

Section 1: Introduction

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1. Introduction

1.1 Background

Every expert on influenza agrees that the ability of the influenza virus to re-assort genes means that another influenza pandemic not only can happen, it almost certainly will happen...Influenza is among the most contagious of all diseases...the influenza virus can spread from person to person before any symptoms develop. If a new influenza virus does emerge, given modern travel patterns it will likely spread even more quickly than it did in 1918.

The Great Influenza, John M. Barry

1.2 Why Does Peterborough County and City Need a Plan for Influenza Pandemic?

During the 20th century, the world experienced three influenza pandemics. The most deadly, the “Spanish Flu” of 1918-19, killed (based on the lowest estimate) 21 million people worldwide. Although no one can predict when the next pandemic of influenza will hit, it is certain that we will continue to experience global influenza pandemics.

Early in 2003, the province of Ontario experienced first hand the impact of a highly contagious respiratory illness (i.e. SARS), which not only affected people’s health and lives and put intense pressure on the health care system, but had devastating economic and social impacts in the broader community. That health emergency, which was predominantly a Nosocomial infection and affected a small number of people (i.e. 375 cases), highlighted limitations in our readiness to deal with a health threat. In Peterborough County and City area, approximately 90 cases were quarantined and fortunately, there were no deaths experienced during the SARS epidemic. However, the health care resources at the Peterborough County-City Health Unit were put under pressure. The staffing contingency plan was activated in order to utilize additional health care staff from services and programs that was considered non-essential during the crisis.

The novel H1N1 influenza virus that emerged in 2009 provided an opportunity for the further refinement of our local pandemic response. The establishment of the Peterborough Interagency Pandemic Influenza Planning Team (PIPIPT) in 2006 prepared the community for a pandemic. The establishment of the Community Influenza Assessment Committee (a subcommittee of the PIPIPT), provided a forum for local collaboration and decision-making over the course of the first two waves of H1N1-related disease. Unlike previous pandemics, access to vaccination and antiviral treatment provided us with effective tools to minimize and mitigate the impact of the illness.

Given our recent experience with a pandemic influenza strain, it is clear that appropriate pandemic planning can reduce: the number of people infected, the amount of illness and the extent of socio-economic disruption. Peterborough County and City are well prepared to

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mobilize resources quickly and effectively to limit the impact of an influenza pandemic. Peterborough's health care sector has a proven track record of effective collaboration and can apply many of the lessons learned in 2009 to future pandemic threats.

1.3 About Influenza

Influenza is a contagious respiratory illness caused by a group of viruses: influenza types A, B, and C. Most seasonal influenza epidemics are caused by type A and B. Type C rarely causes human illness. Influenza can cause mild to severe illness.

Influenza usually starts suddenly. Common symptoms include: fever (usually high, lasting three to four days), headache (often severe), aches and pains (often severe), fatigue and weakness (can last two to three weeks), extreme exhaustion (very common at the start), stuffy nose, sore throat, chest discomfort and cough, and nausea, vomiting and diarrhea (in children). Many illnesses, including the common cold, can have similar symptoms. While most healthy people recover from influenza without complications, some people – such as older people, young children, and people with certain medical conditions – are at high risk for serious complications from influenza. Some of the complications include: viral or bacterial pneumonia, dehydration, and worsening of chronic medical conditions, such as congestive heart failure, asthma, or diabetes. Children and adults may develop sinus problems and ear infections.

Influenza is a highly infectious disease *directly* transmitted from person to person when people infected with influenza cough or sneeze, and droplets of their respiratory secretions come into contact with the mucous membranes of the mouth, nose and probably eyes of another (i.e., droplet spread). Because the virus in droplets can survive for 24-48 hours on hard non-porous surfaces, for 24 to 48 hours on non-porous surfaces, for 8 to 12 hours on cloth, paper and tissues, and for five minutes on hands, it can also be transmitted *indirectly* when people touch contaminated hands, surfaces and objects (i.e., contact spread).

Case Definition for Influenza Like Illness (ILI) in the General Population

Acute onset of respiratory illness with fever AND one or more of the following – cough, sore throat, arthralgia (joint pain), myalgia (muscle aches and pains), prostration (extreme weakness), or malaise. In cases under 5 or 65 and older fever may not be prominent.

Source: iPHIS case definition (not pH1N1) May 4, 2009

The incubation period for influenza is one to three days. However, people with influenza are infectious and able to transmit the virus for up to 24 hours before symptoms appear. About 40% of adults can be infected with influenza and not develop symptoms. Adults are infectious for three to seven days after the symptoms appear while children may be infectious for a longer period. People with influenza tend to shed more viruses in their respiratory secretions in the early stages of the illness. Viral shedding tends to last longer in infants, young children and people with weak or compromised immune systems.

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1.4 When Does Influenza Become a Pandemic?

Strains of influenza are circulating throughout the world all the time. Only influenza A viruses are associated with pandemics. Influenza pandemics arise when all four of the following occur:

- A novel influenza A virus emerges;
- The new virus can spread efficiently from human to human;
- The new virus causes serious illness and death; and
- The population has little or no immunity to the virus.

The WHO (2005) suggests two mechanisms for the emergence of influenza virus that can cause pandemics:

- Genetic re-assortment, which occurs when two different viruses infect the same cell and exchange some gene segments. If the new virus can infect humans, cause serious disease and spread easily from person to person, it will ignite a pandemic; and
- Adaptive mutation or stepwise changes in a virus, which occurs during sequential infection of humans or other mammals. The virus gradually changes to become more transmissible among humans.

The 2009/2010 Experience:

In Peterborough County-City Health Unit (PCCHU), there were 51 laboratory-confirmed cases of pH1N1 between April 1, 2009 and April 1, 2010^[ARK1], or 36.8 cases per 100,000 population. Cases were first reported to PCCHU in June of 2009 (Figure 1) and peaked in October; there were no cases reported after November of the same year. Ages of cases ranged from less than one to 58 years old; nearly half (n=22, or 43.1%) of cases occurred in persons less than 15 years of age. Males and females were affected nearly equally at 54.9% and 45.1%, respectively. Additional demographic variables of PCCHU pH1N1 cases are presented in Table 1.

