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5. Public Health Measures

Nothing could have stopped the sweep of influenza through.....the world – but ruthless intervention...might have interrupted its progress and created occasional firebreaks. Actions as ruthless as those taken in 2003 to contain the outbreak of SARS could well have had effect. Influenza could not have been contained as SARS was – influenza is far more contagious. But any interruption in influenza’s spread could have significant impact. For the virus was growing weaker over time. Simply delaying its arrival in a community or slowing its spread once there – just such minor successes – would have saved many, many thousands of lives.

The Great Influenza, John M. Barry

Public health measures are non-medical interventions used to reduce the spread of disease. They include providing public education, conducting case and contact management, closing schools, limiting public gatherings, issuing travel restrictions and screening travellers. The type of public health measures used and the timing depend on the epidemiology of the virus.

5.1 Objectives

The objectives for Peterborough County and City are as follows:

1. To decrease the number of individuals exposed to the novel virus and potentially slow the progress of the pandemic;
2. To reduce illness and death caused by the pandemic; and
3. To slow pandemic spread and gain time for implementing medical measures.

5.2 Factors to Consider When Choosing Public Health Measures

The types of public health measures used during an influenza pandemic and their timing will depend on:

- The epidemiology of the virus (e.g., pathogenicity, mode(s) of transmission, incubation period, attack rate in different age groups, period of communicability, susceptibility to antivirals)
- The pandemic phase and the amount of virus activity in the area (for example, after the pandemic is declared, the focus will be on community measures designed to reduce the risk of influenza—e.g. public education, restricting public gatherings)
- The characteristics of the community (i.e., some measures, such as school closures, are more effective in rural than in urban areas)
- Public acceptance of the measures

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- The resources required to implement the measures (i.e., some measures, such as tracing contacts and active surveillance, are labour intensive and may not be an effective use of resources once the virus is wide spread in the community)
- The amount of social disruption the measure will cause (for example, the decision to cancel public transit services would be so disruptive; it is unlikely to be used)

5.3 Factors Affecting the Potential Impact of Public Health Measures

The success of any individual public health measure depends on a variety of factors such as:

- The epidemiology of the strain. If the virus has a longer incubation period than seasonal influenza viruses, the Peterborough County-City Health Unit (PCCHU) will have more time to identify and isolate cases before the virus spreads to others.
- The timing of the measures. For individual public health measures, such as case and contact management, to be effective, they must be used aggressively at the early stages of the pandemic to follow-up confirmed or suspected cases. Once a significant number of people are infected, the PCCHU will shift the focus to community measures such as public education and social distancing.
- Public compliance with the measures. Past experience with influenza pandemics indicates that people generally comply with personal protective measures at the beginning of the pandemic. However, as more people become ill, compliance wanes. To slow the spread of the virus, the PCCHU will endeavour to keep the public engaged and encourage compliance.
- Concurrent use of other public health measures. Any single public health measure is unlikely to be effective on its own; measures are more effective when used together as part of a comprehensive approach that includes both individual and community measures. Public health measures are also more effective when used with vaccines and a targeted antiviral strategy.

5.4 The Authority to Use and Enforce Public Health Measures

The Medical Officer of Health (MOH) for the City and County of Peterborough has the authority to implement public health measures under the Health Protection and Promotion Act (HPPA). The decision to use a particular public health measure will be made by the Chief Medical Officer of Health for Ontario after consultation with local medical officers of health and the Ministry of Health and Long Term Care (MOHLTC). This will ensure consistency across Ontario. It will also instill public confidence and compliance and reduce confusion. The timing of instituting these public health measures may vary from health units to health units depending on the severity of the pandemic in each part of the province. The decision to use public health measures will be triggered by the epidemiology of the pandemic strain and the phase of the pandemic.

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Under the HPPA, the MOH can issued communicable disease orders and restrict gatherings. Also, under the Immunization of School Pupil's Act (ISPA), the MOH has the authority to issue orders respecting students in a school.

5.5 Public Health Measures

There are six public health measures which may be used to slow the spread of pandemic influenza. These measures are:

- public education
- travel restrictions
- case management
- contact management
- school and daycare measures
- social distancing

The PCCHU will implement public health measures outlined in table 6.1 of the Ontario Health Plan for an Influenza Pandemic, Public Measures Section, at www.health.gov.on.ca/pandemic as seen below.

