Pandemic Influenza Plan for Middlesex-London

Version 1.0

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CHAPTER 1

Introduction and Overview

CHAPTER 1: Introduction and Overview

This is the first official pandemic influenza plan for Middlesex-London. It has been written in collaboration with the health care providers and emergency services organizations that constitute the Health Emergency Sub-Committee. The Health Emergency Sub-Committee reports indirectly to the Community Emergency Management Program Committee (CEMPC), the City of London committee that oversees municipal emergency planning. The Health Emergency Sub-Committee also supports pandemic planning for Middlesex County, feeding into the regional and municipal emergency planning processes.

The goals of the Pandemic Influenza Plan for Middlesex-London are in keeping with the provincial goals, which consist of the following:

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

The ethical and legal frameworks outlined in the Ontario Health Pandemic Influenza Plan for the province also provide the templates for response within Middlesex-London.

The Pandemic Influenza Plan for Middlesex-London is written in response to the existing threat of a possible influenza pandemic. Its value however goes beyond assisting with the community response to a possible pandemic. Many of the aspects of the pandemic influenza plan will also assist in dealing with other health-related emergencies such as biologic, chemical, radiologic or nuclear agents or events. As well, the working relationships established among the many stakeholders involved in the development of this plan will facilitate planning and response to other emergencies and health related issues.

This first pandemic influenza plan represents the work that has been done to-date. In some areas, the document contains concrete plans for how a particular area of response will be implemented. In other areas it contains a range of options or an inventory of resources to assist with possible responses. This is felt to be a practical approach, as in many circumstances the exact situation requiring a response, and therefore the most appropriate response, cannot be accurately predicted in advance. In other areas of the plan, ideas are presented for future consideration and development. Most chapters of the plan conclude with some suggestions for next steps. A template for further development of the pandemic plan, and a working group structure have been created to support the ongoing pandemic planning initiative.

It is recognized that the Pandemic Influenza Plan for Middlesex-London is a working document that will undergo many iterations. It will require revisions as the international, national and provincial documents on which it is based are modified, and as further scientific information to assist with planning becomes available. As well, the Middlesex-London plan will require modification as local working groups continue their planning and these plans are incorporated in the document. The following provides an overview of the structure and content of this planning document.

Influenza and Pandemic Influenza – Chapter 2

This chapter describes the basic features of how the influenza virus spreads, typical symptoms, how long it takes for infection to develop and how long the virus persists in the environment. It reviews the role of birds in carrying many types of influenza viruses and the unstable nature of the virus. This instability results in the need for annual influenza vaccinations and creates the possibility of an influenza pandemic. Potential preventative strategies including influenza vaccine and antiviral drugs are described in this chapter. The origin of the three pandemics of the 20th century are reviewed along with their impact on people as it spread worldwide. Recent avian influenza outbreaks are described along with the current avian influenza situation in Asia and Eastern Europe.

Pandemic Influenza Planning – Chapter 3

This chapter provides an overview of the templates that have been used to assist with pandemic planning from the World Health Organization (WHO), Public Health Agency of Canada (PHAC), Ontario Ministry of Health and Long-Term Care (MOHLTC) and the US Centers for Disease Control and Prevention (CDC). The WHO phases for pandemic influenza are outlined, as are the elements of a comprehensive local plan. Many of these elements are addressed in this plan, and others will be addressed in future versions of the plan. The various uncertainties in relation to pandemic planning are discussed. Despite these uncertainties, the CDC model, called the Meltzer model, is presented which provides predictors of the numbers of outpatient visits, hospitalizations and deaths that may occur during a pandemic.

Health and Social Structures in Middlesex-London – Chapter 4

This chapter provides an overview of the key health organizations that can assist with service provision in a pandemic. It also provides information on the organizations that will require service and support during a pandemic. Listing these organizations and their number of clients and staff will assist in planning the distribution of antiviral drugs and vaccines. It will also provide some estimates of the number of people who may require assistance during a pandemic and the number and types of people who are available to assist. The appendices for this chapter provide a list of key contacts to facilitate access to the appropriate individuals within these organizations during a pandemic or other emergency. These appendices are available to health care providers, emergency services workers and key decision makers who will be responding to an influenza pandemic.

Surveillance – Chapter 5

This chapter reviews the importance of surveillance information in preparing for an influenza pandemic. The chapter outlines the websites and sources of information that provide information on the influenza situation around the world. Many of these sources are currently monitored on an ongoing basis and monitoring of these sites will be enhanced as a pandemic becomes more likely. The current mechanisms for monitoring influenza activity within Middlesex-London are reviewed, which is primarily a “passive” system where reports are called to the Middlesex-London Health Unit. Additional surveillance mechanisms will be implemented to detect the arrival of influenza in the

community. This form of "active" surveillance involves looking for signs of influenza through regular contact with health care organizations, schools, workplaces and child care centres. During an influenza pandemic, Health Unit staff members will likely be placed in hospitals to facilitate the acquisition of required information. Monitoring regarding the use of antirviral drugs and/or vaccines and their side effects will also be necessary, once these drugs and vaccines become available.

Public Health Measures - Chapter 6

This chapter describes public health measures to respond to an influenza pandemic, which are non-medical procedures designed to slow the spread of disease. These procedures may include early recognition of human-to-human transmission and instituting containment measures such as isolation and follow-up of contacts. The chapter defines a series of infection control precautions that should be followed at all times including frequent hand washing, covering the mouth and nose when coughing and sneezing, environmental cleaning and staying home when ill. In an influenza pandemic, further measures may be implemented to increase social distancing such as closing schools and child care centres, limiting other large gatherings, and travel restrictions. Public health interventions that may be required in the unlikely event that avian influenza should arise in Middlesex-London are also outlined.

Antiviral Drugs – Chapter 7

Antiviral drugs will be used in the early treatment of influenza, and also to prevent influenza from developing. Chapter 7 reviews the use of these drugs and the priority groups that have been established by the Ontario Ministry of Health and Long-Term Care. An estimate of the number of people in Middlesex-London in these priority groups is provided. A plan to distribute the antiviral drugs during a pandemic is outlined and includes distribution through hospitals, long term care facilities and community distribution centres. Mechanisms to determine eligibility for antiviral drugs are outlined in order to facilitate dispensing the antiviral drugs through community distribution centres. The issues related to personal and corporate stockpiling of antiviral drugs are also reviewed.

Vaccinations – Chapter 8

This chapter describes the priority list for vaccinations based on the Ontario Ministry of Health and Long-Term Care criteria. A company located in Canada has been contracted by the federal government to manufacture a dose of pandemic influenza vaccine for every Canadian. The establishment and operation of vaccination clinics follows the process used during routine influenza vaccination clinics. For pandemic influenza, extra planning will be required with regard to assessing eligibility criteria, dividing up the population and allocating them to specific clinics, infection control, and security.

Health Services – Chapter 9

This chapter deals with the most challenging aspect of pandemic influenza planning, the delivery of health care services. The chapter outlines the expected impacts of an influenza pandemic on our already overburdened health care system. The possibility that health care will not be available in the manner that we have come to expect is highlighted in this chapter. The need for integration and coordination among the different sectors of the health care system is discussed. The key elements of the comprehensive plan developed by the London Health Sciences Centre and St. Joseph's Health Care London are summarized. Chapter 9 also reviews the need to provide information on self-care to the community. Further planning is required around the establishment of triage centres, the role of primary care providers, the use of alternate care sites and the potential roles and impact on long-term care facilities. The need for business continuity planning in all health care organizations is emphasized.

Human Resources – Chapter 10

This chapter identifies the important role to be played by alternate health care providers and volunteers. The possible sources of alternate health care providers are identified, as are issues that need to be addressed in order to fully utilize these workers. An inventory of sources of these providers is proposed in order to fully assess the potential roles for these individuals and their barriers to assisting in influenza pandemic response. A similar strategy is proposed in order to capitalize on the use of volunteers in the pandemic response.

Business Continuity – Chapter 11

This chapter provides proactive strategies for businesses that may assist them to continue to function during an influenza pandemic. These strategies include enhanced infection control, vaccination and other preventative health strategies, mechanisms to increase social distancing, prioritizing services to know what must continue and what can be stopped when staff members are ill in large numbers, establishing workplace closure criteria, and establishing communications mechanisms. Businesses can also consider how they can contribute to a community response to pandemic influenza.

Communications – Chapter 12

This chapter outlines the messages that need to be communicated to the public and health care professionals, both during the interpandemic and pandemic alert phases. Strategies to communicate pandemic messages to the public are reviewed and include use of: the media, telephone information lines, pre-recorded telephone messages, internet, receiving e-mails, advertisements, distribution through schools and workplaces, mass mailings, mass faxes, and mass e-mails. Communication to heath care professionals will be the responsibility of the Middlesex-London Health Unit and will use the usual communication routes. Health care providers will receive information on business continuity, infection control, vaccine and antiviral distribution mechanisms, clinical care guidelines, and how services will be provided in the community.

Mass Fatality Management - Chapter 13

Issues related to the management of large numbers of fatalities are outlined in this chapter. Consideration must be given to ensuring that there are adequate supplies required for funerals and disposition of the dead bodies. Infection control issues related to large gatherings at funerals and visitations are reviewed along with the need for education of staff members working in these areas. The need for temporary storage of bodies is highlighted in the event that current capacity is exceeded. Special considerations are required regarding religious needs, deaths in the home, financial implications, pronouncement and certification of death, transfer of bodies and organ donation.

Pandemic Influenza Outbreak Response – Chapter 14

This chapter outlines the provincial emergency response structures, as well as the roles of the Middlesex-London Health Unit, the Health Emergency Sub-Committee and the City of London and County of Middlesex Community Control Groups in pandemic influenza outbreak response. In preparing for a lead role in pandemic influenza response, the Middlesex-London Health Unit continues to undertake preparedness activities that are outlined in this chapter. Lessons learned from previous outbreak experiences are highlighted to assist with pandemic influenza response.

CHAPTER 2

Influenza and Pandemic Influenza

TABLE

CHAPTER 2: Influenza and Pandemic Influenza

Regular influenza seasons

Influenza is a respiratory virus that occurs each year at some time between November and April. Once influenza arrives in a community, it typically lasts for six to eight weeks. Symptoms of influenza include the sudden onset of fever, cough, headache, sore muscles, fatigue and sore throat. In an average influenza season, 10 – 20% of the population is affected. Influenza can spread more widely in closed populations such as long term care facilities, where up to 50% of the population can be affected.

Influenza spreads from infected individuals who cough and sneeze within one metre of other individuals. As well, the virus can remain alive on environmental surfaces that are hard and non-porous for up to 48 hours, and on cloth, paper and tissues for 8 to 12 hours. The influenza virus can also survive on the hands for up to five minutes. Influenza is introduced into a susceptible person through the eyes, mouth and nose. Infected adults can spread the virus from 24 hours before the onset of symptoms to five days after they become ill. Children with influenza can spread the infection from 24 hours before symptoms start and then for up to seven days after they become ill. The peak period of infectiousness is in the 1 to 2 days after the onset of symptoms. People who are more severely ill are more likely to be able to spread their infection. After exposure, a person usually develops symptoms in 1 to 3 days. However, some infected individuals may not develop symptoms but may still be able to transmit the infection to others.

Influenza is usually diagnosed in individuals based on their symptoms. Laboratory confirmation is available using a swab taken through the nose from the back of the throat (nasopharyngeal swab). The laboratory can perform a ”rapid test” to determine if influenza is present, the result of which can be available within a few hours. The “rapid test” will however occasionally miss people with influenza (e.g. the test will say they do not have influenza when in fact they do). A more accurate result is obtained when the material from the swab is allowed to grow for a few days on culture medium. The culture may take several days to provide results. Blood tests taken at the onset of symptoms and then again several weeks later can also be used to tell that a person has recently had influenza.

Influenza first spreads through the community in school age children, whose close contact facilitates this transmission. Most healthy individuals with seasonal influenza will require a short period of time in bed, but will recover uneventfully in 2 – 7 days. People 65 years of age and over and those with underlying medical conditions experience the majority of hospitalizations and death from regular influenza. Children less than 2 years of age are also at increased risk for hospitalization compared to older children and healthy adults. Influenza-related hospitalizations and deaths result from pneumonia that complicates the influenza infection or from worsening of underlying medical conditions. The regular influenza season is estimated to result in up to 500,000 deaths each year in industrialized countries, with 500 to 1,500 deaths each year in Canada.

The influenza virus

There are three types of influenza, A, B and C. Influenza C is of no concern because it does not cause human illness. Influenza A causes most infections during regular influenza seasons, although some influenza B is seen each year as well. Influenza A and B viruses are not very stable, and change rapidly. Influenza A is named based on two different proteins that appear on its surface, hemagglutinin (H) and neuraminidase (N). An influenza virus can have one of 16 kinds of H proteins and one of nine kinds of N proteins. All 16 of the H proteins and all nine of the N proteins have been found in different influenza viruses in birds. Generally in the past, only subtypes of influenza A containing H1, H2, or H3, and N1 or N2 proteins have affected humans. Unlike influenza A that can be broken down into subtypes based on the H and N proteins on its surface, influenza B virus is not divided based on these subtypes.

Both influenza A and B undergo a phenomenon called "antigenic drift". This is a gradual change in the genetic make-up of the virus. As the change progresses, the virus becomes less like its previous version, and therefore there is less protection from past infection in the population. It is because of "antigenic drift" that the influenza vaccine must be remade each year, in anticipation of the type of influenza that is expected to circulate.

Influenza A virus is also able to undergo a major change in its genetic make-up called "antigenic shift". "Antigenic shift" results in the emergence of a new subtype of influenza virus that contains a new H and/or N protein that has not previously been present in humans. Because these are new proteins, people have no immunity from past infections to protect them from becoming ill. "Antigenic shift" is believed to arise when new genetic material from strains of influenza carried only in birds (called avian influenza) mix with the genetic material from human influenza virus. This mixing of influenza viruses is believed to have occurred in pigs, that are able to carry both human and bird strains of the virus. However, recently it has been recognized that humans may also serve as a source for mixing of human and bird strains of influenza. New human influenza strains can also arise when a bird strain of virus undergoes significant genetic changes such that it gains the ability to infect humans and cause disease.

Measures to prevent and treat influenza

Influenza vaccine: The influenza vaccine provides protection against two strains of influenza A and one strain of influenza B. Because the circulating strains of influenza change each year ("antigenic drift"), the vaccine must be manufactured each year containing the types of influenza that are expected to circulate that year. It takes many months each year to produce the influenza vaccine through a process that involves growing the virus in fertilized chicken eggs.

Influenza vaccine is recommended for individuals at high risk for the complications of influenza (e.g. elderly, children less than two years of age, people with underlying medical conditions). It is also recommended for people who can transmit infection to those at high risk (e.g. health care workers, caregivers of children less than 2 years of age, caregivers for the elderly etc.). In Ontario, the influenza vaccine is publicly funded for everyone six months of age and older. Canada is fortunate to have an influenza vaccine

manufacturer, ID Biomedical, located in the country, which will help in providing Canadians with a supply of influenza vaccine during an influenza pandemic.

Antiviral drugs: There are three drugs available to prevent and treat influenza – amantadine, oseltamivir and zanamivir. Oseltamivir (Tamiflu ® - Roche Pharma) and zanamivir (Relenza® - GlaxoSmithKline) belong to a class of antiviral drugs called neuraminidase inhibitors. Amantadine is an older drug that has troublesome side-effects and is complicated to use. Amantadine is effective for influenza A only, whereas neuraminidase inhibitors are effective for both influenza A and B viruses. As well, the influenza virus has demonstrated the ability to easily become resistant to amantadine. Amantadine is however significantly less expensive than the newer neuraminidase inhibitors.

Neuraminidase inhibitors can be used to treat or prevent influenza. When used to treat influenza, they must be started within 48 hours of onset of symptoms. These drugs do not kill the influenza virus, but rather decrease the virus' ability to continue to grow in the body. By doing this, the neuraminidase inhibitors result in an improvement in symptoms 1 – 1 ½ days earlier than if the drug was not used. There is some limited evidence that neuraminidase inhibitors may also decrease the risk of influenza complications when used for treatment.

The neuraminidase inhibitors can also be used to prevent influenza symptoms. In order to prevent influenza, they must be taken on a daily basis during the time when influenza is circulating. Taking the neuraminidase inhibitor for prevention does not prevent the virus from entering the body and so allows the body to develop an immune response to the virus. Instead, the neuraminidase inhibitor prevents the virus from growing in the body, and thereby prevents the development of influenza symptoms and decreases the chances that the virus will spread to others.

Neuraminidase inhibitors can also be used for prevention after an exposure (called "post-exposure prophylaxis"). An example of its use in this way would be to provide the drug to the remainder of the family, when a family member is diagnosed with influenza. This has been shown to decrease the risk of illness in exposed family members who do not yet have symptoms.

A few instances of the influenza virus developing resistance to oseltamivir have been documented. Because of its mechanism of binding to the influenza virus, the development of resistance to zanamivir is felt to be more unlikely than the development of resistance to oseltamivir. The development of resistance to the neuraminidase inhibitors is being closely monitored, but still appears to occur infrequently.

Oseltamivir: Oseltamivir is taken by mouth and comes as a capsule or liquid. It is safe, effective and easy to use. It does not interact with the vast majority of other drugs. Some adjustment of the dose is required for individuals known to have severe kidney problems. In Canada, it is licensed for treatment for ages one and over. For prevention, it is licensed for those 13 years of age and over. Unfortunately, oseltamivir is relatively costly, and is only made by one manufacturer (Roche Pharma), who is located in Switzerland.

For prevention, oseltamivir can be used for a prolonged period of time (up to eight weeks in some studies) and will provide up to 90% protection against influenza illness while the

drug is been taken. Oseltamivir can also be given as post-exposure prophylaxis and will provide good protection as long as the drug is being taken. As well, oseltamivir can be used for treatment. If given within 48 hours after onset of symptoms and possibly even later, it decreases the severity of the illness, and may also decrease complications such as pneumonia, hospitalization and death. Treatment with oseltamivir will also decrease the ability of the ill person to spread influenza to others. For treatment of seasonal influenza, oseltamivir is given as 75 mg twice daily for five days. The pediatric dosages for treatment are provided in Table 2.1. For prevention, 75 mg of oseltamivir is taken once daily for as long as influenza infection is a risk.

Table 2.1: Recommended Pediatric Dosage of Oseltamivir for Treatment Based on Weight

Body weight in kg	Body weight in pounds	Recommended dose
15 kg	33 lbs	30 mg twice daily for 5 days
> 15 kg to 23 kg	>33 lbs to 51 lbs	45 mg twice daily for 5 days
>23 kg to 40 kg	>51 lbs to 88 lbs	60 mg twice daily for 5 days
> 40 kg	> 88 lbs	75 mg twice daily for 5 days

Zanamivir: Zanamivir is produced by GlaxoSmithKline. It has been less popular than oseltamivir because it is taken by inhalation using a Diskinhaler device. This method of delivery poses a problem for some elderly individuals, particularly in long term care facilities, who are not able to coordinate the use of the inhaler. Zanamivir should not be used in individuals with asthma or chronic lung disease as it may worsen these conditions. It is only approved in Canada for treatment and only for individuals 12 years of age and older. For treatment, two puffs twice a day for five days are currently recommended. As with oseltamivir, it must be started within 48 hours of onset of symptoms and will decrease the duration of symptoms by 1 – 1 ½ days. It may also decrease the development of complications from influenza.

