FREQUENTLY ASKED QUESTIONS

ABOUT INFLUENZA

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WHAT IS INFLUENZA?

Influenza is a virus that infects the respiratory tract. Influenza symptoms start 1-4 days after viral exposure, and include a runny/stuffy nose, cough, fever, muscle aches and fatigue.[10] Most people with influenza recover, but an average of 2,000 Canadians die every year from influenza and its complications, making influenza the most common infectious disease cause of death in Canada. Between 5 and 10% of healthcare workers get influenza each year.[25]

WHY SHOULD I GET A FLU SHOT?

Healthcare workers have a fundamental duty to their clients and an ethical responsibility to provide safe care.[2,6,7,30] Health-care workers are at higher risk of influenza than other adults.[25] The influenza vaccine is safe and effective, and our best protection against influenza.[2,4,8,9] Being vaccinated prevents you from taking influenza home to family and friends, or passing it on to your clients.

Staying home when you are sick helps to prevent the spread of influenza; however, people shed the virus and transmit influenza before they develop symptoms. In addition, healthy adults can be infected with little to no symptoms, and can pass on influenza without even knowing that they are sick.[2,10,25]

CAN I GET SICK FROM THE FLU SHOT?

About 50% of people get a sore arm after the vaccine. This is usually mild, but can be severe enough to interfere with activity and can last for a few days.[14,21]

The killed influenza vaccines we now use in Canada contain only surface proteins from the virus, and cannot cause influenza.[2] We give the influenza vaccine in the fall, when many viruses that cause fevers and "colds" are circulating, and since the vaccine doesn't protect you against these other respiratory viruses, people can get sick after getting their influenza vaccine. We know this because, in studies in which people are randomized to either influenza vaccine or placebo injection, there is no difference in illness.[14,21] The table below compares symptoms in the 7 days after influenza vaccine or placebo in the largest study.

Table: Percent of adults reporting symptoms in the 7 days after receiving influenza vaccine or normal saline placebo.[14,21]

Symptom	Placebo Injection	Influenza Vaccine
Fever	6.1%	6.2%
Tiredness	19%	19%
Malaise	18%	16%
Muscle aches	5.7%	6.2%
Headaches	14%	11%
Sore arm	24%	64%

HOW IS INFLUENZA SPREAD?

Influenza is spread by direct contact, like touching someone's shoulder, and by small airborne droplets expelled when we breathe, talk, sneeze or cough.[8,10] Although most experts believe that influenza is most frequently spread by droplets, improving hand hygiene can prevent up to 50% of influenza.[35] This may be because droplets can land on your hands, and then (often unconsciously) you touch your face. Because influenza vaccine is not 100% effective, additional precautions are required to care for patients infected with influenza. They are called

droplet/contact precautions, and include gloves and face protection (either a face shield or goggles and a surgical mask) whenever you enter the room.[36]

HOW CAN I TELL IF MY CLIENT HAS INFLUENZA?

Influenza can cause both upper and lower respiratory illness. Symptoms of upper respiratory illness include runny/stuffy nose, cough, sore throat, fever, muscle aches, and fatigue. Symptoms of lower respiratory tract disease including cough, shortness of breath and wheezing.[8-10]

Older adults, and those with chronic illnesses, are less likely to have high fever or cough, so can present with just feeling unwell or shortness of breath.[36] Because many other viruses also cause these symptoms, the only way to tell for certain if someone has influenza is to take a nasal swab and test it (looking for influenza RNA).[8]

The factors that make influenza more likely are:

- If the illness occurs during the "influenza season" (October to April)
- Fever (the higher the temperature, the more likely influenza is)
- Cough, particularly early cough (in the first few days of illness).[8]

WHO SHOULD GET THE INFLUENZA VACCINE?

The Canadian National Advisory Committee on Immunization (NACI)[2] and the US Centers for Disease Control and Prevention[3,4] recommend that all adults and children over the age of six months be vaccinated against influenza each year. Since the virus changes each year, vaccination against seasonal influenza is needed annually.

NACI recommends that immunization should be a particular priority for:[2]

- People at high risk of influenza-related complications
- Adults and children with chronic health conditions (e.g. asthma, diabetes, cancer, anemia, and others)
- Pregnant women
- People older than 65 years of age
- All children 6 months to 5 years of age
- Residents in nursing homes/other chronic care facilities
- People capable of transmitting influenza to those at high risk
    - Health-care and other care providers
    - Household contacts of individuals at high risk of influenza-related complications, and of children <6 months of age
    - Those providing regular care to children under 24 months of age

WHY SHOULD STAFF WHO DON'T PROVIDE DIRECT CLIENT CARE GET VACCINATED?