Table 1. Epidemiological summary of pH1N1 laboratory confirmed cases reported to PCCHU; Apr. 1, 2009 – Apr. 1, 2010.

Total Number of reported lab confirmed cases	51
Onset date of first case	6/22/2009
Onset date of last case	11/28/2009
Age range	Less than 1 (approx 4 mo.) to 58
Average, Median Age	Average: 23-24; Median: 19-20
Number and of males/females	M: 28 (54.9%); F: 23 (45.1%)
Number hospitalized	29 (56.9%)
Duration of hospitalization	Avg: 5.5d; Median: 2.5d
Number requiring ventilation	<5
Number deceased	<5

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database; Apr. 7, 2010

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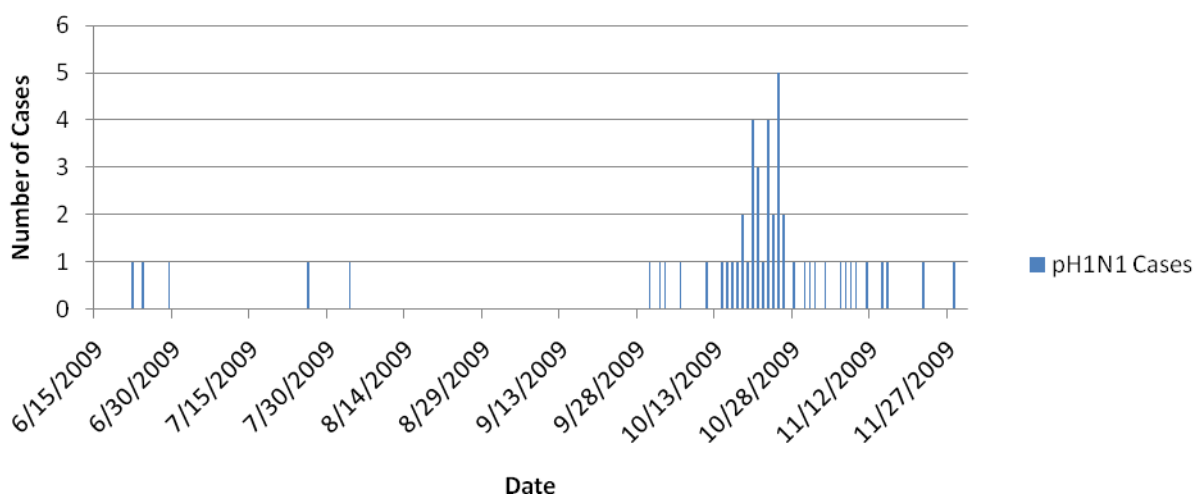


Figure 1. Timeline of laboratory-confirmed pH1N1 cases reported to PCCHU; Apr. 1, 2009 – Apr. 1, 2010

In Ontario between September 1, 2009 and April 10, 2010, there were 4727 confirmed cases of pandemic influenza (pH1N1) by Ontario Health Units according to the Ministry of Health and Long-Term Care (Source: Ministry of Health and Long Term Care [MOHLTC]: Ontario Influenza Bulletin, 2009-2010; Surveillance Week 14 [April 4, 2010 – April 10, 2010]) – Table 2. Few other strains of influenza A or B were reported to Health Units during this time, indicating that pH1N1 was the predominant circulating strain of influenza in Ontario (and Canada). More populous regions (e.g.: Toronto, Central East, Central West) experienced greater case volumes of pH1N1 than more rural areas of Ontario.

Table 2. Cumulative confirmed cases of influenza by health region with an episode date; Sept. 1, 2009 – Apr. 10, 2010

Region	Influenza A					Influenza A & B	Influenza B	Total (cumulative)
	pH1N1	NS*	Other†	H1	H3			
North West	162	120	5	0	0	0	0	287
North East	314	216	13	0	0	0	0	543
Eastern	950	122	0	1	0	0	0	1,073
Central East	994	722	23	0	1	0	6	1,746
Toronto	848	386	20	0	0	0	3	1,257
Southwest	615	550	11	1	1	0	2	1,180
Central West	844	667	10	1	2	1	4	1,529
Total Ontario	4,727	2,783	82	3	4	1	15	7,615

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database

*no subtype/not subtyped

† included indeterminate, untypeable and other subtypes

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When examining cases of pH1N1 confirmed by provincial laboratories, 3561 cases were reported in Ontario between August 30, 2009 and April 10, 2010 (Source: Public Health Agency of Canada; Flu Watch, April 4 to April 10, 2010 [Week 14]) – Table 3. (Note: Differences in figures are due to a number of factors, including: changing case definitions; reporting dates used; lags in laboratory testing and reporting) Ontario experienced a lower case volume than some other provinces, in particular Quebec (n=10,650), British Columbia (n=5816), and Alberta (n=5763); however, Ontario also had a significant volume of influenza specimens that were not subtyped or for which subtyping was not available. The highest rates of laboratory confirmed pH1N1 cases in Ontario were found in the Porcupine, Timiskiming, and Northwestern Health Units (not shown); the lowest rates of were found in the City of Ottawa, the City of Toronto, and York Regional Health Units.

Table 3. Cumulative numbers of positive influenza specimens by provincial laboratories; Aug. 30, 2009 –Apr. 10, 2010

Province	Influenza A					Influenza B
	A Total	H1	H3	pH1N1	NS*	
British Columbia	6,382	0	1	5,816	565	1
Alberta	5,871	2	5	5,763	101	0
Saskatchewan	2,598	0	1	2,298	299	0
Manitoba	1,915	0	0	1,788	127	0
Ontario	7,812	4	0	3,561	4247	10
Quebec	10,700	4	44	10,650	2	9
New Brunswick	1,856	1	1	1,835	19	0
Nova Scotia	788	0	0	753	35	0
Prince Edward Island	97	0	0	96	1	0
Newfoundland and Labrador	951	0	0	951	0	0
Canada	38,970	11	52	33,511	5396	22

Specimens from Northwest Territories, Yukon, and Nunavut are sent to reference laboratories in other provinces
 *no subtype/not subtyped

In Canada, from April 12, 2009 to April 10, 2010, the Public Health Agency of Canada received reports of a total of 8,678 pH1N1 cases (approximately one in four, or 27.8%) requiring hospitalization, including 1,473 (17.0%) cases admitted to intensive care (ICU) – Table 4. Ontario ranked third behind Quebec (n=3063) and Alberta (n=1276) among Canadian provinces in the number of hospitalizations in laboratory-confirmed pH1N1 cases with 1843. Ontario also had the second highest proportion of (laboratory-confirmed) cases requiring hospitalization (51.8%; Prince Edward Island ranked first with 52.1%). The Canadian average for hospitalized cases requiring ICU care was 17%. Saskatchewan had the highest rate of hospitalized patients requiring ICU care at 77.6%; Ontario was slightly above national average at 17.3%.

