

## 9. Accessing Antiviral Drugs and Vaccine

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Production facilities have to be ready to manufacture vaccines and drugs; others should be stockpiled and distributed around the country.

*The Great Influenza*, John M. Barry

**Antiviral Drugs** (i.e., anti-influenza drugs) can be used to treat and prevent influenza, and will be an important disease management strategy during an influenza pandemic – particularly during the early wave(s) when vaccine is not available. We do not yet know how effective antiviral drugs will be against the pandemic strain but, when used to treat seasonal influenza, they have been shown to reduce the length of time people are ill and the risk of complications, hospitalization and death.

Ontario currently has an antiviral stockpile large enough to treat 25% of the population, which is more than the proportion of the population likely to become sick enough during a pandemic to need antiviral treatment.

This chapter discusses antiviral use in adults; for more information on the use of antivirals with children and pregnant women, see Chapter 18 and 18A.

**Vaccine** is the most effective means to prevent disease and death from influenza during a pandemic; however, it will take time after the pandemic strain is identified to develop a vaccine so it will likely not be available for the first wave. We do not know how effective the vaccine (once developed) will be against the pandemic strain, but vaccines for seasonal influenza usually prevent illness in 70 to 90% of healthy adults.

Comprehensive influenza antiviral and vaccine programs include:

- ongoing immunization strategies designed to protect the population from seasonal circulating strains of influenza
- plans to acquire and maintain a supply of antivirals and vaccine
- a consistent, ethical, evidence-based decision-making process for determining who has priority access to antivirals and vaccine when supplies are limited
- an effective system to distribute and administer antivirals and vaccine
- a mechanism to monitor antiviral and vaccine uptake and effectiveness, and to monitor any adverse reactions to antivirals and vaccine or resistance to antivirals.

### 9.1 Objectives

#### **Antiviral Drugs**

1. To maintain a secure supply of antiviral drugs large enough to treat 25% of Ontario's population.
2. To store, distribute, allocate and administer antiviral drugs efficiently and appropriately.
3. To monitor the safety and effectiveness of antiviral drugs as well as any development of resistance to antivirals.

#### **Vaccine**

1. To provide a secure supply of safe, effective vaccine for all Ontarians as quickly as possible.

2. To store, distribute, allocate and administer vaccine supplies efficiently and appropriately.
3. To monitor the safety and effectiveness of vaccine programs.

## 9.2 Antiviral Drugs

### **Supply**

The federal government is responsible for approving and licensing antiviral drugs. At the current time, three antivirals are licensed for use in Canada for prophylaxis and treatment of influenza A infections: amantadine, and oseltamivir (Tamiflu®) zanamivir (Relenza™). The last two are neuraminidase inhibitors. When administered within two days (ideally within 12 to 24 hours) of the onset of illness, both amantadine and neuraminidase inhibitors (e.g., oseltamivir) are effective in reducing length of illness. Neuraminidase inhibitors are effective in reducing influenza complications; however, resistance to amantadine can develop when the drug is used for treatment during annual influenza season. A fourth antiviral, rimantadine is not currently licensed in Canada.

Because of amantadine's side effect profile, dosing requirements and risk of resistance, oseltamivir (Tamiflu®) is the drug of choice for most people during a pandemic. Relenza™ is the recommended treatment for pregnant and lactating women. Clinicians may consider other drugs, based on their clinical expertise and judgment.

As of July 2008, a national antiviral stockpile was almost completely in place, large enough to treat those needing care and for early containment.

Ontario has committed to maintaining a stockpile large enough to treat up to 25% of the population. This stockpile is currently in place, and includes a supply of zanamivir to diversify the stockpile and provide

appropriate treatment for pregnant and lactating women.

Governments are also collaborating to learn more about:

- the impact of antiviral drugs in preventing serious health outcomes during an influenza pandemic
- how to manage the stockpile (i.e., extending the shelf life of antiviral drugs).

### **Antiviral Storage and Distribution**

To be effective, antiviral treatment must be started within 48 hours of the onset of symptoms, and within 12 to 24 hours to be most effective. To provide timely treatment, Ontario must have an effective system for distributing antiviral drugs.

During a pandemic, the Ministry Emergency Operations Centre (MEOC) will be responsible for coordinating the distribution of antivirals to hospitals, long-term care homes, pharmacies, and Flu Centres. The system will address distribution of antivirals to special populations, including those under federal jurisdiction (e.g., armed forces, First Nations, RCMP).

### **Use of Antiviral Drugs**

#### **For treatment**

In the early days of pandemic planning, Ontario developed lists of people who, based on their health status or occupational risk, would be first to receive antiviral drugs to treat influenza. These lists are no longer necessary because the province has stockpiled enough antiviral drugs to treat all Ontarians who are likely to become ill (i.e., 25% of the population).

Should a pandemic be severe enough that more than 25% of the population will require treatment, antiviral drugs will be distributed according to the available scientific evidence (e.g., priority may be

given to those likely to develop complications from influenza) and in accordance with the ethical framework for decision-making described in Chapter 2.

During a pandemic, treatment regimens may have to be altered (e.g., higher doses, longer treatment courses) and the timing to start treatment may also change, depending on the epidemiology of the pandemic strain.

