



INFORMATION

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THE ROLE OF VACCINES AND ANTIVIRALS IN CONTROLLING AND PREVENTING INFLUENZA

The spread of avian influenza H5N1 throughout Southeast Asia and into Europe has generated significant interest in this virus and what its spread means for human health. It also has raised questions about avian and human influenza viruses, and on how Canada is preparing for a possible influenza pandemic, particularly as this relates to vaccines and antivirals.

Vaccines are used to protect Canadians from many serious diseases and illnesses, including influenza. Each year, millions of Canadians receive an influenza vaccine (commonly called the “flu shot”) to avoid contracting influenza viruses that routinely circulate in our communities. The vaccine provides immunity by stimulating the human body to produce antibodies to fight off different virus strains. The antibodies are effective for four to six months. When you are exposed to these influenza virus strains, the antibodies will help either to prevent infection or to reduce the severity of the illness they cause. A vaccine is usually administered by injection; it includes a form of the virus that is dead or weakened – so it is harmless to people.

The annual influenza vaccine is changed each year to provide protection from the virus strains that are predicted to be the most common. Scientists in Canada and around the world assess which influenza strains are out there in the world and make recommendations on the three to be included in the annual vaccine. Since these strains may change from year to year, and because the antibodies from the vaccine last only four to six months, you need to get the influenza vaccine each year to protect yourself.

Because of its effectiveness in preventing illness, vaccination is also the first line of defence in the event of an influenza pandemic. An influenza pandemic can occur when an influenza strain currently in circulation mixes with another strain, creating a new, different strain to which people have little or no immunity.

This could happen, for example, if a person sick with a human influenza virus also becomes infected with an avian influenza virus, and the two viruses re-assort or “mix.” This means that the avian influenza virus acquires human influenza genes, potentially creating a new virus subtype or strain. If this new subtype or strain can be easily transmitted from person to person, many people around the world could become ill and possibly die. This scenario is referred to as an “influenza pandemic.”

Currently, there is no influenza pandemic anywhere in the world. However, there were three influenza pandemics in the last century, and scientists recognize that another is inevitable. Scientists and governments are currently monitoring the H5N1 avian influenza virus that has affected many poultry populations and some humans in Southeast Asia and parts of Europe. The more birds that are infected, the more likely it is that people will be in contact with sick birds, creating opportunities for avian influenza H5N1 to mix with another virus strain and create a new influenza strain.

Like the annual influenza vaccine, a pandemic influenza vaccine must include the strain of influenza virus that has emerged. Therefore, a specific vaccine cannot be produced or stockpiled until the new strain has emerged. Once this new strain has emerged and been identified, it will take about six months to develop and produce an influenza vaccine. Therefore, a specific vaccine will not be available at the start of a pandemic and may be in short supply during the initial stages of the outbreak.

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Canada has a 10-year contract with a manufacturing company for the production of a pandemic influenza vaccine, should one be required. Although a specific vaccine cannot be produced until the new strain emerges, having a contract with a domestic supplier allows Canada to build the infrastructure and systems needed to produce enough vaccine for all Canadians in the event of a pandemic.

Until a specific vaccine is available to protect Canadians, **antivirals** will be an important part of our response to a pandemic. Unlike vaccines, antivirals do not prevent illness by providing immunity. An antiviral is a medicine taken by mouth or by inhalation that destroys a virus or interferes with its ability to grow and reproduce. It is usually given to patients when they are sick to reduce symptoms, to shorten the length of illness and to minimize serious complications. When antivirals are used for preventive purposes, people must continue taking them as long as they are exposed to the virus.

Antivirals can be stockpiled in advance and administered to high-risk groups as required. However, their effectiveness is limited; therefore, they are only one part of our overall strategy. They alone cannot be relied on to reduce the impact of a pandemic.

The federal, provincial and territorial governments currently own a combined total of 35 million capsules of the antiviral oseltamivir, with another five 5 million on order.