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Table 4. Cumulative numbers of hospitalized cases, ICU admissions and deaths among pandemic H1N1 2009 confirmed cases, Canada; Apr. 12, 2000 – Apr. 10, 2010*

Province / Territory	Lab Confirmed†	Hospitalized Cases†	% of Lab Confirmed Hospitalized	ICU Admissions†	% of Hospitalizations requiring ICU	Deaths†
BC	5,816	1,084	18.6%	168	15.5%	57
AB	5,763	1,276	22.1%	239	18.7%	71
SK	2,298	67	2.9%	52	77.6%	15
MB	1,788	379	21.2%	61	16.1%	11
ON	3,561	1,843	51.8%	319	17.3%	128
QC	10,650	3,063	28.8%	465	15.2%	108
NB	1,835	163	8.9%	34	20.9%	8
NS	753	293	38.9%	50	17.1%	7
PEI	96	50	52.1%	9	18.0%	0
NL	951	308	32.4%	60	19.5%	18
YK		15		3	20.0%	3
NWT		52		7	13.5%	1
NU		85		6	7.1%	1
Canada	33,511	8,678	27.8%‡	1473	17.0%	428

*Based on epidemiological date, hospitalization date, death date and reporting date

†Counts based retrieved from: Public Health Agency of Canada; Flu Watch, April 4 to April 10, 2010 (Week 14)

‡Excluding YK, NWT, and NT

As of April 10, 2010 the national cumulative crude hospitalization rate was 25.7 per 100,000 population with the highest rates in children less than 5 years of age (100.4 per 100,000). The national crude ICU admission rate was 4.4 per 100,000 population. The ICU admission rate was highest in adults 45 to 64 years (6.4 per 100,000) as well as children under five years of age (6.2 per 100,000).

According to the MOHLTC, there were 2212 hospitalizations for influenza A (Table 5) in Ontario. Similar to national rates, the highest rates of hospitalization in Ontario were in those less than one year of age (118.7 per 100,000) and in those aged one to four (60.4 per 100,000). By case load, those aged 45 to 64 were hospitalized the most (n=570).

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Table 5. Incidence of hospitalizations among influenza cases in Ontario; Sep. 1, 2009 – Apr. 10, 2010

Age Group	Influenza A		Influenza B		Total Influenza	
	Number	Rate/100,000	Number	Rate/100,000	Number	Rate/100,000
<1	159	118.67	0	0.00	159	118.67
1-4	330	60.42	1	0.18	331	60.60
5-14	371	24.03	1	0.06	372	24.10
15-24	206	11.78	1	0.06	207	11.83
25-44	362	9.67	0	0.00	362	9.67
45-64	570	16.41	0	0.00	570	16.41
65+	214	12.39	0	0.00	214	12.39
TOTAL	2,212	17.12	3	0.02	2,215	17.14

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database

Core data was available for 8,227 (94.8%) hospitalizations across Canada, as well as 1,473 (100%) ICU admissions and 423 (98.8%) deaths – Table 6. Among the 1,117 ICU cases where there is detailed information, 58.5% (n=654) required ventilation.

Table 6. Descriptive characteristics of laboratory-confirmed Canadian pandemic H1N1 2009 hospitalized cases, ICU admissions and deaths among ICU-admitted cases and deaths with core information available, reported to PHAC as of April 10, 2010†

	Hospitalized Cases (n=8227)	ICU Admissions (n=1473)	Deaths (n=423)
Females, %	50	51	49.6
Median age	29	46	53
Underlying medical conditions ¹	56.1	71.2	83
Pregnancy ²	20.2	11.7	8

¹Proportion of cases with at least one underlying medical condition (excluding pregnancy) among those for whom the information was available

²Percent of pregnant women among women 15 to 44 years of age.

†All cases admitted to ICU are included in the hospitalization count; however, not all the fatal cases have been hospitalized before dying.

The cumulative crude national mortality rate was 1.3 per 100,000 population with those 45 years and older having the highest mortality rate (2.1 per 100,000). The MOHLTC reported 120 influenza A deaths in Ontario between September 1, 2009 and April 10, 2010 (eight less than PHAC pH1N1 deaths between April 12, 2009 and April 10, 2010). Similarly to Canada, the highest crude mortality rates in Ontario were found in those 45 to 64 years of age (1.58 per 100,000) and in those greater than 65 years of age (1.79 per 100,000) – Table 7.

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Table 7. Incidence of deaths among influenza cases in Ontario; Sep. 1, 2009 – Apr. 10, 2010

Age Group	Influenza A		Influenza B		Total Influenza	
	Number	Rate/100,000	Number	Rate/100,000	Number	Rate/100,000
<1	1	0.75	0	0.00	1	0.75
1-4	1	0.18	0	0.00	1	0.18
5-14	4	0.26	0	0.00	4	0.26
15-24	9	0.51	0	0.00	9	0.51
25-44	19	0.51	0	0.00	19	0.51
45-64	55	1.58	1	0.03	56	1.61
65+	31	1.79	0	0.00	31	1.79
TOTAL	120	0.93	1	0.01	121	0.94

Source: Ontario Ministry of Health and Long-Term Care, integrated Public Health Information System (iPHIS) database; extracted 14/04/2010

Internationally, the World Health Organization (WHO) reported that as of April 4, 2010, over 213 countries and overseas territories or communities worldwide reported cases of pH1N1 and there were at least 17,700 deaths (WHO, Pandemic (H1N1) 2009 - update 97 http://www.who.int/csr/don/2010_04_23a/en/index.html) – Table 8.