Pandemic influenza

Pandemic influenza refers to the occurrence of a new strain of influenza that circulates worldwide. The new strain, which usually occurs due to “antigenic shift”, will not have been previously seen in humans and so there will be no past immunity to provide protection. In past influenza pandemics, emergence of new strains has caused significant hospitalizations and deaths, and has spread rapidly around the world.

Pandemic influenza has occurred three times in the 20th century: 1918 - 1919 (“Spanish Influenza” caused by an H1N1 strain), 1957 (“Asian Influenza” caused by an H2N2 strain) and 1968 (“Hong Kong Influenza” caused by an H3N2 strain). The 1918-1919 pandemic of “Spanish Influenza” is the most renown, killing upwards of 40 million individuals, far more than were killed in the First World War. Unlike regular seasonal influenza that tends to cause serious illness in the elderly and very young children, the 1918 pandemic predominantly affected young, healthy adults, mainly between the ages of 15 and 35. The 1957 pandemic caused somewhat less death, with 2 million excess deaths attributed to this pandemic. Deaths occurred in the more traditionally affected groups, such as the elderly and those with underlying medical conditions. The 1968

pandemic was even milder, resulting in an estimated excess of 1 million deaths, mostly in the elderly. Past pandemics have tended to occur in waves with several weeks to months respite between each wave of pandemic influenza activity in a country. Two or three waves of influenza activity have occurred in past pandemics, with each wave estimated to last about six to eight weeks.

It is believed that all of the pandemic strains in the 20th century arose from avian strains of influenza. The 1918-1919 "Spanish Influenza" is believed to have arisen from progressive mutations of an avian strain of influenza. This strain did not take on any human genes, but merely gained the ability to cause severe infection by progressive changes in its genetic make-up. In contrast, the 1957 and 1968 pandemic strains arose from the mixing of avian influenza strains with human strains. This mixing may have arisen in pigs or people, both of which can be infected with bird and human strains that can facilitate the mixing of genetic material between the two strains. It is felt that past and future strains of pandemic influenza will likely arise from Asia where birds, pigs and people live in close proximity. These living conditions create a favorable environment for avian strains of influenza to mix their genetic material with human strains, resulting in the next influenza pandemic. As the interval between previous pandemics range from 10 years to 39 years, many experts feel that we are now due for the next pandemic.

Recent outbreaks of avian influenza

In 1997, a strain of avian influenza called H5N1 caused a severe outbreak in chickens in Hong Kong. This strain was called "highly pathogenic" because of its propensity to kill chickens. For the first time, this strain of H5N1 avian influenza directly infected people as well. A total of 18 people were infected, six of whom died. The lethality of this strain in humans raised serious concerns that the next pandemic might arise, and to prevent this from happening, 1.5 million chickens in Hong Kong were culled within four days. This measure was felt to have possibly averted the development of the next pandemic.

In 2003, the H5N1 virus appeared again in a Hong Kong family who had recently traveled to Southern China. The daughter in the family died of an undiagnosed illness. The father and son in the family were diagnosed with H5N1 influenza, resulting in the death of the father.

In December 2003, H5N1 again caused an outbreak of avian influenza beginning in South Korea. Unfortunately, despite efforts to contain this virus, it spread among domestic chickens, domestic ducks and other waterfowl in Southeast Asia. During the first phase of this outbreak from December 2003 to April 2004, eight countries were affected by outbreaks of highly pathogenic H5N1 in chickens. Affected countries were: the Republic of Korea, Viet Nam, Japan, Thailand, Cambodia, Lao People's Democratic Republic, Indonesia and China. A total of 120 million birds in Asia either died or were culled trying to contain the outbreak. A total of 35 people were found to be infected during this first phase, resulting in 24 deaths. All of the human infections occurred in Viet Nam and Thailand among people with direct contact with infected birds. The infections were occurring in previously healthy children and young adults.

During the second phase of the outbreak from July to October 2004, H5N1 reappeared in birds in Cambodia, China, Indonesia, Thailand and Viet Nam and appeared for the first

time in birds in Malaysia. During this second phase a total of 9 people were found to be infected in Viet Nam and Thailand, 8 of whom died. As well, the first confirmed case of human-to-human transmission occurred in Thailand, where an ill daughter passed the infection to her mother who cared for the daughter while she was dying. Unlike the daughter, the mother did not have any direct exposure to poultry.

The third phase of the outbreak began in December 2004 and is ongoing in many previously affected countries. Since May 2005, additional outbreaks of avian influenza have been reported in Russia, China, Kazakhstan, Turkey, Romania, Croatia and Ukraine. Human cases continue to occur in Viet Nam and Thailand and cases have also occurred in Cambodia and Indonesia. As well, in mid-November 2005, human cases were confirmed in China and in early January 2006, human cases were confirmed in Turkey.

In total as of January 10, 2006, the current avian influenza outbreak has affected birds in 17 countries. As of January 10, 2006, 147 human cases have been reported from six countries, resulting in 78 deaths. Updates on outbreaks of avian influenza in birds can be found on the World Organization for Animal Health (OIE) website at http://www.oie.int/eng/en_index.htm . Updates on human cases of avian influenza can be found on the World Health Organization (WHO) web site at http://www.who.int/csr/disease/avian_influenza/en/index.html .

The spread of this highly pathogenic strain of influenza to so many countries at one time is unprecedented. The ability to cause death in approximately half of infected people, most of who were young and previously healthy has raised major concerns regarding the emergence of the next influenza pandemic. Experts are concerned that the widespread distribution of the H5N1 virus may facilitate genetic mixing with a human strain of influenza. This could result in a new strain of influenza that carries the lethality of the H5N1 strain of avian influenza, and the transmissibility of the regular human strains of influenza. Should this occur, an influenza pandemic that causes significant illness and death could result.

Additional outbreaks of highly pathogenic avian influenza have occurred in other parts of the world. An outbreak of highly pathogenic H7N7 occurred in the Netherlands in 2003. Eighty-nine people were confirmed to have H7N7 influenza. Most had only mild illness mainly consisting of eye infections, although one individual died. Most of the people with laboratory-confirmed influenza had direct exposure to birds, although three infected people were family members of someone with bird exposure. As well, in 2004 highly pathogenic avian influenza affected poultry in British Columbia. In this instance, the outbreak was caused by the H7N3 strain of influenza. In order to control this outbreak, approximately 250,000 birds were culled. Several individuals developed mild respiratory illness and H7 influenza was laboratory -confirmed in two people.

The recent avian influenza outbreaks, and particularly the developments in Southern Asia and Eastern Europe, have reaffirmed the need for jurisdictions around the world to develop pandemic influenza plans.

CHAPTER 3

Pandemic Influenza Planning

TABLES

APPENDICES

CHAPTER 3: Pandemic Influenza Planning

Pandemic planning documents

Numerous templates exist to aid in pandemic influenza preparedness. These include documents developed by:

World Health Organization (WHO)
http://www.who.int/csr/disease/influenza/en/
Public Health Agency of Canada
http://www.phac-aspc.gc.ca/cpip-pclcpi/index.html
Ontario Ministry of Health and Long-Term Care
http://www.health.gov.on.ca/english/providers/program/emu/pan_flu/pan_flu_plan.html
Centers for Disease Control and Prevention (CDC)
http://www.hhs.gov/pandemicflu/plan/

Pandemic phases

The World Health Organization has outlined the phases of pandemic activity in Table 3.1.

Table 3.1: World Health Organization Phases of Pandemic Influenza

Period	Phase	Description
Interpandemic period	Phase 1	No new influenza subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk* of human infection is considered low.
Interpandemic period	Phase 2	No new influenza subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human diseases.
Pandemic alert period**	Phase 3	Human infection(s) with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact.
Pandemic alert period**	Phase 4	Small cluster(s) with limited human-to-human spread, but spread is highly localized, suggesting that the virus is not well adapted to humans.
Pandemic alert period**	Phase 5	Larger cluster(s) but human-to-human spread still localized, suggesting that the virus is becoming increasingly adapted to humans, but may not yet be fully transmissible (substantial pandemic risk).
Pandemic period	Phase 6	Increased and sustained transmission in general population.
Postpandemic period		Return to interpandemic period

* The distinction between phase 1 and phase 2 is based on the risk of human infection or disease from circulating strains in animals.
** The distinction between phase 3, phase 4 and phase 5 is based on the risk of a pandemic.

Source: World Health Organization, 2005

Planning structure and framework

The pandemic influenza planning process is based on the provincial and federal pandemic plans. The planning process will address the following issues:

- Surveillance
- Public health measures
- Antiviral distribution
- Vaccine distribution
- Health services
- Human resources
- Business continuity
- Communications – public and professional
- Outbreak management
- Laboratory services
- Mass fatality management
- Emergency services
- Social support mechanism

Many of these issues are addressed in this version of the plan, and others will be addressed in future versions. The Health Emergency Sub-Committee of the City of London Community Emergency Management Program Committee (CEMPC), has been struck to support the pandemic influenza planning process. The membership and Terms of Reference for this Sub-Committee are outlined in Appendix 3-A. The Health Emergency Sub-Committee also supports pandemic planning for Middlesex County, feeding into the regional and municipal emergency planning processes. A planning framework for the Sub-Committee has been developed (see Appendix 3-B) and working groups are being established to move the planning process forward. The aim of these working groups is to provide further refinement to the issues addressed in this plan and to work through issues not currently reviewed in this plan. Further work is still required to determine how to plan the social support mechanism required for pandemic planning and other community emergencies.

Planning uncertainties

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

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

Due to these uncertainties, it is very difficult to develop a definitive response to pandemic influenza. Therefore, this plan will attempt to outline a range of options that are available, and to provide an inventory of resources to aid in a pandemic response. It is anticipated that knowing the range of options in advance will allow rapid, efficient decision making when more of the uncertainties regarding pandemic influenza are known.

Planning parameters

Despite the uncertainties described above, the Ontario Health Pandemic Influenza Plan, June 2005, has outlined some estimates that can be used for planning purposes. The estimates are based on using a model called the Meltzer model that was designed in the United States and applied to the Ontario population. The estimates are calculated using a software program called FluAid 2.0 that was designed by the U.S. Centers for Disease Control and Prevention (CDC).

The model provides estimates of outpatient visits, hospitalizations and deaths based on 15%, 25% and 35% of the population becoming ill. It provides these parameters assuming a most likely, minimum and maximum scenario. Table 3.1 provides the estimates for Middlesex-London, a population of 430,367 people, as presented in the Ontario Health Pandemic Influenza Plan. Assuming that 35% of the population will become ill and using the most likely estimates provided in Table 3.1, the following represent the possible impact on Middlesex-London residents:

- 80,286 people will require an outpatient visit due to influenza illness over an eight-week period;
- 1,811 people will be hospitalized as a result of their influenza; and
- 416 people will die.

The Meltzer model makes assumptions regarding the impact of pandemic influenza based on past pandemics and health care utilization in the United States. It does not take into account the use of antiviral drugs or vaccines. It is therefore possible that the estimates provided in Table 3.1 may underestimate or overestimate what actually occurs. It should also be noted that Table 3.1 provides estimates of the impact of pandemic influenza on residents of Middlesex-London. Hospitals in the City of London may have proportionally more admissions and deaths than the estimates would indicate because they serve not only the residents of Middlesex-London, but also as a tertiary referral centre for several other counties in Southwest Ontario. It should also be noted that population estimates that form the basis for calculations using Meltzer's model exclude students who attend post-secondary institutions in London but live elsewhere when the school year is done. This exclusion of post-secondary students could lead to underestimating the use of health care services in Middlesex-London.

Table 3.2: Estimated Impact of Pandemic Influenza for Middlesex-London

Estimated Impact of Pandemic Influenza in Ontario by Public Health Unit

MIDDLESEX-LONDON HEALTH UNIT

POPULATION (NUMBERS AND DISTRIBUTION)					
	0-18 yrs	19-64 yrs	65+ yrs	Total	% Total
Non-high risk	95,223	233,606	33,438	362,267	84.17
High risk	6,510	39,298	22,292	68,100	15.82
Totals	101,733	272,904	55,730	430,367	100

DEATHS (NUMBER OF CASES)						
Gross attack rates				Distribution by age group (% of total): Most likely		
	15%	25%	35%		% High Risk	%Total
0-18 yrs most likely	2	3	4	0-18 yrs	0	1
minimum	1	2	2			
maximum	22	37	51			
19-64 years most likely	85	142	199	19-64 yrs	42	48
minimum	12	20	28			
maximum	160	267	374			
65+ yrs most likely	91	152	213	65+ yrs	41	51
minimum	89	148	207			
maximum	113	189	264			
TOTAL: Most likely	178	297	416	Totals	83	100
Total minimum	102	170	237			
Total maximum	295	493	689			

HOSPITALIZATION (NUMBER OF CASES)						
Gross attack rates				Distribution by age group (% of total): Most likely		
	15%	25%	35%		% High Risk	% Total
0-18 yrs most likely	28	47	66	0-18 yrs	1	4
minimum	14	23	33			
maximum	120	199	279			
19-64 yrs most likely	504	841	1,177	19-64 yrs	10	65
minimum	74	156	218			
maximum	551	918	1,285			
65+ yrs most likely	244	406	568	65+ yrs	19	31
minimum	174	290	406			
maximum	308	513	719			
TOTAL: Most likely	776	1,294	1,811	Totals	30	100
Total: minimum	262	469	657			
Total: maximum	979	1,630	2,283			

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OUTPATIENT VISITS (NUMBER OF CASES)						
Gross attack rates				Distribution by age group (% of total): Most likely		
	15%	25%	35%		% High Risk	% Total
0-18 yrs most likely	9,025	15,042	21,059	0-18 yrs	3	26
minimum	7,540	12,567	17,593			
maximum	10,511	17,518	24,525			
19-64 yrs most likely	21,057	35,095	49,133	19-64 yrs	8	61
minimum	15,119	25,198	35,277			
maximum	32,140	53,566	74,993			
65+ yrs most likely	4,326	7,210	10,094	64+ yrs	5	13
minimum	4,082	6,804	9,525			
maximum	6,715	11,192	15,669			
TOTAL: Most likely	34,408	57,347	80,286	Totals	16	100
Total: minimum	26,741	44,569	62,395			
Total: maximum	49,366	82,276	115,187			

Source: Ministry of Health and Long-Term Care. Ontario Health Pandemic Influenza Plan. June 2005, Appendix 1, Page 59 - 60

Appendix 3-A

TERMS OF REFERENCE
Health Emergency Sub-Committee

January, 2006

Mandate:

The mandate of the Health Emergency Sub-Committee is to enhance the capacity of the City of London and Middlesex County to respond from a health perspective to chemical, biological, radiological and nuclear events, pandemic influenza and other large scale communicable disease events. This involves review of the current level of preparedness, identifying the gaps in the current response capacity, and putting plans in place to address these gaps. Plans developed by the Health Emergency Sub-Committee will be integrated with federal, provincial, municipal and other local emergency response plans. The Health Emergency Sub-Committee will also assist in the management of large-scale emergencies with health impacts.

With regard to emergency preparedness, the Health Emergency Sub-Committee will address the following areas:

- Emergency room / urgent care issues e.g.. how to deal with contaminated patients; personal protective suits – how many, what type; training of staff for chemical and biologic response; plans for large numbers of ill people during pandemic influenza and CBRN events; plans for the emergency room itself being affected by pandemic influenza or as a site of a CBRN event; plans for large number of ill staff members; decontamination of the emergency room

- Hospital issues e.g. hospital planning for large numbers of ill people; isolation rooms; infection control precautions; hospital emergency plans to free up beds and call in more resources; off-site hospitals for extra capacity if needed; plans for hospital staff being affected by pandemic influenza or by a CBRN event; plans for large number of ill staff members

- Ambulance issues e.g. transfer of contaminated patients; transfer of infectious patients; capacity in the system; ability to assist at off site locations and decontamination locations; plans for large number of ill staff members; decontamination of ambulances

- Public health issues e.g. sites to distribute drugs and vaccines; policies, procedures and medical directives for distributing drugs and vaccine; communications and information dissemination including web site, telephone information lines, communication with local physicians

- Pharmacy issues e.g. stockpiling of drugs

- Communication issues e.g. who communicates what to whom; process for determining who takes the lead for co-ordination and who the spokesperson(s) will be

- Training issues e.g. what do health care workers need to know to enhance their capacity to respond to biologic and chemical weapons, pandemic influenza and other communicable disease events

- Resources issues e.g. What type of resources do we need to request to deal with stockpiling of drugs, personal protective equipment, enhanced capacity of emergency rooms to respond, training etc.; staffing of alternate sites

- Dead body disposal e.g. How to deal with mass casualties in terms of body disposal

- Human resources e.g. Ensuring that all agencies have contingency plans to manage in case of mass illness among their employees; ensuring that child care plans are in place for workers who may be needed during emergencies but whose usual child care is unavailable; developing plans to access health care workers from other sources or non-traditional health care workers

- Laboratory issues e.g. What types of tests will be required; which laboratory can do what tests; how will specimens be transported to the appropriate laboratory

- Disease containment / infection control issues e.g. When would schools be closed or other large gatherings cancelled; when would travel be limited and/or borders closed; when would masks be recommended

- Business continuity: Develop best practice advice for health care organizations and other community businesses and organizations regarding maintaining their business and services during a pandemic

Membership:

City of London - David Colvin, Dave O'Brien, Kent McVittie

Community Care Access Centre – Donna Ladouceur

Community Pharmacy – Michael Jaczko

County of Middlesex - Bettina Weber, Denis Merrall

Family Medicine – Dr. Tom Freeman, Dr. Carina Starok

First Nations Communities - Dan McMillan

London Health Sciences Centre - Steve Coulahan, Ron Heyboer, Dr. Michael John, Sab Sferrazza, Barb Watterworth, Heather Whyte

London Fire Service – Deputy Chief David Kitterman, Brian Arnold

London Police – Detective Sergeant Tom Bradley, Superintendent Rob Brown, Superintendent Ian Peer, Inspector Brent Shea

London Regional Public Health Laboratory – Dr. Abdul Chagla

Long Term Care Facility – Mary Raithby

Middlesesex Health Alliance - Yvonne Richardson, Dr. P. C. Shah

Middlesex-London Health Unit – Cathy Egan, Alison Locker, Dr. Graham Pollett, Patricia Simone, Mary Anne Simpson, Dr. Bryna Warshawsky

Ministry of the Environment – Shawna Borne, Lee Orphan

Regional Coroner – Dr. Thomas Wilson

St. Joseph's Health Care - Mike Bessegato, Karen Dyer, Cheryl Marks, Dr. Robert Stodilka, Russ Wheeler

Southwest Regional Office of the Ministry of Health and Long Term Care - Julie Girard

Thames Emergency Services – Jim Christie

Chair: Dr. Bryna Warshawsky

Reporting relationship:

The Health Emergency Sub-Committee reports to the Steering Committee of the Community Emergency Management Program Committee (CEMPC) for the City of London. The Health Emergency Sub-Committee also provides advice and support to the Community Emergency Management Program Committee for Middlesex County and the municipalities within Middlesex County.