Table 6.1: Definitions of Public Health Measures

Public Health Measure and Definition	Types of Activities Used to Implement the Measure	Timeframes When? For how long?
<p>1. Public Education Clear, consistent, accurate information given to the public to help them be prepared for a pandemic and reduce their risk.</p>	<p>Public education includes providing information about influenza and how it spreads, as well as information about:</p> <ul style="list-style-type: none"> ✓ i. Individual infection prevention and control measures, including education about: <ul style="list-style-type: none"> • hand hygiene, respiratory / cough etiquette, including covering one’s mouth when coughing or sneezing and proper tissue disposal, and other personal protective measures to avoid droplet / contact spread • the importance of fresh air and how to increase air circulation in buildings • the wearing of masks by the public or people who do not have influenza. This practice is not recommended at this time because it has not been proven effective in stopping or slowing the spread of influenza; however if individuals choose to wear masks, they should: <ul style="list-style-type: none"> • wear a surgical mask • learn the proper procedures for putting masks on and taking them off (to avoid contact with droplets) • know how to dispose of the mask properly (i.e., without increasing the risk of infection) • know that a mask or any other personal protective equipment is not a substitute for hand hygiene • how to clean and disinfect environmental surfaces to avoid droplet / contact spread. ✓ ii. Social distancing, including messages advising people: <ul style="list-style-type: none"> • to stay home from day-care, school, work and public events if they have influenza-like-illness (ILI) symptoms or have had contact with someone with ILI • to avoid large gatherings or crowds • to reduce non-essential travel • when and how to get information on any closures, cancellations or changes to community services / events • about emergency preparedness supplies they should have in their homes (e.g., food, water) ✍ iii. Influenza care, including information about: <ul style="list-style-type: none"> • how to access health care advice / triage services (e.g., Telehealth, internet sites) • where and how to seek medical care in a way that minimizes exposure to influenza (e.g., go to your family physician for other health services, go to flu centres if you have influenza symptoms) • self care and how to care for others who are ill at home. 	<p>Public education should begin as early as possible in the pandemic (i.e., in the pandemic alert period) and continue throughout a pandemic.</p>



Public Health Measure and Definition	Types of Activities Used to Implement the Measure	Timeframes When? For how long?
<p>2. Travel Restrictions</p> <p>Restricting people from traveling between countries in order to slow the spread of influenza.</p> <p>Note: Travel restrictions are the responsibility of the Public Health Agency of Canada (PHAC), and Ontario will comply with federal directions.</p>	<p>✓ i. Foreign travel advisories</p> <p>The PHAC website (http://www.phac-aspc.gc.ca/tmp-pmv/pub_e.html) provides Travel Health Advisories about the occurrence of communicable diseases around the world and recommends measures to reduce risk. For example, on June 1, 2007, the website advised travelers going to any of 13 countries that have had confirmed cases of H5N1 (avian influenza) to avoid contact with domestic poultry and wild birds, to ensure all poultry dishes are thoroughly cooked and to practice proper hand hygiene.</p> <p>✎ ii. Voluntary foreign travel restrictions</p> <p>In the event of a pandemic, PHAC could either ask people to consider deferring unnecessary travel, or recommend that people defer unnecessary travel (depending on the severity of pandemic).</p> <p>✎ iii. Closing borders</p> <p>During a pandemic, PHAC could close the borders, restricting people who have symptoms of ILL, have had contact with someone who has ILL or who is from an area where there is pandemic activity from entering the country.</p> <p>✎ iv. Reducing transit use</p> <p>During a severe pandemic, public health officials could recommend strategies to reduce the number of people traveling by transit at one time (i.e., staggering work hours, controlling the number of individuals permitted on streetcars and subway cars).</p>	<p>Depending on the severity of the pandemic strain, restrictions on foreign travel could begin very early in a pandemic in an effort to keep the pandemic strain out of Canada, and could continue throughout the pandemic.</p>

