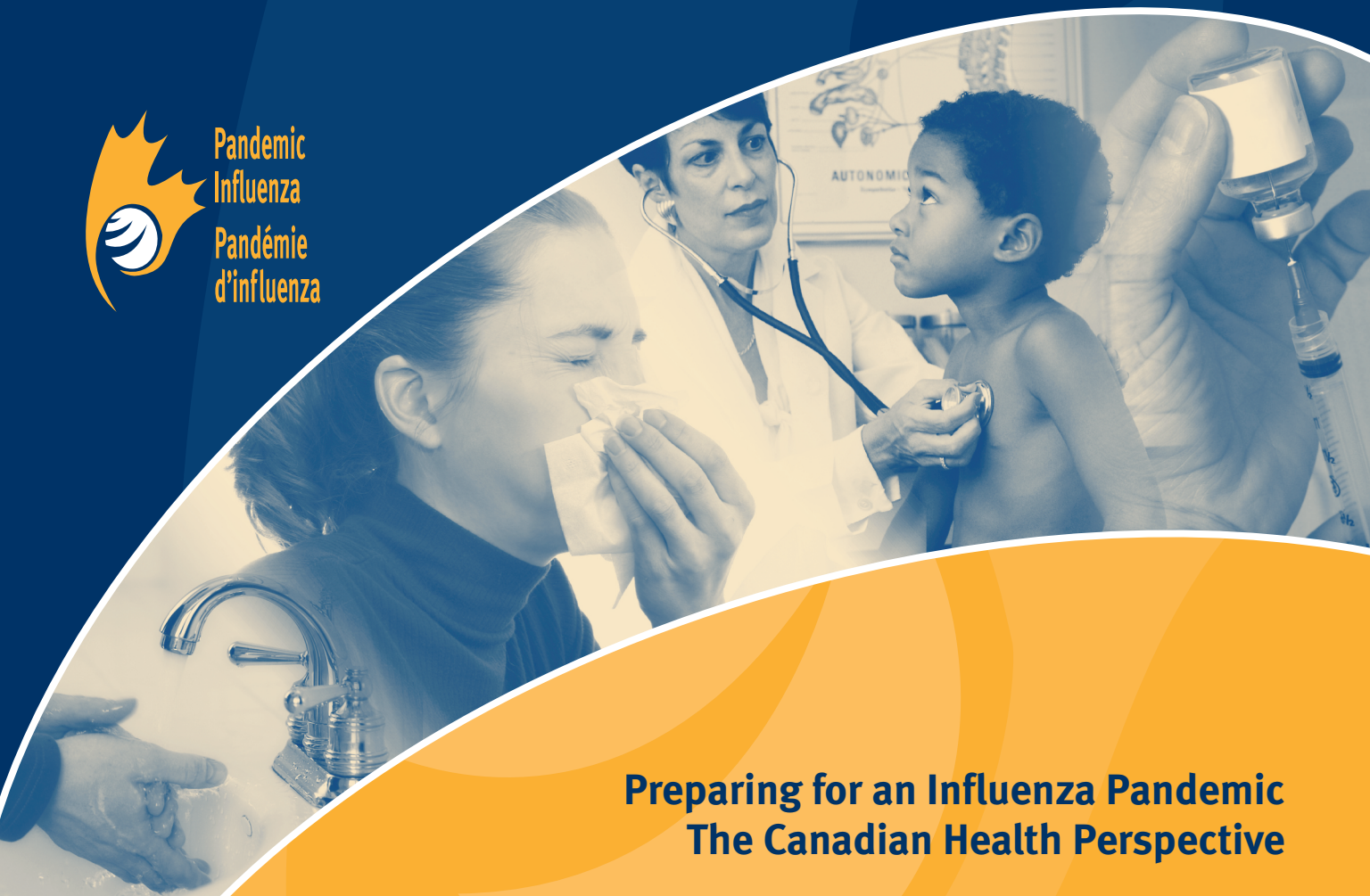


Highlights from the **Canadian Pandemic Influenza Plan** for the **Health Sector**



Pandemic
Influenza
Pandémie
d'influenza



**Preparing for an Influenza Pandemic
The Canadian Health Perspective**

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Introduction

New infectious diseases can cause serious human illness. Influenza viruses spread easily and from time to time, new strains emerge. Humans may have little or no immunity to these new viruses. When there are no vaccines or medicines to keep a new virus from spreading, many people can become sick and die. The spread of an influenza virus around the world is known as an influenza pandemic.

