

Section 3 Planning Goals, Assumptions and Uncertainties

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1. Goals

The goals of the HKPRDHU Pandemic Influenza Plan are similar to provincial goals, which consist of the following:

1. To minimize serious illness and overall deaths.
2. To minimize societal disruption as a result of an influenza pandemic.

2. Assumptions

The key assumptions and limitations guiding HKPRDHU pandemic influenza planning and response activities are listed below.

- A pandemic will be due to a new subtype of influenza A.
- The first human cases caused by a novel influenza virus will likely occur in other countries and will be detected by the global surveillance network.
- Ontario will have little lead-time between when a pandemic is first declared by the WHO and when it spreads throughout the province¹.
- 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. In any locality, the length of each wave of illness is approximately eight weeks.
- There will be an attack rate of 35% over the duration of the pandemic².
- More severe illness and mortality than the usual seasonal influenza is likely in all population groups.
- Non-medical containment measures (Public Health Measures) will be the principal means of disease control until adequate supplies of vaccine and/or antiviral medications are available.
- 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.

¹ The next pandemic virus will be present in Canada within 3 months after it emerges in another part of the world, but it could be much sooner because of the volume and speed of global air travel (The Canadian Influenza Plan for the Health Sector, 2006).

² 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 (OHPPI, 2007).

3. Uncertainties

There are many uncertainties in relation to pandemic influenza planning. How these uncertainties manifest themselves will significantly affect how a pandemic response is mounted. Some of these uncertainties include:

- ❑ How much warning will there be before the arrival of an influenza pandemic in HKPR District?
- ❑ What age groups will be predominantly affected?
- ❑ What percentage of the population will be affected, require outpatient care, require hospitalization, require intensive care support and what percentage will die?
- ❑ Will vaccines and antiviral drugs be available/effective in preventing transmission, hospitalization and/or death?
- ❑ Will public health measures such as closing schools and child care centres have any effect, or will they be warranted because absenteeism will not allow them to continue to operate?
- ❑ How long will the pandemic last?

4. Planning Parameters

Despite the uncertainties described above, the Ontario Health Pandemic Influenza Plan, June 2005, has outlined some estimates that can be used for planning purposes. The estimates are based on using a model called the Meltzer model that was designed in the United States and applied to the Ontario population. The estimates are calculated using a software program called FluAid 2.0 (<http://www2a.cdc.gov/od/fluaid/>) that was designed by the U.S. Centers for Disease Control and Prevention (CDC). The model provides estimates of outpatient visits, hospitalizations and deaths based on 15%, 25% and 35% of the population becoming ill. It provides these parameters assuming a most likely, minimum and maximum scenario. Table 3.1 summarizes the estimates for Northumberland County, City of Kawartha Lakes and Haliburton County, a population of 173,920 people, as presented in OHPIP. 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.

For hospital admissions and persons requiring ICU care during a pandemic, a spreadsheet model called FluSurge can be used:

<http://www.cdc.gov/flu/flusurge.htm>

It should be noted that the Meltzer model reflects US realities in past pandemic and that the numbers provided in table 3.1 could be either overestimated or understated. The numbers are for planning purposes only.

Table 3.1 Estimated Impact of Pandemic Influenza in HKPR District³

Deaths (Number of cases)						
Gross attack rates				Distribution by age group (%of total): Most likely		
	15%	25%	35%		%High Risk	%Total
0-18 yrs most likely	1	1	1	0-18 yrs	0	1
Minimum	0	1	1			
Maximum	8	14	19			
19-64 yrs most likely	32	54	75	19-64 yrs	32	37
Minimum	5	8	11			
Maximum	60	101	141			
65+ yrs most likely	54	89	125	65+ yrs	50	62
Minimum	52	87	121			
Maximum	67	111	155			
Total: Most Likely	87	144	201	Totals	82	100
Total minimum	57	96	133			
Total maximum	135	226	315			

Hospitalization (Number of cases)						
Gross attack rates				Distribution by age group (%of total): Most likely		
	15%	25%	35%		%High Risk	%Total
0-18 yrs most likely	11	18	25	0-18 yrs	1	3
Minimum	5	9	12			
Maximum	45	75	105			
19-64 yrs most likely	190	317	443	19-64 yrs	8	55
Minimum	28	59	82			
Maximum	207	346	484			
65+ yrs most likely	143	239	334	65+ yrs	26	42
Minimum	102	171	239			
Maximum	181	302	422			
Total: Most Likely	344	574	802	Totals	35	100
Minimum	135	239	333			
Maximum	433	723	1,011			

³ The numbers reflect 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." (OHPIP, 2006).

Outpatient Visits (Number of cases)						
Gross attack rates				Distribution by age group (% of total): Most likely		
	15%	25%	35%		%High Risk	%Total
0-18 yrs most likely	3,403	5,672	7,940	0-18 yrs	3	25
Minimum	2,843	4,738	6,633			
Maximum	3,963	6,605	9,247			
19-64 yrs most likely	7,933	13,222	18,510	19-64 yrs	8	57
Minimum	5,696	9,793	13,291			
Maximum	12,108	20,181	28,253			
65+ yrs most likely	2,542	4,237	5,931	65+ yrs	8	18
Minimum	2,399	3,998	5,597			
Maximum	3,946	6,577	9,207			
Total: Most Likely	13,878	23,131	32,381	Totals	19	100
Minimum	10,938	18,229	25,521			
Maximum	20,017	33,363	46,707			

Source: Ministry of Health and Long-Term Care. Ontario Health Plan for an Influenza Pandemic, June 2005, Appendix 1, Page 7-8)