Table 8. Approximate number of pH1N1 deaths by WHO region as of April 4, 2010. *

Region	Deaths†
WHO Regional Office for Africa (AFRO)	168
WHO Regional Office for the Americas (AMRO)	At least 8,309
WHO Regional Office for the Eastern Mediterranean (EMRO)‡	1019
WHO Regional Office for Europe (EURO)	At least 4,783
WHO Regional Office for South-East Asia (SEARO)	1,769
WHO Regional Office for the Western Pacific (WPRO)	1,805
Total*	At least 17,853

* Since the beginning of the pandemic; no date given

†The reported number of fatal cases is an under representation of the actual numbers as many deaths are never tested or recognized as influenza related.

‡No update since 7 March 2010

The European Centre for Disease Prevention and Control provide an update on the number of deaths by county; as of the Week 10 (week of March 8th, 2010) France (n=309), the United Kingdom (n=296) and Germany (n=243) have reported the greatest number of deaths (Source: European Centre for Disease Prevention and Control; Surveillance Report Weekly influenza surveillance overview 19 March 2010; Available: http://www.ecdc.europa.eu/en/publications/Publications/100319_EISN_Weekly_Influenza_Surveillance_Overview.pdf) – Table 9.

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Table 9. Aggregate numbers of pH1N1 associated deaths, Week 10, 2010*

Country	Cumulative Deaths†	Last Reported Week
Austria	0	W36, 2009
Belgium	0	W29, 2009
Bulgaria	40	W53, 2009
Cyprus	0	W29, 2009
Czech Republic	98	W10, 2010
Denmark	0	W36, 2009
Estonia	19	W10, 2010
Finland	0	W36, 2009
France	309	W10, 2010
Germany	243	W9, 2010
Greece	139	W10, 2010
Hungary	130	W10, 2010
Iceland	2	W52, 2009
Ireland	24	W10, 2010
Italy	1	W52, 2009
Latvia	34	W9, 2010
Lithuania	23	W10, 2010
Luxembourg	3	W52, 2009
Malta	5	W9, 2010
Netherlands	59	W10, 2010
Norway	29	W10, 2010
Poland	148	W53, 2009
Portugal	0	W53, 2009
Romania	122	W10, 2010
Slovakia	54	W10, 2010
Slovenia	19	W10, 2010
Spain	4	W29, 2009
Sweden	24	W10, 2010
United Kingdom	296	W9, 2010
Total	1825	

*Week of Mar. 8, 2010

†Since the beginning of the pandemic; no date given

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1.5 The Context for Preparing for an Influenza Pandemic

The Peterborough County-City Health Unit Pandemic Influenza Plan is based on and reflects:

- a collaborative approach to pandemic planning;
- an ethical framework to guide decision-making; and
- relevant provincial legislation.

1.6 World Health Organization (WHO) Pandemic Periods and Phases

The World Health Organization (WHO) Global Influenza Preparedness Plan, released in April 2005, revised the phases of a pandemic into six phases. WHO decided to update the original plan in response to recent developments surrounding the H5N1 avian influenza virus, including endemic animal infection in several Southeast Asian countries and continuing human cases, better understanding of the evolution of flu viruses, new techniques for diagnosis and vaccine development, improved antivirals, and the ongoing revisions of the International Health Regulations.

The WHO plan was revised again in April 2009, retaining the six-phase structure but regrouping and redefining the phases to more accurately reflect pandemic risk and the epidemiological situation based upon observable phenomena.

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PANDEMIC PHASE DESCRIPTIONS	
PHASE 1	No animal influenza virus circulating among animals has been reported to cause infection in humans.
PHASE 2	An animal influenza virus circulating in domesticated or wild animals is known to have caused infection in humans and is therefore considered a specific potential pandemic threat.
PHASE 3	An animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks.
PHASE 4	Human-to-human transmission (H2H) of an animal or human-animal influenza reassortant virus able to sustain community-level outbreaks has been verified.
PHASE 5	The same identified virus has caused sustained community level outbreaks in two or more countries in one WHO region.
PHASE 6	In addition to the criteria defined in Phase 5, the same virus has caused sustained community level outbreaks in at least one other country in another WHO region.
POST-PEAK PERIOD	Levels of pandemic influenza in most countries with adequate surveillance have dropped below peak levels.
POSSIBLE NEWWAVE	Level of pandemic influenza activity in most countries with adequate surveillance rising again.
POST-PANDEMIC PERIOD	Levels of influenza activity have returned to the levels seen for seasonal influenza in most countries with adequate surveillance.

In addition, three more phases were added to identify the ongoing evolution of a global pandemic, with the potential for multiple waves.

In nature, influenza viruses circulate continuously among animals, especially birds. Even though such viruses might theoretically develop into pandemic viruses, in **Phase 1** no viruses circulating among animals have been reported to cause infections in humans.

In **Phase 2** an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans, and is therefore considered a potential pandemic threat.

In **Phase 3**, an animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for example, when there is close contact between an infected person and an unprotected caregiver. However, limited transmission under such restricted circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.

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Phase 4 is characterized by verified human-to-human transmission of an animal or human-animal influenza reassortant virus able to cause “community-level outbreaks.” The ability to cause sustained disease outbreaks in a community marks a significant upwards shift in the risk for a pandemic. Any country that suspects or has verified such an event should urgently consult with WHO so that the situation can be jointly assessed and a decision made by the affected country if implementation of a rapid pandemic containment operation is warranted. Phase 4 indicates a significant increase in risk of a pandemic but does not necessarily mean that a pandemic is a forgone conclusion.

Phase 5 is characterized by human-to-human spread of the virus into at least two countries in one WHO Region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication and implementation of the planned mitigation measures is short.

Phase 6, the pandemic phase, is characterized by community level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in **Phase 5**. Designation of this phase will indicate that a global pandemic is under way.

