

INFLUENZAS AND THE PANDEMIC THREAT

Human Influenza

What is influenza?

Commonly called “the Flu” influenza is a disease of the upper respiratory tract. For basic information about the flu and how it differs from a cold or so-called “24-hour” or “stomach flu”, refer to Health Canada’s website article titled, “Influenza (the flu)”.

How serious is the flu in Canada?

Million of people get the flu in Canada each year. Most recover in one to two weeks, but each year between 4,000 to 8,000 Canadians (mostly elderly) die from complications of the flu. In an influenza pandemic, those numbers could be much higher. Health Canada estimates that in a pandemic, over 50% of Canadians may be infected and between 11,000 and 58,000 Canadians may die, depending on the severity of the strain.

What is an influenza pandemic?

Influenza viruses regularly mutate or change slightly. That’s why it’s necessary to get a new flu shot each year, since the viruses circulating in the population change. However, 3 – 4 times each century, a completely new flu virus appears, unrelated to any previous circulating viruses. When this happens, no one has any immunity and the virus spreads rapidly around the globe, infecting and killing millions of people. This is known as a pandemic. Four criteria must be met for a pandemic:

1. A new Influenza A virus emerges
2. The population has little immunity to the new virus

3. The new virus is “virulent” – causes serious illness and death
4. The new virus can spread efficiently from human to human

In the last century there were three pandemics, during the years 1918 – 1919, 1957 – 1958 and 1968 – 1969. The 1918 pandemic caused at least 20 million deaths worldwide, including 50,000 in Canada. The two later pandemics were much milder, but still killed 2 million and 1 million people worldwide respectively, including 7,00 and 4,00 Canadians respectively.

They called the H1N1 influenza outbreak in 2009 a pandemic, but that didn’t seem so bad. Does that mean we shouldn’t worry about future pandemics?

Absolutely not. The H1N1 influenza met almost all the criteria for a pandemic. It was a new strain never seen before, and the population had little immunity. It spread efficiently from human to human, showing up in Canada and the United States within weeks of the outbreak in Mexico. Fortunately, while at first the virus appeared to be virulent, it proved not to cause as much serious illness and death as was originally feared.

So we got off easy on this one. However, history has shown us that the severity of influenza pandemics varies and we have no way of predicting if the next one will be as mild, or if it will be as bad or worse than the outbreak in 1918.

Influenza and Animals

How will a 'Pandemic virus' likely occur?

There are two ways that scientists have seen a pandemic strain arise:

One way that a pandemic strain could emerge is when a virus is spread from an animal (e.g. a bird) to a human. As it infects more and more humans, it gradually adapts to the human host, until it is able to be transmitted more easily. Scientists believe that this is what happened in the 1918 pandemic. Since that virus was totally avian (bird) virus that had adapted to humans.

The second way that a pandemic strain could emerge is through re-assortment. Sometimes humans and animals can swap viruses back and forth through direct close contact (such as in pig production farms). A human (or a pig) becomes infected with a human flu virus and perhaps an avian flu virus at the same time. The two viruses exchange genetic material while in the same host at the same time, and a new strain emerges that can be very deadly. If this can also be efficiently spread from human to human, a pandemic can occur. Scientists think this is what happened in the 1958 – 1959 pandemic and also the 1968 – 1969 pandemic. The viruses were hybrids of human and avian influenza viruses.

To further complicate matters, the 2009 H1N1 virus was proven to be a reassortment of human, swine and avian influenza and this is one of the reasons that the global health community was so concerned about this new virus. There was fear that the virus would be unpredictable and could mutate during the pandemic to a much more virulent virus.

Avian Influenza

While the 2009 outbreak of H1N1 took the spotlight

off of the H5N1 avian flu in southeast Asia, the World Health Organization (WHO) continues to monitor this very deadly influenza.

Avian influenza, or “bird flu” has been documented in many Asian, European and African countries since 2003. Avian influenza refers to many different strains of influenza that infect many species of birds. A serious strain that has been infecting chickens and ducks, as well as a few mammals, is a highly pathogenic (disease causing) strain that spreads easily from bird to bird and is almost 100% fatal in chickens. The H5N1 strain is of concern because of its tendency to mutate rapidly, and also to acquire genes from viruses infecting other species, such as humans. As of August 2011, the WHO has confirmed 565 human cases of H5N1 influenza and 331 of those had fatal outcomes. While the fatality rate per reported case is frighteningly high, there has been limited human-to-human contact, keeping the spread of this disease low. However, because the virus mutates rapidly, making human-to-human transmission a possibility, the WHO continues to monitor the spread of this virus. For more information and monthly updates, please go to the World Health Organization website.

Pandemic Predictions

It is very difficult to predict what might occur in the next pandemic. If it arises out of southeast Asia, experts predict that it might reach North America within 3 months. It would have its maximum effect in the Canadian population within 5 to 7 months and could last up to 18 months.