A pandemic known as the “Spanish flu” killed between 40 and 50 million people worldwide in 1918 and 1919. (In Canada, 50,000 died.) More recent pandemics, in 1957 and 1968, killed more than a million people each worldwide.

We don’t know when another influenza pandemic will strike. But scientists tell us it will certainly come, and Canada and other countries must prepare for it. How much damage Canada suffers from a pandemic will depend on how severe the illness is, how different age groups are affected, and how well we respond. We must plan in order to reduce serious illness, the number of deaths, and disruption to society.

The federal, provincial and territorial governments have worked together to develop the ***Canadian Pandemic Influenza Plan for the Health Sector***. More than 200 experts helped prepare the Plan, which is a guide for health care professionals who will have to plan for and respond to an influenza pandemic. The Plan was published in 2004 and is updated regularly.

The Plan provides guidelines for a wide range of health-related activities, from monitoring the spread of a virus, even before it reaches Canada, to using the most effective vaccines and medicines to decrease illness. It offers a national public health approach to preparing for an influenza pandemic in Canada.

In addition, the other levels of government and individual health care institutions have written emergency response plans to meet their particular needs. Plans have also been created for agencies and businesses, which might be affected by a public health emergency.

Part 1 – Understanding Influenza

Influenza – The “Flu”

Seasonal influenza (the “flu”) is a common, easily spread disease of the lungs. In humans it is caused by one of two viruses: influenza A or influenza B. Animals can also be infected by influenza A.

Each year, millions of Canadians get the flu. The virus spreads easily when droplets coughed or sneezed into the air by infected people are breathed in by people close to them. The flu can also be spread when the virus gets onto hands and other surfaces which are then touched by another person who subsequently touches their own eyes, nose or mouth. A flu virus can survive for several minutes on hands, and for one or two days on hard surfaces like counters and desks. If people become ill from the virus – usually within one to three days after they are exposed to it – their symptoms typically include headache, chills, coughing, fever, loss of appetite, muscle aches and fatigue, runny nose, sneezing, watery eyes and sore throat. Some symptoms – nausea, vomiting and diarrhea – are more common in children than in adults. Seniors may not show the usual signs of flu but may feel overwhelming fatigue and malaise. People may be able to infect others with the flu virus before they even know they have the flu.

Most people recover from the flu in a week. But the flu and its complications send about 20,000 Canadians to hospital every year, and on average 4,000 die – mainly seniors and individuals with chronic health conditions.

Influenza Vaccination

The best way to protect yourself against influenza is to get a flu shot every year and to practise basic hygiene, especially frequent hand washing. When you get a flu shot, your body’s immune system develops protection (antibodies) against the strains of virus in the vaccine. The antibodies help prevent infection or reduce the severity of the illness. The vaccine cannot give you the flu, as it contains dead pieces of flu viruses.

Different flu viruses can affect people every year, so the vaccine needs to be updated annually. This is why it is important to be immunized each fall.

Flu Prevention Checklist

To reduce the risk of getting and spreading influenza, public health officials recommend these practices:

- Wash your hands regularly with warm, soapy water for at least 20 seconds, especially before and after eating, after going to the bathroom, after coughing and sneezing, and after touching surfaces that may have been contaminated. Alcohol-based hand gel is an effective alternative if soap and water are unavailable.
- Cough and sneeze into a tissue or sleeve to keep the virus away from your hands and to keep the virus from spreading through infected droplets. Throw away used tissues promptly and wash hands as soon as possible.
- Frequently clean and disinfect household surfaces, such as door handles and light switches, which may have been contaminated by somebody in the house who is ill.
- Encourage all members of your household, especially children, to follow these practices.
- If you get the flu, stay at home and rest until you feel better.