Because our staff travel in and out of our office, and influenza spreads easily, even staff who don't provide client care are at risk. They can be exposed to influenza because of other staff members who are sick. Getting vaccinated protects them, and stops them from taking influenza home to their families.[10]

Non-client care staff can also spread influenza to vulnerable people during casual contact – for instance: in the lobby, the subway or any common areas.[10]

All our staff are important – absenteeism due to influenza among non-client care staff interferes with the function of our agency in the same way that as absenteeism due to influenza among client care staff interferes with client care.

IS THE INFLUENZA VACCINE EFFECTIVE?

Influenza vaccine is our most important protection against influenza.[2,4] Overall, vaccine prevents 60% of influenza in healthy adults.[14-16] Vaccinated individuals who contract influenza have a milder illness than unvaccinated individuals.[37] With a good match to circulating strains, influenza vaccine prevents illness in 70-90% of healthy children and adults. In years when influenza has changed and strains are less well matched to the vaccine, vaccine efficacy is lower.[2,8,9]

IS THE INFLUENZA VACCINE SAFE?

The influenza vaccine has been administered routinely in Canada since 1946. Nowadays, about 400 million people around the world get their influenza vaccine each year.[2,4]

Common safety concerns about influenza vaccine include:

- **Mercury:** The single dose vaccines being do not contain any mercury. All multi-dose vaccines have a form of mercury called thimersal in them to protect them from bacterial contamination. Mercury is a naturally occurring compound, and the amount of mercury in influenza vaccines is not associated with any toxicity.[2]
- **Adjuvant:** Adjuvants are substances sometimes added to vaccines to boost the immune response.[2,4] This year's vaccines for healthcare workers (Agriflu® and Vaxigrip®) do not contain adjuvants.
- **Guillain-Barré Syndrome (GBS)**: GBS is a condition in which an abnormal immune response to infections or antigens causes muscle weakness and paralysis. GBS can be a complication of both influenza infection and influenza vaccination. The chances of developing GBS from influenza vaccine is about one per million doses of vaccine.[22] But since vaccination protects you from getting influenza, and GBS is a complication of influenza, vaccination actually protects you overall from GBS.[23,38]

SHOULD PREGNANT WOMEN GET VACCINATED?

Influenza vaccine is recommended as a priority for all pregnant women by (among others) the Canadian National Advisory Committee on Immunization, The Canadian Society for Obstetrics and Gynecology, Motherisk, and the US Centers for Disease Control.[2-5] Influenza vaccine is an inactivated vaccine which is safe in pregnancy.[2,4,5,24]

When pregnant women are vaccinated, the antibodies they make in response to the vaccine cross the placenta, and protect their babies from influenza during the first six months of life.[32] Studies have shown that pregnant women who get vaccinated are less likely to have babies who are premature or small for gestational age babies.[31,33]

IS THERE EVIDENCE TO SHOW THAT WEARING A SURGICAL MASK IS EFFECTIVE AT PREVENTING TRANSMISSION OF INFLUENZA VIRUS?

Yes, masks can be worn for one of two reasons:

- By infected people to prevent virus from being spread to others, and
- By people who are not infected to protect themselves.

Studies show that when people with influenza wear a mask, the amount of influenza virus shed into the air around them when they breathe or cough is significantly reduced.[39,40] There are also studies which show that people who both wear masks and perform hand hygiene frequently are less likely to develop influenza when they are in close contact with people with influenza.[41-43]

HOW DOES INFLUENZA VACCINE WORK TO BOOST MY IMMUNITY?

When the vaccine is injected in your arm, a small number of immune system cells that are present at the site of the injection recognize the vaccine proteins as foreign and potentially illness causing.Your immune system rapidly increases the number of cells that make antibodies targeted at the surface proteins of the influenza. These antibody producing cells then make antibodies that circulate in your blood and lymphatics.[44]

If you are exposed to the influenza virus, the antibodies bind influenza surface proteins, preventing the virus from invading cells and helping to direct other immune system cells to kill the virus.[44]

IS THE IMMUNE RESPONSE FROM A VACCINE BETTER THAN IF I BUILD MY IMMUNE RESPONSE BY BEING INFECTED BY THE VIRUS?

It doesn't matter to your immune system whether it is responding to proteins (antigens) in a vaccine or proteins that are part of a virus or a bacterium; the response to each protein is similar.[45]

Sometimes – but not always – the immune response to an infection is longer lasting and stronger than to a single dose of a vaccine. This is because there are more antigens in the entire infecting microbe than in more purified vaccines, and because during an infection there may be a higher concentration of the antigens.[45]

For influenza, you get vaccinated every year with antigens from 3 strains, whereas if you get infected, you get infected with 1 strain every 3-10 years.[33] Vaccination gives you more exposure to the most important viral antigens. It's less risky to build your immune response from a vaccine than from exposure. If you are infected, you can get sick and spread the infection to others.

WILL THE INFLUENZA VACCINE LEAVE ME MORE SUSCEPTIBLE TO OTHER ILLNESSES? WILL IT REDUCE MY IMMUNE RESPONSE FOR FIGHTING OFF OTHER VIRUSES OR BACTERIA?

