caused by the influenza viruses that infects many parts of the body including the lungs. It can cause mild to severe illness, and at times can lead to death. Someone who has the flu spreads the virus by sneezing, coughing, or even talking. Flu may be transmitted by direct hand contact.

Influenza is a common cause of respiratory illness requiring EMS transport and hospitalization. During the influenza season, outbreaks of health-care-associated influenza affect both patients and personnel in EMS.

Influenza is a very contagious illness that strikes millions of Americans each year, with pneumonia as the most common complication in high-risk groups. Influenza, unlike the common cold, has a swift onset of severe symptoms beginning with two to seven days of fever, headache, muscle aches, extreme fatigue, runny nose and sore throat, and a cough that is often severe and may last seven days or more.

Every year in the United States, on average 5% to 20% of the population gets the flu. More than 20,000 people are hospitalized from flu complications, and 36,000 people die from flu. Some are considered at high risk for serious flu complications, such as older people, young children, and people with certain health conditions.

Influenza transmission occurs predominantly by large respiratory droplets (particles $>5 \mu$ in diameter) that are expelled from the respiratory tract during coughing or sneezing. Particles usually do not remain suspended in the air, and close contact (<3 feet) usually is required for transmission. Transmission also occurs through direct contact with respiratory droplets or secretions, followed by touching the nose or mouth. Occasionally a person may become infected by touching something with virus on it and then touching their mouth or nose. Adults may be able to infect others beginning 1 day before getting symptoms and up to 7 days after getting sick. That means that you can give someone the flu before you know you're sick as well as while you are sick.

Symptoms of flu include:

- fever (usually high),
- headache,
- extreme tiredness,
- dry cough,
- sore throat,
- runny or stuffy nose, and
- muscle aches.

Gastro-intestinal symptoms, such as nausea, vomiting, and diarrhea, are much more common among children than adults.

Some of the complications caused by flu include bacterial pneumonia, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes. Children may get sinus problems and ear infections.

Infection Control Measures

Infection control measures are recommended to prevent person-to-person transmission of influenza and to control influenza outbreaks in the EMS setting.

Standard / Droplet Precautions

During the care of a patient with suspected or confirmed influenza:

- Offer a mask to patients who are coughing
- Wear a mask yourself

- Wear gloves on all patient contacts.
- Wear a uniform cover if soiling of clothes with patient's respiratory secretions is expected.
- Remove gloves and decontaminate hands before and after touching the patient, after touching the patient's environment, or after touching the patient's respiratory secretions.
- When hands are visibly soiled or contaminated with respiratory secretions, wash hands with either a non-antimicrobial or an antimicrobial soap and water.
- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands in clinical situations. Alternatively, wash hands with an antimicrobial soap and water.

Employee Restrictions

Exclude EMS personnel with symptoms of respiratory infection from work for the duration of illness, many times employees would rather come to work sick and save their sick time, departments should have infection control SOPs that prohibit this and supervisors must follow this procedure and send sick employees home.

Employee Vaccination

According to national recommendations by the Centers for Disease Control EMS workers are in a high-risk category and should receive influenza immunization.

Immunization is the primary measure to prevent influenza, limit transmission of influenza, and prevent complications from influenza. Influenza immunization is recommended before or during the influenza season for the following persons who are at increased risk for complications from influenza: children aged 6-23 months, adults aged > 65 years, pregnant women in their second or third trimester during influenza season, and persons aged > 2 years with certain underlying chronic conditions.

Priority should be given for vaccinating persons at greatest risk for transmission of disease to persons at high risk for complications, including household contacts and **health-care personnel**. All health care workers are considered to be at high risk and should receive vaccination.

While we will take a look at both varieties of immunization here, the use of inactivated influenza vaccine is preferred for vaccinating health-care workers taking care of severely immunocompromised patients because of concerns of potential risk for transmission of vaccine virus from recipients of live attenuated influenza vaccine to severely immunosuppressed contacts.

Two flu vaccines are available this year in limited supply:

The traditional injected flu vaccine, which contains inactivated (killed) virus, is licensed for anyone age six months and older. Because there is no live virus in this vaccine, it cannot cause influenza. Some patients experience soreness at the injection site lasting less than two days, but serious side effects from this vaccine are extremely rare.