Influenza Pandemic

Sometimes a completely new form of influenza virus appears and starts to cause illness in humans. When this happens, it is easy for this new subtype to spread from person to person since most people will not have immunity to the new strain of virus. An influenza pandemic results if many people around the world become ill and die from such a virus. Influenza pandemics have occurred three to four times per century.

Wild birds are natural carriers of influenza A viruses, but they suffer little or no harm from these avian influenza (“bird flu”) viruses. Other birds and animals, such as domestic poultry and pigs, can also carry and transmit influenza viruses.

Scientists believe there are two key ways for pandemic flu viruses to develop. First of all, a new subtype can result from the mixing (or “re-assortment”) of human and avian viruses. Scientists believe that this is what started the last two influenza pandemics, in 1957 and 1968. Because humans had no defence against the new strain, it spread rapidly around the globe, causing widespread illness and higher rates of death compared to seasonal influenza. These pandemics each resulted in more than one million deaths globally.

	Avian (Bird) Flu	Seasonal (Human) Flu	Pandemic Flu
What is it?	A disease caused by influenza viruses carried and spread among birds.	An infection caused by influenza viruses carried and spread among humans.	A new strain of influenza virus that spreads quickly worldwide. <ul style="list-style-type: none"> • It is carried and spread among humans; and • humans have little or no immunity against it.
How does it spread?	<ul style="list-style-type: none"> • Wild birds are the main carriers. • Domestic birds (like chickens and turkeys) get the virus from wild birds and may become seriously ill. • Humans do not easily contract bird flu viruses. • Humans can only get bird flu by handling infected birds or coming into contact with contaminated feces. • There is no evidence that bird flu is passed by eating cooked poultry products. 	<ul style="list-style-type: none"> • Breathing droplets that have been sneezed or coughed into the air by someone with the flu, or having the droplets land on the surface of the eye. • Shaking hands with an infected person or touching a contaminated surface, and then touching the eyes, nose or mouth. 	<ul style="list-style-type: none"> • Spread the same way as seasonal flu.
What is the connection?	<p>What is the connection between bird flu, human flu and pandemic flu?</p> <p>Bird flu + Human flu can = Pandemic flu</p> <p>One way pandemic flu can occur is if bird flu mixes with human flu and creates a new strain of flu virus that can spread easily from human to human.</p>		

A new pandemic strain can also develop if an avian influenza virus changes (or mutates) a number of times, into a virus that can cause human illness and spread easily from person to person. Once this happens, the altered virus can spread around the world because humans have no defence against the new strain. This is likely how the “Spanish flu” killed between 40 and 50 million people worldwide in 1918 and 1919, including about 50,000 in Canada.

Avian Influenza

The names given to influenza viruses by scientists are based on two surface proteins: hemagglutinin (“H” protein) and neuraminidase (“N” protein). There are 16 H types and 9 N types that can potentially exist in any combination. Some combinations commonly circulate each season among humans while others are only found in wild birds. However, every once in a while these bird (avian) viruses start causing illness and death in domestic birds like chickens. Viruses that cause illness in birds may not necessarily cause disease in humans, but if they are causing illness in a lot of birds/flocks there is higher risk that they will change (mutate) and start causing human illness.

In recent years, there has been growing concern about a particular strain of avian influenza virus – an H5N1 virus – that has spread through birds from Southeast Asia through Asia to parts of Europe and Africa. This strain causes mild illness in some migratory waterfowl, but it has resulted in a high rate of death in chickens. Millions of birds have been killed in an effort to prevent the spread of the virus.

The H5N1 virus is not easily transmitted to humans. A limited number of people have contracted the virus through close contact with sick or dead birds. The death rate in these human cases has been high. But there is still no evidence that it can spread easily from person to person.

