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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. SARS was predominantly a Nosocomial infection, and only affected a small number of people (i.e. 375 cases); however, it highlighted limitations in our readiness to deal with a health threat. In Peterborough County and City area, approximately 90 cases were quarantined. Fortunately, there were no deaths experienced during the SARS epidemic. However, the health care resources at Peterborough Public Health 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 Outbreak Planning Team (PIOPT) in 2006 prepared the community for a pandemic. The establishment of the Community Influenza Assessment Committee (a subcommittee of the PIOPT), 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 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).

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.

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.

1.5 The Context for Preparing for an Influenza Pandemic

The Peterborough Public Health (PPH) 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 Severity of an Influenza Pandemic

The 2013 OHPIP is based on a number of severity scenarios adapted from draft work undertaken by the Centre for Disease Control and Prevention (CDC). In this model, severity is measured on two dimensions:

- transmissibility of the virus; and
- clinical severity of the illness.

The OHPIP severity model includes an initial stage before severity is known when the limited availability of surveillance data does not allow for confident identification of severity. The severity may not be clearly known until after a pandemic is over.

OHPIP Severity Model:

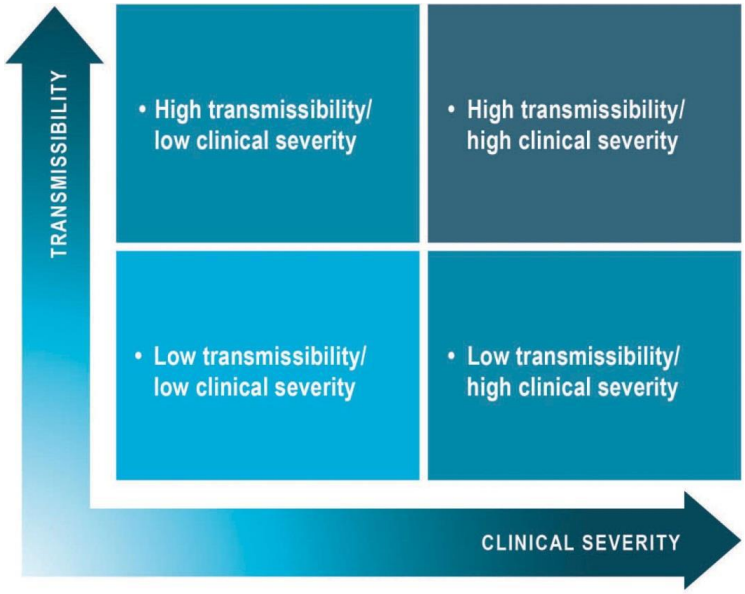

FIGURE 1. FOUR SEVERITY SCENARIOS USED IN THE OHPIP

Examples and Impact of Severity Scenarios

Overall severity	Characteristics	Examples	Impact on health system
Before severity is known	Limited surveillance data available	Either in the pre-pandemic phase or early in the pandemic, before there is enough information available to determine the severity of the pandemic	Unknown
Low transmissibility & low clinical severity	Cumulative attack rate[14]: < 21% R_0 (basic reproduction number)[15]: <1.6 Case Fatality Rate (CFR)[16]: <0.25%	Typical seasonal influenza epidemics 2009 influenza pandemic 1968 influenza pandemic	Comparable to seasonal influenza
High transmissibility & low clinical severity	Cumulative attack rate: ≥21% R_0≥1.6 CFR: <0.25%	1927-28 seasonal influenza epidemic	Significant workplace absenteeism High burden on outpatient and acute services
Low transmissibility & high clinical severity	Cumulative attack rate: < 21% R_0: <1.6 CFR: ≥0.25%	1957 influenza pandemic	High burden on critical health care services

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 PPH 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, Peterborough Public Health is chair of the Peterborough Interagency Outbreak Planning Team (PIOPT). 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 PIOPT, 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.

For details on Roles and Responsibilities of all health system partners, refer to the OHPIP, 2013.

1.9 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. The MOHLTC will respond based on provincial legislative requirements and responsibilities.

1.10 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 Peterborough Public Health plan. This will allow the concerned individuals to standardize contact information across organizations to make communication and cooperation among the groups easier.

1.11 Planning Goals, Approach and Assumptions

a) Goals

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