

### 3. Planning Goals, Approach and Assumptions

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[E]pidemiologists, scientists, public health officials, and ethicists will have to join with the professionals who handle disasters. Some of the issues are obvious and simple, such as making sure health care workers are the first to get vaccinated. ... Other questions involve logistics and risk assessment. Some elements ... involve questions of power and ethics. Public health officials will need the authority to enforce decisions. ... Questions about who will have the authority to make and ensure decisions, and under what circumstances, must be settled in advance.

*The Great Influenza*, John M. Barry

#### 3.1 Goals

1. To minimize serious illness and overall deaths through appropriate management of Ontario's health care system, and
2. To minimize societal disruption in Ontario as a result of an influenza pandemic.

The focus of pandemic planning is to reduce the impact of influenza on individuals and society.

The plan will be continually updated to reflect new potential challenges and the most current thinking.

Pandemic planning will identify those activities that are critical for the well-being of the province. It will also identify less critical activities that can be curtailed to free up resources for critical activities. The process of making these types of decisions and developing plans will be based on the ethical framework (see Chapter 2).

Planning will identify the additional resources – human and physical – required at the provincial and local levels to provide critical services, and establish a process to make those resources available. The role of the Public Health Division (PHD) and Emergency Management Unit (EMU), along with the other divisions and branches at the MOHLTC, is to plan and prepare for a possible influenza pandemic or any infectious disease that may arise. They will also provide direction, guidance, and support to local public health units with their pandemic planning initiatives.

Plans will be tested at the local, provincial and national levels to identify any gaps, overlaps or confusion that can be corrected, and to reassure the public that Ontario has effective plans in place and will be able to respond to an influenza pandemic.

#### 3.2 Strategic Approach

Ontario's Health Plan for an Influenza Pandemic is based on a four-pronged strategic approach:

***Be ready.*** Plan at the provincial and local levels in anticipation of an influenza pandemic.

***Be watchful.*** Practise active screening and surveillance to identify the earliest signs of an influenza pandemic.

***Be decisive.*** Manage the spread quickly and effectively.

***Be transparent.*** Communicate with Ontarians.

#### ***Be Ready: Plan at the Provincial and Local Levels for an Influenza Pandemic***

Ontario will make every effort to develop a plan which ensures the province is ready to deal with as many eventualities as possible.

***Be Watchful: Screening and Surveillance***

Ontario will identify clusters of respiratory infection early. In addition to routine influenza surveillance, the MOHLTC has established an active screening and surveillance program – an early warning system – that will identify individuals with febrile respiratory illness (FRI) – including influenza like illness (ILI) – early.

As part of its effort to be watchful, Ontario will closely monitor influenza or influenza-like illness outbreaks in other jurisdictions. Depending on where the pandemic strain of influenza originates, Ontario will use every opportunity to enhance and target its screening and surveillance systems. The province will also use any lead time to encourage the federal government to increase screening and surveillance activities at border crossings and arrival points.

Ontario will reinforce the importance of personal watchfulness. The province, in collaboration with local public health units and other stakeholders, will educate both health care workers and the public about their role in identifying signs of influenza and preventing its spread.

***Be Decisive: Manage the Spread***

Faced with an influenza pandemic, Ontario will act decisively to manage and contain its spread. While an influenza pandemic may be inevitable, Ontario can take steps to minimize its impact and protect the population, including providing vaccines and antiviral medications as available, curtailing public gatherings and limiting travel as appropriate.

***Be Transparent: Communicate with Ontarians***

To manage an influenza pandemic, the health care system must have the cooperation of the public and workers involved in pandemic influenza response.

As noted in the ethical framework for decision-making (see Chapter 2), that cooperation is based on trust and transparency. Decision-makers will enter into a covenant with the people of Ontario to be transparent and to provide the best available information. Ontarians will be informed about the plans, and consistent spokespersons will be identified to communicate with the public and address their questions during a pandemic.

In return, Ontarians will be urged to comply with the advice, direction and, if required, the legal orders given by people responsible for managing the pandemic.