During the **post-peak** period, pandemic disease levels in most countries with adequate surveillance will have dropped below peak observed levels. The post-peak period signifies that pandemic activity appears to be decreasing; however, it is uncertain if additional waves will occur and countries will need to be prepared for a second wave.

Previous pandemics have been characterized by waves of activity spread over months. Once the level of disease activity drops, a critical communications task will be to balance this information with the possibility of another wave. Pandemic waves can be separated by months and an immediate “at-ease” signal may be premature.

In the **post-pandemic** period, influenza disease activity will have returned to levels normally seen for seasonal influenza. It is expected that the pandemic virus will behave as a seasonal influenza A virus. At this stage, it is important to maintain surveillance and update pandemic preparedness and response plans accordingly. An intensive phase of recovery and evaluation may be required. This phased approach is intended to help countries and other stakeholders to anticipate when certain situations will require decisions and decide at which point main actions should be implemented. As in the 2005 guidance, each of the phases applies worldwide once announced. However, individual countries will be affected at different times. In addition to the globally announced pandemic phase, countries may want to make further national distinctions based upon their specific situations. For example, countries may wish to consider whether the potential pandemic virus is causing disease within their own borders, in neighbouring countries, or countries in close proximity.

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1.7 A Collaborative Approach to Pandemic Planning

Because viruses do not respect borders, planning must occur at all levels: internationally, nationally, provincially and locally. Each level of government has different roles depending on their jurisdictional authority, but their plans and activities must be coordinated. The PCCHU plan is based on coordination and collaboration among the City, County and health care sector.

A coordinated collaborative approach will ensure effective communication from local health authorities who will be the first to detect influenza in their communities, to the provincial and federal governments, and to other countries and international health authorities.

1.8 Roles and Responsibilities in Collaborative Pandemic Planning

In Peterborough City and County, the Health Unit is chair of the of the Peterborough Interagency Pandemic Influenza Planning Team. The Team consists of representatives from major stakeholders and partners such as the Peterborough Regional Health Centre, the Emergency Management Coordinators for the City and County, Curve Lake and Hiawatha First Nations, and others, such as the Boards of Education, postsecondary education institutions, and the United Way. The Team has conducted activities to educate health care providers, local businesses, volunteer organizations, and the general public about the need to prepare for a pandemic.

The Community Influenza Assessment Committee, a subcommittee of the PIIPT, functions as the forum for collaboration and coordination between the health care system, public health, and municipal partners. Its role is to ensure access to preventive, assessment and treatment services for influenza during a pandemic.

The public is expected to actively participate in efforts to reduce the spread of influenza, to comply with any public health measures, and to participate in their own care in a pandemic.

1.9 Ethical Framework for Decision Making

The PCCHU will adopt the Ethical Framework for Decision Making as outlined in the Ontario Health Pandemic Influenza Plan. (to access a copy of the Ontario Health Pandemic Influenza Plan visit:

[E2] http://www.health.gov.on.ca/english/providers/program/emu/pan_flu/pan_flu_plan.html

[RP3])

During a pandemic, governments and public health authorities will have to make difficult decisions (e.g., access to vaccines and antivirals, reallocation of people and resources). Stakeholders (e.g., members of the public, patients, health care workers, other organizations) are more likely to accept decisions if the processes are:

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- Open and transparent – the process by which decisions are made must be open to scrutiny and the basis for decisions should be explained;
- Reasonable – Decisions should be based on reasons (i.e., evidence, principles, values) and be made by people who are credible and accountable;
- Inclusive – Decisions should be made explicitly with stakeholder views in mind and stakeholders should have opportunities to be engaged in the decision-making process;
- Responsive – Decisions should be revisited and revised as new information emerges, and stakeholders should have opportunities to voice any concerns they have about decisions (i.e., dispute and complaint mechanisms); and
- Accountable – There should be mechanisms to ensure that ethical decision-making is sustained throughout the pandemic.

Core ethical values will be applied during an influenza pandemic. More than one value may be relevant in any given situation, and some values will be in tension with others. This tension is the cause of the ethical dilemmas that may emerge during a pandemic, and reinforces the importance of shared ethical language as well as decision-making processes that can assign a moral weight to each value when values are in conflict. The core ethical values (not listed in priority) follows:

Individual Liberty. Individual liberty (i.e., respect for autonomy) is a value enshrined in our laws and in health care practice. During a pandemic, it may be necessary to restrict individual liberty in order to protect the public from serious harm. Individual liberty can be preserved to the extent that the imposed limits and the reasons for them are transparent. Restrictions to individual liberty will:

- be proportional to the risk of public harm;
- be necessary and relevant to protecting the public good;
- employ the least restrictive means necessary to achieve public health goals; and
- be applied without discrimination.

Protection of the Public from Harm. Public health authorities have an obligation to protect the public from serious harm. For public health to fulfill this obligation and minimize serious illness, death and social disruption, public health may isolate people or use other containment strategies, require health care facilities to restrict public access to some areas or limit some services (e.g., elective surgeries). For these protective measures to be effective, citizens must comply with them. The ethical value of individual liberty is often in tension with the obligation to protect the public from harm; however, it is also in individuals' interests to serve the public good and minimize harm to others. When making decisions designed to protect the public from harm, public health authorities will:

- weigh the benefits of protecting the public from harm against the loss of liberty of some individuals (e.g. isolation);

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- ensure all stakeholders are aware of the medical and moral reasons for the measures, the benefits of complying, and the consequences of not complying; and
- establish mechanisms to review decisions as the situation changes and to address stakeholder concerns or complaints.

Proportionality. Restrictions on individual liberty and measures to protect the public from harm should not exceed the minimum required to address the actual level of risk or need in the community. The Medical Officer of Health for the City and County of Peterborough will:

- use the least restrictive or coercive measure possible when limiting or restricting liberties or entitlements; and
- use more coercive measures only in circumstances where less restrictive means have failed to achieve appropriate [public health] ends.

Privacy. Individuals have a right to privacy, including the privacy of their health information. During a pandemic, it may be necessary to override this right to protect the public from serious harm; however, to be consistent with the ethical principle of proportionality, the City and County of Peterborough will:

- determine whether the good intended is significant enough to justify the potential harm of suspending privacy rights (e.g., potential stigmatization of individuals and communities);
- require private information only if there are no less intrusive means to protect public health;
- limit any disclosure to only that information required to achieve legitimate public health goals; and
- take steps to prevent stigmatization (e.g., public education to correct misperceptions about disease transmission).