This H5N1 strain of avian influenza has not been found in wild or domestic birds in Canada, but it could arrive at some time in the future. Governments across the country have been studying the health of wild birds so that they can be on the alert as soon as this virus enters Canada. This will help us understand how influenza viruses are spread among wild birds, and prepare us to address any risks these bird flu viruses might represent to human health.

Part 2 – What Canadian Governments are Doing to Prepare

Canadian Pandemic Influenza Plan for the Health Sector

Working together, the federal, provincial and territorial governments produced the *Canadian Pandemic Influenza Plan for the Health Sector* with input from more than 200 officials and experts. The Plan, first published in 2004, is kept up to date and provides guidance to the health sector on preparedness activities and response to an influenza pandemic.

A wide range of people in the health sector will have to respond to an influenza pandemic and the Plan will be especially helpful for the provincial and territorial ministries of Health responsible for health care delivery. The goal of pandemic planning is to minimize serious illness and deaths resulting from an influenza pandemic, and to minimize societal disruption (that is, allow as many people as possible to carry on their normal activities) during a pandemic. One of the aims of the Plan is to assist the provinces and territories so that the response to pandemic influenza is similar across Canada, resulting in the delivery of the best health care possible during a time of potentially high demand for services.

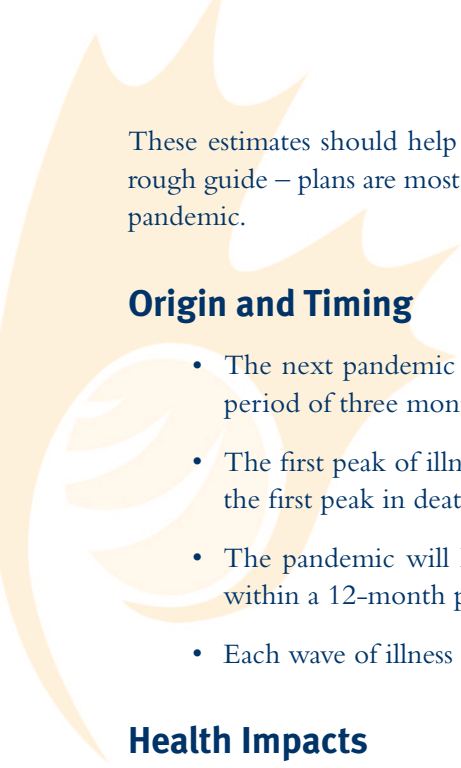
In addition, different levels of government, hospitals and many businesses have been developing their own plans for responding to an influenza pandemic.

The Plan is updated regularly to include the latest scientific information. The most recent update incorporates new terminology and includes new guidelines to help public health professionals manage local outbreaks of pandemic influenza. The full document contains detailed information and more comprehensive explanations, activities and time lines. It is available online at www.pandemicplan.gc.ca.

Impact of an Influenza Pandemic in Canada

Just as we do not know when the next pandemic will strike, we cannot predict how severe it will be. That will depend on the influenza strain that emerges, how easily it spreads, which groups of people are affected, and how effectively we respond.

As we plan, we use experience and currently available information to make assumptions about the likely effects of an influenza pandemic. The assumptions below estimate the impact of a pandemic of moderate severity in Canada.



These estimates should help health professionals plan their response to a pandemic. But they are only a rough guide – plans are most useful when they can be adapted to other situations, including a more severe pandemic.

Origin and Timing

- The next pandemic is expected to emerge outside of Canada and to arrive in Canada within a period of three months. It could arrive at any time of year.
- The first peak of illness could occur within two to four months after the virus arrives in Canada; the first peak in deaths can be expected approximately one month later.
- The pandemic will likely last 12 to 18 months, and more than one wave of illness may occur within a 12-month period.
- Each wave of illness is expected to last between six and eight weeks.