### **3.3 Planning Assumptions**

The Ontario Health Plan for an Influenza Pandemic is based on the following planning assumptions:

***The course of an influenza pandemic***

- A pandemic will be due to a new subtype of influenza A
- A new strain is most likely to occur in southeast Asia
- Ontario will have little lead time between when a pandemic is first declared by the WHO and when it spreads to the province
- An influenza pandemic usually spreads in two or more waves, either in the same year or in successive years. A second wave may occur within three to nine months of the initial outbreak wave and may cause more serious illnesses and deaths than the first. In any locality, the length of each wave of illness is approximately eight weeks.
- The pandemic strain will be primarily community spread: that is, transmitted from person to person in the community rather than in health care settings.

### ***The extent and severity of illness***

- Because the population will have had limited prior exposure to the virus, most people will be susceptible. If the pandemic is caused by a recycled influenza strain, children and otherwise healthy adults may be at greater risk because elderly people may have some residual immunity from previous exposure to a similar virus.
- Regardless of the severity of the pandemic, there will be an illness attack rate of 35%, which means that over the entire course of a pandemic about 35% of the population will be sick enough with influenza to take at least a half day off work.
- At the peak of the first wave, about 20 to 25% of the workforce will be absent from work for at least a half-day.
- About 45% of people who become ill during a moderately severe pandemic will not require medical care, but they will need health information and advice; about 53% will require outpatient or primary care (e.g., antiviral treatment); and approximately 1.5 to 2% will require hospitalization.
- More severe illness and mortality than the usual seasonal influenza is likely in all population groups.
- In the first pandemic wave, at least one third of deaths are likely to be in people under age 65 compared to less than 5% of deaths in interpandemic years.
- Subclinical infections will occur. Based on previous pandemics, many people will only experience mild illness or have no symptoms, but still be able to transmit the virus to others.

- Individuals who recover from illness with the pandemic strain will be immune to infection from that strain.

Table 3.1 summarizes the estimated impact of an influenza pandemic of moderate severity on deaths, hospitalizations and outpatient visits at different attack rates in Ontario. The attack rates describe the impact over the entire duration of the pandemic, that is: the proportion of the population that will be infected over the multiple waves of influenza that usually occur during a pandemic. (*Note: these estimates do not take into account the potential impact of antiviral drugs or an effective vaccine.*)

### ***Access to antivirals/vaccine***

- The only specific treatment option for influenza during a pandemic will be antiviral drugs, which are most effective when started within 12 to 24 hours of onset of symptoms and must be started within 48 hours. The efficacy of antivirals against the pandemic strain is unknown but, when antivirals are used to treat seasonal influenza, they have been shown to reduce the length of time people are ill, risk of complications and hospitalizations.
- The federal and provincial governments will stockpile antivirals. (Ontario currently has an antiviral stockpile large enough to treat 25% of the population which should be large enough to provide treatment to anyone who needs it.)
- Although antivirals can be used for prophylaxis (i.e., preventing influenza), there will not be adequate supplies to provide both treatment and prophylaxis for everyone at this time. (Ontario will develop a provincial policy on the use of antivirals for prophylaxis after consideration of the national policy, which is currently under development.)

**Table 3.1: Estimated Impact of an Influenza Pandemic by Attack Rate  
(based on a moderate scenario - 1957-like virus)**