<p>3. Case Management</p> <p>Case management involves public health nurses and inspectors OR public health staff following up with individuals ill with influenza (i.e., cases) to provide information and strategies to reduce transmission to other people.</p>	<p>i. Voluntary isolation</p> <p>Cases (i.e., people with ILI) are asked to isolate themselves and avoid contact with others, usually for up to 5 days after symptoms develop (7 days for children, who are infectious longer) -- although the time will be determined by the epidemiology of the pandemic strain. While isolated, the person should practice good hand hygiene and cough etiquette (i.e., frequent, thorough hand hygiene; cover their mouth when coughing or sneezing); stay at least 1 metre* or arms-length away from others (i.e. social distancing); and wear a surgical mask when out in public.</p> <p>People with influenza could be isolated at home or in a hospital, depending on the severity of their illness and hospital capacity.</p> <p>ii. Self Care</p> <p>Cases (people with ILI) and their families are given clear, concise information about:</p> <ul style="list-style-type: none"> • how to care for someone with influenza at home • when and where to seek medical attention. <p>iii. Antivirals</p> <p>Public health nurses and inspectors OR public health staff ensure that people with pandemic influenza / symptoms receive antivirals (from the provincial stockpile for treatment), know how to take them, and adhere to treatment.</p> <p>iv. Public health follow-up</p> <p>Case management could also include:</p> <ul style="list-style-type: none"> • <i>Individual</i> monitoring of people with ILI (e.g., daily phone calls, visits) to ensure they are complying with voluntary isolation, care and treatment, gathering information on their contacts, and notifying the contacts • <i>Group</i> education by providing ongoing public information and messages for people in voluntary 	<p>Because case management is highly labour intensive, public health units will likely only be able to use the traditional individual or one-to-one approach in the pandemic alert period and early in the pandemic period, when there are a relatively small number of cases and there is an opportunity to contain the virus. The main purpose will be to confirm the presence of the pandemic strain.</p> <p>After that time, public health units may use a group / public education approach to reinforce the importance of isolation, self-care, and compliance with treatment.</p>
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Public Health Measure and Definition	Types of Activities Used to Implement the Measure	Timeframes When? For how long?
<p>4. Contact Management Contact management is a highly labour intensive process of individually contacting anyone who has had close contact (i.e., within one metre*) with someone with influenza during the time the person was infectious. Contacts are notified and advised to take steps to protect their health and the health of others.</p>	<p>isolation</p> <p>✓ i. Education Public health nurses and inspectors OR public health staff advise contacts about symptoms to watch for and what to do if they become ill.</p> <p>✎ ii. Voluntary and modified quarantine Depending on the severity of the virus, close contacts of cases (people with ILI) who are otherwise healthy may be asked to quarantine themselves at home and avoid contact with other people until the incubation period is over (usually three days but time will be determined based on the pandemic strain). People who are symptom-free may be asked to maintain a modified quarantine, that is: they can leave the home to obtain essential supplies (e.g., food for the family) but not to go to work or engage in social activities. This type of modified quarantine allows families to continue to function, while reducing the risk of exposing others.</p> <p>✎ ii. Public health follow-up Follow-up with contacts can occur in two ways:</p> <ul style="list-style-type: none"> • <i>Individual</i> monitoring of contacts to ensure they are complying with voluntary quarantine, noting if they develop symptoms (i.e., become cases), directing them to care if they develop symptoms and notifying their contacts • <i>Group</i> education by providing ongoing public information and messages to people in voluntary modified quarantine. 	<p>Because contact management is highly labour intensive, public health units will likely only be able to provide individual contact management in the pandemic alert period and early in the pandemic period, when there are a relatively small number of cases and there is an opportunity to contain the virus. The main purpose will be to confirm the spread of the pandemic strain.</p> <p>After that time, public health units will rely more on public education messages to reinforce the importance of being aware of symptoms, seeking care, and voluntary or modified quarantine for people who have been exposed to someone with influenza.</p>