Frequency of meetings:

Meetings to be held at least four times a year until the committee feels that we are adequately able to manage the health aspects of CBRN, pandemic influenza and other communicable disease events in our community. After that point, meetings can decrease in frequency but should continue in order to ensure ongoing preparedness. Meeting dates to be set on an annual basis. Agendas to be circulated at least one week in advance of the next meeting.

Minutes:

To be taken by the Middlesex-London Health Unit and to be circulated at least one week in advance of the next meeting.

Appendix 3-B

Health Emergency Sub-Committee - Planning Framework

Name of Group	Public Health	Communications	Human Resources	Health Services	Mass Fatality Management	Laboratory
Mandate	To ensure effective pandemic planning and response with respect to the following six areas: • Surveillance; • Public health measures; • Antiviral distribution; • Vaccine distribution; • Health professional communications; • Business continuity.	To ensure consistent and effective communications to the general public before and during a pandemic	To identify and support recruitment of human resources to assist in various roles during a pandemic, including the following task: • Identify the agencies / organizations that could provide human resources; • Determine the number of staff members and the roles they can play; • Determine the barriers to using staff during a pandemic; • Determine the training needs for using staff during a pandemic.	To plan for the provision of integrated health care and alternate levels of care during a pandemic. Issues to address include: • Hospitals care; • Triage / urgent care / walk - in / emergency department / primary health care provider / community health centre; • CCAC / Long term care / retirement homes; • Ambulance / patient transfer; • Alternate sites for care; • Alternate levels of care such as child care and elder care; • Supplies; • Infection control.	To plan for the safe transportation and disposal of dead bodies	To ensure efficient influenza diagnostic testing that supports influenza surveillance. To ensure the maintenance of other essential laboratory services.
Chair	Dr. Bryna Warshawsky		Dr. Graham Pollett Steve Coulahan	Dr. Michael John Dr. Carina Starok	Patricia Simone	Dr. Abdul Chagla Russ Wheeler
Members	Public Health unit staff members Community and hospital pharmacist for antiviral distribution group	Consider utilizing existing multi-agency communication network	Hospital Public health Long term care facilities CCAC Contract nursing agencies Nursing faculties Volunteer organizations	Hospital – emergency department, urgent care, infection control, planners Public health Community physicians CCAC Long term care Ambulance Community services HMMS – supplies	Corporate funeral home Private funeral home County funeral home Regional coroner Chair of Western Association Public Health Inspector Public Health Emergency Planner	Public health laboratory Hospital laboratory Private laboratory

CHAPTER 4

Health and Social Infrastructures in Middlesex-London

TABLES

Please note that the appendices for Chapter 4 as outlined below are not provided in the public version of the plan. They are available to pandemic influenza health responders, emergency services workers and key decision makers, as required.

APPENDICES:

Appendix 4-A: Long Term Care Facilities

Appendix 4-B: Middlesex-London Health Unit

Appendix 4-C: Family Practices Units

Appendix 4-D: Walk-In Clinics

Appendix 4-E: Contract Nursing Agencies

Appendix 4-F: London Pharmacy Directory

Appendix 4-G: Laboratories

Appendix 4-H: Veterinary Consultants and Veterinarians

Appendix 4-I: Middlesex County Fire Services

Appendix 4-J: Funeral Homes for London and Middlesex County

Appendix 4-K: University of Western Ontario Key Contacts

Appendix 4-L: University of Western Ontario Student Residences
Fanshawe College Emergency Contacts
Fanshawe College Student Residences
Other Post Secondary Institutions in Middlesex-London

Appendix 4-M: Schools in Middlesex-London

Appendix 4-N: Licensed Child Care Centres

Appendix 4-O: Group Homes and Shelters

Appendix 4-P: Elgin Middlesex Detention Centre Emergency Contacts
London Transit Commission Contact Information
Airport, Train Station and Bus Terminal Contact Information

Appendix 4-Q: Key decision makers

Appendix 4-R: Essential municipal services

Appendix 4-S: Larger workplaces in Middlesex-London

CHAPTER 4: Health and Social Infrastructures in Middlesex-London

This chapter will describe the health and social infrastructures that will assist in pandemic influenza planning and response. As well, it will describe organizations that will need to be serviced as part of pandemic influenza response in Middlesex-London. Appendices for this chapter, which contain contact information for organizations and individuals, are not provided in the public version of the plan but will be provided to pandemic influenza health responders, emergency services workers and key decision makers, as required.

Population: Middlesex-London covers an area of 3,750 km^2 and has a population of 403,185 (2001 census) and consists of the City of London with a population of 336,539 and the surrounding County of Middlesex with a population of 66,646. The City of London is a densely populated urban community, while the County of Middlesex is divided into eight municipalities. These municipalities are: Strathroy-Caradoc (population 19,114); Middlesex Centre (population 14,242); Thames Centre (population 12,473); North Middlesex (population 6,901); Lucan-Biddulph (population 4,201); Southwest Middlesex (population 6,144); Adelaide Metcalfe (population 3,149) and Newbury (population 422).

Table 4.1 provides the population distribution of Middlesex-London by age from 2004 population projections provided by Statistics Canada.

Health Care Organizations

Acute care facilities: There are four acute care facilities in Middlesex-London. The London Heath Sciences Centre (LHSC) (519-685-8500) is located in London and has two acute care sites: University Hospital and Victoria Hospital. Strathroy Middlesex General Hospital (519-245-1550) is located in Strathroy and Four Counties Health Services (519-693-4441) is located in Newbury. The latter two hospitals are linked under the Middlesex Hospital Alliance.

St. Joseph's Hospital (519-646-6000), which is part of St. Joseph's Health Care (SJHC) London, is mainly an ambulatory site. It no longer has an emergency department but instead has an urgent care centre. LHSC has a third site located on South Street. This site no longer has an emergency department. It offers a number of services, including psychiatry, dialysis, nuclear medicine and outpatient services. Table 4.2 provides an overview of the number of beds, patients and staffing at each of these six health care facilities.

Chronic care facilities and psychiatric hospitals: There are two chronic care facilities in Middlesex-London - Parkwood Hospital (519- 685-4292) and Mount Hope Centre for Long Term Care (519-646-6000). Regional Mental Health Care London is the psychiatric hospital located in London. Parkwood, Mount Hope and Regional Mental Health Care London are all part of St. Joseph's Health Care London. Table 4.3 provides an overview of each of these facilities.

Long term care facilities: In Middlesex-London, there are 33 long-term care facilities. Twelve of these facilities are solely nursing homes, 6 consist of both a nursing home and retirement home, and 15 are solely retirement homes. There are a total of 3,898 beds in these facilities. Table 4.4 provides an overview of each of these facilities. Appendix 4-A provides contact information for all long-term care facilities in Middlesex-London.

Community Care Access Centre: The Community Care Access Centre (CCAC) London-Middlesex (519-473-2222 or 1-800-811-5146) organizes home care and placement in long term care facilities for the residents of Middlesex-London. On average, the CCAC provides home care and support for 18,363 residents (769,489 hours of service). Much of the support is purchased through contract nursing agencies. The CCAC itself employs approximately 173 staff.

Public health: The Middlesex-London Health Unit (MLHU) (519-663-5317) provides health promotion, prevention and health protection services for the Middlesex-London area. There are approximately 250 staff members employed by the Middlesex-London Health Unit, including Public Health Nurses, Public Health Inspectors, Family Home Visitors, and Administrative Assistants. Clinical services include an immunization clinic, sexual health clinics, dental clinic, and travel clinic. Contact information for the Middlesex-London Health Unit is provided in Appendix 4-B

Health care providers: There are four large teaching family practice units within Middlesex-London: Byron Family Medical Centre (519-472-9670), St. Joseph's Family Medical and Dental Centre (519-672-9660), Victoria Family Medical Centre (519-433-8424) and Southwest Middlesex Health Centre (519-264-2800). The four teaching units are affiliated with the Department of Family Medicine at the University of Western Ontario. Table 4.5 provides a brief overview of these teaching family practice units. Appendix 4-C provides contact information for these units.

There is one Community Health Centre in London. The InterCommunity Health Centre (519-660-0874) employs approximately 27 people: 3.6 physicians, 4.3 nurses, 3.9 nurse practitioners, 3.5 social workers, 6 community outreach workers and 5.5 support staff, and has approximately 6,500 active patients.

There are 12 walk-in clinics in Middlesex-London. Appendix 4-D contains a list of the walk-in clinics, along with phone numbers, locations and hours. There are approximately 900 physicians who provide care in Middlesex-London: 300 community family physicians, 25 primary care pediatricians and approximately 575 specialists. The Middlesex-London Health Unit maintains a database of contact information for the community physicians and many of the specialists as well.

Contract nursing agencies: There are eight contract nursing agencies in Middlesex-London. Table 4.6 provides a brief overview of these organizations. Contact information for these agencies is provided in Appendix 4-E.

Pharmacies: There are approximately 82 pharmacies in Middlesex-London. A list of pharmacies with locations and contact information is provided in Appendix 4-F. The London and District Pharmacists Association is a voluntary association with approximately 200-230 pharmacists/members. This association provides a coordinating function for local pharmacies.

Laboratory services: There are two laboratories that conduct virology testing in Middlesex-London – the London Regional Public Health Laboratory and the virology laboratory at St. Joseph's Health Care London. There is also a microbiology laboratory at Victoria Hospital of London Health Sciences Centre and three private companies that provide laboratory services. A list of contact information for laboratories is provided in Appendix 4-G.

Dentists: There are approximately 300 dentists in Middlesex-London. They are supported by the London and District Dental Society (519-685-9316).

Veterinarians: Key contacts to assist with animal related outbreaks include the Ontario Ministry of Agriculture, Food and Rural Affairs and the Canadian Food Inspection Agency. Contact information for these organizations is provided in Appendix 4-H. There are approximately 107 veterinarians in Middlesex-London. Their contact information is also provided in Appendix 4-H.

Essential Services

Ambulance services: The Thames Emergency Medical Services (Thames EMS) (519-679-5466) provides paramedic services to Middlesex-London. Thames EMS employs 160 paramedics, many of whom are part time and received about 53,000 calls in 1999. It utilizes 17 ambulances during day-time hours.

Voyageur Transportation Services (455-4579 ext. 227) provides non-urgent transportation of medical patients. As of August 2006, they will also provide public paratransit services. They have 70 employees involved in patient transfer, and approximately 120 employees involved in wheel chair van operations.

Police services*:* The London Police Service (519-661- 5670) provides police services to the City of London. They have 555 officers and 174 support personnel.

Police services in the Strathroy-Caradoc area (Strathroy, Mount Brydges, Melbourne, Campbellvale) are provided by the Strathroy-Caradoc Police Service (519-245-1250). The Strathroy-Caradoc Police Service has 30 police officers and 9 support staff. It has 11 vehicles and a community relations van.

The Western Region – Middlesex Detachment of the Ontario Provincial Police (OPP) (519-245-2323) serves the remainder of the County of Middlesex from four detachments located in Strathroy, Glencoe, Lucan and London. There are 75 officers and 7 support personnel in the Middlesex Detachment.

Fire services: Fire services for the City of London are provided by London Fire Services (519) 661-5279. London Fire Services employs 336 fire fighters and 49 support personnel. They have 12 stations and 24 trucks. The London Fire Services also operates a Hazardous Materials (HazMat) unit.

Fire services for the Strathroy-Caradoc area is provided by the Strathroy-Caradoc Fire Department (519-245-1990). Three units are operated – one in each of Strathroy, Mount Brydges and Melbourne. There is one supervisor, 64 volunteer fire fighters and 1 support staff. A total of 12 vehicles are operated.

Fire services for the remainder of the County of Middlesex are provided by 15 volunteer departments. The area serviced by these volunteer fire departments, the number of volunteer fire fighters, key contacts and their telephone numbers are found in Appendix 4-I. Mutual aid agreements exists between the fire departments in Middlesex-London.

Funeral services: There are ten funeral homes in London and an additional seven throughout Middlesex County. A list of funeral homes and contact information is provided in Appendix 4-J. Appendix 4-J also contains contact information for the regional coroner's office for Middlesex-London and the Board of Funeral Services, which operates out of Toronto.

Educational and Child Care Institutions

Post secondary institutions: The University of Western Ontario (UWO) (519-661-2111) is the largest post-secondary institution in Middlesex-London. Approximately 28,061 undergraduate students, 4,182 graduate students and 8,000 staff members study or work at the University of Western Ontario. There are 8 residences with 4,172 students living in residence on campus. A list of key contacts at the University of Western Ontario is provided in Appendix 4-K. A list of the number students in each residence and the telephone number for each residence is provided in Appendix 4-L.

Fanshawe College is the next largest post-secondary institution in Middlesex-London with approximately 15,000 full time students and 25,000 part time students. The College employs 869 full time staff members and 722 part time staff members. There are two residences with 384 students living in residence on campus. A list of key contacts information at the Fanshawe College is provided in Appendix 4-L. A list of the number of students in each residence and the telephone number for each residence is provided in Appendix 4-L.

Other post-secondary institutions in Middlesex-London include: Southwest Medix (519-659-4822) and Westervelt College (519-668-2000). A list of the number of students and staff along with the names of key contacts is provided in Appendix 4-L.

Schools: Publicly funded schools within Middlesex-London fall under the Thames Valley School Board (519-452-2000), London Catholic District School Board (519-663-2088), French First Language Public Board (416-614-5891), and French First Language Catholic School Board (519-948-9227). There are also several private schools. The Thames Valley School Board and London Catholic District School Board cover schools in Middlesex-London, Oxford County and Elgin County. Including private schools, there are a total of 149 elementary schools and 24 secondary schools in Middlesex-London. There are approximately 50,537 children enrolled in elementary schools and 24,527 students enrolled in secondary schools in Middlesex-London. A list of all schools, their enrolment and contact information is provided in Appendix 4-M.

Child care centres: There is a total of 108 licensed child care facilities in Middlesex-London. A total of 5,358 children are enrolled in these facilities. Appendix 4-N provides a list of the child care facilities, enrolment and contact information. Aside from licensed child care facilities, there are numerous unlicensed, family child care centers for which detailed information is not available.

Other

Group homes and shelters: There are numerous group homes or other sorts of organized group living arrangements in London. Major organizations that provide group living arrangements include: Mission Services of London (519- 433-2807); Participation House Support Services (519-660-6635); London Association of Community Living (519-686-3000); Children's Aid Society (519 455-9000); Salvation Army (519-455-4810); Anago Resources (519-435-1099); and Western Area Youth Services (519-432-2209). There are three shelters for women and two men's shelters. Appendix 4-O provides a list of group homes and shelters, the number of residents that can be accommodated and contact information.

Correctional facilities*:* There is one provincial correctional facility within Middlesex-London, the Elgin-Middlesex Detention Centre (519 686-1922). Table 4.7 provides a brief overview of the detention centre. Contact information for this facility can be found in Appendix 4-P.

London Transit Commission**:** The London Transit Commission (LTC) has a total of 185 buses with approximately 147 on the road on a daily basis. The Commission employs 350 bus drivers and 100 other staff including support staff, mangers and mechanics. Contact information for LTC is found in Appendix 4-P.

Transit hubs: London has an international airport, a train station and bus station. Contact information for these transit hubs are provided in Appendix 4-P.

Key decision-makers: Many of the key community decision-makers are already covered under other groups that have been identified in this document. Additional key decision-makers consist of elected politicians and key bureaucrats in the City of London, at the regional level in the County of Middlesex, and within local townships in Middlesex County. A list of these key decision makers and their contact information is provided in Appendix 4-Q.

Essential municipal services: Essential municipals services required to keep the local infrastructure functioning consist of people who provide hydro electric power, water treatment, sewage treatment and natural gas. A list of these organizations, the number of people employed and their contact information is provided in Appendix 4-R.

Workplaces: There are many large workplaces in Middlesex-London. A list of some major workplaces, approximate number of employees and contact information is provided in Appendix 4-S.