	Source	Attack Rate 15 %			Attack Rate 25 %			Attack Rate 35%		
		min	Most likely	max	min	Most likely	max	min	Most likely	max
1. Estimated population 2006	2001 Census		12,919,600		12,919,600		12,919,600		12,919,600	
2. No. of people ill enough to remain home	% of total population (1)		1,937,940		3,229,900		4,521,860			
3. No. of people who can be managed through self care	#2 minus 4, 5 and 6	1,121,724	<b>875,719</b>	417,930	1,869,539	<b>1,459,532</b>	696,550	2,617,354	<b>2,043,345</b>	975,170
4. No. of people who will require an outpatient visit	FluAid 2.0	804,484	<b>1,033,418</b>	1,481,544	1,340,807	<b>1,722,363</b>	2,469,240	1,877,130	<b>2,411,308</b>	3,456,936
5. No. of people hospitalized who will recover	FluAid 2.0	8,595	<b>23,388</b>	29,525	14,325	<b>38,979</b>	49,208	20,055	<b>54,572</b>	68,892
6. No. of fatal cases (70% in hospital)	FluAid 2.0	3,137	<b>5,415</b>	8,941	5,229	<b>9,026</b>	14,902	7,321	<b>12,635</b>	20,862
7. No. of hospitalizations (recoveries + 70% of fatal cases)	#5 plus 70% of #6	10,791	<b>27,179</b>	35,784	17,985	<b>45,297</b>	59,639	25,180	<b>63,417</b>	83,495

**Table 3.2: Number of People Affected as a Percentage of the Population  
(based on a 35% attack rate)**

	No. of People	% of People who are Clinically Ill (#2 in Table 3.1)	% of Total Population (#1 in Table 3.1)
People who can be managed through self care	<b>2,043,345</b>	45.2%	15.8%
People who will require an outpatient visit	<b>2,411,308</b>	53.3%	18.7%
People who will be hospitalized and recover	<b>54,572</b>	1.2%	0.4%
Fatal cases (70% in hospital)	<b>12,635</b>	0.3%	0.1%
Hospitalizations (recoveries + 70% of fatal cases)	<b>63,417</b>	1.4%	0.5%

Note: Table 3.2 is based on the Meltzer model (developed at the Centers for Disease Control, Atlanta USA), which is also used by the Canadian Pandemic Influenza Plan. The model is based on the following assumptions: the numbers display a pandemic of mild to moderate severity and reflect the impact of the entire duration of the pandemic (i.e., multiple waves). The model does not include the potential impact of antiviral drugs, public health measures or an

effective vaccine. As Meltzer himself notes, "The wide range of values for most of the results adds emphasis to the fact that the impact of the next influenza pandemic is largely unknown."

The model is intended to show discrete or mutually exclusive health outcomes of outpatient care, hospitalization and death. However, during a pandemic, there is potential for a single patient to traverse through multiple outcomes (e.g., a patient who is hospitalized and dies; a patient who receives an outpatient visit and then dies at home). Therefore, the estimate for the number of persons who can be managed through self-care may be underestimated.

In addition, the Meltzer model outcome for hospitalization reflects only those patients who are hospitalized and recover. An additional assumption incorporated into the model is that 70% of fatal cases will occur in hospital. Therefore, a more accurate estimate of hospitalizations is calculated by adding 70% of the fatal cases to the number of patients hospitalized who will recover.

The above numbers were calculated using FluAid 2.0 software developed by the U.S. Centers for Disease Control and Prevention (a version of the software can be found online at <http://www2a.cdc.gov/od/fluaid/>). It utilizes population estimates for 2005 based on 2001 census data. FluAid is designed to provide a range of estimates for the total impact of an influenza pandemic for a given region at a macro level. The program can also provide further detail such as the impact to the health care system and vaccination coverage when additional data and assumptions are entered (e.g., number of hospital beds, morgue capacity, number of patients per day, time to administer one dose of vaccine).

The FluAid program differs slightly from the CDC's FluSurge program (<http://www.cdc.gov/flu/flusurge.htm>), which provides more specific detail with respect to hospital capacity during a pandemic and can display the impact on capacity over time depending on the duration of the pandemic (in weeks). While both FluAid and FluSurge require the user to enter population data for a particular community or area, both programs may yield different results in terms of the estimated number of deaths and hospitalizations for a given population. This may be because both programs use a slightly different age distribution for entry of population data.