Note: Where the plan contains any reference to the collection, use or disclosure of information or data, it is referring to non-identifiable information or data whenever possible. Any collection, use or disclosure of personal information will be done in compliance with governing legislation.

Equity. All patients have an equal claim to receive the health care they need, and health care institutions are obligated to ensure sufficient supply of health services and materials. During a pandemic, tough decisions may have to be made about who will receive antiviral medication and vaccinations, and which health services will be temporarily suspended. Depending on the extent of the pandemic, measures taken to contain the spread of disease may limit access to emergency or essential services. In these circumstances, decision makers will:

- strive to preserve as much equity as possible between the needs of influenza patients and patients who need urgent treatment for other diseases; and
- establish fair decision-making processes/criteria.

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Duty to Provide Care. Health care workers have an ethical duty to provide care and respond to suffering. During a pandemic, demands for care may overwhelm health care workers and their institutions, and create challenges related to resources, practice, liability and workplace safety.

Health care workers may have to weigh their duty to provide care against competing obligations (i.e., to their own health, family and friends).

When providers cannot provide appropriate care because of constraints caused by the pandemic, they may be faced with moral dilemmas. To support providers in their efforts to discharge their duty to provide care, Peterborough County and City will:

- work collaboratively with stakeholders, regulatory colleges and labour associations to establish practice guidelines;
- work collaboratively with stakeholders, including labour associations, to establish fair dispute resolution processes;
- strive to ensure the appropriate supports are in place (e.g., resources, supplies, equipment); and
- develop a mechanism for provider complaints and claims for work exemptions.

Reciprocity. Society has an ethical responsibility to support those who face a disproportionate burden in protecting the public good. During a pandemic, the greatest burden will fall on public health practitioners, other health care workers, patients, and their families. Health care workers will be asked to take on expanded duties. They may be exposed to greater risk in the workplace, suffer physical and emotional stress, and be isolated from peers and family. Individuals who are isolated may experience significant social, economic, and emotional burdens. Decision-makers will:

- take steps to ease the burdens of health care workers, patients, and patient's families.

Trust. Trust is an essential part of the relationship between government and citizens, between health care workers and patients, between organizations and their staff, between the public and health care workers, and among organizations within a health system. During a pandemic, some people may perceive measures to protect the public from harm (e.g., limiting access to certain health services) as a betrayal of trust.

In order to maintain trust during a pandemic, decision-makers will:

- take steps to build trust with stakeholders before the pandemic occurs (i.e., engage stakeholders early); and
- ensure decision making processes are ethical and transparent.

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Solidarity. Stemming an influenza pandemic will require solidarity among community, health care institutions, public health units, and government. Solidarity requires good, straightforward communication and open collaboration within and between these stakeholders to share information and coordinate health care delivery. By identifying that the health of the general public (and service providers) is a good worth promoting during an influenza pandemic, government decision-makers, public health workers and other health care professionals could model values of solidarity while encouraging others to broaden traditional ethical values focused on rights or interests of individuals.

Stewardship. In our society, both institutions and individuals will be entrusted with governance over scarce resources, such as vaccines, antivirals, ventilators, hospital beds and even health care workers. Those entrusted with governance should be guided by the notion of stewardship, which includes protecting and developing one's resources, and being accountable for public well-being. To ensure good stewardship of scarce resources, decision makers will:

- consider both the benefit to the public good and equity (i.e., fair distribution of both benefits and burdens).

Peterborough County and City will use this ethical framework to guide decision-making in pandemic planning and management.

1.10 Relevant Provincial Legislation

During a pandemic, individuals and institutions responsible for managing the response will require the legal authority to implement pandemic plans. Much of that legislation is already in place (e.g., the Health Protection and Promotion Act, the Emergency Management and Civil Protection Act), and some is now under development. During pandemic planning and during a pandemic, Ontario will work within a legal framework that attempts to balance the rights of individuals (e.g., privacy, liberty, equity) with the responsibility to protect the public from harm and the rights of workers to work in safety. Below is a summary of relevant legislation which will guide the province and the City and County of Peterborough.

Emergency Legislation

The Emergency Management and Civil Protection Act (EMCPA) is the principal statute governing emergency management in Ontario. The Act governs all municipalities in Ontario, ministers presiding over a provincial ministry, and agencies, boards, commissions and other branches of the provincial government designated by the Lieutenant Governor in Council. Under the Act:

- head of municipal council may declare that an emergency exists in the municipality and may take action and issue orders necessary to implement the emergency plans of the

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- municipality and to protect property and the health, safety and welfare of the inhabitants of the emergency area
- the Cabinet, or the Premier may declare that an emergency exists throughout Ontario or in any part
 - the Premier may, at any time, declare that an emergency has been terminated
 - heads of municipal councils and ministers presiding over a provincial ministry and designated agencies, boards, commissions and branches of government are required to develop and implement emergency management programs which must consist of:
 - an emergency plan
 - training programs and exercises for municipal and Crown employees and other persons
 - public education
 - any other element required by regulation.

Pursuant to Order-in-Council 167/2004 (February 2, 2004), the Minister of Health and Long-Term Care is responsible for two areas in formulating emergency plans: human health disease and epidemics; and provision of health services during an emergency (e.g., floods, ice storm).

The Emergency Management Act (EMA), 2007, provides the federal framework for emergency management, similar to Ontario's EMCPA. Similar to the EMCPA, the EMA governs the declaration, expiration and continuation and revocation of each type of emergency and the emergency orders that may be issued under each circumstance. Examples include:

- regulation or prohibition of travel
- evacuation of persons
- appropriation of property
- authorization or direction to persons to render essential services
- regulation of essential goods, services and resources
- establishment of emergency shelters and hospitals
- authorization of expenditures

The Act also provides for compensation to persons who suffer loss, injury or damage as a result of any of order issued by the government under the Act.