Table 4.1: Population Estimates for Middlesex-London by Age (2004)

Age (years)	**Number of residents in Middlesex-London** (percent of total population)
Less than 2	8,640 (2%)
2 – 4	13, 861 (3.2%)
5 – 14	56,383 (13.1%)
15 – 19	28,859 (6.7%
20 – 49	194,960 (45.3%)
50 – 64	71,934 (16.7%)
65 – 74	28,454 (6.3%)
75 and over	27,276 (6.3%)
TOTAL	**430,367 (100%)**

Table 4.2: Overview of Acute Care Facilities in Middlesex-London

	LHSC-University Hospital	LHSC-Victoria Hospital	LHSC-South Street Hospital	St. Josephs Health Care London	Strathroy Middlesex General Hospital	Four Counties Health Services
Number of beds	341	352 83 pediatric	68 mental health	183	84	16
Average number of admissions per year	38,914 in patient admissions 35,214 one day stays (day surgery)			~10,000	3,000	600
Average number of emergency department / urgent care visits per year	127,240			45,600	27,072	10,000
Number of ICU beds	36	30	0	0	4	0
Number of ventilators	36	30	0	0	3	0
Number of negative pressure rooms	3 in intensive care unit 2 in inpatient medicine 1 in emergency department	5 in intensive care unit 2 in emergency department 2 in pediatric critical care unit	0	0	3 in emergency department 1 on 1-South 1 in intensive care unit 1 portable hepa-units	1
Number of infection control practitioners (ICPs)	6 ICPs for all sites 1 City Wide Team Leader			1 ICP - 2.5 days per week 1 ICP – 3 days per week 1 ICP – 2 days per week	1 ICP shared between Four Counties Health Services & Strathroy Middlesex General Hospital	
Approximate number of staff who provide direct patient care	2,438 nurses (RN & RPN) 116 Registered Respiratory Therapists 421 allied health 497 non-licensed care providers PLUS: physicians			1,874 nurses (RN & RPN) 43 Registered Respiratory Therapists 682 allied health 540 non-licensed care providers PLUS: physicians	190	63
Approximate number of staff who provide service that do not involved direct patient care	1,210 (lab workers, clerical) and possibly other support staff number to be determined			605 (lab workers, clerical) and possibly other support staff number to be determined	165	49

Table 4.3: Overview of Chronic Care and Psychiatric Facilities in Middlesex-London

	Parkwood Hospital	**Mount Hope**	**Regional Mental Health Care, London**
Number of beds	501	394	385
Average number of admissions per year	1,516	125	1,111
Number of infection control practitioners (ICPs)	2	1 - 1 day per week	1 - 2.5 days per week
Approximate number of staff who provide direct patient care	782	132	1,125
Approximate number of staff who provide service that does not involve direct patient care	264	56	316

Table 4.4: Overview of Long Term Care Facilities in Middlesex-London

Name of facility	Nursing home	Retirement home	Number of residents	Number of staff
Ashwood Manor		*	72	30
Babcock	*		60	60
Cedarmere Manor		*	16	8
Central Park Lodge		*	88	42
Chateau Gardens London	*	*	95	130
Chateau Gardens Parkhill	*		59	60
Chelsey Park	*	*	247 Nursing 104 Retirement	281 Nursing 83 Retirement
Country Terrace	*		120	120
Countryside Manor		*	12	11
Craigwiel Gardens	*		83	105
Dearness Home	*		246	338
Elmwood Place	*	*	78 Nursing 19 Retirement	88
Extendicare	*		168	170
Grandwood Park		*	118 27 apartments	90
Granite House		*	40	14
Highview Residences		*	24	20
Kensington Village	*	*	108 Nursing 140 Retirement	190
Longworth	*	*	160 Nursing 118 Retirement	140 Nursing 68 Retirement
Maple Village		*	55	14
Masonville Manor		*	109	20
McCormick Home	*		141	180
Meadow Park	*	*	122 Nursing 65 Retirement	165
Meadowcroft		*	80	80
Middlesex Terrace	*		105	110
Mount Hope	*		394	
Mount Brydges Rest Home		*	20	5
Queens Village		*	60	14
Restview		*	23	13
Sprucedale Care Centre	*		96	115
Strathmere Lodge	*		175	180
Trafalgar Terrace		*	51	36
Versa Care Lambeth	*		135	87
Waverley Mansion		*	65	35

Table 4.5: Overview of Teaching Family Medicine Units in Middlesex-London

	Approximate number of patients	Number of physicians	Number of residents	Number of nurses
Byron Family Medical Centre	6,000	4 full time 2 part time	8	4 1 nurse practitioner
Southwest Middlesex Health Centre	3,800	4 full time	4	3
St. Joseph's Family Medical and Dental Centre	10,000	4 full time 1 clinical associate 1 part time	8	4 full time 1 part time 1 nurse practitioner
Victoria Family Medical Centre	6,000	4 full time 1 part time	8	3 RN 2 RPN

Table 4.6: Overview of Contract Nursing Agencies in Middlesex-London

	Number of nurses	Number of home support workers	Other staff	Number of clients
ComCare	70	145	170	1,500
Occumed	20	0	16	NA
Paramed (London)	46	167	39	3,000
Paramed (Strathroy)	30	60	3	426
Physical Relief	43	70	95	
St. Elizabeth	40	140	28	850/week
Victoria Order of Nurses	247	141	150	4,500
We Care	7	60	4	120/week

Table 4.7: Overview of Elgin-Middlesex Detention Centre

Number of beds	412
Average number of admissions per year	4,500
Number of staff members	270
Number of health care workers	11 full time 10 casual

CHAPTER 5

Surveillance

CHAPTER 5: Surveillance

Surveillance activities will vary depending on the stage of the pandemic. At all stages however, surveillance activities will provide the information required to make informed decisions regarding the management of the pandemic. In the interpandemic phase, surveillance activities will focus on monitoring activity in other parts of the world. The World Health Organization is hoping that very aggressive surveillance will identify the first instances of human-to-human transmission. Early identification of human-to-human transmission will facilitate the rapid implementation of control measures to prevent or delay subsequent transmission, such as the use of antiviral medications, and public health measures such as isolation and quarantine. Although the first instances of human-to-human transmission are likely to occur in other countries, surveillance mechanisms in Middlesex-London must also be able to identify this type of transmission in the unlikely event that this should occur locally.

In a pandemic alert phase, surveillance activities will focus on monitoring international sources of information in order to determine how the virus is behaving in other parts of the world, e.g. what age groups is it affecting; how is it being transmitted; what measures are effective with respect to prevention and treatment; how sick people are becoming etc. As well, surveillance efforts will concentrate on watching for the first signs of the introduction of pandemic influenza into Middlesex-London to determine if control measures can prevent further transmission.

Once pandemic influenza has become established in Middlesex-London, surveillance activities will focus on determining the impact of the pandemic on the population. Indicators that will be measured include emergency department visits, hospital admissions, admissions to intensive care units, ventilator usage, and influenza-related deaths. If triage sites are established in Middlesesex-London, the numbers of visits to these sites will also be monitored. As well, should antiviral drugs and/or vaccinations be available, surveillance activities will monitor the use of these medications and any adverse effects related to their use. The Middlesex-London Health Unit will also participate in special studies and other surveillance initiatives as requested by the Ministry of Health and Long-Term Care, the Public Health Agency of Canada or other organizations as appropriate.

Monitoring the national and international influenza situation

On an ongoing basis, the international influenza situation is closely monitored. Information from these sources is used to monitor the spread of avian influenza outbreaks, the extent of human disease and any evidence of human-to-human transmission. In the event of a pandemic, these sources will be used to better understand the outbreak and the extent of worldwide transmission. Some of the sources of this information are as follows:

- **World Health Organization (WHO)**: The WHO provides updates on the worldwide situation in humans based on official reports. As well, the WHO publishes documents that guide in pandemic influenza planning. http://www.who.int/csr/disease/avian_influenza/en/

- **World Organization for Animal Health (OIE)**: The OIE monitors, analyzes and disseminates information regarding animal health based on official reports and provides veterinary expertise on an international basis. http://www.oie.int/eng/en_index.htm
- **Public Health Agency of Canada (PHAC)**: The PHAC is the Canadian source of pandemic information and advice to travelers. PHAC publishes a weekly bulletin called FluWatch that provides information regarding the influenza situation in Canada, and elsewhere in the world. FluWatch contains information on: laboratory-based influenza virus identification; influenza-like illness reporting by sentinel physicians across the country; and reporting of influenza activity by provincial and territorial epidemiologists. http://www.phac-aspc.gc.ca/fluwatch/index.html
- **Canadian Network for Public Health Intelligence (CNPHI):** CNPHI is a secure web-based site designed to assist public health professionals in coordinating their response to communicable disease issues. It contains information posted by public health authorities across Canada on the outbreaks they are managing. CNPHI is run by the Public Health Agency of Canada.
- **Centers for Disease Control and Prevention (CDC):** The CDC is the American source of pandemic information and advice to travelers. http://www.cdc.gov/flu/
- **ProMED:** ProMED is an e-mail distribution lists that monitors media reports and official reports. ProMED also receives reports from local observers and readers. Reports are reviewed by experts and then posted via e-mail to over 300,000 subscribers in 150 countries. http://www.promedmail.org/pls/promed/
- **Ministry of Health and Long-Term Care (MOHLTC):** The Public Health Division of the Ministry of Health and Long-Term Care publishes a weekly influenza bulletin. This bulletin contains information on the level of influenza activity in each health unit area in Ontario, and the number of long-term care facilities experiencing outbreaks. http://www.health.gov.on.ca/english/providers/program/pubhealth/flu/flu_mn.html

In addition to these official sources, monitoring is occurring behind the scenes for influenza and other communicable diseases. Sources of behind the scenes monitoring include:

- **Global Public Health Intelligence Network (GPHIN)**: GPHIN monitors reports from news wires and web sites to obtain information regarding world wide communicable diseases. It monitors for this information in seven languages, 24 hours a day. The information is filtered by an automated process and then analyzed by officials at the Public Health Agency of Canada. Relevant information is rapidly forwarded to end users via the internet. http://www.phac-aspc.gc.ca/media/nr-rp/2004/2004_gphin-rmispbk_e.html
- **Center for Infectious Disease Research and Policy (CIDRAP),** University of Minnesota: CIDRAP conducts and interprets epidemiologic research and translates it into real-world applications and solutions. They have been monitoring ProMED and media reports to keep statistics on what is occurring in the current avian influenza situation. http://www.cidrap.umn.edu/cidrap/center/mission/index.html

Increasingly, monitoring of influenza activity in animals is becoming part of surveillance mechanisms. A recent report by the Canadian Cooperative Wildlife Health Centre in collaboration with federal and provincial partners has identified the normal types of influenza carried by migratory birds in seven Canadian provinces.

Surveillance during regular influenza seasons

During regular influenza seasons, the Middlesex-London Health Unit uses several sources of information to monitor the influenza activity in the community. These systems are predominantly what are called "passive reporting systems" since the Health Unit waits for reports to be called to them. The "passive reporting systems" that the Health Unit uses during regular influenza seasons are described below:

- **Reporting of laboratory confirmed cases of influenza:** Under the Health Protection and Promotion Act R.S.O. 1990, physicians, other health care providers, laboratories, hospitals, school principals, and directors of institutions are required to report when someone has or may have a reportable disease, which includes influenza. In practice, many people do not seek medical attention with influenza, and few health care providers take swabs for influenza. Therefore laboratory confirmed influenza cases represent only a small fraction of influenza cases in the community.
- **Enhanced surveillance by walk-in clinics, teaching family medical clinics, and emergency departments:** Walk-in clinics, teaching family medical clinics and emergency departments are asked at the beginning of each influenza season to watch for people presenting with influenza-like illness. When they see clusters of patients with possible influenza, they are asked to notify the Middlesex-London Health Unit and take swabs from these individuals. At the beginning of each influenza season, they are sent swabs and partially completed requisition forms to aid with this process.
- **Influenza outbreaks in long-term care facilities:** Long-term care facilities notify the Middlesex-London Health Unit whenever they see an increased number of people with respiratory symptoms compared to the normal institutional profile. Swabs are taken from several ill residents in order to identify if an influenza outbreak is occurring in the facility. Influenza in long-term care facilities is the most reliable indicator of influenza activity in the community.
- **School absenteeism:** School children are the first to be affected by the arrival of influenza and they are responsible for much of the early transmission within the community. School absenteeism of greater than 10% is a good indicator of influenza activity. Schools in Middlesex-London are asked to notify the Health Unit whenever they have more than 10% of their school students absent, especially if they are aware that some students have respiratory symptoms.
- **Febrile respiratory illness surveillance:** As an early detection system for SARS and other respiratory illness, health care settings are required to screen all patients/clients/residents who present for care. Screening questions ask about fever and new onset of cough or shortness of breath. A patient with both fever and new onset respiratory symptoms or worsening of existing symptoms is required to be placed under certain precautions to prevent spread of his/her infection. The number and percentage of people who report fever and respiratory symptoms on

the febrile respiratory screening tool are reported to the Health Unit each week. The Middlesex-London Health Unit monitors these trends that provide an indirect indicator of increases or decreases in respiratory illness in the community. In addition, the health care setting is required to report directly to the Health Unit if any of the following are identified:

- A patient with a new or worsening cough and fever who has traveled to a country with a health alert in the past 14 days; or
- A patient with a new or worsening cough and fever who has been in contact with someone who is also ill and has a travel history to a country with a health alert in the last 14 days;
- There is an outbreak of febrile respiratory illness in any health care facility.

Hospital infection control practitioners in Middlesex-London are also aware that the following may represent unusual events that they should report to the Health Unit:

- Patient(s) admitted to the intensive care unit for at least 72 hours with no obvious cause for their febrile respiratory illness;
- Patient(s) admitted with febrile respiratory symptoms from a long-term care facility; or
- A group of health care providers admitted to hospital with febrile respiratory symptoms.

Laboratory testing for influenza virus is done at two laboratories in London. The London Regional Public Health Laboratory does most the testing of swabs taken by long-term care facilities, the hospitals in Middlesex County and by community physicians. The virology laboratory at St. Joseph's Health Care London tests swabs taken on patients seen in the emergency departments and from in-patients and out-patients at the London Health Sciences Centre and St. Joseph's Health Care London.

Enhanced surveillance to detect the arrival of pandemic influenza

In order to detect the arrival of a pandemic strain of influenza, community surveillance will need to switch from a "passive reporting system" to an "active reporting system". This means that the Middlesex-London Health Unit will need to make regular contact with key sources for monitoring influenza activity. There are a range of potential options available for more "active" influenza surveillance. The likelihood that influenza will be arriving in Middlesex-London, based on monitoring of national and international sources, will determine which options are selected. Among the range of options are the following:

1. Regular phone calls to walk-in clinics, teaching family medical units and emergency departments to determine the amount of influenza-like illness being seen, and to remind staff to take swabs on patients with compatible symptoms.
2. Placing a Middlesex-London Health Unit staff member in walk-in clinics, teaching family medical units and/or emergency departments to determine the number of patients with influenza like illness being seen and to take swabs on patients with compatible symptoms.
3. Regular phone calls to some or all schools to determine absenteeism rates.
4. Regular phone calls to some or all child care centres to determine illness/absenteeism rates.

5. Regular phone calls to some or all long-term care facilities to determine if there are patients with respiratory illness.
6. Asking workplaces to contact the Middlesex-London Health Unit when large numbers of staff members are ill (e.g. more than 10% of staff off ill). Alternatively, regular phone calls could be made to some larger workplaces to determine employee absenteeism.
7. Regular phone calls to pharmacists regarding increases in patient inquiries about cold and fever medications.
8. Monitoring of the numbers of cold and fever medications being sold by pharmacies in order to identify an increase in sales that may indicate the arrival of pandemic influenza.
9. Monitoring the numbers of calls to Telehealth Ontario related to respiratory infections in order to identify an increase in calls that may indicate the arrival of pandemic influenza.
10. Monitoring death notices to determine increases in deaths in the community or clusters of deaths from long-term care facilities.
11. Regular contact with hospital infection control practitioners to determine the number of patients admitted with respiratory illness and to ensure that swabs are taken. Regular contact with the infection control practitioners would also determine the number of people in the intensive care unit with respiratory illness and the number of people on ventilators with respiratory illness, as well as the number of deaths from respiratory illness.
12. Placing Middlesex-London Health Unit staff members in the hospitals to conduct the surveillance activities outlined in #11.

Enhanced surveillance once pandemic influenza has arrived in Middlesex-London

Once pandemic influenza has arrived in Middlesex-London the purpose of surveillance will be to determine the extent of transmission and the burden on the health care system. The surveillance activities previously outlined to detect the arrival of pandemic influenza remain options for surveillance once pandemic influenza has arrived.

It is very likely that once pandemic influenza has arrived in Middlesex-London, Health Unit staff members will be placed in each hospital to obtain necessary information. The Health Unit staff members will determine the number of patients being seen in the emergency departments with influenza-like illness, the number admitted with influenza-like illness, the number of intensive care admissions, the number of ventilators being used, and the number of influenza-related deaths. Because hospitals in Middlesex-London serve other jurisdictions in Southwest Ontario, monitoring will need to determine the residence of the patient in order to report information to the appropriate health unit. Having Health Unit staff members obtain this information will free-up hospital infection control practitioners to focus on the many infection control issues that will arise during an influenza pandemic. Appropriate clearance will need to be obtained for Health Unit staff to have access to the hospital's computer system and paper records. In addition, advance training will be required so that staff members are familiar with hospital systems including reviewing paper and electronic records.

In the event that special assessment clinics are established for triaging patients, Health Unit staff members will also be assigned to monitor the number of patients seen at these sites, along with other relevant epidemiologic data.

Surveillance for use and adverse effects of antiviral drugs and vaccines

The Middlesex-London Health Unit will be the source of distribution of most of the antiviral drugs and vaccines. Databases will need to be established to indicate where antiviral drugs and vaccines have been distributed and in what quantity. Locations with supplies of antiviral drugs and vaccines will need to be contacted on a regular basis to reinforce eligibility criteria and determine remaining quantities.

Everyone who receives an antiviral drug and/or vaccination will be reminded of the need to report adverse reactions to his/her physician or the clinic where the drug or vaccine was received. Health care workers will be reminded to report adverse events to the Middlesex-London Health Unit. Should there be particular concerns about either the effectiveness or adverse effects associated with a drug or vaccine, special surveillance systems or studies may need to be established, likely in consultation with the Ontario Ministry of Health and Long-Term Care.

Surveillance tools

The Ontario Health Pandemic Influenza Plan states that the province will develop specific hospital, long-term care, and community reporting forms, as well as forms to monitor vaccine and antiviral use and adverse events. The Middlesex-London Health Unit will use and/or modify these forms as required to collect the necessary information. As much as possible, databases will be established to efficiently keep track of the information being collected. These databases may be provincially or locally developed. The Health Unit is exploring expanding their technologic capacity to allow direct data entry into databases and/or the use of optical character recognition forms to facilitate data entry. The use of field-based applications, like hand-held devices, will also be explored.

Next steps

Further development of surveillance mechanisms will be done by the Public Health Working Group. This group will continue to refine the active surveillance mechanisms outlined above. As well, the working group will explore mechanisms to facilitate Middlesex-London Health Unit involvement in obtaining hospital data during a pandemic. Forms and databases developed by the Ontario Ministry of Health and Long-Term Care will be reviewed and adapted as required. Use of technologic options for data collection in the field will be explored by the Middlesex-London Health Unit.

CHAPTER 6

Public Health Measures

APPENDIX

CHAPTER 6: Public Health Measures

Public health measures are non-medical procedures designed to slow the spread of influenza. These procedures may include: early recognition of human-to-human transmission and instituting containment measures such as isolation, follow-up of contacts and infection control precautions. At all times it is essential to reinforce infection control measures such as frequent hand washing, covering the mouth and nose when coughing and sneezing, environmental cleaning and staying home when ill. In a pandemic, measures to increase social distancing such as closing school and child care centres, limiting other large gatherings, and travel restrictions may also be instituted. In some areas of the world, public health measures may be the only options available to contain the spread of pandemic influenza as there may be no access to antiviral drugs and vaccines. Public health interventions may also be required in Middlesex-London in the unlikely event that highly pathogenic avian influenza should arise in local poultry flocks.

Early recognition and containment measures for isolated cases

The World Health Organization has suggested that early recognition of the first evidence of human-to-human transmission of avian influenza may allow public health measures to be instituted to delay or possibly prevent further transmission that could lead to the next influenza pandemic. The first evidence of human-to-human transmission is most likely to arise in countries where human cases of avian influenza are occurring. It is possible, although unlikely, that human-to-human spread of avian influenza could arise from a traveler who is infected with the next pandemic strain of influenza.

The current system of febrile respiratory illness surveillance should identify this individual when he/she presents to the health care system. Reporting of this individual to the Middlesex-London Health Unit and appropriate laboratory testing to confirm avian influenza would allow public health measures to be implemented as appropriate. These measures could include the following:

- Placing the patient in isolation until they are no longer able to spread their infection to others. This time is defined as the "period of communicability" and for influenza is from 24 hours before symptoms appear until five days after symptom-onset for adults and up to seven days from symptom-onset in children.
- Identify all close contacts of the ill person who may have been exposed to the ill person while he/she was able to spread the infection. Close contacts are defined as people who were within one metre of the ill person during the "period of communicability".
- Identified close contacts will be provided with antiviral drugs if the case was laboratory confirmed. They will be advised of influenza symptoms to watch for, and infection control strategies to follow (see below). They will be asked to limit their contact with others until it is determined that they have not acquired influenza. Close contacts will be advised of who to call if they become ill, and how to seek medical assistance. Laboratory testing of close contacts may be indicated to be sure that they have not acquired influenza. These contacts will be closely monitored by the Health Unit.