Health Impacts

- Up to 70 percent of the population could become infected, but only between 15 and 35 percent of the population will become “clinically ill” – which means ill enough to miss work for at least half a day.
- For a pandemic of mild to moderate severity, if a vaccine and antivirals are not available, up to 50 percent of the clinically ill will seek outpatient care, 1 percent of the clinically ill will be hospitalized and recover, and 0.4 percent of the clinically ill will die.
- Individuals who recover from illness caused by the pandemic strain will no longer be at risk of infection by that strain.
- If the pandemic causes illness in 35 percent of the population, businesses should expect up to 25 percent of their staff to be away from work in the peak two weeks. Some will be ill, and others will be caring for relatives and friends or afraid to go to work. There may also be school closures and other pandemic-related public health measures that affect the work force.

Estimated Health Impacts of a Pandemic in Canada

A moderately severe pandemic in the absence of a vaccine and antivirals MAY cause:

- 11,000 to 58,000 deaths
- 34,000 to 138,000 people to be hospitalized (and recover)
- 2 to 5 million people to seek outpatient care (e.g. physician office or emergency room visit)
- 4.5 to 10.6 million people to be clinically ill

Terminology

The World Health Organization, in its pandemic planning documents, uses certain terms to describe the global influenza situation at any point in time. This terminology includes the following pandemic periods and a system using numbered “pandemic phases.” This same terminology is used in the Canadian plan.

Interpandemic Period – This is the “baseline” period. During this time, no new virus strains have been detected in humans, although a virus capable of causing disease may be evident in poultry, either in Canada or elsewhere. Extensive planning should take place in this period.

Pandemic Alert Period – This is the stage during which a new influenza virus has begun to infect humans, with isolated cases or clusters of cases occurring inside or outside of Canada. Because human-to-human spread of the new virus is not as efficient during this phase as with normal seasonal influenza, cases are found in only a few locations. The new virus may or may not go on to cause a pandemic. It is important to note that there may not be an alert period – that is, we may not get any warning that a new pandemic virus is emerging. As a result, we must be prepared to rapidly manage a new influenza virus when it is already capable of spreading easily from person to person.

Pandemic Period – During this period the new virus is being efficiently transmitted from one person to another, causing serious illness around the world.

Post-Pandemic Period – This is the recovery period following the pandemic influenza activity.

Key Components of Pandemic Planning

Most prevention and preparedness activities will occur during the Interpandemic Period or Pandemic Alert Period, before a new influenza virus reaches Canada.

1. Surveillance and Laboratory Preparedness

If the pandemic response is to be successful, we must be able to identify a new influenza virus and track its activity in the population. The more quickly we can identify a virus, the more time we will have to develop a vaccine and begin prevention and control measures.

Since Severe Acute Respiratory Syndrome (SARS) spread from Asia to Canada in 2003, this country has become better at identifying and keeping track of unusual lung illnesses. Reports of influenza cases and outbreaks across Canada are summarized in FluWatch reports so that health authorities can track influenza activity. The following monitoring systems contribute information to FluWatch:

- a network of laboratories across Canada to track current influenza strains;
- a network of physicians working in clinics to study influenza-like illness; and
- provincial and territorial medical specialists, who report influenza outbreaks that occur in their region.

The information gathered by these sources can be used to identify trends in influenza activity – when influenza is starting, peaking and slowing down in particular areas and what viruses are circulating. During a pandemic, surveillance will be enhanced in order to collect more information about the new virus and to help health care professionals decide the best response to the pandemic.

Canada has also improved its alert systems. The Global Public Health Intelligence Network (GPHIN) operates an internet-based early warning system. It gathers and distributes important public health information from around the world. It operates in seven languages, seven days a week, 24 hours a day. Its information is shared rapidly with public health authorities across Canada through e-mail and web alerts.

2. Pandemic Vaccine

Canada is one of the few countries in the world that are prepared to have a vaccine manufacturer develop and supply a pandemic influenza vaccine as soon as a new strain is identified. Under a 10-year contract signed in 2001 between the Government of Canada and ID Biomedical (now GlaxoSmithKline Biologicals), the company will be able to produce enough vaccine for all Canadians in the event of an influenza pandemic.