Depending on the severity of the disease, a model developed by the US Centres for Disease Control and Prevention predicts a potential of between 9,000 and 51,000 deaths in Canada IF A VACCINE IS NOT AVAILABLE. We could also anticipate a severe shortage in health care resources and hospital beds.

Is there a Government plan to deal with an influenza pandemic?

Public Health Agency of Canada oversees the Canadian Influenza Pandemic Plan. The World Health Organization has called it an ‘excellent template’ for other nations to use.

The goals of influenza pandemic preparedness and response are:

1. First, to minimize serious illness and overall deaths, and
2. Second to minimize societal disruption among Canadians as a result of an influenza pandemic

These goals will be realized through the coordinated efforts of all levels of government in planning and preparation.

This plan was reviewed and revised following the 2009 H1N1 outbreak, using lessons learned from that outbreak and the Canadian response.

A copy of the complete plan can be found at:
<http://www.phac-aspc.gc.ca/cpip-pclcpi/>

What are the stages of a pandemic?

The World Health Organization has identified six stages:

Period	Phase	Description
Interpandemic Period	Phase 1	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.
	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.
	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.
Pandemic Alert Period	Phase 4	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	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.
Pandemic Period	Phase 6	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.
Postpandemic Period		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.

You can find out what phase the world is currently in by checking the World Health Organization website.

Workplace Precautions and Planning

What is considered an influenza outbreak in a workplace?

Absenteeism of 10% or more on any one day due to ‘influenza-like illness’ (ILI) is considered an outbreak and a workplace should report this to their local public health unit. ILI is defined as the sudden onset of respiratory illness with fever and cough and with one or more of the following: sore throat, aching joints, aching muscles or extreme exhaustion.

What should an employer do in the Interpandemic Period to protect workers?

As with any workplace hazard, it is important to follow a continuous improvement process. The following should be implemented during “usual” flu seasons, and continued on an ongoing basis:

1. First, assess the risks to workers in your particular workplace. Those who have contact with the public are at particular risk of contracting the flu. Make sure you include workers in your discussions about the potential problems and possible remedies.
2. With input from workers, plan the controls you intend to put in place, and develop your standards, policies, and procedures. Some of these that may be applicable are suggested below:
 - Offer free on-site flu vaccine to all workers and their families every October or November. While the flu vaccine is free to all Ontarians, making it convenient by offering it in the workplace may encourage people

to get their shot. Including family members may avoid having immunized workers stay home to care for ill family members.

- Strongly encourage any employees who may travel to regions where influenza cases are present for business or vacation to have the current influenza vaccination two to three weeks before they leave.
- Ensure that you have a sickness and absenteeism policy that encourages people to stay home when they are sick and does not penalize people for compliance (through loss of pay when off sick, or giving rewards for perfect attendance). Having sick people come to work is the best way to decimate the workforce in a pandemic.
- Encourage good hygiene among all your workers, which means covering their mouth during a cough or sneeze, not spitting, hand washing, and keeping their hands away from their mouth, eyes, and nose.

People should wash their hands:

- **after touching anything that could be contaminated with the body fluids of others (e.g., saliva, nasal secretions, feces)**
 - **after coughing or sneezing**
 - **after using the toilet**
 - **before and after meals and snacks**
 - **before and after preparing food**
 - **before and after smoking cigarettes**
 - **when arriving home**
 - **before and after work**
- Provide alcohol-based hand sanitizers for workers in places or situations where it is impossible or inconvenient to wash hands with running water and soap.
 - Ensure regular cleaning of frequently touched environmental surfaces, such as doorknobs, railings, telephones, keyboards, etc.

- Do appropriate cross training so that essential services or processes can continue if key people are off sick with the flu.
- 3. Communicate your standards, policies, and procedures clearly and appropriately to all employees on a regular basis and through many vehicles.
- 4. Train employees so that they understand the facts about flu vaccine and good hygiene practices.
- 5. Measure and evaluate your efforts and make improvements as necessary.

How can businesses prepare for the next pandemic, in addition to what they do in the Interpandemic Period?

During a pandemic, up to 35% of employees may be absent at one time due to illness. An additional number may be absent for other reasons, such as the need to care for ill family members, caring for children who are at home due to school closures, or simply due to fear of travel on public transit. Apart from the risk of illness to employees, this unprecedented absenteeism can threaten the survival of a business.