Please note that these programs were designed to generate estimated figures, and are intended to provide planners with an idea of the potential effect that an influenza pandemic will have on health services within the area so that communities and healthcare facilities can plan appropriately. However, planners should not rely on these programs to provide an accurate prediction of a pandemic impact. The actual impact of a pandemic will depend on a host of factors, including the virulence of the disease, the ease of transmission, the availability and accessibility of antivirals and vaccine, implementation of public health measures and so on. In addition, the assumptions built into both programs are U.S.-based and may not apply equally to Canada. In some cases, these assumptions can be modified within the program to reflect the characteristics of a particular local population. Local planners are encouraged to use either program based on their particular requirements.

- Should an influenza pandemic be severe enough to overwhelm the current Ontario antiviral stockpile, the available supply will be allocated according to national priorities, based on the best available epidemiological evidence (e.g., who is most at risk of complications or death from influenza), stockpile size and Ontario's ethical framework for decision-making.
- A vaccine will not be available for at least four to six months after the seed strain is identified, which means it will not be available in time for the first wave of illness. Vaccine may be available to mitigate the impact of the second wave.
- A domestic supplier is under contract to provide vaccine for Canada. Vaccines manufactured in other countries are likely to be embargoed during a pandemic.
- In a pandemic caused by a novel virus subtype, the population will not be able to benefit from cross-protection from previous exposure to related strains, and everyone may require two doses of vaccine to induce immunity.
- When vaccine becomes available, Ontario will have to be prepared to administer at least one dose to the entire population within a month.
- Even with a well-matched vaccine, the effectiveness of seasonal influenza vaccine in preventing illness is approximately 70 to 90% in healthy adults (based on experience with annual influenza immunization programs).

***The impact on the health care system***

- During a pandemic, the availability of public health and health care workers could be reduced by up to one-third due to illness, concern about disease

transmission in the workplace, and family caregiving responsibilities. A shortage of health care providers will result in a decrease in services. For example:

- During a pandemic, laboratory testing capacity will be reduced due to illness and supply shortages.
- Hospital capacity is already limited and could be further reduced because of staff illness. Inter-hospital assistance will be limited because of a rapid spread of influenza. Home care and long-term care homes will provide influenza care that will help avoid hospital admissions and allow early hospital discharges.
- Non-life-threatening health services and public health programs will be significantly curtailed, consolidated or suspended completely.
- Depending on the severity of the pandemic and the number of health care workers who are infected, redeployment of health care workers across sectors may not be practical. The health care system will have to use a variety of mechanisms to augment/supplement existing health human resources.
- Care protocols may change and standards of practice for “normal” operating conditions may be adapted to meet pandemic/emergency needs.
- The MOHLTC will provide centralized purchase and distribution of certain personal protective equipment, vaccines/antiviral drugs and other clinical supplies.

### ***Managing a pandemic***

- A provincial emergency will likely be declared early in a pandemic, and could

be declared before the strain of influenza appears in Ontario.

- The overall provincial response during a provincial emergency will be managed from the Provincial Emergency Operations Centre (PEOC), with the Emergency Management Unit providing command and control services for the health care sector and the MOHLTC.
- The Provincial Infectious Diseases Advisory Committee (PIDAC) and the Ministry of Labour will provide ongoing health and safety, clinical, infection control and epidemiological advice to the MOHLTC throughout the pandemic and recovery period.
- Decision-making processes regarding personal protective equipment will include the application of the precautionary principle when there is scientific uncertainty.

### ***Communications***

- A pandemic alert or the start of pandemic activity anywhere in Canada will become a national issue. The Public Health Agency of Canada and the federal government will coordinate inter-provincial communications. Provincial health communications strategies must be aligned with the federal communications plan.
- A pandemic will create intense public and media (local, national, international) interest. Ontario will require sophisticated streamlined communications (e.g., live news conferences using latest satellite and fibre optic technologies). Spill over media from other provinces and the United States will affect Ontarians’ perspective, reinforcing the need for a consistent communications approach among jurisdictions.

- A pandemic will also create intense pressure on health care workers. Ontario will make use of various communications channels, including websites, electronic mail and fax, to provide health care workers with information that can be useful for their own protection and for their patients/ clients and to help manage broader public anxiety.