Vaccines are the first line of defence against a pandemic, but it could take up to six months to produce the vaccine for a new virus. This complex process cannot begin until the pandemic begins and the new virus has been identified. This means that a vaccine will probably not be available when the first wave of the pandemic strikes Canada. In addition, since not enough vaccine will be available immediately for the entire population, some key individuals will have to be vaccinated first. However, the whole population will be immunized as quickly as possible.

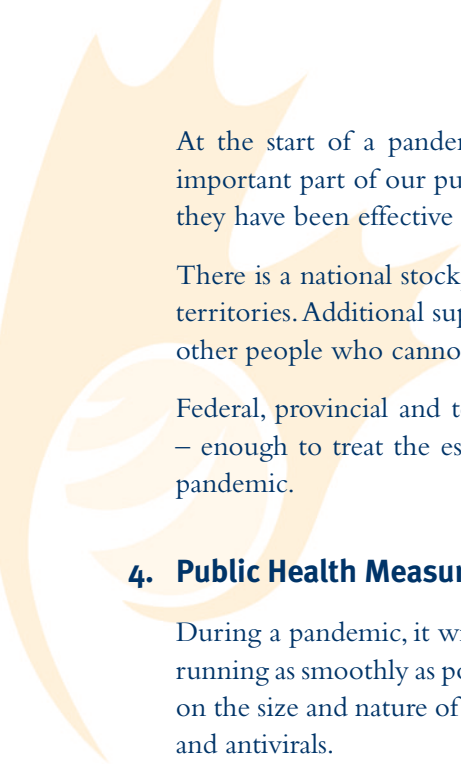
The Pandemic Plan makes recommendations about how the pandemic vaccine might be initially used when there is a limited supply. For example, because it will be important to maintain health care services, the Plan recommends that planners consider how they might identify and give the pandemic vaccine to health care workers first. Planners are also encouraged to think about how they would identify and vaccinate individuals who will provide other essential community services and those at high risk of serious illness from influenza. These recommendations, which have been presented as a priority list for planning purposes, will be reviewed at the time of a pandemic, when more is known about the strain of the virus and which individuals are most at risk from the infection.

Prototype Pandemic Vaccine

Advance work on a prototype (“mock”) vaccine is planned to give Canada a head start before a pandemic strain emerges. A prototype vaccine will be developed from the H5N1 strain, and clinical trials will be conducted in Canada. This work will provide useful information on the exact ingredients of the vaccine and the number of doses that may be needed in an actual pandemic. The experience and knowledge gained by the manufacturer and vaccine regulators will help shorten the time required for vaccine development when a pandemic virus emerges.

3. Antivirals

Medications can be used to prevent illness and to treat those who do become sick with influenza. Antivirals work by reducing the ability of the virus to reproduce in the body. If they are taken shortly after influenza strikes (within 48 hours of first symptoms), antivirals can reduce symptoms, shorten the length of illness, and reduce serious complications. They can also prevent illness during a pandemic wave if treatment is started before or promptly after close contact with someone infected with the virus.



At the start of a pandemic, when an effective vaccine may not be available, antivirals will be an important part of our public health response. Antivirals were not available during past pandemics, but they have been effective to some extent at both treating and preventing seasonal influenza.

There is a national stockpile of antivirals in Canada, which has been distributed to the provinces and territories. Additional supplies are being gathered, including antiviral solution for young children and other people who cannot swallow capsules.

Federal, provincial and territorial governments intend to increase the stockpile to 55 million doses – enough to treat the estimated number of Canadians who will require medical attention during a pandemic.

4. Public Health Measures

During a pandemic, it will be important to reduce serious illness and death and to keep communities running as smoothly as possible. The general public health measures recommended will vary, depending on the size and nature of the community, the level of pandemic activity, and the availability of vaccines and antivirals.

Public Education

Both before and during a pandemic, Canadians are encouraged to follow good hand hygiene practices. (See Flu Prevention Checklist on page 4.)

