# Types of flu shots explained

October 16 2014, by Chris Defrancesco

Flu season is approaching and with that comes the annual reminder to get a flu shot. But it's more complicated than a simple recommendation. How do we know which of the available influenza vaccines to get, and when? UConn Today asked Laura Haynes, a professor of immunology at UConn Health who studies the efficacy of the flu vaccine in older patients at the UConn Center on Aging, what we need to know about protecting ourselves – and others – this flu season.

## Why is it important, especially for the elderly population, to protect against influenza?

The Centers for Disease Control and Prevention recommends that everyone over 6 months of age receive a flu vaccination each year. Vaccination to prevent influenza is particularly important for people who are at high risk of serious complications from influenza, such as the elderly. Ninety percent of flu-related deaths and more than half of flu-related hospitalizations occur in people aged 65 years and older. Many older adults develop new disability while hospitalized, resulting in a loss of function and independence. As a result, these individuals are unable to resume their previous activities, and in many cases may not be able to return to their homes. The leading causes of this loss of function and disability following flu infection are strokes, pneumonia, heart attack, congestive heart failure, and hip fracture. One of the major goals of influenza vaccination is to keep elderly people from being hospitalized.

## When should people get their flu shot?

Children and younger adults should get their vaccinations in October since it takes a couple of weeks for full immunity to be generated. Older adults should get their vaccinations a little later, before or around Thanksgiving. This later time point for older adults is due to the fact that vaccine-induced immunity wanes faster in the elderly. By waiting a few weeks for vaccination, protection can be extended further into the winter months, when flu is most likely to be spreading.

## What forms of the flu vaccine are available, and which are best for whom?

- **Trivalent inactivated vaccine**: This is great for everyone over 6 months, except those with egg allergies. It contains proteins from three circulating influenza strains. It is given as a shot in the arm.
- **Quadrivalent inactivated vaccine**: This is similar to the trivalent except that it contains proteins from four circulating influenza strains. It is also given as a shot in the arm.
- **Intradermal inactivated vaccine**: This is for adults 18 to 64 years old. It uses a very small needle to the arm and may be helpful for those individuals who do not like needles. It provides the same protection as the traditional inactivated vaccine.
- **High-dose inactivated vaccine**: This is for individuals ages 65 and older. It has more of the flu proteins that induce the immune response but it can have somewhat more common side effects, such as inflammation and pain at injection site. This is also a shot in the arm.
- **Live attenuated vaccine**: This is a nasal mist for people 2 to 49 years old. Marketed under the brand Flumist, this vaccine induces the most protective immune response.
- **Recombinant vaccine**: Marketed under the brand Flublok, made by Protein Sciences Corp. in Meriden, this is approved for people 18 to 49 years old. It does not contain preservatives or egg

products since it consists of recombinant influenza proteins that are grown in the laboratory, not in eggs. This is also a shot in the arm.

It's important to note that not every form of the flu vaccine is available everywhere. For example, a pharmacy might offer the trivalent, but the patient may be a candidate for the high-dose. That patient might be better off forgoing the convenience of the pharmacy shot and going to his or her doctor instead.

## Why isn't the high-dose vaccine recommended for everyone?

There is no doubt that all individuals 65 years and older are highly likely to benefit from receiving the regular flu vaccine. This is especially true in years when the vaccine provides a good match against the most prevalent influenza serotypes (variations within a species of bacteria or viruses).

The high-dose vaccine is specifically designed for those older adults who have significantly weakened immune systems, since they are frail – especially when they suffer from multiple chronic diseases. It contains four times the amount of antigen (the part of the vaccine that prompts the body to make antibody) contained in regular flu shots. This additional flu antigen is intended to create a stronger immune response (more antibody) in the person getting the vaccine.

This high-dose vaccine has recently been shown to be safe and effective in a study of nearly 32,000 older adults, yet it still remains to be seen who should be receiving the high-dose as opposed to the regular vaccine.

Some adverse events were reported more frequently and perhaps more intensely after vaccination with the high-dose vaccine. The high-dose

vaccine is also more expensive and less readily available, since it is difficult to manufacture.

One of our studies focuses on whether specific biomarkers (blood tests) may help provide information on which older adults are most likely to require and benefit from the high-dose vaccine. This is an example of personalized medicine, which we are developing as part of our efforts to help provide patients, as well as their families and providers, with individualized information on how to age well.

## How else can we prevent the spread of flu particularly among the elderly?

- Vaccinate children – they are usually the ones who spread viruses amongst family members.
- Wash your hands often with soap and water or an alcohol-based hand rub.
- Avoid touching your eyes, nose, or mouth. Germs spread this way.
- Try to avoid close contact with sick people.
- Practice good health habits. Get plenty of sleep and exercise, manage your stress, drink plenty of fluids, and eat healthy foods.
- Cover your nose and mouth with a tissue when you cough or sneeze. Throw the tissue in the trash after you use it.
- If you are sick with flu-like illness, stay home for at least 24 hours after your fever is gone without the use of fever-reducing medicine.

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