<p>5. School and day-care based infection prevention and control and social distancing measures</p> <p>School and day-care-based measures are steps designed to reduce the number of contacts that children have in schools and day care centres. They are important because schools are dense social environments and children without pre-existing immunity to influenza viruses are more susceptible than adults to infection. Children also shed more virus for a longer period of time, which makes them more infectious, and they are less likely to practice hand hygiene. Compared to adults, children are responsible for more secondary household transmission (CDC, 2007).</p>	<p>✓ i. Infection prevention and control measures</p> <p>Everyone in school and daycare settings are encouraged to adopt infection prevention and control measures including:</p> <ul style="list-style-type: none"> • washing hands frequently and meticulously • practicing respiratory hygiene / cough etiquette, including covering one’s mouth when coughing or sneezing and proper tissue disposal • cleaning and disinfecting environmental surfaces (e.g. door handles, lunchroom tables, desks, etc.) • increasing fresh air in buildings (i.e., open windows) • asking parents to keep children who are sick at home. <p>✍ ii. Social Distancing</p> <p>Public health can request changes in the school environment or school practices that reduce contacts between children by limiting the number of children in a given area and keeping children further apart, such as:</p> <ul style="list-style-type: none"> • space students at least 1 metre* (3 ft) apart • suspending interschool sports activities • avoiding social mixing of different groups of children (e.g., school dances) • reducing large gatherings within the school setting (e.g., cancelling assemblies, having students eat lunch in class rooms, staggering recesses or lunches if possible, cancelling school trips) • reducing the number of children allowed in a given area at a given time • suspending non-essential after school activities (e.g., clubs, sports). <p>✍ iii. School/Day Care Closures</p> <p>The public health unit can issue orders to temporarily close day cares, elementary schools and high schools. Any decision to close schools would be discussed with the affected school boards.</p>	<p>Infection prevention and control and social distancing measures in schools and daycares would be implemented early in the pandemic and be maintained throughout a pandemic.</p> <p>School closures, if required, would also have to be implemented early in a pandemic to be effective (see below), and would be maintained for between four and 12 weeks, depending on the severity of the pandemic.</p>
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Public Health Measure and Definition	Types of Activities Used to Implement the Measure	Timeframes When? For how long?
<p>6. Social distancing in the community Social distancing measures are designed to reduce the number of close contact encounters that adults have in the community – including the workplace and the post secondary education system.</p>	<p>✓ i. Workplace infection prevention and control for non-health care settings Public health provides information and education that helps non-health care workplaces implement infection prevention and control measures including:</p> <ul style="list-style-type: none"> • installing hand sanitizer stations in all workplaces and post secondary institutions • encouraging employees to wash their hands frequently and meticulously and practise respiratory hygiene/ cough etiquette, including covering their mouth when coughing or sneezing and proper tissue disposal • cleaning and disinfecting environmental surfaces • increasing fresh air in buildings (i.e., open windows) • asking employees to stay home from work and social engagements when sick. <p>✍ ii. Social distancing Public health can ask workplaces and post secondary institutions to make changes to their environments and practices that reduce contacts between adults, such as:</p> <ul style="list-style-type: none"> • spacing employees / students one metre* (3 ft.) apart • allowing employees / students to use computer technology to work / study from home • limiting the number of people in a work / study setting at any given time • conducting meetings / academic lectures via television, radio, mail, Internet, teleconference or videoconference instead of face-to-face • staggering employee working hours and academic lectures to reduce the number of people on the transit system at the same time • establishing liberal absence / sick leave policies so workers who are ill or have ill family members can remain away from work until symptoms in the household have resolved • cohorting students in dormitories, in order to keep student with influenza separate from other students. <p>✍ iii. Restricting public gatherings Public health can issue orders restricting or discouraging social and other large gatherings – particularly those held in-doors, including:</p> <ul style="list-style-type: none"> • sporting events • faith based ceremonies • dances and other social activities. 	<p>Depending on the severity of the pandemic, social distancing measures are implemented early in the pandemic and maintained through the pandemic.</p>

* Scientists are not certain how far droplets from a coughing or sneezing person can travel. OHPIP recommends keeping about 1 metre distance from a coughing or sneezing person; however, this distance is currently under review.

For other public health measures not included in this section, see the Canadian Pandemic Influenza Plan, Annex M at <http://www.phac-aspc.gc.ca/cpip-pclcpi/>

5.6 A Severity-Based Approach to Public Health Measures

The types and extent of public health measures used during an influenza pandemic will depend on the severity of the pandemic, based on death rates. The death rates are as follows:

- <0.1% case fatality rate = mild pandemic
- 0.1% <1.0% case fatality rate = moderate pandemic
- \geq 1.0% case fatality rate = severe pandemic

The PCCHU follow the severity-based approach for public health measures as described in the Ontario Health Plan for an Influenza Pandemic, Public Measures Section, at www.health.gov.on.ca/pandemic as seen below.