#### **For prophylaxis**

Currently there is no evidence that putting large groups of otherwise healthy Canadians on antiviral drugs in order to prevent influenza (i.e., prophylaxis) will slow or stop the spread of a pandemic; however, prophylaxis with antiviral drugs may play a key role in maintaining critical services (i.e., preventing infection in and providing reassurance to people caring for individuals with influenza as well as workers in critical industries) until a vaccine becomes available.

Ontario will develop a provincial policy on the use of antivirals for prophylaxis after consideration of the national policy (currently under development) and in accordance with the ethical framework for decision-making. This will help ensure a consistent approach to using antivirals for prophylaxis across all provinces and territories, which will lead to stronger public confidence and morale.

#### ***Monitoring Adverse Effects***

Physicians, pharmacists and consumers will be able to report severe and unusual adverse events to Health Canada through MedEffects.

### **9.3 Vaccine**

#### ***Immunization Strategies***

In the fall of 2000, Ontario began offering free annual influenza immunizations to all Ontario residents over the age of six months with no contraindications to influenza

immunization. The program, known as the Universal Influenza Immunization Program (UIIP), provides approximately five to six million doses of trivalent influenza vaccine a year.

Ontario will continue to actively promote annual universal influenza immunization, particularly with groups identified by the National Advisory Committee on Immunization (NACI) as being at high risk of complications from influenza. Annual influenza immunization will reduce the morbidity, mortality and demands on the health care system from seasonal influenza strains.

Ontario will also promote pneumococcal vaccination of NACI “high-risk” groups during the interpandemic period to reduce the incidence and severity of secondary bacterial pneumonia in people with influenza.

#### ***Vaccine Supply***

The federal government is responsible for pandemic influenza vaccine procurement and supply, including developing the domestic infrastructure, maintaining a standby supply of fertilized hens’ eggs ready to convert into vaccines, phasing in new technologies, and ensuring security of supply (i.e., via a pandemic contract). In case of a pandemic, a domestic supplier guarantees to manufacture at least 8 million doses of monovalent vaccine per month and to provide enough vaccine for all Canadians to receive one dose within four months.

In October 2001, Ontario signed a Memorandum of Understanding to participate in the Canadian influenza vaccine procurement and supply process. That agreement runs until March 2011.

To immunize the entire province, Ontario would require 25 million monovalent doses (based on two doses per person). The province must be prepared to administer

one dose per person to the entire population of the province within a month.

### **Access to Vaccine**

Each year, the National Advisory Committee on Immunization (NACI) makes recommendations (published in the *Canada Communicable Disease Report*) on priority groups for influenza immunization (i.e., persons who are most at risk for influenza, those who could spread influenza to persons at greatest risk). In the event of a pandemic, the Pandemic Influenza Committee, which includes representation from NACI, will make recommendations to federal/ provincial/ territorial governments on priority groups for immunization based on the epidemiology of the pandemic strain.

Ontario's goal is to obtain enough vaccine for the entire population but, during the early stages of a pandemic, vaccine will be in short supply. In this situation, the province will follow the national recommendations for priority groups for influenza immunization, adapting them as required to meet provincial needs. It will also use the ethical framework (see Chapter 2) to guide the decision-making process.

### **Distribution and Administration**

Ontario has a vaccine distribution system in place to support its Universal Influenza Immunization Program. A similar system may be used to distribute vaccine during a pandemic, with some changes. During a pandemic, Ontario will use primarily a "Pull" strategy to ensure best use of available resources: influenza vaccine will be sent only to public health units, which will organize mass immunization clinics in various locations in their communities. Other vaccines (e.g., essential immunizations) will continue to be administered through current channels.

The province has developed an Emergency Mass Immunization/ Prophylaxis Plan that

will address any issues or gaps in vaccine and antiviral distribution, such as security issues and timely distribution to remote communities (see Chapter 9A: Antivirals and Vaccine Tools). Provincial and local vaccine distribution plans include steps to reach special populations, such as those that fall under federal jurisdiction (e.g., armed forces, First Nations, RCMP) and people who are homeless.

### **Monitoring Adverse Events**

The MOHLTC collects information on Adverse Events Following Immunization (AEFI) through the integrated Public Health Information System (iPHIS). These reports are then sent to the Public Health Agency of Canada (PHAC) and stored in the Canadian Adverse Events Following Immunization Surveillance System (CAEFISS) database. Through this database, the safety of vaccines in Canada can be monitored. Physicians, pharmacists and consumers are encouraged to report any adverse events related to vaccines.

Children's hospitals in Ontario participate in the Immunization Monitoring Program – Active (IMPACT), which tracks AEFIs, vaccine failures and selected infectious diseases in children.

## **9.4 Next Steps**

MOHLTC will:

- work with the Public Health Agency of Canada and other provinces and territories to develop a policy on access to antivirals for prophylaxis
- maintain its antiviral stockpile
- establish a storage and distribution system (including distribution routes) for antiviral drugs that will ensure access within 12 to 24 hours in all parts of the province.

To promote effective use and management

of antivirals and vaccine, Ontario will develop the following tools:

- an antiviral comparison chart
- an algorithm for antiviral treatment
- guidelines for handling and managing antiviral drugs, including dispensing procedures and how to limit wastage
- clinical guidelines for antiviral use and patient care in health care settings
- fact sheets on immunization (i.e., benefits, location of immunization clinics).