Your immune system is large and complex and is composed of many millions of different types of cells.[46] Your immune system responds to many antigens every day – in the food you eat and the air your breathe; it is a very small fraction of your immune system that is needed to respond to any one antigen or vaccine, and the rest of the system is more than adequate to maintain your health.[46]

Some infections – like influenza and measles – do make you more prone to other complicating infections. This is because these infections damage cells of your respiratory tract, and perhaps because they cause inflammation elsewhere in your body. Vaccines do not have this effect.[47]

HOW IS THE INFLUENZA VACCINE MADE?

To make influenza vaccine each year, manufacturers are given strains of influenza virus by World Health Organization reference laboratories that contain antigens chosen by the World Health Organization expert group.[48] Each virus is injected into specially harvested germ-free chicken eggs, and allowed to grow for several days.[49] The part of the egg called the allantoic fluid – where viruses concentrate – is then removed.[49] The viruses are killed, and the surface proteins of the virus are extracted and separated. Proteins from the three different strains are then mixed together under sterile conditions to create batches of vaccine.[48,50,51]

The vaccine is tested by both the manufacturer and government laboratories in each country that uses the vaccine to make sure that the vaccine is sterile, contains the right concentration of virus proteins, and acceptable concentrations of other components (e.g. leftover egg proteins).[60,61]

WHAT IS HERD IMMUNITY AND WHY IS IT IMPORTANT?

The rate of spread of a virus through a population depends on the chance that one person infected with the virus will come into contact with one or more other members of the population who are susceptible to infection (because they have neither been infected before nor vaccinated). The more people who are vaccinated in the population, the less chance there is that an infected person will be able to pass the virus onto other susceptible people – the virus thus spreads more slowly. If enough people are vaccinated, the people who can't be vaccinated (eg. those with allergies) or those who do not respond well to vaccines (the frail elderly or people who are immunocompromised) are partially protected because the virus spread is slowed. This is what is known as herd immunity.[52]

CAN PEOPLE WITH EGG ALLERGIES BE SAFELY IMMUNIZED WITH INFLUENZA VACCINE?

In the Statement on Seasonal Influenza Vaccine for 2014-15, the National Advisory Committee on Immunization (NACI) has concluded that egg allergic individuals may be vaccinated against influenza with the full dose of any injectable influenza vaccine in any setting where vaccines are routinely administered.[2] This change is as a result of new data demonstrating that vaccine is safe for individuals with egg allergies; serious allergic reactions have not been reported.[53,54,55] The nasal spray vaccine should not be given to egg-allergic individuals as it has not yet been studied. As always, immunizers administering vaccine should be prepared for and have the necessary equipment to respond to a vaccine emergency at all times.

WHAT SHOULD PEOPLE DO IF THEY HAVE HAD A PRIOR ALLERGIC REACTION TO AN INFLUENZA VACCINE?

Different influenza vaccines have somewhat different chemical contents (called "excipients"). For instance, Vaxigrip® may contain trace amounts of neomycin, but Fluviral® does not. Thus, it is possible to be allergic to one influenza vaccine but not to others.[56,57] Consultation with an experienced allergist is needed to assess which component of the vaccine may have caused the reaction, and whether it is safe to receive an influenza vaccine.

WHY SHOULD I GET VACCINATED WHEN THE VACCINE DOESN'T ALWAYS WORK WELL?

Influenza A (H3N2) sometimes evolves very quickly, and it takes about 6 months to make a vaccine. In 2014, a new strain of influenza A (H3N2) evolved after vaccine preparation had started. This evolution of a new A(H3N2) strain while the vaccine is being prepared happens once every 6-10 years.

Usually, when this happens, the protection vaccination gives healthy adults against influenza drops from about 70% to 40-50%. But in 2014, the new H3N2 strain was very different from previous ones, and vaccine protection was only 0-20%. Although the vaccine worked well against A(H1N1) and B in 2014, most influenza was due to the new strain of A(H3N2). Because the vaccine did not work well against this strain, there was a lot of influenza, and many more people than usual were admitted to hospital and died.

Decisions about vaccination against influenza cannot be made based on one year's experience. Some years, vaccine does not work well against some strains. But averaged over all years, vaccine prevents 60% of influenza in healthy adults.

DOES THE INFLUENZA VACCINE WORK BEST IN THE FIRST YEAR YOU GET IT?

Many factors affect exactly how well influenza vaccine works each year. Some recent studies do suggest that, for some strains of influenza, the influenza vaccine works better in the first year you get it than later years. This doesn't mean that the vaccine doesn't work at all in later years only that it doesn't work quite as well. Because you have to give up the all of benefit of the vaccine in the first year in order for it to work better in the second year, you get the most overall protection from influenza by getting vaccinated every year.

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