“Social Distancing”

To decrease the impact of influenza, public health authorities may consider community-based measures. Since the virus is spread mainly as a result of close contact with an infected person, and it will not always be possible to identify infected people (especially early in the illness), “social distancing” may be encouraged. In general, this means people would be encouraged to reduce the number of people that they come into close contact with during the time that the pandemic virus is known to be causing illness in the area. This may involve changes in the work setting (e.g. fewer face-to-face meetings) or in the community (e.g. staying away from public events and locations where crowds gather). In certain situations, public health authorities may close schools and daycare centres for a short period of time in order to limit opportunities for the virus to spread to large groups of people.

Isolation and Quarantine

Individuals who are infected with the influenza virus during a pandemic should be isolated either in a hospital or at home. However, quarantine – which involves keeping people away from other people if they have been exposed to the virus but are not ill – is not expected to be feasible or effective in the Pandemic Period.

5. Health Services

During a pandemic, there will be greater demands than ever on health care providers and institutions, and for related equipment. As a result, guidelines have been developed to help those delivering care to plan how they will cope with large numbers of influenza cases, some with life-threatening complications.

Health care workers must be kept as healthy as possible so they can be available to care for others. To assist with this, the Plan recommends a number of measures, including vaccination, the use of appropriate infection control practices and work reassignments.

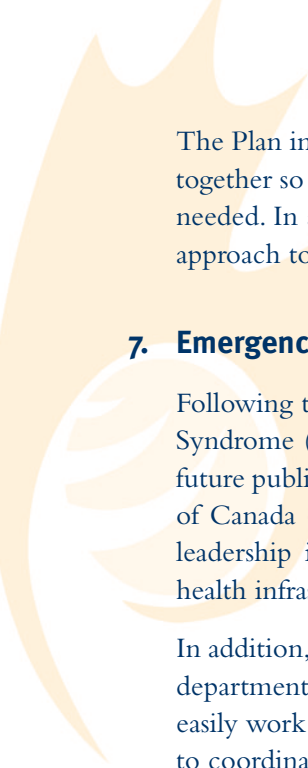
The Plan provides guidelines to assist health care providers with diagnosis and case management, and to help the general public with self-treatment.

See the list of annexes at the end of this document.

6. Communications

If an influenza pandemic is to be successfully managed, the public will need accurate and timely information before, during and after the pandemic. Canadians must know how to protect themselves and their loved ones. Speaking with Canadians about key issues is a basic part of pandemic influenza communications planning. This includes keeping lines of communication open with individuals and organizations so that people can get all the health information they need and want.

The news media play an important role in making up-to-date information available to the public. As the pandemic evolves, an enormous number of organizations will become involved with the media, providing new information about financial and social effects of the pandemic.



The Plan includes a national communications strategy that encourages information providers to work together so that the messages given to the public are clear, consistent, and delivered as soon as they are needed. In addition, a secure Web site has been set up to help officials share resources and plan their approach to a pandemic. The site's role will be expanded during a pandemic.

7. Emergency Preparedness and Coordination

Following the terrorist attacks of September 11, 2001, and the outbreak of Severe Acute Respiratory Syndrome (SARS), the Government of Canada recognized that the country needed to be ready for future public health emergencies. Its most concrete response was to establish the Public Health Agency of Canada (PHAC) and to appoint a Chief Public Health Officer of Canada. The Agency provides leadership in promoting health, investigating and controlling disease outbreaks, supporting public health infrastructure, and fostering collaboration across and between governments.

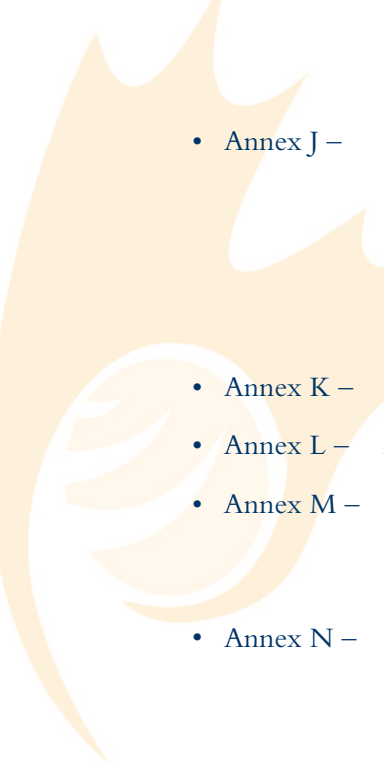
In addition, Public Safety and Emergency Preparedness Canada (PSEPC) was created so that all federal departments and agencies responsible for national security and the safety of Canadians could more easily work together. PHAC and PSEPC are working with the provincial and territorial governments to coordinate a unified response to any national public health emergency.

