Feature Article: Understanding types of influenza vaccines

Getting a seasonal influenza vaccine provides the best protection available against what can be a severe, and even deadly, disease. The vaccine typically protects about 70 of 100 vaccinated people from being infected with influenza and often lessens the length and severity of the disease for those who do become infected. While the recommendation to get an influenza vaccine is well understood, the different types of influenza vaccines available may require additional information. The first influenza vaccine was licensed in the U.S. in 1945. Through the years, advancements in vaccine research and manufacturing have resulted in a few different influenza vaccine options. Below is a summary of the different influenza vaccines now available.

Inactivated Influenza Vaccines (IIV) – “The Shot”

The traditional influenza vaccine is made by growing influenza viruses in eggs, purifying the viruses, and then completely killing the viruses with a chemical so that they cannot replicate and, therefore, cannot cause disease. Versions of the influenza shot contain three or four strains of influenza virus. The inactivated version, given as a shot into a muscle, is the version most people receive. It is made by multiple companies, so it is distributed under a variety of product names and brands. Possible side effects include redness, soreness or hardening at the injection site, muscle aches or a low-grade fever. Several special preparations are also available:

- **Intradermal:** This version uses a significantly smaller needle than the traditional needle used for intramuscular delivery. The smaller needle is injected into the skin rather than into the muscle. The intradermal injection uses lesser quantities of influenza virus proteins, but can cause more local reactions like pain or redness at the injection site. The intradermal vaccine (Fluzone® Intradermal) is used in people 18 years of age and older.

- **Cell-derived:** This version of influenza vaccine is grown in mammalian cells, not eggs. Because eggs are not used to grow the vaccine viruses, vaccine prepared in this manner can be made more quickly (two months versus at least six months for an egg-based influenza vaccine). This type of production also means lower quantities of egg proteins in the final product, so it can be given to people with moderate to severe egg allergies. This version is used in people 18 years of age and older.

- **Recombinant DNA:** In this version, a gene for an influenza virus surface protein (called hemagglutinin) is inserted into a small, circular piece of DNA (a plasmid), which is then reproduced inside insect cells. As the cells reproduce, the influenza protein is also produced. The protein is then purified and used as the vaccine. FluBlok® is the only completely egg-free influenza vaccine available in the U.S. making it ideal for use in those with severe egg allergies. This vaccine is made with the shortest production time and is licensed for use in people 18 years of age and older.

- **High-dose:** This version is specifically designed for use in people 65 years of age and older. It contains four times more of the influenza virus protein (hemagglutinin) than other formulations in an effort to induce better immune responses in older people whose immune systems may not respond as well. Recently, the high-dose influenza vaccine was shown to decrease hospitalizations compared with the standard dose vaccine in older patients. Therefore, it is the best vaccine for people 65 years of age and older.
Feature Article: Understanding types of influenza vaccines (cont.)

Live Attenuated Influenza Vaccine (LAIV) – “The Nasal Spray”

The intranasal version of the influenza vaccine contains live, weakened influenza viruses that have been grown repeatedly in the laboratory, so that instead of replicating at body temperature, they are better able to replicate in the comparably cooler temperatures of the nasal cavity. Because the vaccine virus cannot grow at normal body temperature, it can’t possibly cause the pneumonia that is occasionally a consequence of natural infection. The nasal spray influenza vaccine provides protection against four types of influenza. It is approved for use in healthy people between the ages of 2 years and 49 years. Possible side effects include runny nose, mild congestion, sore throat and cough.

Although understanding the different types of the vaccine may be confusing, the important thing to know is that this variety enables healthcare professionals to safely vaccinate virtually anyone who requests an influenza vaccine. And, for virtually everyone, receiving a seasonal influenza vaccine is the best defense against this unpredictable, and potentially deadly, pathogen.

Did You Know? Arizona, mega cruise ships and an NFL stadium

What do these three things have in common? All are used as graphic measures of the benefits of influenza vaccination in this fun infographic produced by the Centers for Disease Control and Prevention (CDC). View full-size version here: http://www.cdc.gov/flu/pdf/freeresources/nivw-benefits-of-vaccination-8c.pdf

Spotlight: A cold vs. influenza

Some people use the terms “cold” and “flu” interchangeably. However, this is inaccurate because the common cold is not caused by influenza. Indeed, people infected with influenza can often point to the hour they became ill because the symptoms begin so suddenly and are so severe. Persistent fever and severe achiness, headache, chills, and moderate to severe tiredness generally describe an influenza infection. An influenza-associated cough will typically be dry and unproductive and may be accompanied by severe chest discomfort. On the other hand, symptoms related to the common cold tend to appear gradually and be less severe. Coughs associated with the common cold tend to be hacking and productive. Chest discomfort, if present, is typically mild or moderate. Also typical of the common cold are sinus-related symptoms, such as sneezing, stuffy nose, and sore throat.

Perhaps the most important distinction between the common cold and influenza is the severity of these illnesses. A cold does not generally lead to serious health problems, except perhaps an occasional sinus or middle ear infection. However, complications from influenza can include bronchitis, viral pneumonia, bacterial pneumonia, and the worsening of chronic conditions such as diabetes, lung disease, heart disease and more. These complications can lead to hospitalization and sometimes death.

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