The Quarantine Act gives the federal government general and emergency powers to inspect, issue orders and enforce quarantine of travelers and cargo arriving in Canada for the purpose of preventing the introduction and spread of communicable diseases.

For additional information on relevant emergency legislation see the Ontario Health Pandemic Influenza Plan (OHPIP) at

http://www.health.gov.on.ca/english/providers/program/emu/pan_flu/pan_flu_plan.html#section[RP4]

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Public Health Legislation

Under the Health Protection and Promotion Act:

- physicians, laboratories, school principals and others must report certain diseases, including influenza to medical officers of health
- persons who pose a risk to the public health may be ordered to do, or to stop doing, anything to reduce the risk of disease transmission
- information about patients who are infected with communicable diseases may be disclosed to the ministry and medical officers of health, while protecting the confidentiality of sensitive health information
- physicians are required to report to the Medical Officer of Health the name and residence address of any person who is under the care and treatment of the physician in respect of a communicable disease and who refuses or neglects to continue the treatment in a manner and to a degree satisfactory to the physician.
- The Medical Officer of Health may take appropriate action to prevent, eliminate or decrease a health risk
- premises may be required, under certain conditions, to be used as temporary isolation facilities.

Under the Health Systems Improvements Act, 2007, new powers are provided to the Minister and Chief Medical Officer of Health which may be invoked without the declaration of a provincial emergency. These powers are intended to mitigate an incident such as an outbreak of infectious disease from escalating to the level of a provincial emergency. These powers include:

- authorizing the Minister of Health and Long Term Care, upon certification by the Chief Medical Officer of Health, to procure, acquire or seize medications and supplies when regular supply and procurement process are insufficient to address the needs of Ontarians.
- Authorizing the Chief Medical Officer of Health to:
 - request information from health information custodians
 - collect, retain and use for pre-existing laboratory specimens to investigate, eliminate or reduce the risk to health
 - issue directives concerning precautions and procedures to health care providers

Additional amendments have been made in order to strengthen the capacity of Ontario's health care system to respond to outbreaks of disease. These include:

- increased powers for local medical officers of health to investigate and respond to outbreaks of communicable disease in hospitals
- increased timeliness and efficiency of laboratory reporting of reportable
- improved enforcement of public health orders

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Pre-Hospital Care Legislation

Regulations under the Ambulance Act include provisions concerning education, protection, prevention of disease transmission, reporting of possible exposure and sterilization of equipment. They also deal with issues surrounding the immunization of emergency medical attendants.

Hospital Legislation

Under the Public Hospitals Act:

- hospitals are required to obtain ministry approval before using additional sites for hospital services
- Cabinet is authorized to appoint a hospital supervisor on the recommendation of the Minister of Health and Long-Term Care
- the Minister is authorized to make regulations, subject to Cabinet approval, to address the safety of any hospital site and to deal with patient admissions, care and discharge
- the administrator, medical staff, chief nursing executive, staff nurses and nurses who are managers are required to develop plans to deal with: i) emergency situations that could place a greater than normal demand on the services provided by the hospital or disrupt the normal hospital routine, and ii) the failure to provide services by persons who ordinarily provide services in the hospital.

Other Facility Legislation

The Nursing Homes Act, the Charitable Institutions Act, the Homes for the Aged and Rest Homes Act, and the Health Facilities Special Orders Act (which govern long-term care facilities in Ontario) in conjunction with the service agreements entered into with these operators require the operators of long-term care facilities to:

- implement surveillance protocols for a particular communicable disease provided by the MOHLTC
- report all communicable disease outbreaks to the medical officer of health comply with the Long-Term Care Facility Program Manual
- provide information to the MOHLTC relating to the operation of the facility (e.g., bed occupancy rates, service levels, staffing levels)

Legislation Governing Community Health Services

The Long-Term Care Act, 1994 and the Community Care Access Corporations Act, 2001 in conjunction with the memorandum of understanding and funding agreements between the ministry and community-based agencies, give the ministry the authority to require CCACs and other approved community-based agencies to:

- provide reports and information

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- comply with all ministry directives, policies, guidelines and procedures, including surveillance protocols for communicable diseases
- comply with the most recent Planning, Funding and Accountability Manual.

Legislation Governing Health Information

The Personal Health Information Protection Act, 2004, governs the collection, use, and disclosure of personal health information by health information custodians, including physicians, hospitals, long-term care facilities, boards of health, medical officers of health and the Ministry of Health and Long-Term Care. It includes provisions providing for the disclosure of personal health information to the Chief Medical Officer of Health or a medical officer of health by health information custodians without the consent of the individuals to whom the information relates where the information is disclosed for a purpose of the Health Protection and Promotion Act. It also includes provisions providing for the disclosure of personal health information by health information custodians without the consent of the individuals to whom the information relates to public health authorities in other jurisdictions where the disclosure is made for a purpose that is substantially similar to a purpose of the Health Protection and Promotion Act.

Legislation Governing Regulated Health Professionals

Under the authority of the Regulated Health Professions Act, 1991 (RHPA), the power to register physicians, nurses and other regulated health professionals is provided to the College which governs the health profession, not the Ministry of Health and Long-Term Care.

Temporary registration in the event of an emergency is possible under the RHPA, the Health Professions Procedural Code (Code), which is Schedule 2 to the RHPA and the health profession specific Acts. See, for example, the registration regulations made under the Medicine Act, 1991, Nursing Act, 1991 and the Medical Laboratory Technology Act, 1991. Specific requirements and procedures for temporary registration vary from College to College under their registration regulations.

Depending on the provisions within the Colleges' registration regulations, temporary registration of a regulated health professional in an emergency situation may be available. Under Regulation 865/93–Registration, made by the College of Physicians and Surgeons of Ontario (CPSO), a certificate of registration may be issued for supervised, short duration practice without first requiring an order of the CPSO's Ontario Health Plan for an Influenza Pandemic June 2005 Registration Committee. In these circumstances, the appointment must be for the purpose of providing, among other things, medical services for a short interval that would otherwise be unavailable due to a lack of persons to provide them.