Isolation of the ill person and the follow-up and counselling of their close contacts are strategies that were used during the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003, and are employed in the follow-up of many communicable diseases. Public health staff members have all the required skills, forms and other tools to institute these strategies. Unfortunately, several features of the influenza virus limit the effectiveness of isolation and close contact follow-up in containing the spread of influenza. The most important limitations are that:

- Influenza can be spread before the ill person has symptoms. In fact, it is possible that an infected person may never develop influenza symptoms yet still be able to spread the virus. These characteristics of influenza will limit the effectiveness of isolating the ill person because the person may already have spread his/her infection before isolation can be instituted.
- The time period from acquisition of the influenza virus to becoming ill is very short. This period is called "the incubation period" and is between 1 and 3 days for influenza. This short incubation period means that by the time the close contacts of the ill person are identified, the close contacts may themselves be ill and able to spread their infection to others. The short incubation period for the influenza virus significantly limits the effectiveness of close contact follow-up and counselling.

The above strategies will be tried if a few isolated cases of pandemic influenza occur in Middlesex London. However, they will be impractical and likely ineffective if more widespread pandemic influenza activity occurs in our area.

Infection control strategies for all times

There are infection control strategies that are currently recommended that should be instituted as common practices. Reinforcing these strategies will help to prevent the transmission of many infectious agents including those that cause influenza, the common cold and diarrhea. These strategies include:

Hand washing and hand sanitizers: Frequent hand washing with soap and water, or the use of alcohol-based hand sanitizers are very effective at limiting the spread of infection. Appropriate hand washing involves the use of pump soap and warm running water, rubbing the hands together for a total of 15 seconds. Effective hand sanitizers contain 60-70% alcohol and work by rubbing a quarter size amount over the hands until dry. Hands should be washed or sanitized:

- After coughing, sneezing or blowing the nose;
- After using the washroom;
- After changing diapers;
- After touching animals;
- Before preparing food;
- Before eating;
- Before putting contact lenses in the eyes or touching the eyes, mouth or nose.

The use of hand washing or hand sanitizers should also be used after shaking hands in order to prevent introduction of virus from the hands into the mouth, nose or eyes.

It is very important for children to have ready access to appropriate facilities for hand washing. All washrooms in schools and childcare centres should be equipped with sinks of an appropriate height. Warm running water should be easy to turn on and pump soap

should be consistently available. Educational initiatives should teach children how to appropriately wash hands and how to use hand sanitizers.

Since SARS, hand sanitizers have become commonplace in health care settings. They should also be made more widely available in other settings through use of the following strategies:

- Carrying them in purses, lunch pails, knapsacks, brief cases and vehicles;
- Restaurants can have them on the dining tables;
- Buffet lines can have them readily available before patrons access food;
- Schools and child care centres can have them in every classroom;
- Public places like banks, shopping malls, libraries, and religious institutions can make them readily available in areas accessed by the public; and
- Workplaces can make them available in common areas.

Taking advantage of influenza vaccine and all other vaccinations: Vaccinations are safe and effective at preventing many infections. In Ontario, publicly funded annual influenza vaccine is provided for everyone six months of age and older. All Ontarians should be strongly encouraged to take advantage of the annual influenza vaccine and all other vaccinations for which they are eligible.

Covering the mouth: Covering your mouth and nose while sneezing and coughing can help limit the spread of infection to others. A strategy that may help reduce transmission further is to cough or sneeze into your elbow or upper arm. This will reduce contamination of hands that may facilitate transmission. Hand washing or a hand sanitizer should be used whenever hands come in contact with saliva or nasal secretions from coughing or sneezing or other activities. Tissues should be readily available for runny noses, and hands should be washed or sanitized after wiping the nose. Tissues should be appropriately disposed of after use.

Avoid touching the face: Since many viruses and bacteria are introduced into the body via the mouth, nose or eyes, people should try to avoid touching their face as much as possible. Habits such as nail biting should be avoided, and hands should be washed before inserting contact lenses.

Staying home from work, school or child care centres if ill: Staying home from work, school or childcare centres when ill can help limit the spread of infection. Since SARS, this has been recognized as a very important strategy for health care providers. In all workplaces, schools and childcare centres, it should be common practice and a sign of respect for people to stay home in the acute, symptomatic stages of illness. Employers, administrators, colleagues and classmates should encourage their peers to go home if feeling unwell. Workplaces should have policies and incentives in place that encourage employees to stay at home while ill, and should not penalize employees by withholding pay when they are absent due to illness.

Ideally, people should stay at home for the "period of communicability" of the infection. For influenza, this would mean staying at home for five days for adults and seven days for children. This may not, however, be practical. Since influenza is most infectious during the first few days of illness, and this is when people feel the most ill, staying at home until well enough to resume activities should be sufficient. Upon returning to

childcare, work or school, hand washing or use of hand sanitizers should occur frequently. If possible, the recovering individual should remain one meter or more from others until the full "period of communicability" has passed.

Environmental cleaning: The influenza virus can survive on hard non-porous surfaces for 24 to 48 hours. It can also persist for 8 to 12 hours on cloth, paper and tissues, so used tissues should be discarded immediately after use. Frequent cleaning of the environment can help reduce the spread of virus from environmental surfaces. Cleaning should take place using common household disinfectants as directed by the manufacturer. Special attention should be paid to commonly touched areas in public places such as:

- door handles;
- hand rails in buildings and on public transportation;
- elevator buttons;
- buttons on automatic banking machines;
- public computer keyboards and the mouse;
- table tops in restaurants;
- telephone receivers in public places etc.

Appendix 6-A provides a fact sheet on appropriate hand washing, use of hand sanitizers and other infection control measures.

Enhanced infection control during an influenza pandemic

During an influenza pandemic, the "infection control strategies for all times" as outlined above will need to be reinforced and the frequency of the interventions increased. In addition, there will be several other infection control strategies that will need to be considered for implementation as follows:

- Hand shaking, hugging and kissing to be considered unacceptable as greetings.
- All social interactions to be conducted by maintaining at least one metre distance between individuals.
- Sharing of mouthpieces for musical instrument should be avoided.
- Religious practices that involve food, drink, or direct contact will need to be appropriately modified or curtailed.

The use of masks and goggles or face shields to protect the eyes could be considered but may not be practical in any other setting except health care.

Limiting social interactions

In the 1957 pandemic, WHO experts found that in some countries, spread of pandemic influenza followed public gatherings like conferences and festivals. The outbreak also occurred first in camps, schools and army units, indicating that avoiding crowds may decrease the peak incidence of influenza. Because school children are known to be a source of influenza transmission in the community, school closures may have some impact on decreasing transmission. School closures during an influenza outbreak have been shown, in one recent study, to be associated with a significant decrease in the

incidence of viral respiratory disease and health care utilization among children 6 to 12 years of age. It is possible that school closures may have an impact on spreading out the peak of influenza illness, thereby making it easier for health care services to keep-up with the demand.

School closures and/or restricting social gatherings in order to limit influenza transmission are unlikely to be decisions that are made at the local level. It is more likely that these decisions will be made either federally or provincially in order to ensure consistency between jurisdictions. It may be necessary to locally close some or all schools and/or childcare centres if, because of influenza illness, there are insufficient staff members to provide the needed care or supervision.

School and childcare centre closures will not be effective in preventing or delaying influenza transmission if children, who are not in school or childcare, aggregate in another setting. In order to prevent this from happening, parents may have to stay home with their children in the event of school and childcare centre closures. This will have a considerable impact on the availability of the workforce, especially in health care and essential service organizations. Well workers who need to stay home to look after their children will worsen the impact of the loss of workers who are off due to influenza illness. In deciding whether to close schools and childcare centres, the possible decrease in transmission will have to be weighed against the loss of well workers from the workplace due to child care obligations. Health care workers, emergency services workers and other essential workers should be encouraged to make contingency plans for childcare as required. Sources of alternate childcare providers may include relatives, friends, neighbours, and workplace colleagues who can be spared from the workplace. Social support systems will also need to be planned at the community level to assist with childcare provisions.

Travel restrictions

Decisions regarding limitations on travel are unlikely to be made at the local level. These decisions should come from the federal government. Travel restrictions will have most value if implemented just as a pandemic is emerging, for example in Pandemic Phases 4 and 5. It is possible that potential travelers will be asked to limit all but essential travel to affected countries. Returning travelers from affected areas will likely be advised of symptoms to watch for, infection control precautions to take and how to seek medical care if symptoms develop. The World Health Organization (WHO) has suggested that screening travelers for symptoms as they leave an affected area may have some benefit. However, they feel that screening of returning travelers as they enter an unaffected country is unlikely to be an effective strategy. The Middlesex-London Health Unit will be responsible for monitoring federal travel advisories and assisting in disseminating this information to the public, travel agencies, community health care providers, and transportation hubs.

Avian influenza in local poultry flocks

It is possible, although unlikely, that highly pathogenic avian influenza could arise among domestic poultry operations in Middlesex-London. Response to this situation would require a coordinated initiative involving the control of the infection in poultry and

public health measures to prevent infection in people. The Ontario Ministry of Agriculture Food and Rural Affairs, the Ontario Ministry of Heath and Long-Term Care, the Canadian Food Inspection Agency, involved veterinarians, and the Middlesex-London Health Unit would be among the organizations and people to respond to this situation. Plans developed by production organizations may also assist in management of highly pathogenic avian influenza in local flocks.

Control in poultry: In order to control the infection among poultry, the affected farm would be required to cull its flock. This would be done under the close supervision of the Ministry of Agriculture, Food and Rural Affairs and the Canadian Food Inspection Agency. Biosecurity measures in area farms would be reinforced to minimize transmission from one farm to another. Biosecurity measures include:

- keeping birds in covered poultry houses and other measures to prevent exposure from wild birds;
- thoroughly cleaning all equipment, cages, vehicles, clothing and footwear before and after coming into contact with birds;
- limiting access to poultry houses and ensuring proper hygiene practices for all persons coming into contact with poultry;
- ensuring that birds do not drink surface water, since surface water may be contaminated with avian influenza from wild birds; and
- isolating or avoiding the introduction of new birds into existing flocks.

Enhanced surveillance would be instituted in surrounding farms to determine if they also have birds infected with highly pathogenic avian influenza. Control measures will be implemented as appropriate. Contact information for large poultry operation in Middlesex-London will be maintained by the Health Unit to facilitate surveillance in surrounding farms.

***Public health measures in people*:** Strict infection control precautions would be instituted for workers involved in the culling process including masks, eye protection, gloves, appropriate footwear, protective clothing, and stringent hand washing routines. Poultry workers would be offered vaccination with the currently available influenza vaccine as appropriate, in order to prevent the potential mixing of the avian influenza strains and human influenza strains in poultry workers. Poultry workers would also be offered antiviral drugs to prevent infection. These workers would be advised of the symptoms of influenza and monitored on a regular basis for symptoms in themselves and their families. Local physicians and hospitals would be advised to watch for influenza in poultry workers and their families. The general public would be advised of the outbreak and the need to ensure that all poultry and poultry products are thoroughly cooked before being eaten.

Next steps

Further development of public health measures will be done by the Public Health Working Group. This group will explore strategies to educate the community about the need for “Infection Control Strategies For All Time”. In addition, this group will continue to follow the literature regarding the merits of measures to increase social distancing, such as school closures, during an influenza pandemic. The Middlesex-London Health Unit will continue to develop tools that will assist with isolation and contact follow-up during an influenza pandemic.

MIDDLESEX-LONDON HEALTH UNIT

FACT SHEET fact sheet

Infection Control Strategies for All Times

There are several infection control strategies that should be part of common practice at all times. Reinforcing these strategies will help to prevent transmission of many infectious agents including those that cause influenza, the common cold and diarrhea. These strategies include good hand hygiene, covering your mouth, staying home when ill, and cleaning the environment.

Hand Hygiene: Handwashing and Hand Sanitizers

Handwashing is the most effective way of preventing infections, including influenza.
Hands should be washed or sanitized:

- after coughing, sneezing or blowing the nose;
- after using the washroom;
- after changing diapers;
- after touching animals;
- before preparing food for others;
- before eating;
- before putting contact lenses in eyes;
- before touching the eyes, nose or mouth.

Frequent hand washing with soap and water, or the use of alcohol-based hand sanitizers are very effective at removing bacteria and viruses on the hands. This helps to limit the spread of infections. Appropriate hand washing involves the use of liquid soap and warm running water, rubbing the hands together for a total of 15 seconds. Effective hand sanitizers contain 60-70% alcohol and work by rubbing a quarter size amount over the hands until dry. When possible, hands should be washed or hand sanitizers used after shaking hands or before touching the face to prevent introduction of virus from the hands into the mouth, nose or eyes. Avoid touching your face as much as possible.

In the workplace it is a good idea to have alcohol hand sanitizers readily available for use in common areas and on desktops. Schools or child care centres should consider the use of hand sanitizers in classrooms and playgrounds, with the use supervised and encouraged by a teacher in younger age groups.

Taking Advantage of Influenza Vaccine and All Other Vaccinations

Vaccinations are safe and effective at preventing many infections. In Ontario, publicly funded annual influenza vaccine is provided for everyone six months of age and older. All Ontarians should be strongly encouraged to take advantage of the annual influenza vaccine and all other vaccinations for which they are eligible.

Covering the Mouth when Sneezing and Coughing

Covering the mouth when sneezing and coughing followed by handwashing or hand sanitizing, can help to limit the spread of infection to others. Coughing or sneezing into your elbow or upper arm avoids contaminating hands if you can't wash them right away. Tissues should be readily available for use on runny noses or to cough or sneeze into. Hands should be washed or sanitized after touching contaminated tissues. Used tissues should be thrown out.

Staying Home from Work, School or Child Care Centres if Ill

Staying away from others is important when ill, as this helps prevent the spread of infection. Staying home when contagious should become a common practice and is a sign of respect for others. Most respiratory infections are contagious for five days in adults and seven days in children. Colleagues and classmates should encourage their peers to go home if feeling unwell. While at home, it is important to minimize contact with household members, cover your cough and wash your hands to reduce the possibility of spread.

Cleaning the Environment

Some viruses and bacteria can survive in the environment for long periods of time. For example, the influenza virus can survive on hard surfaces for 24 to 48 hours. It can also survive for 8 to 12 hours on cloth, paper and tissues. Frequent cleaning of the environment can help reduce the chance of a person picking up a virus or bacteria from a contaminated surface. Cleaning should be done with a common household disinfectant, or a bleach solution (1 teaspoon bleach to 3 cups water). Special attention should be paid to commonly touched areas such as door handles, hand railings, elevator buttons, and telephone receivers.

Computers, especially those intended for multiple users, should be cleaned and disinfected periodically. Turn off the computer and monitor, and use a cloth dampened with alcohol to wipe clean the keyboard and mouse.

For more information, contact the Middlesex-London Health Unit at 663-5317 ext. 2330 or visit the website at www.healthunit.com

CHAPTER 7

Antiviral Drugs

TABLES

APPENDIX

CHAPTER 7: Antiviral drugs

Oseltamivir (Tamiflu®) and zanamivir (Relenza®) are referred to as neuraminidase inhibitors and are the two antiviral drugs that will likely be available for pandemic response. Currently, the Ontario and Canadian governments are stockpiling oseltamivir, which is taken by mouth, however they are also considering the purchase of zanamivir, which is inhaled. There are three potential ways in which these drugs can be used:

- **For treatment:** If taken within 48 hours of onset of symptoms, the drugs may decrease the duration of symptoms by 1 – 1 ½ days, and may decrease the risk of complications.
- **For prevention:** In order to prevent influenza, they must be taken on a daily basis during the time when influenza is circulating.
- **For "post-exposure prophylaxis":** Post exposure prophylaxis means putting close contacts of someone with influenza on the drugs to prevent or minimize the development of illness.

Chapter 2 provides detailed information regarding these drugs.

Antiviral drugs will likely be used for treatment throughout the pandemic. For prevention, antiviral drugs are seen as an interim measure to minimize serious illness and death before a vaccine becomes available and is widely distributed.

Allocation plans

The Ontario Health Pandemic Influenza Plan (June 2005) has defined the groups, in order of priority, who are to receive publicly provided antiviral drugs (see Table 7.1) The priority groups are defined for treatment and separately for prevention. These priority groups are currently being reassessed at the provincial level.

Table 7.1: Priority Groups for Antiviral Drugs During a Pandemic

Priority	For Treatment	For Prevention
1	Persons hospitalized for influenza (within 48 hours of symptoms)	Front line health care workers and key decision makers
2	Ill health care workers and first responders/emergency service providers	Remaining health care workers
3	Ill high risk person in the community (within 48 hours of symptoms)	Emergency/essential service workers
4	Ill high risk residents in institutions	High risk residents of institutions
5		High risk persons hospitalized for illness other than influenza
6		Persons at high risk in the community

Source: Ontario Health Pandemic Influenza Plan (June 2005), page 32

The federal government has a relatively small stockpile of 16,000,000 doses of oseltamivir. The Ontario Ministry of Health and Long-Term Care currently has 10,000,000 doses of oseltamivir on hand. Within the next three years, they hope to have a total of 20,000,000 doses. Assuming that the drugs are distributed on a per capita basis and that Middlesex-London represents 3.5% of the Ontario population, Middlesex-London can expect to receive 700,000 of the 20,000,000 available provincial doses.

When used for prevention, oseltemivir will be administered as one daily dose for at least 42 days, and possibly as long as 60 days. For planning purposes, this plan will provide estimates of the drug being taken for 42 days and 60 days. When used for treatment, oseltamivir is administered twice daily for 5 days (a total of 10 doses). A supply of 700,000 would therefore be expected to:

- Treat 70,000 people with influenza; OR
- Prevent influenza in 11,667 (taking the drug for 60 days) to 16,667 people (taking the drug for 42 days).

As the priority list outlined above contains recommendations for both treatment and prevention, the number of people who will be able to receive oseltamivir will be somewhere between 11,667 or 16,667 and 70,000.

A rough overview of the numbers of people in a modified version of the priority groups is provided in Table 7.2. This information is based on the inventory of health and other organizations in Middlesex-London as outlined in Chapter 4. Estimates for numbers of ill people are based on the Ontario Health Pandemic Influenza Plan using the 35% attack rate and the most likely scenario.

It should be noted that in allocating antiviral drugs in the above groups, organizations have not been divided into sections or functions. Instead, enough antiviral medication has been allocated to the entire organization. The rationale for this approach is that the organization will likely have to make use of all its staff members in order to function during a pandemic, especially considering that up to 30% of staff members may be ill. This approach is felt to be most supportive of business continuity within these essential service organizations. It should also be noted from Table 7.2 that with the current estimated allocation of approximately 700,000 doses for Middlesex-London, at most the first two priority groups in Table 7.1 will be able to receive antiviral medication.

