9. Accessing Antivirals and Vaccine

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

John M. Barry, The Great Influenza

Antivirals (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 antivirals 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, symptoms and hospitalizations.

Ontario is working with the federal government to develop an antiviral stockpile that will be large enough to treat 25% of the population, as recommended by the World Health Organization. This represents the proportion of the population who will be sick enough to need antiviral treatment. Although antivirals can be used both for treatment and prophylaxis (prevention), Ontario will use its supply primarily for treating people who are ill.

Vaccine is the most effective means to prevent disease and death from influenza during a pandemic; however, it will take four to five months 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 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 vaccine or resistance to antivirals.

9.1 Objectives

Antivirals

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

Supply

The federal government is responsible for approving and licensing antivirals. At the current time, two antivirals are licensed for use in Canada for prophylaxis and treatment of influenza A infections: amantadine and oseltamivir (Tamiflu®), a neuraminidase inhibitor (neuraminidase inhibitors are much more expensive than amantadine). When administered within two days (48 hours) of the onset of illness, both amantadine and neuraminidase inhibitors (e.g., oseltamivir) are effective in reducing length of illness and hospitalization and, in the case of oseltamivir, influenza complications, but resistance to amantadine can develop when the drug is used for treatment during annual influenza season. The strain of avian influenza responsible for the recent outbreak strain in Asia (H5N1) is resistant to amantadine in laboratory. Another antiviral, zanamivir (Relenza™) is licensed for treatment only – and is the recommended treatment for pregnant and lactating women. A fourth antiviral, rimantadine is not currently licensed in Canada.

Because of amantadine's side effect profile and individual dosing requirement, oseltamivir (Tamiflu®) is the drug of choice for most people during a pandemic. Clinicians may consider other drugs, based on their clinical expertise and judgment.

Based on consultation with chief medical officers of health, the Public Health Agency of Canada is now working with the provinces to establish a national antiviral stockpile, with a target of having enough supplies to treat 22% of the population.

Ontario has committed to maintaining a stockpile large enough to treat up to 25% of the population, and has placed orders to purchase more antivirals (in addition to its share of the national stockpile). The stockpile will consist primarily of oseltamivir, but the Ministry of Health and Long-Term Care is also purchasing a supply of zanamivir to diversify the stockpile and provide appropriate treatment for pregnant and lactating women. The stockpile will be complete in 2009.

Governments are also collaborating to learn more about:

- the impact of antivirals in preventing serious health outcomes during an influenza pandemic
- how to manage the stockpile (i.e., the shelf life of antivirals, how often to turn over supplies).

Antiviral Storage and Distribution

To be effective, antivirals must be started within 48 hours of the onset of symptoms, and the earlier they are started, the more effective they are. To provide timely treatment, Ontario must have an effective distribution system for antivrals.

During a pandemic, the Ministry Emergency Operations Centre (MEOC) will be responsible for coordinating the distribution of antivirals across the province, and public health units will be responsible for coordinating the distribution of antivirals among health care organizations at the local level. The distribution system will address distribution of antivirals to special populations, including those under federal jurisdiction (e.g., armed forces, First Nations, RCMP).

Should a pandemic occur before Ontario's stockpile is complete, antivirals for

treatment will be distributed according to the available epidemiological 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.

Use of Antivirals

Currently there is no evidence that putting large groups of otherwise healthy Canadians on antivirals in order to prevent influenza (i.e., prophylaxis) will slow or stop the spread of a pandemic; however, prophylaxis with antivirals 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. Both the 2004 and 2005 OHPIP listed preliminary groups of people who, based on their health status or their role during a pandemic, would be the first to receive antivirals for treatment or prophylaxis.

Ontario has removed those lists from the 2006 OHPIP and will develop a provincial policy on the use of antivirals for prophylaxis based on 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.

With regard to antivirals for treatment, the Ontario government is committed to providing treatment for individuals who become ill during an influenza pandemic and will maintain an antiviral stockpile large enough to treat 25% of the population.

Monitoring Adverse Effects

Based on national recommendations, Ontario will develop a mechanism to monitor adverse effects from antivirals as well as the development of antiviral resistance. See Chapter 5A for the pandemic reporting forms, which will be used to collect information on adverse events associated with antiviral use.

9.3 Vaccine

Immunization Strategies

In the fall of 2000, Ontario began offering a free influenza immunization to anyone in the province over the age of 6 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.

9.3.2 Vaccine Supply

The federal government is responsible for 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, the domestic supplier (IDBiomedical) guarantees to manufacture 8 million (+/- 10%) monovalent doses, per month, for a period of 4 months starting within 4 to 5 months after the receipt of the pandemic seed strain for Canada.

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 24 million monovalent doses (based on two doses per person, over approximately four months).

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 will be used to distribute vaccine during a pandemic, with some changes. In the current system, vaccine is shipped directly to the public health units only (except in Toronto, where vaccine is also shipped directly to physicians). The health units then distribute vaccine to physician offices, workplace clinics, and a variety of other settings where immunization services are provided. 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 vaccination clinics, and people will attend the clinics to be immunized. Other vaccines (e.g., pneumococcal) will continue to be administered through current channels.

The province has developed an Emergency Mass Vaccination/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 will also 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 federal government maintains an adverse event following immunization (AEFI) surveillance system through the CIDPC. The Canadian Paediatric Surveillance Program monitors acute flaccid paralysis (including Guillain Barré Syndrome).

In Ontario, adverse events associated with influenza vaccination are reportable under the *Health Protection and Promotion Act*. The

network of children's hospitals in Ontario that participate in the Immunization Monitoring Program - Active (IMPACT) report data on child hospitalizations possibly associated with vaccination to PHAC, and participate in the Canadian Paediatric Surveillance Program.

9.4 Next Steps

Ontario will work with the Public Health Agency of Canada and other provinces and territories to develop a policy on access to antivirals for prophylaxis. MOHLTC will also:

- continue to develop its antiviral stockpile
- establish a storage and distribution system for antivirals that will ensure access within 48 hours in all parts of the province.

To promote effective use and management of antivirals and vaccine, Ontario will develop the following tools:

- fact sheets on antivirals (i.e., who will receive them, where to access them, how to take them)
- antiviral comparison chart
- an algorithm for antiviral treatment
- guidelines for handling and managing antivirals 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).