A live attenuated (weakened) virus vaccine (LAIV) that is sprayed into the nose (intranasal) is again available. The intranasal vaccine is licensed for healthy people age 5 to 49 years. Because it contains live virus that can be shed for an average of 3 days after vaccination; it should NOT be used for the high-risk groups who are recommended to receive the inactivated vaccine. Some clinics will have the intranasal vaccine available, but most clinics will provide only the injected inactivated vaccine.

The nasal-spray flu vaccine (sometimes called LAIV for Live Attenuated Influenza Vaccine) is a new flu vaccine that was licensed in 2003. It is different from the other licensed influenza vaccine (also called the "flu shot") because it contains weakened live influenza viruses instead of killed viruses and is administered by nasal spray instead of injection.

The nasal-spray flu vaccine contains three different live (but weakened) influenza viruses. When the viruses are sprayed into the nose, they stimulate the body's immune system to develop protective antibodies that will prevent infection by naturally occurring influenza viruses.

The live viruses in the nasal-spray flu vaccine (LAIV) are attenuated, cold-adapted, and temperature sensitive. This means the viruses are weakened and will not cause severe symptoms often associated with influenza illness. Cold-adapted and temperature sensitive mean the viruses can grow in the nose and throat, but not in the lower respiratory tract where the temperature is higher.

In one large study among children aged 15-85 months, the nasal-spray flu vaccine (LAIV) reduced the chance of influenza illness by 92% compared with placebo. In a study among adults, the participants were not specifically tested for influenza. However, the study found 19% fewer severe febrile respiratory tract illnesses, 24% fewer respiratory tract illnesses with fever, 23-27% fewer days of illness, 13-28% fewer lost work days, 15-41% fewer health care provider visits, and 43-47% less use of antibiotics compared with placebo.

In clinical studies, transmission of vaccine viruses to close contacts has occurred only rarely. The current estimated risk of getting infected with vaccine virus after close contact with a person vaccinated with the nasal-spray flu vaccine is low (0.6%-2.4%). Because the viruses are attenuated and cold-adapted, infection is unlikely to result in influenza illness symptoms since the vaccine viruses have not been shown to mutate into typical or naturally occurring influenza viruses.

Both the injected flu vaccine and the nasal formulations include protection against what is expected to be the most prevalent strain during this year's flu season. The viruses in the vaccine change each year based on international surveillance and scientists' predictions about which types and strains of viruses will circulate in a given year.

About 2 weeks after vaccination, antibodies that provide protection against influenza virus infection develop in the body. The ability of flu vaccine to protect a person depends on the age and health status of the person getting the vaccine, and the similarity or "match" between the virus strains in the vaccine and those in circulation. Testing has shown that both the flu shot and the nasal-spray vaccine are effective at preventing the flu. October or November is the best time to get vaccinated, but you can still get vaccinated in December and later. Flu season can begin as early as October and last as late as May.

Vaccine Side Effects

Different side effects can be associated with the flu shot and LAIV.

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

- Soreness, redness, or swelling where the shot was given
- Fever (low grade)
- Aches

If these problems occur, they begin soon after the shot and usually last 1 to 2 days. Almost all people who receive influenza vaccine have no serious problems from it. However, on rare occasions, flu vaccination can cause serious problems, such as severe allergic reactions.

LAIV: The viruses in the nasal-spray vaccine are weakened and will not cause severe symptoms often associated with influenza illness. (In clinical studies, transmission of vaccine viruses to close contacts has occurred only rarely.)

In adults, side effects can include:

- runny nose
- headache
- sore throat
- cough

Some people who should not be vaccinated:

- People who have a severe allergy to chicken eggs.
- People who have had a severe reaction to an influenza vaccination in the past.
- People who developed Guillain-Barre syndrome (GBS) within 6 weeks of getting an influenza vaccine previously.
- Children less than 6 months of age.
- People who are sick with a fever. (These people can get vaccinated once their symptoms lessen.)

The best way to prevent the flu is to get a flu vaccine, as well as following a few simple infection control measures. As we have discussed previously in Infection Connection, handwashing is paramount in preventing the spread of infectious disease. Until next time, be healthy and safe.

Reference:

www.cdc.gov

October 2004