Distribution plans

It is anticipated that the Health Unit will receive the allocation of antiviral medication for Middlesex-London and will then distribute the medication to dispensing sites in the community. In order to do this, the Health Unit will need to arrange for a secure location to store, count and label the drugs. Hospital pharmacists will assist with preparing standard labels to be used when the drug is dispensed for treatment and when it is dispensed for prevention. The Health Unit will need to arrange for transportation mechanisms and will need to develop a database to monitor the inventory and distribution of the drugs. Accountability mechanisms similar to those used for the management of narcotics will be implemented. Security during storage and transport will be essential and will likely need to be arranged through a private security firm. Trigger

points based on burden of disease in the community will need to be established in order to determine the appropriate time to begin distribution of the antiviral drugs. The following explores some of the options for dispensing the antiviral medications during an influenza pandemic.

Hospital and hospital pharmacies: Several of the priority groups may be best served by receiving antiviral drugs directly from the hospital or hospital pharmacy. These groups include:

- People hospitalized for influenza (treatment)
- Hospital workers (prevention and/or treatment)
- High-risk persons hospitalized for illnesses other than influenza (prevention)

Long-term care facilities: Health care workers in long-term care facilities will be eligible to receive antiviral drugs in advance of the residents in the facilities. Delivery of drugs directly to these facilities may be a possibility, or alternatively staff members from these facilities may be sent to community distribution centres to receive their drugs. When residents are eligible to receive antiviral drugs, the drugs will be sent directly to the long-term care facilities.

Community distribution: The following groups are likely to receive their antiviral drugs through community distribution sites:

- Community health care workers (prevention and/or treatment)
- Essential services workers (prevention and/or treatment)
- Ill high risk persons in the community (treatment)
- High-risk persons in the community (prevention)

Most of the distribution of antiviral drugs for the community will be done through community distribution centres established and operated by the Middlesex-London Health Unit. These centres would be situated in strategic locations throughout the City of London and Middlesex County. The assistance of pharmacists will be key to establishing and operating community distribution centres. Strict infection control measures will need to be implemented at these distribution sites. Dispensing antiviral drugs from selected pharmacies is an option that also requires further exploration**.**

It is possible that triage centres will be established in Middlesex-London. These triage centres will be locations where people who suspect that they have influenza can be seen in order: to establish if they have influenza; to receive information about self-care at home if they are to be sent home; to receive antiviral drugs for influenza treatment if the person is eligible; or to be referred for hospital admission if indicated. These sites will have access to publicly provided antiviral drugs for distribution to patients who are eligible for the drugs.

Determining eligibility for antiviral drugs

In order to distribute antiviral drugs, there will be the need for mechanisms to ensure that they are given only to individuals who are eligible based on the priority groups established federally and provincially. Chapter 4 provides information on the number of people in each eligible group and contact information for each eligible group. The Middlesex-London Health Unit will maintain and update this list. In the event of an influenza pandemic, drugs will be allocated to each group based on the numbers that have been provided.

When drugs are allocated and sent to hospitals and long term care facilities, it will be left to these facilities to determine how they are further distributed to eligible patients for treatment, and to staff members for treatment and prevention. These organizations will be asked to complete documentation to account for the use of the antiviral drugs allocated to them.

A formalized plan for determining eligibility will be required for the groups who will receive their drugs through community distribution methods: Two mechanisms will be established in order to accomplish this – one involving community health care providers; and the other involving essential service organizations.

***Determining eligibility via health care providers**:* The following outlines a potential process to be used by health care providers to obtain antiviral drugs for their patients, themselves and their office staff.

- Physicians and nurse practitioners will be kept up-to-date on the groups who are eligible for antiviral drugs at any particular time during the pandemic. This can be done via e-mail and fax.
- Physicians' or nurse practitioners' offices will be given antiviral drug eligibility forms that contain the lists of groups who may be eligible for antiviral drugs. An example of this type of form is provided in Appendix 7-A.
- The health care provider who sees a patient meeting the criteria for influenza infection and is in a group that is currently eligible for antiviral drugs will provide this patient with a completed form.
- The physician or nurse practitioner will also provide these forms to themselves and their office staff if they are eligible for antiviral drugs.
- Completed forms will be brought to a community distribution centre to access the antiviral drug.
- An inventory system to keep track of the distribution and return of these forms will be developed.

Determining eligibility via essential services organizations: Based on the lists and contact information outlined in Chapter 4, each employer of an essential service organization will be given a certain number of eligibility forms. The employer will distribute these forms to eligible employees within their organization who will then bring the forms to the community distribution centres to receive their drugs. These forms will have unique identifiers in order to ensure that they are being used appropriately, and an inventory system will be established to track the distribution and return of these forms.

Operation of community distribution centres

Community distribution centres will operate in a manner similar to vaccination clinics (see Chapter 8), however they will require fewer staff members and the operations will be less complex. The number of clinics, their locations and their hours of operation will be determined based on the needs of the people who will be picking up antiviral drugs at these locations. The flow at these clinics will be as follows:

1. Assess if the individual is currently ill. If so, the individual will be provided with a surgical mask.
2. Use of alcohol-based hand sanitizers by all.
3. Verification of the identification of the individual.
4. Review of the individuals' eligibility form.
5. Recording of appropriate data from the eligibility form into the database.
6. Counselling about the use of the antiviral drug by an appropriately trained health care professional operating under a medical directive.
7. Provision of written instructions on taking the antiviral drugs.
8. Provision of the pre-packaged, pre-labeled antiviral drugs with the appropriate quantity for treatment or prevention as indicated.
9. Completion of the appropriate documentation by the health care provider.

In order to ensure the appropriate functioning of the distribution centre, the following will also be required:

- The support of pharmacists at these centres will be essential to establish systems for antiviral drug packaging and labeling and to assist in the provision of counseling and drug information. A pharmacist available for consultation during the hours of operations of the distribution centres will also be required.
- Security personnel will need to be present and clear protocols will need to be developed in the event that non-eligible individuals seek to obtain antiviral drugs.
- Appropriate infection control measures will be required since some people picking up antiviral drugs will be ill and infectious.
- An inventory system will need to be developed to ensure all antiviral drugs are appropriately accounted for at all times.

Personal and corporate stockpiles

As can be seen from Table 7.2 only a limited number of people will be able to receive publicly provided antiviral drugs. The remainder of people will need to rely on public health measures to prevent influenza, until a vaccine becomes available. This has led some individuals and workplaces to consider stockpiling antiviral drugs. The shelf life of oseltamivir is approximately four years, which would make it possible to stockpile.

Personal stockpiles: Personal stockpiles pose concerns for several reasons outlined below:

- In some instances, the drugs are being obtained on the internet without a prescription from a physician.
- It may be difficult for an individual, without consultation from a health care provider, to determine when they are experiencing influenza and therefore when to take the drug for treatment. Stockpiling the drug for prevention will require at least a six-week supply, that will be costly.

- It is possible that inappropriate use of oseltamivir may promote the development of drug resistance.
- The demand for drugs on the private market may limit the supply for governments that are trying to stockpile the drugs as part of their pandemic planning process. Because of concerns regarding supply, Roche Pharma, the sole manufacturer of oseltamivir, has recently temporarily stopped providing the drug to the private market in Canada as a result of a large increase in purchases by people stockpiling the drug.
- The final concern regarding stockpiling relates to equity. As some people will be able to afford the drug and others will not, stockpiling creates inequities in access to health care.

Corporate stockpiles: Some workplaces will be eligible for publicly provided antiviral drugs because of the nature of their work. These workplaces should be encouraged to purchase their own stockpile, under the direction of a corporate physician, as this will free up additional antiviral drugs for other groups on the priority list.

The federal and provincial governments are currently debating the merits and concerns regarding personal stockpiling and stockpiling for businesses not on the priority list. As Roche Pharma currently has the patent on oseltamivir until 2016, there are ongoing discussions on how to meet the increasing demands for the drug with only one world-wide supplier.

Next steps

Further work in developing the antiviral plan rests with the Public Health Working Group in collaboration with community and hospital pharmacists. Further work is required to enumerate the number of people eligible for antiviral drugs in each category. The location and operations of community distribution centres requires further planning. Medical directive, documentation protocols, policies and procedures, and security measures need to be developed for these centres. The potential role of community pharmacies in antiviral drug distribution requires further exploration. The mechanisms to determine eligibility as outlined in the plan require further community consultation to ensure that they will work. Mechanisms to keep track of the eligibility forms that are issued and returned also need to be developed, as does an inventory management system for the antiviral drugs based on the systems used for distribution of narcotics. The Middlesex-London Health Unit needs to continue to monitor and disseminate information from the federal and provincial governments as appropriate regarding the stockpiling of antiviral drugs for personal and corporate use.

Table 7.2: Estimates of Numbers of People in Priority Groups for Antiviral Drugs in Middlesex-London

Priority groups	Who is included in this group	Estimate of number of doses		How estimate was determined
Persons hospitalized for influenza (treatment)	Persons hospitalized for influenza	18,110		1,811 people will be hospitalized based on the mostly likely scenario with a 35% attack rates. Each person will receive 10 doses.
Health care workers (prevention and/or treatment)	Hospital staff; Physicians and Nurse Practitioner offices; Community Health Centres; Walk-in clinics; Long term care facilities; CCAC; Contract nursing agencies; Public health; Pharmacies; Laboratories; Emergency Medical Services; Fire – paramedics.	**42 doses** 840,000	**60 doses** 1,200,000	20,000 is an estimate of people in this group. NOTE: This estimate does not include public and private laboratory staff or walk-in clinic staff. Further investigation is being conducted to obtain more precise numbers for this group.
Essential services workers (prevention and/or treatment)	Police; Fire – non-paramedics; Hydro and other utilities; Public transit; Municipal politicians; Municipal workers; Funeral services; Correctional services.	**42 doses** 132,216	**60 doses** 188,880	3,148 is an estimate of the number of fire, police, and correctional workers. Further investigation is being conducted to obtain numbers in other groups.
Ill high risk persons in the community seeking outpatient care (treatment)	People ill with influenza who are: 65 years of age and older; Have chronic medical conditions; Are one year of age.	128,460		The Ontario Health Pandemic Influenza Plan estimates, using the most likely scenario with a 35% attack rate, that 80,286 people will receive outpatient care, 16% of whom are estimated to be in a high risk group. Therefore 12,846 people are estimated to be in this group, each requiring 10 doses.
Residents of institutions (treatment and/or prevention)	Nursing homes; Retirement homes; Both nursing homes and retirement homes; Correctional facilities	**42 doses** 198,618	**60 doses** 283,740	4,729 people are residents of institutions. Each will receive either 42 doses (6 weeks) of antiviral drugs or 60 doses (8 weeks).
Persons hospitalized for illnesses other than influenza (prevention)		**42 doses** 245,700	**60 doses** 351,000	In an eight week period there are an approximately 6,600 people hospitalized in Middlesex-London. It will be assumed that all hospitalized individuals are part of a high-risk group, except women admitted for delivery. There are approximately 750 deliveries in an eight week period. Therefore approximately 5,850 individuals will be eligible for prophylaxis. It will be assumed that they take prophylactic drugs for the entire 6 or 8 weeks.
High risk individuals in the community (prevention)	People 65 years of age and older Persons ages 13 to 64 years with high-risk medical conditions	**42 doses** 3,122,406	**60 doses** 4,460,580	According to the Ontario Pandemic Influenza Plan, there are approximately 97,256 individuals in this category (65 year olds - 55,730; high risk 19-64 year olds 39,298; high risk 13-18 year olds 2,228). Excluding ill high-risk individuals seeking outpatient care (12,846), hospitalized individuals (5,850) and residents of long-term care facilities (4,317) reduces this estimate to 74,343. This is still an overestimate of the true number, though, since people represented in other categories of this table would also need to be excluded.

Appendix 7-A

Physician / organization code	Sequential preprinted code

Antiviral Eligibility Form (for health care providers) - EXAMPLE

PATIENT INFORMATION:

Name of patient _____ _____
Last name First name

Date of birth _____ _____ _____
Year Month Day

Address: _____ City _____

Postal code: _____

Telephone number: _____ OHIP number: _____

HEALTH CARE PROVIDER INFORMATION:

Name of health care provider: _____ Phone number:_____

Address: _____

Physician billing number: _____

ELIGIBILITY CRITERIA

Date of visit _____ _____ _____
Year Month Day

- ❑ Health care worker - treatment — Provide 10 tables
- ❑ Health care workers - prevention — Provide 42 or 60 tablets
- ❑ Essential services workers - treatment — Provide 10 tablets
- ❑ Ill high risk persons in the community – treatment — Provide 10 tablets
  Please list high-risk condition: _____
- ❑ High-risk persons in the community - prevention — Provide 42 or 60 tablets
  Please list high-risk condition: _____

IF PROVIDED FOR TREATMENT, PLEASE COMPLETE THE FOLLOWING

The above patient presented with (please check as many as apply)

- ❑ Fever
- ❑ Headache
- ❑ Muscle ache
- ❑ Sore throat
- ❑ Joint pain
- ❑ Stiff neck
- ❑ Other, please specify _____

CERTIFICATION OF HEALTH CARE PROVIDER:

I certify that the information that I have provided on this form is accurate.

_____ _____
Signature Date

CHAPTER 8

Vaccinations

TABLES

APPENDICES

CHAPTER 8: Vaccinations

Vaccination is felt to be the best option to control the spread of pandemic influenza. Unfortunately, vaccination is not expected to be available in the initial stages of an influenza pandemic since it takes at least six months to produce a vaccine for a new strain of influenza. Canada is fortunate to have a manufacturer of influenza vaccine, ID Biomedical, located in the country. The federal government has entered into a 10-year contract with ID Biomedical from 2001 to 2011, the goal of which is to provide sufficient influenza vaccine in the event of an influenza pandemic. By the fifth year of the contract, the company has agreed to have the capacity to provide eight million doses of pandemic influenza vaccine each month for four months. This translates to a quarter of the Canadian population receiving influenza vaccine each month, and in total the entire Canadian population receiving one dose of vaccine. When the vaccine becomes available in a pandemic, Middlesex-London should receive 107,000 doses of vaccine each month for four months.

Priority Groups for Vaccination

The Ontario Health Pandemic Influenza Plan outlines the groups to receive vaccinations in order of priority. Table 8.1 provides a description of what types of people are included in each group and an estimate of the number of people in each group in Middlesex-London. Further refinement of the numbers in each group is required.

Table 8.1: Priority Groups for Influenza Vaccination and Estimates

Group	Description of the Group	Estimated Numbers in Middlesex-London
1. Front line health care providers	Hospital staff; Physicians and Nurse Practitioner offices; Community Health Centres; Walk-in clinics; Long term care facilities; CCAC; Contract nursing agencies; Public health; Pharmacies; Laboratories; Emergency Medical Services; Fire - paramedics	~20,000 Further investigation into this number is required.
2. Remaining health care providers		
3. Emergency / essential service providers	Police; Fire – non-paramedics; Hydro and other utilities; Public transit; Municipal politicians; Municipal workers; Funeral services; Correctional services.	3,148 Further investigation into this number is required
4. Persons at high risk for fatal outcomes	65 years of age and older; Chronic medical conditions; Children between 6 months of age and less than 24 months.	107,481
5. Healthy adults	Adults between 19 and 64 years of age with no underlying medical problems	233,606 (210,298 excluding health care workers and emergency services workers)
6. Children 24 months to 18 years of age	Children 24 months to 18 years of age	87,135

Planning vaccination clinics

The Middlesex-London Health Unit has considerable experience offering mass immunization clinics. The usual staffing complement at Health Unit-run clinics are as follows:

- **Team leaders:** Team leaders are Public Health Nurses from the Middlesex-London Health Unit with considerable experience in administering vaccines and/or operating immunization clinics. They are responsible for the overall operations of the clinic.
- **Givers:** In most immunization clinics, the person giving the needles is a nurse. In a pandemic situation, alternate providers may be required to administer vaccines. The people administering vaccines are therefore referred to as "givers".
- **Drawer-uppers:** The people drawing the vaccine into the syringe are referred to as "drawer-uppers". Again, these are usually registered nurses or registered practical nurses, but may be alternate providers in a pandemic.
- **Administrative assistants:** Administrative assistants manage the supplies and paper work at the clinic and support the volunteers in their work.
- **Runners**: Runners deliver vaccine from the "drawer-uppers" to the "givers".
- **Volunteers:** Volunteers direct the crowds and distribute the necessary paper work to people receiving their vaccinations.

Planning parameters

The following are the parameters that are being used to plan pandemic influenza vaccination clinics to deliver 107,000 doses of vaccine per month.

- Number of shots that can be given per "giver" per hour – 20 shots per "giver" per hour
- Maximum number of hours each "giver" can work giving needles at a clinic – 5 hours
- Maximum number of "givers" who can work at one clinic giving needles – 20 "givers"
- Number of clients that can be served by a clinic of this size - 2,000
- Number of "drawer-uppers" given that mixing of the vaccine is not required – 1 "drawer-upper" to 5 "givers" – therefore 4 "drawer-uppers" required for 20 "givers"
- Number of team leaders required for 20 "givers" – 2 team leaders
- Number of administrative assistants for 20 "givers" – 2 administrative assistants
- Number of runners for 20 "givers" – 2 runners
- Number of volunteers required for 2,000 clients – 6 volunteers.
- Number of clinics that can be run at one time – 5 clinics
- Number of days per week clinics can be run – 6 days per week
- Maximum number of days each staff member works per week – 5 days per week
- Possible illness rate among staff members – 33%

Putting all these variables together, it is evident that 10,000 shots can be delivered per day and 60,000 shots can be delivered per week. The 107,000 doses of vaccine that we would receive each month in Middlesex-London would therefore require less than 2 weeks to administer each month. However to operate at the above rate would require the staff complement outlined in Table 8.2.

Table 8.2: Staff Complement Required to Operate Immunization Clinics

Position	Number working per day	Number to cover all shifts without illness	Number required in total to accommodate illness
Team leader	10	12	16
Givers	100	120	160
Drawer uppers	20	24	32
Administrative Assistants	10	12	16
Runners	10	12	16
Volunteers	30	36	48

Sources of staff for the immunization clinics

The following provides a list of the possible sources of staffing. Further details on these sources of staff can be found in the Chapter 10.

- **Team leader:** Middlesex-London Health Unit
- **Givers and drawer-uppers:**
  - Middlesex-London Health Unit
  - Contract nursing agencies
  - Nursing students
  - Retired nurses
  - Medical students in pre-clinical years
  - Veterinarians
  - Dentists

  Other sources of nursing and medical staff may be available if they are not occupied in providing care to patients. These include:
  - Hospital nurses
  - Long term care facility nurses
  - Nurses from family medical centres
  - Medical residents
  - Medical students in clinical years

- **Administrative assistants**: Middlesex-London Health Unit
- **Runners:** Middlesex-London Health Unit
- **Volunteers:** Organized through the Middlesex-London Health Unit. Volunteers are available through the roster of volunteers who routinely assist at the Health Unit. As well, volunteers can be recruited from local service clubs, advertising to the general public, large workplaces, university and high school students etc.