Canada is also cooperating with other countries and international organizations so that there can be a combined response if any pandemic strikes. As part of the overall Security and Prosperity Partnership established with the United States and Mexico, Canada contributes to pandemic planning on a North American scale. It also provides laboratory and technical support to the World Health Organization in the study of diseases.

List of Annexes to the Canadian Pandemic Influenza Plan

A number of annexes have been developed to provide additional, detailed information relevant to specific aspects of pandemic planning. Like the Plan itself, these continue to be updated and expanded as new information becomes available. The full Plan, including annexes, is available at www.pandemicplan.gc.ca.

- Annex A – **Planning Checklists** – addresses surveillance, vaccine programs, antivirals, health services emergency planning and response, public health measures, and communications
- Annex B – **Pandemic Influenza Planning Considerations in First Nations Communities**
- Annex C – **Laboratory Procedures**
- Annex D – **Recommendations for Pandemic Vaccine Use** – indicates the priority groups for immunization
- Annex E – **Planning Recommendations for Antiviral Use During a Pandemic** – provides the latest data regarding antivirals and recommendations for their strategic use
- Annex F – **Infection Control and Occupational Health Guidelines During Pandemic Influenza in Traditional and Non-Traditional Health Care Settings** – contains guidance for the general public, community health care workers and office-based providers, such as public health and physiotherapy clinics, physician and dental offices, and alternative health care providers
- Annex G – **Clinical Care Guidelines and Tools** – contains recommendations on the triage of pediatric and adult patients, and the management of patients in long-term care facilities; provides forms designed to help health care staff with case management, investigations that should be considered, treatment and the selection of patients for hospital and intensive care admission
- Annex H – **Resource Management Guidelines for Health Care Facilities** – provides recommendations on how to manage scarce resources during an influenza pandemic
- Annex I – **Guidelines for the Management of Mass Fatalities** – addresses morgue capacity, corpse storage, transportation, burial, cremation and grief counseling

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- Annex J – **Guidelines for Non-Traditional Sites and Workers** – provides administrative options for non-traditional hospitals, potential resources and sites, critical characteristics, support services needed, type of work done at sites and liability protection; also addresses potential sources of additional labour during a pandemic, volunteer recruitment and screening, liability and personal insurance of workers, temporary licensing, roles and responsibilities, and training
 - Annex K – **Communications Annex**
 - Annex L – **Emergency Preparedness and Response System**
 - Annex M – **Public Health Measures** – links key planning assumptions with recommended actions; recommendations on public health management of cases and contacts, community-based control strategies, and travel and border issues
 - Annex N – **Pandemic Influenza Surveillance Guidelines** – covers surveillance roles and responsibilities for all levels of government

Additional Information and Resources

The Canadian Pandemic Influenza Plan for the Health Sector (The Plan) is available on-line in its complete form at www.pandemicplan.gc.ca

One-stop access to information from Government of Canada departments and agencies on pandemic, avian and seasonal influenza is available at www.pandemicinfluenza.gc.ca

You can also call the Pandemic Influenza Information Line (toll-free in Canada) at **1-800-454-8302**

Links to provincial and territorial information on pandemic influenza planning are also available at www.pandemicinfluenza.gc.ca

For information on avian flu and animal health, see the Canadian Food Inspection Agency's web site at www.hc-sc.gc.ca/dc-ma/avia/index_e.html

SafeCanada.ca
provides information on emergency preparedness at home and work

Information from the U.S. on pandemic influenza is available from the Centers for Disease Control and Prevention (CDC) at www.pandemicflu.gov