Figure 6.1: Public Health Measures By Pandemic Severity

Public Health Measure	Severity of the Pandemic		
	Mild	Moderate	Severe
Public Education	<ol style="list-style-type: none"> 1. Reinforce general infection prevention and control practices 2. Where to get information on self-care 	PLUS <ol style="list-style-type: none"> 3. Provide messages re: social distancing 	PLUS <ol style="list-style-type: none"> 4. Provide message re: masks for people who do not have flu – not recommended, but if individuals choose to use them, they should use surgical masks
Travel Restrictions	Business as usual: <ol style="list-style-type: none"> 1. Refer travelers to PHAC website for Travel Health Notices and International Reports 	<ol style="list-style-type: none"> 1. Consider deferring unnecessary travel 2. Consider measures to reduce the number of people on transit vehicles at any one time in the affected area 	<ol style="list-style-type: none"> 1. Recommend deferring unnecessary travel 2. Recommend measures to reduce the number of people on transit vehicles at any one time in the affected area
Case Management	<ol style="list-style-type: none"> 1. Voluntary isolation 2. Self-care 3. Antivirals 4. Public Health Follow-up – individual (one-to-one) as long as necessary to confirm the pandemic strain, then switching to group management strategies 		
Contact Management	<ol style="list-style-type: none"> 1. Reinforce public education messages and provide information on where to go for care 	<ol style="list-style-type: none"> 1. Consider voluntary modified quarantine 2. Public health follow-up – using group strategies 	<ol style="list-style-type: none"> 1. Recommend voluntary modified quarantine – if indicated by severity of the pandemic
School and Day Care Measures	Business as usual <ol style="list-style-type: none"> 1. Reinforce infection prevention and control measures within the affected Ministry of Education region 	<ol style="list-style-type: none"> 2. Consider social distancing (e.g., limit sizes of groups and activities in schools) within the affected Ministry of Education region 3. Consider closing day cares, elementary schools and secondary schools within the affected Ministry of Education region for < 4 weeks* 	<ol style="list-style-type: none"> 2. Recommend closing day cares, elementary schools and secondary schools within the affected Ministry of Education region for < 12 weeks*
Social Distancing in the Community	Business as usual <ol style="list-style-type: none"> 1. Reinforce public education/infection prevention and control measures within affected areas 	<ol style="list-style-type: none"> 2. Consider implementing social distancing measures in post-secondary institutions, workplaces and community in affected areas (e.g., distance between desks, flex hours, meeting via video or teleconferencing, working at home) 3. Recommend that people avoid indoor public gatherings 	<ol style="list-style-type: none"> 2. Recommend implementing social distancing measures in post-secondary institutions, workplaces and community in affected areas (e.g., distance between desks, flex hours, meeting via video or teleconferencing, working at home) 3. Restrict all public gatherings

* Reassess length of time that schools should remain closed based on the epidemiology of the virus.

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There are different approaches for implementing public measures as follows:

- Resource-driven approach: public health will conduct case/contact management only when it is warranted due to the substantial resources required for this measure. Once resources are overwhelmed, health units will focus on group/public messaging to achieve the same ends.
- Consistent approach, with some flexibility to respond to local needs: the Chief Medical Officer of Health will make specific recommendations about the measures to be used province wide. However, the timing of measures may vary from health unit to health unit depending on the severity of the pandemic in each part of the province.
- Targeted approach: Ontario will use information on the epidemiology of the virus (e.g. attack rates in different populations) to develop targeted public health interventions.

5.7 Triggers for Public Health Measures

Public health measures are likely to be most effective when used early in the pandemic and implemented quickly. The following table outlines the trigger for initiating each type of public health measure. However, the severity of the pandemic strain may change the trigger for the public health measure.

Measure	Trigger
Public education	First lab confirmed case in North America
Travel restrictions	Evidence of a pandemic strain outside of Canada
Case management	Cluster of cases in/near Ontario
Contact management	Cluster of cases in/near Ontario
School and daycare measures	Cluster of cases within a Ministry of Education region or in a nearby community in an adjoining Ministry of Education region
Social distancing	Cluster of cases within local public health unit or adjoining health unit area

5.8 Risks Associated with Public Health Measures

While each public health measure may be partially effective, all, with the exception of public education, have some risks. For example, many of the measures will take people out of the workforce which will disrupt services and the economy. School and day care closures are a particular concern because parents would have to stay home from work to look after children. This would have a negative economic impact on families, particularly low income families, who

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cannot afford to lose income. It would be disruptive to businesses and could affect access to essential services. In addition, adolescents who are not at school may congregate in other places (e.g., malls), providing other ways for the virus to spread. The risks of instituting these control measures must be weighed against the impact of the pandemic.

The risks can be balanced by using mitigating strategies. These may include: developing child minding strategies for workers in essential industries; using high school and university students to look after younger children which will free parents to work; allowing parents to work from home; encouraging small groups of families to share child care needs (while trying not to recreate the typical density of children in school classrooms); and providing income support for low income families who have to take time off work.

5.9 Support and Guidance to Health Care Workers

Effective management of a pandemic requires close coordination between the PCCHU and the hospital, long term care facilities and health care professionals. Clinical care is provided by a mix of health care workers (e.g., doctors, nurse practitioners, nurses, paramedics, respiratory therapists) in many settings such as medical clinics, ambulances, at home, hospitals and long term care facilities. To provide support and guidance for health care workers in all settings and to encourage a coordinated response, the PCCHU will:

- provide ongoing professional education which may include guidelines and resources;
- promote good respiratory infection control practices in health care settings by:
 - reinforcing the importance of hand hygiene and encourage the installation of hand hygiene stations; and
 - encouraging health care workers to implement guidelines for febrile respiratory illnesses and infection control practices
- work with health care organizations to develop pandemic preparedness plans;
- work with health care organizations to identify strategies for assessing and treating influenza patients effectively and efficiently.