Locations for clinics

The following criteria are used to determine the optimal clinic locations.

- Large parking area
- Readily accessible by public transportation
- Wheel chair accessible
- A large open area
- Large number of chairs and tables available
- Separate entrance and exit
- Washrooms easily accessible
- Telephone easily accessible
- Preferably not cement floors
- Waiting space indoors before entering the clinic

Table 8.3 provides an assessment of the suitability of possible clinic locations. Contact information for these sites is provided in Appendix 8-A.

Logistics of the clinics

In most respects, the logistics of operating the immunization clinics will follow the usual protocols established by the Middlesex-London Health Unit. These protocols are outlined in detail elsewhere but are reviewed preliminarily here.

Scheduling: Staff and volunteer schedules will be coordinated through the Middlesex-London Health Unit.
Orientation: Large group orientation sessions will take place several days before clinics begin for all "givers" and "drawer-uppers". Extra training time will be allocated as some "givers" and "drawer-uppers" will be relatively unfamiliar with giving vaccines and large clinic settings. Packages containing all the relevant information on the vaccine, vaccination process, documentation, medical directives, consent forms etc. will be provided to each staff member. The Ontario Health Pandemic Influenza Plan provides good training information for “givers” and “drawer-uppers”. As much information as possible will be distributed in advance of the large group orientation. The information will also be posted on a confidential web site for staff members to access from home. Smaller orientation sessions provided by the team leaders will take place preceding each clinic.
Medical directives and documents: All medical directives, information sheets, consent forms and after care information will be developed by the Health Unit as per usual protocols. Documents for clients will be available in advance on the Health Unit web site.
Roles and responsibilities: All roles and responsibilities for staff members who will work in the clinic are as per the usual protocols of the Middlesex-London Health Unit. Roles and responsibilities will be reviewed with regard to pandemic influenza clinics and distributed to all staff members.
Clinic flow and clinic set-up: The clinic flow and clinic set-up will be as per the usual protocols of the Middlesex-London Health Unit. Clinic set-up for preferred clinic locations will be determined in advance.

Material and supplies: The usual Middlesex-London Health Unit checklists for supplying clinics will be used (see Appendix 8-B). Assuming the clinic stays in one location over several days, supplies will be sufficient for several days with a mechanism to replenish supplies through delivery of extra materials to the site. Currently, some supplies are being purchased in advance and stockpiled eg. paper supplies, needles and syringes, cotton balls, etc.
Cold chain: At all times, vaccines are kept between 2 and 8^0C. This is accomplished through coolers and freezer bags containing ice packs.
Data collection: A strict inventory will be kept of all vaccines provided, wasted and left unused after each clinic. Completed consent forms will be stored in a secure location at the Health Unit. Consideration will be given to electronically recording information from the consent forms in a secure database. This will facilitate data collection regarding the number of people immunized, their eligibility criteria and other demographic information.
Incident management: Usual Health Unit incident management systems will be followed including management of: fainting; severe allergic reactions; needlestick injuries; injuries to clients; and witnessing child abuse.

In addition to usual protocols for immunization clinics, pandemic influenza vaccination will require several unique plans as follows:

Determining eligibility for the vaccine

Since vaccines will be made available to certain groups before others as outlined in Table 8.1, a system to identify who is eligible to receive vaccine with each shipment will be necessary. This system will be similar to the process outlined for antiviral drug distribution. Hospitals and long term care facilities will receive their allocation of vaccine for administration to staff members within their organizations. All other health care providers and essential service organizations within the first, second and third priority groups will receive eligibility forms based on the numbers of employees within that organization. The forms will be distributed to employees who will present them to the immunization clinic in order to receive their vaccine. Eligibility for the fourth group, people at high risk for influenza, will be determined by health care providers. As with antiviral drugs, the health care provider will give eligible high-risk individuals a form that they will bring to the vaccination clinic. The form will be signed by the health care provider and will attest to the fact that the client meets the appropriate criteria to receive the vaccine. All forms will have unique identifiers in order to ensure that they are being used appropriately, and an inventory system will be established to track the distribution and return of these forms. Those eligible based on age criteria may be able to show appropriate identification with their date of birth at the clinic location.

Dividing up the population

Once sufficient vaccine is available to meet the last two priority groups, healthy adults and children, a system will be required to allocate the population to specific clinic locations and dates in order to avoid long line-ups. A system such as this was used for the mass meningococcal campaign in 2001 and successfully ensured that no clinic was excessively busy or excessively slow. The population will need to be divided into groups of approximately 2,000 as this is the number of people who can be vaccinated in a five-hour clinic. The mechanism to divide the population has yet to be determined but may include the use of postal codes or street addresses.

Infection control

Because of the aggregation of people at vaccination clinics, special attention to infection control will be required. Clients will be screened for symptoms before entering the clinic, and acutely ill patients will be advised to return when they have recovered. All clients will be asked to use a alcohol-based hand sanitizer before proceeding into the clinic. Staff at the immunization clinic will use the alcohol-based hand sanitizer between each client. All surfaces will be cleaned with an appropriate disinfectant after each clinic.

Security

Security personnel will need to be present and clear protocols will need to be developed in the event that non-eligible individuals seek to obtain vaccinations. Security will also be required during the storage and transportation of vaccine. Arrangements will be made with a private security firm. In addition, London Police Service, the Strathroy-Caradoc Police Service, or the Ontario Provincial Police will be made aware of all clinic locations in case additional security is required.

Next steps

Further work in the area of vaccination clinics rests with the Public Health Working Group. Additional work is required to assess the mechanism to determine eligibility for vaccination. A mechanism to divide the general population into segments of 2,000 and to allocate these segments of people to specific immunization clinics and dates needs to be organized. Electronic management of consent forms in immunization clinics should be explored. Security strategies for transportation and storage of the influenza vaccine are required.

Table 8.3: Assessment Criteria for Possible Influenza Vaccination Clinic Sites

Location	Address	parking	access to public transport	wheelchair accessible	large open area	chairs and table available	separate enter and exit	washrooms easily accessible	telephone easily accessible	not cement floors	waiting space indoors	good ligthing/temp controlled	RATING
Clarke Road Secondary School	300 Clarke Rd	1	1	1	1	1	1	1	1	1	1	1	11
Sir Wilfrid Laurier Secondary School	450 Millbank Dr	1	1	1	1	1	1	1	1	1	1	1	11
Oakridge Secondary School	1040 Oxford St W	1	1	1	1	1	1	1	1	1	1	1	11
Westmount Public School	1011 Viscount Rd	1	1	1	1	1	1	1	1	1	1	1	11
Byron Somerset Public School	175 Whisperwood Ave	0	1	1	1	1	1	1	1	1	1	1	10
Fanshawe College	1460 Oxford St E	0	1	1	1	1	1	1	1	1	1	1	10
Glen Cairn Public School	53 Frontenac Rd	0	1	1	1	1	1	1	1	1	1	1	10
John Paul II Secondary School	1300 Oxford St E	1	1	0	1	1	1	1	1	1	1	1	10
Mother Teresea	1065 Sunningdale Rd E	1	0	1	1	1	1	1	1	1	1	1	10
North Middlesex District High School	100 Main St	1	0	1	1	1	1	1	1	1	1	1	10
Saunders Secondary School	941 Viscount Rd	1	1	0	1	1	1	1	1	1	1	1	10
South Secondary School	371 Tecumseh Ave	1	1	0	1	1	1	1	1	1	1	1	10
University of Western Ontario	Richmond St	0	1	1	1	1	1	1	1	1	1	1	10
Dorchester Community Centre	2066 Dorchester Rd	1	0	1	1	1	1	1	1	1	1	1	10
London Jewish Community Ctr	536 Huron St	1	1	1	1	1	0	1	1	1	0	1	9
Lucan Community Memorial Centre	263 Main St	1	0	1	1	1	1	1	1	0	1	1	9
Medway High School	14405 Medway Rd	1	0	1	1	1	1	1	1	1	1	0	9
Montcalm Secondary School	1350 Highbury Ave	1	1	0	1	1	1	0	1	1	1	1	9
Caradoc Community Centre	116 Lions Park Dr	1	0	1	1	1	1	1	1	0	1	1	9
North Meadows Public School	82 Middlesex Dr	0	0	1	1	1	1	1	1	1	1	1	9
Regina Mundi	5250 Wellington Rd S	1	0	0	1	1	1	1	1	1	1	1	9
South London Community Centre	1119 Jalna Blvd	0	1	1	1	1	0	1	1	1	1	1	9
St. Thomas Aquinas	1360 Oxford St W	1	0	0	1	1	1	1	1	1	1	1	9

Location	Address	parking	access to public transport	wheelchair accessible	large open area	chairs and table available	separate enter and exit	washrooms easily accessible	telephone easily accessible	not cement floors	waiting space indoors	good ligthing/temp controlled	RATING
Western Fair	316 Rectory St	1	1	1	1	1	0	1	1	0	1	1	9
Westminster Central Public School	2835 Westminster	0	1	0	1	1	1	1	1	1	1	1	9
Wilfrid Jury Public School	950 Lawson Rd	0	1	1	1	1	0	1	1	1	1	1	9
Lambeth Community Centre	12 Beatty St	0	0	1	1	1	1	1	1	1	1	1	9
Glencoe District High School	3581 Concession St	1	0	1	1	1	1	1	0	0	1	1	8
Lord Nelson Public School	1990 Royal Cr	0	0	0	1	1	1	1	1	1	1	1	8
John Labatts Centre	99 Dundas St	0	1	1	0	1	0	1	1	0	1	1	7
Kenwick Mall Middlesex-London Health Unit	51 Front St E	1	0	1	1	0	1	0	1	0	1	0	6

Note: 1 indicates present: 0 indicates absent

Appendix 8-A: Contact List for Vaccination Clinic Sites

Location	Address	City	Phone	Fax
Clarke Road Secondary School	300 Clarke Rd	London	452-2959	452-2647
Sir Wilfrid Laurier Secondary School	450 Millbank Dr	London	452-2850	452-2859
Oakridge Secondary School	1040 Oxford St W	London	452-2750	452-2769
Westmount Public School	1011 Viscount Rd	London	452-8675	452-8679
Byron Somerset Public School	175 Whisperwood Ave	London	452-8095	452-8099
Fanshawe College	1460 Oxford St E	London	432-4430	
Glen Cairn Public School	53 Frontenac Rd	London	452-8210	452-8219
John Paul II Secondary School	1300 Oxford St E	London	457-3440	457-3680
Mother Teresea	1065 Sunningdale Rd E	London	645-1318	645-3114
North Middlesex District High School	100 Main St	Parkhill	294-0443	294-0096
Saunders Secondary School	941 Viscount Rd	London	452-2770	452-2799
South Secondary School	371 Tecumseh Ave	London	452-2860	452-2879
University of Western Ontario	Richmond St	London	661-2111	
Dorchester Community Centre	2066 Dorchester Rd	Dorchester	268-7334	268-3928
London Jewish Community Centre	536 Huron St	London	673-3310	673-1161
Lucan Community Memorial Centre	263 Main St	Lucan	227-4442	227-4443
Medway High School	14405 Medway Rd	Arva	660-1940	660-0506
Montcalm Secondary School	1350 Highbury Ave	London	452-2740	452-2749
Caradoc Community Centre	116 Lions Park Dr	Mt Brydges	264-9900	
North Meadows Public School	82 Middlesex Dr	Strathroy	245-7301	245-7303
Regina Mundi	5250 Wellington Rd S	London	685-2133	685-2569
South London Community Centre	1119 Jalna Blvd	London	661-2500 ex 5329	661-5607
St. Thomas Aquinas	1360 Oxford St W	London	641-1223	641-4858
Western Fair	316 Rectory St	London	438-7203	
Westminster Central Public School	2835 Westminster	London	452-8665	452-8669
Wilfrid Jury Public School	950 Lawson Rd	London	452-8693	452-8689
Glencoe District High School	3581 Concession St	Glencoe	287-3999	287-3889
Lambeth Community Centre	12 Beatty St	London	661-5197	661-5607
Lord Nelson Public School	1990 Royal Cr	London	452-8325	452-8329
John Labatts Centre	99 Dundas St	London	455-2849	
Kenwick Mall Middlesex-London Health Unit	51 Front St E	Strathroy	245-3230	351-3125

Appendix 8-B CLINIC SUPPLY LIST

PACKING SUPPLIES FOR CLINICS	REPLENISH
After Care Sheets (2000)	
Consents (2000)	
Fact Sheet (1000)	
Alcohol Swabs (200x 20 boxes) 4000	
Cotton Balls (2000 per bag)	
Jugs (24 empty per clinic)	
Boxes of tissues (12)	
Kids Stickers/Tatoos, brown paper bags	
Large Table Covers (20 per clinic)	
Masking Tape, Magic Marker	Circle one
Needles -1" 2000	
Paper Pad, Name Tags, Pens (3 dozen)	
Plastic Tray (13)	
Hand sanitizers 12	
Small Table Covers (30 per clinic)	
Syringes 1" – 2000 (20 boxes)	
Sorter, Rubber Finger, Elastics	
Stat Sheet, Replenish List	
TB Syringes w/out needle –200-children	
Clipboards (60-70)	
Case of Water	

CONTENTS OF FIRST AID TOTE	REPLENISH
Band-Aids 3 boxes	
Bottle of Disinfectant	
Garbage Rolls	
Gloves (1 box)	
Juice Boxes 12	
Paper Towels 1	
Hand sanitizers	
Needles - 1 ½" (1 box)	
TOY TOTE	
COOLER WITH ICE	
VACCINE	
PACKAGE OF SIGNS	**REPLENISH**
Closed for table	
Enter Exit Quiet Area	Circle one
Location ← → ↑	Circle one
Lists of Other clinic sites and times	
Please remain in waiting area 15 min.	
Table number 1 2 3 4 5 6 7 8 9 10	Circle one
Thanks to Volunteers	
Toys remain May contain nuts	Circle one
Washroom ← ↑ → ↓	Circle one

CHAPTER 9

Health Services

TABLE

CHAPTER 9: Health Services

The provision of health services during an influenza pandemic will undoubtedly be the most challenging aspect of pandemic influenza response. Our health care system is currently functioning at close to maximum capacity at all times, and will face significant challenges in responding to the increased demands that are projected to occur during an influenza pandemic (see Chapter 3).

The Centers for Disease Control in the United States has designed a program called FluSurge which assists hospitals in calculating their bed requirements during a pandemic. There web site is http://www.cdc.gov/flu/flusurge.htm . The Ontario Health Pandemic Influenza Plan indicates that the following parameters are used in the FluSurge estimates:

- Average length of stay 9.5 days
- 100% of admitted patients using an acute care bed for 7 days
- 15% of admitted patients using an intensive care unit (ICU) bed
- 7.5% of admitted patients using ventilator support for 10 days

Based on the above parameters, the Ontario plan estimates that for the province, pandemic influenza alone will use 86% of all acute care beds, 187% of ICU beds, and 74% of ventilator supported beds during the peak of influenza activity. The use of these resources will not be evenly distributed throughout the eight weeks of a pandemic wave. Table 9.1 indicates the distribution of hospital resource utilization for the province based on a 35% attack rate.

Table 9.1 Distribution by Week of Hospital Resource Utilization for Ontario Based on 35% Attack rate

Table 14: Impact of Influenza with 35% Attack Rate on Hospital Capacity

35% Attack Rate 6 Weeks		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Hospitals	Weekly admissions	7,320	10,370	12,811	12,811	10,370	7,320		
	Peak admission/day			1,996	1,996				
Hospitals	# hospitalizations	7,320	10,370	12,811	13,459	12,430	9,895		
	% hospital capacity	47%	66%	82%	86%	80%	63%		
ICU	# ICU admissions	1,098	2,054	2,628	2,825	2,754	2,236		
	% ICU capacity	73%	136%	174%	187%	182%	148%		
Ventilator	# on ventilators	549	1,027	1,314	1,413	1,377	1,118		
	% ventilator capacity	29%	54%	69%	74%	72%	59%		
Deaths	# of influenza deaths			1,442	2,043	2,523	2,523	2,043	1,442
	70% deaths in hospital			1,009	1,430	1,766	1,766	1,430	1,009

Note: The above numbers were calculated using FluSurge software developed by the U.S. Centers for Disease Control and Prevention (a version of the software can be found online at http://www.cdc.gov/flu/flusurge.htm). It utilizes population estimates for 2004 based on 2001 census data. FluSurge is designed to provide a sense of the impact of a pandemic on hospital capacity over a selected duration of weeks. The program differs slightly from the CDC's FluAidprogram (http://www2a.cdc.gov/od/fluaid/), which provides a range of estimates for the total impact of an influenza pandemic for a given area at a macro level.

As noted earlier, FluSurge and FluAid require the user to enter population data for a particular community or area, both programs may yield different results in terms of the estimated number of deaths and hospitalizations for a given population. Please note that these programs are intended to provide planners with an idea of the potential effect that an influenza pandemic will have on health services within the area so that communities and healthcare facilities can plan appropriately. Local planners are encouraged to utilize either program to suit their particular requirements, however, should not rely on these programs to provide an accurate prediction of a pandemic impact.

Ontario Health Pandemic Influenza Plan, June 2005, page 69.

In order to respond to these daunting figures, a coordinated approach from all sectors of the health care system will be required. As well, a change in public expectations will also be needed. As a community, we will be forced to "triage" who gets care and who gets its first. The concept of triage is outlined in the Ontario Health Pandemic Influenza Plan as requiring consideration of the populations' needs as a whole, and not necessarily each individual's needs. This is a very different way of addressing our usual health care expectations and will force us to ask and answer questions like:

- Should an individual with life-threatening cancer be admitted to the ICU with influenza illness, when an otherwise healthy individual with influenza also requires that ICU bed?
- Should elderly residents from long-term care facilities be admitted to hospital when young children also require admission to the very limited available spaces?

Overview of health care planning

Planning the health care response will require looking at all aspects of the health care system including:

- Telehealth Ontario
- Primary health care providers - family physicians, pediatricians, walk-in clinics, and the community health centre
- Emergency departments/urgent care centre
- Hospital care, including intensive care
- Long term care facilities
- Home care including the Community Care Access Centre (CCAC) and contract nursing agencies
- Emergency medical services and medical transportation services

Pandemic influenza planning will also require the implementation of alternate methods of health care delivery including:

- Self care
- Triage sites
- Alternate health care sites (non-traditional health care sites)

It is expected that all health care organizations will develop pandemic influenza plans using business continuity principles as outlined in Chapter 11. A mechanism will also be required to coordinate these various plans, since one organization's plan will invariably have implications on other organizations. For example:

- As the hospital seeks to discharge patients to the community in order to free up hospital beds, the need for home care supports will increase.
- As long-term care facilities seek to support their residents within their facilities and minimize the use of acute care beds, they will require additional support from community physicians and nurse practitioners.