The applicant must also meet all the criteria under the regulation relating to supervised

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practice of short duration. The certificate expires thirty days after it is issued unless a panel of the Registration Committee orders an extension. Some Colleges may be unable to issue temporary certificates in emergency circumstances. Under the Code, a College Registrar may grant a certificate of registration with terms and conditions, for example, limiting the time or location of the professional's practice, but only with the approval of a panel of the Registration Committee. Other Colleges have developed expedited processes for use in emergency circumstances.

Legislation Governing Workplaces

The Ministry of Labour enforces the Occupational Health and Safety Act (OHS) and the Health Care and Residential Facilities Regulation (HCRF). Under the OHS, an employer has the duty to take all reasonable precautions in the circumstances for the protection of a worker. Further, under the HCRF Regulation, there is a duty for employers in health care facilities to establish measures and procedures including the following:

- control of infections
- immunization
- the use of disinfectants
- the handling, cleaning and disposal of soiled linen, sharp objects and waste.

Employers, in consultation with the Joint Health and Safety Committee (JHSC) in the workplace, are required to develop these procedures and provide workers with relevant training. Workers have the right to participate in identifying and resolving workplace health and safety concerns and have a duty to wear and use protective equipment, devices or clothing provided by the employer. The OHS cannot be overridden by any emergency order made under either the Emergency Management and Civil Protection Act (EMCPA) or the Health Protection and Promotion Act (HPPA).

1.11 Incident Management System (IMS)

The Incident Management System is an international emergency management structure that has been adopted by Emergency Management Ontario (EMO) as the operational framework for emergency management for the Government of Ontario. It provides the basic command structure and functions required to manage an emergency situation effectively. The IMS has four components:

- Command
- Operations
- Planning
- Logistics and Finance

This structure has been applied to the PCCHU County-City Health Unit plan. This will allow the concerned individuals to standardize contact information across organizations to make communication and cooperation among the groups easier.

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1.12 Planning Goals, Approach and Assumptions

a) Goals

The goals of the Peterborough County-City Health Unit pandemic plan are:

1. To minimize serious illness and overall deaths through appropriate management of the health care system; and
2. To minimize societal disruption as a result of an influenza pandemic.

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

b) Strategic Approach

The PCCHU Pandemic Influenza Plan has adopted Ontario's four pronged strategic approach to pandemic planning:

- **Be ready**
Plan for the influenza pandemic.
- **Be watchful**
Practice active screening and surveillance to identify the earliest signs of a pandemic.
- **Be decisive**
Manage the spread quickly and effectively.
- **Be transparent**
Communicate with key stakeholders and residents of Peterborough.

c) Planning Assumptions

The PCCHU Pandemic Influenza Plan 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.
- Ontario will have little lead time between when a pandemic is first declared by the WHO and when it spreads to the province.

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- An influenza pandemic usually spreads in two or more waves, either in the same year or in successive influenza seasons (i.e., October to April). 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. The length of each wave of illness is approximately eight weeks.

The extent and severity of illness

- Because the population will have had limited prior exposure to the virus, most people will be susceptible. Children and otherwise healthy adults may be at greater risk because elderly people may have some residual immunity from exposure to a similar virus earlier in their lives if the pandemic is caused by a recycled influenza strain.
- There will be an attack rate of 35% during the first wave. (Note: This assumes an aggressive impact than what may occur.)
- About 45% of people who acquire influenza will not require medical care, but they will need health information and advice; about 53% will require outpatient or primary care (e.g., treatment by a family physician); 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.
- At least one third of deaths are likely to be in people under age 65 compared to less than 5% of deaths in inter-pandemic years.
- Sub-clinical infections will occur. Based on previous pandemics, some people will only experience mild illness or have no symptoms, but still be able to transmit the virus to others. This will make case identification and contact tracing more difficult.
- Individuals who recover from illness with the pandemic strain will likely be immune to infection from that strain.

Access to vaccines/antivirals

- A vaccine will not be available for at least four to five months after the seed strain is identified, which means it will not be available in time for the first wave of illness but may be available in time to mitigate the impact of the second wave.
- Once available, the vaccine will be in short supply and high demand. 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 as many as two doses of vaccine to induce immunity.
- When vaccine becomes available, approximately 2 to 4 million doses will have to be administered per month until Ontario's population is fully immunized.
- Even with a well-matched vaccine, the effectiveness of influenza vaccine in preventing illness is approximately 70-90% in healthy adults (based on experience with annual influenza immunization programs).
- The only specific treatment option for influenza during a pandemic will be antiviral drugs, which must be started within 48 hours of the onset of symptoms. The efficacy of antivirals against the pandemic strain is unknown but, when antivirals are used to treat seasonal

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influenza, they have been shown to shorten the length of time people are ill, ameliorate symptoms and reduce hospitalizations.

- Prophylactic antivirals can be effective in preventing influenza and reducing the impact of outbreaks within institutions.
- Because Ontario will not have a large enough initial supply of either antivirals or vaccine for the entire population, the province will have to set priorities for who receives limited vaccine and antiviral drugs. Ontario will follow the recommendations of the Federal/Provincial/Territorial Pandemic Influenza Committee (PIC) for priority groups for immunization and antiviral treatment and prophylaxis.
- During the course of the pandemic, priority groups may change based on the epidemiology of the pandemic strain (i.e., the nature of the virus, the people most affected).

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 care giving responsibilities.
- 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 surge capacity by providing influenza care that will help avoid hospital admissions and allow early hospital discharges.
- 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.
- Non-life-threatening health services and public health programs will be significantly curtailed, consolidated or suspended completely.
- Care protocols may change and standards of practice for “normal” operating conditions may have to 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 the onset of a pandemic, and could be declared before the strain of influenza appears in Ontario.
- The overall provincial response during a declared provincial emergency will be managed from the Provincial Emergency Operations Centre, with the Emergency Management Unit, MOHLTC providing command and control services for the health care sector and the MOHLTC itself.
- The Provincial Infectious Diseases Advisory Committee (PIDAC) will be responsible for providing ongoing clinical, infection control and epidemiological advice to the MOHLTC throughout the pandemic and recovery period.

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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 fiber optic technologies). Spill over media from other provinces and the United States will affect Ontarian's 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.