Employers planning for a pandemic should first ensure that they have done all the things listed in the section above. But in addition, they should:

1. **Assemble a team to plan for the pandemic.** The team should include senior leadership, senior union leaders, senior human resource staff, health and safety staff, key suppliers, and ideally a health professional from inside or outside the organization.
2. **Assess the risks to the organization.** Consider which people and which processes are at highest risk. For example:

- People at risk – those in contact with the public, those who travel extensively in planes and trains, those with school-aged children, those with chronic illnesses (e.g., diabetes, heart disease)
- Processes at risk – those that involve public gatherings, those that are dependent on a small number of skilled workers, those dependent on supplies from external suppliers.
- 3. **Set your priorities.** Which processes are the most critical for the survival and continuance of your business? Which support jobs are most critical for your business (e.g., payroll staff, IT support)? Also, determine which are your least essential processes, which could be shut down for a few weeks in an emergency, without affecting your ability to survive as a business?
- 4. **Protect your people and your processes as much as possible.** This may include increasing your fresh air circulation, shifting staff from less essential processes or functions to critical processes and functions, encouraging alternate working arrangements such as telecommuting and conference calls, etc. Don't forget contingency planning for suppliers. Also be sure to define trigger points for instituting some of these contingency plans.
- 5. **Build the Foundation.** The controls listed above won't be possible to institute without a solid foundation including:
 - Good succession planning and cross training
 - A clear definition of the chain of command in a pandemic situation
 - A well-defined communication plan for internal and external communications
 - A definition of the new criteria for alternate work arrangements, as well as the availability of the technology to support them

Could Public Health Officials ‘commandeer’ our facilities or employees in a pandemic?

During a pandemic, Canada’s health care system may be overwhelmed, and public health officials may be required to use community resources to meet the needs of the population.

Therefore, public health officials may come to businesses for assistance, as follows:

1. Facilities

The Canadian Pandemic Influenza Plan has a section titled “Guidelines for Non-Traditional Sites and Workers”. This section discusses the possibility of the need for using non-healthcare facilities for the monitoring, care or support of influenza patients during a pandemic. These sites might be used for triage centres, clinics, emergency residential care, etc. The Plan suggests the following types of sites might be appropriate for a Non-Traditional Site:

- Schools
- Arenas
- Hotels
- Churches
- Community halls
- Closed hospitals or hospital
- Banquet facilities wards
- Day care centres

If your workplace is one of the above, or if your company owns large facilities that could be useful for handling large numbers of people or supplies in a pandemic situation, you may want to contact your local Public Health Unit’s Pandemic Planning staff, to offer your location as a potential Non-Traditional Site.

2. Human Resources – Needed Skills

In a pandemic situation, up to 35% of the population may be clinically ill and unable to work. This will be especially critical if shortages of health care workers

result. The Plan calls for searching out additional health care workers, who may not normally be employed in a health care setting, or volunteers who could be trained to do non-medical work. If your company has an occupational health department, or employs trained health care workers who may be working in educational or administrative work, they could be called upon by the government to assist in managing the pandemic.

Under certain circumstances, the time or property of such workers could be legally compelled to assist with the pandemic, though this would be a last resort. Employers should look at the list of skill sets in this section of the Plan, and consider whether your company has health care or other workers who could be of assistance in a pandemic. The government will also be looking for large numbers of volunteers for non-medical work, and you may want to consider the role your company could play in this.

Will legislation change during a pandemic?

Employers should ensure that they have a mechanism to remain aware of legislative changes. During a pandemic, a state of emergency may, or may not, be declared. If it is declared, it may change the implications of various pieces of legislation. Even if it is not declared, there may be changes or policy decisions that affect employers and workers. For example, the Workplace Safety and Insurance Board may publish a policy statement clarifying the eligibility of various classes of workers for compensation if they should acquire influenza while on the job. Similarly, the Ministry of Labour may publish policies or clarification of policies related to the right to refuse work, job reassignments, and other employment issues.

Travel Issues

Are there any travel restrictions at this time?

As travel safety issues can change rapidly during Phases 4 to 6 of the WHO Pandemic Advisory, it is advisable to check the Public Health Agency of Canada's website for up-to-date travel information.

Additional Resources

Where can I get more information on this subject?

There are many excellent web sites with information about influenza. Here's a selection of some of the best:

- Canadian Food Inspection Agency
- Canadian Pandemic Influenza Plan
- Healthy Ontario
- Ontario Ministry of Health
- Ontario Ministry of Labour
- Ontario Health Pandemic Influenza Plan
- Public Health Agency of Canada
- US Government Pandemic Flu Site
- World Health Organization

© Workplace Safety & Prevention Services 2011. Workplace Safety & Prevention Services (WSPS) grants permission to approved end users to reproduce this document in whole or in part, provided its intended use is for non-commercial, educational purposes and that full acknowledgement is given to the WSPS. Approved end users are firms registered with the Workplace Safety and Insurance Board. WSPS reserves the right to extend this permission to other stakeholders and interested parties by express written permission upon application. WSPS extends no warranty to materials amended or altered by the end user. Under no circumstances is this document, or any portion thereof, to be duplicated for purposes of sale or for external reproduction or distribution.

Revised: October 2011