Self care

The ability to care for oneself and one's family without requiring medical care will be essential to minimize the use of health care services during an influenza pandemic. Alberta Health and Wellness has developed informational materials to assist in self-care for Alberta residents. This material is available on their web site at http://www.health.gov.ab.ca/influenza/Self_care.html . The Canadian Pandemic Influenza Plan contains similar information that can be found at http://www.phac-aspc.gc.ca/cpip-pclcpi/pdf-cpip-03/cpip-appendix-g.pdf. These documents will be adapted for use provincially and/or locally and will be widely distributed as appropriate.

Telehealth Ontario (1-866-797-0000) provides 24-hour access to telephone consultation with a registered nurse. Telehealth will need to be prepared to respond to a substantial increase in call volume during a pandemic. Their advice will be key to assisting people with self-care and avoiding unnecessary health care visits. It will be essential to ensure that Telehealth has the required information regarding triage sites, immunization clinics and antiviral distribution locations as these are established in Middlesex-London.

Triage sites and primary care

Substantial planning is required to determine how primary health care will be delivered in Middlesex-London. It is quite likely that triage centres will need to be established in several locations in the City and County. These centres will assess people with influenza-like illness in order to determine if they can be sent home with self-care instructions or whether they should be referred to a hospital emergency department for further assessment and possible hospital admission. These triage centres will also determine eligibility for treatment with antiviral drugs that will be available at the centres. The locations, staffing and services provided by these triage centres is currently being investigated. Stringent infection control practices will be required in these centres to prevent transmission of influenza to health care staff and among clients.

The role of primary care providers during an influenza pandemic remains to be determined. It is likely that some primary care providers will be asked to provide care at triage centres. Provisions will therefore need to be made for the patients in their practice who require non-influenza related care. As well, it will need to be determined if all patients with suspected influenza will be sent to the triage centres, or whether these individuals will also be seen in private primary care providers' offices. In either situation, stringent client screening for possible influenza and infection control practices will be required in primary care providers' offices. It will need to be determined if equipment such as masks and eye protection will be provided provincially or whether the primary care provider will be required to purchase these items. A prioritization process is being considered to assist in determining which routine primary care interventions can be deferred during an influenza pandemic in order to free up capacity among primary health care providers.

Hospital planning

London Health Sciences Centre and St. Joseph's Health Care London have developed a comprehensive plan for responding to pandemic influenza. A Pandemic Management Team will be constituted to oversee the operations of the plan. The hospitals plan to remain within their current spaces as much as possible, since the required supports and infrastructures

are readily available within their buildings. The plan identifies potential bed spaces and currently estimates that approximately 700 additional bed spaces could be made available, including 100 additional ICU spaces, however this will fluctuate over the next few years due to construction and demolition projects. These estimates do not include South Street Hospital or Gartshore Residence (the former nurse's residence across from South Street), which could also be considered options until 2007-2008. Consideration should be given to keeping as much capacity and infrastructure as possible at the South Street campus and at St. Joseph's Hospital in order to assist with pandemic influenza response. Hospital auditoriums and cafeterias can be considered as possible additional sites for patient care beds.

Obtaining the required staff to support these additional beds will be a challenge. The hospitals will work in collaboration with the Health Emergency Sub-Committee to develop a human resource plan as outlined in Chapter 10. The hospital plan proposes innovative strategies such as "team nursing" in order to ensure that the appropriate level of support is provided for alternate health care providers. Communication mechanisms and staff support structures are also built into the hospitals' plan. The hospitals will take the lead in communicating to the public regarding services that are or are not available during a pandemic, relocation of key services, and hospital visiting policies.

To ensure the equitable distribution of resources, the clinical team members will develop and continually revise criteria for admission, intensive care, and discharge that will consider the availability of resources. Reviews in the United States, as quoted in the Ontario Health Pandemic Influenza Plan, estimate that a hospital will only be able to support an additional 20% of its capacity within its four walls. The hospital plan therefore recognizes the need to look at alternate care sites in collaboration with the Health Emergency Sub-Committee.

The hospital plan is based on the World Health Organization's pandemic influenza phases. The key elements of the London hospitals' plan are outlined below. In each phase of the plan, additional activities are added to the activities initiated in the previous stages.

Phase 1-3: No sustained human-to-human spread.

- Ensure that retired equipment remains usable;
- Maintain a one month inventory of critical supplies likely to be required for influenza patient care, diagnostics, and personal protection of providers;
- Maintain an alternate suppliers list;
- Conduct routine and pandemic-related infection control education;
- Provide education regarding the pandemic plan;
- Continue with routine Febrile Respiratory Illness surveillance;
- Maintain a contact list of retired employees;
- Promote the current year's influenza vaccine.

Phase 4: Human-to-human spread has been identified but remains highly localized.

- Constitute the Pandemic Management Team;
- Postpone projects that will reduce response capability;
- Enhance surveillance for Febrile Respiratory Illness;
- Review supply lists;
- Update the human resource roster.

Phase 5: Larger clusters of human-to-human transmission although the outbreak still remains localized.

- Acquire additional pandemic supplies;
- Calculate numbers of beds needed using the FluSurge program and determine current bed capacities;
- Develop triggers to cancel elective procedures and visits;
- Encourage staff members to develop personal pandemic preparedness plans;
- Establish an internal hospital information line and web site;
- Begin to identify non-traditional sites;
- Plan for the consolidation and deferral of services;
- Enhance security related to antiviral drugs and vaccines if available;
- Defer non-urgent care for patients with febrile respiratory illness;
- Plan for early or temporary discharge from non-acute care sites;
- Adopt and/or approve any Ministry of Health and Long-Term Care directives or clinical pathways for internal use;
- Identify potential additional morgue space.

Phase 6: Increased and sustained transmission in the community.

- Implement non-traditional sites as required;
- Ration equipment and supplies as necessary;
- Defer non-essential services;
- Institute early discharge as appropriate;
- Re-deploy staff as required;
- Employ, train and support additional staff as required;
- Implement influenza and non-influenza streams in emergency department/urgent care centre;
- Acquire additional morgue space as required.

Recovery

- Systematically return operations to normal.

Alternate care sites (non-traditional care sites)

The Canadian Pandemic Influenza Plan outlines the possible roles of non-traditional care sites as follows:

- Care of patients who are not critically ill when hospitals are overloaded
- As residences for individuals unable to care for themselves
- As "step-down" units to care for stable patients who have been transferred from acute care hospitals

The Canadian plan recommends "satellite sites" with linkages to existing health care facilities as opposed to "free standing sites". Satellite sites can more readily take advantage of the health care facility's infrastructures, policies and procedures, equipment etc.

An idea to be further explored within Middlesex-London is the use of long-term care facilities, particularly those associated with St. Joseph's Health Care London, as alternate care sites. Long-term care facilities associated with St. Joseph's Health Care London would be considered "satellite sites" that have the advantage of being part of the hospital's infrastructure. Further exploration of this option would require planning regarding moving

existing patients from these long-term care facilities to other long-term care facilities or back into the community during a pandemic.

Other options for alternate care sites include university dormitories, hotels, the Wolseley Barracks, the Western Fair grounds, schools etc. Equipping a non-health care site to be an alternate care site would require considerable planning with many challenges. Decisions will need to be made by the Health Emergency Sub-Committee regarding the extent to which these sites are inventoried and plans are made regarding what would be required to equip, staff and operate sites that do not routinely provide health care.

Long-term care facilities

In preparing their pandemic plans, long-term care facilities should consider mechanisms to provide as much care on site as possible in order to minimize transfers to acute care facilities. Discussions between long term care and acute care facilities can help delineate the type of support the hospitals can provide to long-term care facilities during a pandemic in order to prevent the need for hospital admissions. Criteria for transferring residents to acute care should be developed. Additional support from community physicians and nurse practitioners for long-term care facilities may also help minimize transfers to acute care facilities.

Residents and their family members will need to be asked about the possibility of taking residents home for care. This will free up spaces in the long-term care facility for people who can be discharged from hospital to the facility, and for members of the community who need urgent admissions to the facility. Residents and their family members will also need to review the level of care that will be available for residents in the long-term care facility, specifically as it relates to the possible unavailability of acute care transfers.

Community Care Access Centre (CCAC)

Community Care Access Centre will need to determine how to expand their capacity during a pandemic, as early discharge from acute care will be a strategy used to increase acute care bed capacity. The human resource inventory outlined in Chapter 10 will assist the CCAC in identifying alternate health care providers.

Emergency medical services and medical transportation services

Business continuity planning, alternate sources of health care providers, and alternate mechanisms to transport patients in non-urgent situations are elements of planning for emergency medical services.

Laboratories

As with other health care organizations, business continuity planning will be crucial for laboratories. The Ontario Health Plan for Pandemic Influenza provides a model to assist in prioritizing services in public health and community laboratories dependant on the severity of the influenza pandemic. Local plans to coordinate laboratory services, including specimen collection, transportation of specimens, testing, and reporting to local health units, are being developed.

Next steps

Considerable work is still required to address the provision of heath care services in a pandemic. This work will be conducted under the leadership of the Health Services Working Group and the Health Emergency Sub-Committee as a whole. Discussions need to occur at the provincial level regarding rationalizing the use of health care services during a pandemic, and information on what to expect from the health care system needs to be communicated to the public. Self-care materials require development or adaptation. The locations, staffing and functions of triage centres require careful consideration. The role of primary care providers in the triage sites and management of influenza patients in their offices also requires considerable discussion. The availability of additional clinical space within the hospitals and in long-term care facilities affiliated with the hospitals requires exploration. The development of an inventory of possible alternate care sites outside of health care settings should be discussed as well. All organizations involved in the delivery of health care should ensure that they conduct comprehensive business continuity planning based on the suggestions in Chapter 11. Further planning regarding laboratory services will be undertaken by the Laboratory Working Group.

CHAPTER 10

Human Resources

CHAPTER 10: Human Resources

The large number of ill people needing medical care will require the use of alternate sources of health care providers to provide clinical services. This need will be compounded by illness among health care workers themselves, which could affect one-third of workers over an eight-week period. Alternate sources of health care providers may be required to assist in providing medical care in triage centres or hospitals, to assist with immunization and/or antiviral clinics, and to assist with community care of individuals being cared for at home. Volunteers are also key to pandemic response to assist in health care settings and to provide essential social supports in the community.

Health care providers

Possible sources of alternate health care providers include:

- Retired nurses
- Retired physicians
- Medical students
- Nursing students
- Registered practical nursing students
- Contract nursing agencies
- Foreign trained health care providers
- Health care providers who are not working in the field
- Personal support workers
- Veterinarians
- Dentists, dental hygienists, dental assistants and dental students
- Pharmacists and pharmacy assistants
- Physiotherapists and physiotherapy students
- Occupational therapists and occupational therapy students
- Respiratory therapy students
- Hospital technologists
- Paramedics
- Midwives and midwifery students

Numerous issues have been raised in the Canadian Pandemic Influenza Plan and the Ontario Health Pandemic Influenza Plan regarding the use of alternate health care providers. These issues include:

- Recruitment
- Training
- Assessment of skills sets
- Requirements of licensing bodies
- Employment insurance coverage
- Worker health and safety
- Liability coverage
- Compensation

Many of these issues, including assessing the requirements of licensing bodies, and employment insurance, liability and compensation issues, need to be addressed at the provincial level.

In order to facilitate the use of alternate health care providers within Middlesex-London, it is proposed that an inventory of available sources of providers be prepared. This inventory could be conducted using a written template to be completed by each organization, or alternatively, and perhaps more effectively, by meeting individually with each organization. Each possible provider organization will be asked to provide the following information:

- Key contact people and contact information
- Number of staff members who could be re-deployed to assist with pandemic influenza response
- Number of available staff members broken down by the task they could perform (under the assumption that appropriate training is provided). Tasks could include the provision of:
  - Vaccinations
  - Drawing-up
  - Clinical care in a triage site
  - Clinical care in a hospital setting / alternate care sites
  - Clinical care in the home
  - Assistance with personal care in the home
  - Assistance with personal care in the hospital
- Training needs in order for staff members to be able to fulfill their potential roles
- Barriers for staff members or the organization in fulfilling their potential roles
- Suggested mechanisms to reduce or eliminate these barriers

This inventory would then be used to develop strategies to address identified barriers and ensure that the potential workforce of alternate health care providers is as prepared as possible to assume their potential roles. It is likely that these strategies will need to be implemented in a progressive manner as a pandemic becomes increasingly likely.

Volunteers

Volunteers are crucial to an efficient community response to an influenza pandemic. Volunteers are going to be required to assist in health care settings, but more importantly are likely to be needed to provide social supports for community members whose usual supports are unavailable. This type of social support may include child care, elder care or care for the disabled, and may involve providing assistance with daily activities such as shopping, cooking, bathing etc. Police reference checks will likely be required before undertaking these activities. During an influenza pandemic, usual sources of supports may be unavailable because of illness in the support provider, or because the support provider is a health care provider or essential service worker whose services are needed in the community.

The Middlesex-London Health Unit has a core group of volunteers who assist on a regular basis with Health Unit programs. Additional sources of volunteers include service clubs, home and school associations, workplaces, religious organizations, and post-secondary and secondary school students. A strategy to identify and enumerate these sources of volunteers

will be required. As with the health care providers, this strategy will need to identify how these groups are able to assist in a pandemic response, and their barriers to participation. Strategies to address these barriers will be analyzed and implemented as appropriate. In addition to assisting with pandemic influenza response, a comprehensive volunteer strategy will further enhance volunteer involvement in regular Health Unit, health care and community programs, as well as during other emergency situations.

Next steps

The Human Resources Working Group will be establishing the framework to conduct the inventory of possible health care providers. The group will establish the mechanism to collect the required information on the sources of health care providers, and will determine the organizations to contact to obtain the information. The volunteer component of the plan requires a coordinated approach that may fall to the Human Resource Working Group and/or other interested community groups.

CHAPTER 11

Business Continuity

CHAPTER 11: Business Continuity

Pre-planning may assist businesses to continue to function during an influenza pandemic or other emergency. Business continuity planning involves looking at strategies such as enhanced infection control, routine vaccinations and other preventative health measures, mechanisms to increase social distancing, prioritizing services to know what must continue and what can be stopped when staff members are ill in large numbers, establishing workplace closure criteria, and establishing communications mechanisms. Businesses should consider appointing a "business continuity coordinator" to facilitate the development and implementation of mechanisms to support business continuity in the event of an outbreak or other emergency. Businesses should also consider how they can contribute to a community response to pandemic influenza.

Infection control

Many of the infection control strategies outlined in Chapter 6 may help decrease influenza transmission in the workplace. These include:

- Ensuring bathrooms have adequate pump soap and warm running water, and the liberal availability of alcohol-based hand sanitizers;
- Frequent environmental cleaning;
- Avoiding the sharing of telephones and computer keyboards;
- Ill employees should be advised to go home and remain at home until symptoms are improving. All employees should continue to be paid while on sick leave;
- Close contacts of an ill employee should be advised to watch for symptoms of illness, perform frequent hand washing/sanitizing, and stay at least one metre apart from other employees;
- The effectiveness of wearing masks, eye protection and other personal protective equipment to decrease transmission in the workplace is uncertain.

Vaccinations and other preventative health measures

Encourage staff members to take advantage of the annual influenza vaccine and all other vaccinations for which they are eligible. Other preventative health measures such as not smoking, proper nutrition, adequate rest and exercise, drinking alcohol only in moderation, and undergoing routine recommended medical screening procedures will also help keep staff members healthy.

Enhancing social distancing

Strategies to keep workers at least a metre apart may help limit the spread of influenza in the workplace. These strategies include avoiding in-person meetings and conducting as much business over the telephone or by e-mail or fax as possible. Some workplaces may consider helping their workers establish home offices so that they do not have to come into the workplace at all. Home offices will also assist employees to continue to work in the event that school closures require employees to stay at home.

Prioritization of services

As part of business continuity planning, employers should try to determine what functions, operations or people are essential. In the event of large-scale illness, less essential services can be stopped and staff members reassigned to more essential services. Preplanning and advanced training may assist in reassigning staff. Alternate sources of workers, such as retired employees, may also have to be identified in order to keep sufficient staff members at work to provide essential services. Employees with more than one job will need to determine how they will allocate their time depending on the services provided in each workplace.

One or more people should be identified and provided training in order to ensure back-up for key positions in the organization. Keeping these individuals in separate locations may prevent them all from becoming ill at the same time. People in essential positions should ensure that they have back-up plans for childcare if appropriate. Sources of alternate childcare providers may include relatives, friends, neighbours, and workplace colleagues who can be spared from the workplace.

Workplace closure criteria

Workplaces may need to close if there are insufficient employees to continue to operate. Staff may be limited because of illness and/or the need for staff to stay home to provide care for ill children or in the event of school closures. If school closures are felt to be prudent to control the spread of infections, it is possible that similar recommendations will be made for non-essential workplaces. As well, workplaces may need to close if demand for their product or service decreases because of conditions created by an influenza pandemic. Employers should establish criteria to determine if and when a workplace should close. Payment mechanisms for staff members should be clearly defined and communicated in the event that a workplace closure is required.

Communication

Employers should establish mechanisms to communicate the measures that are being taken to decrease the impact of pandemic influenza. Education regarding infection control precautions should be provided. The expectations to stay home when ill should be clearly communicated. Employees should be aware of the criteria for workplace closure and the mechanisms by which workplace closures will be communicated to staff members.

Determining how your organization can contribute to the community response

Organizations may be able to contribute to the community response to pandemic influenza by considering the following:

- Ensuring that staff members whose spouses are health care providers or essential service workers are relieved of their duties in order to provide childcare in the event of school closures or illness in the children.
- Determining whether sections of the organization could suspend operations during a pandemic so that staff members could assist with the local response. Staff members may be able to assist in the response by working in health care settings, or by assisting with child care or elder care in the community.

Next steps

Currently the responsibilities for developing the business continuity framework and promoting business continuity planning rests with the Public Health Working Group. Consideration needs to be given to creating a dedicated working group to focus on business continuity planning. Ongoing efforts are required to ensure that health care organizations, essential service organizations, and other employers in Middlesex-London receive information on business continuity planning. This information can be delivered via printed material, material posted on web sites, in person meetings, and group presentations and workshops.

CHAPTER 12

Communications

Chapter 12: Communications

Communication is an extremely important aspect of outbreak and crisis management. Clear, concise, timely messages from a credible source using multiple delivery methods will be key to ensuring good communication during an influenza pandemic. The Middlesex-London Health Unit will be the lead organization for public and professional communication within Middlesex-London. Communications from the Health Unit will be supported by provincial, national and international sources, information from local hospitals, and information from municipal leaders. Changes in the availability of services or products will also need to be clearly communicated to the public. Communications will be directed to the general public and to health care providers. As well, effective communication between those leading the community pandemic response is crucial, as discussed in Chapter 14.

Public communication

Pre-pandemic communication: Before the arrival of a pandemic, it is important for the public to understand what is meant by an influenza pandemic and what is being done to prepare for and mitigate the impact of an influenza pandemic, including much of the information contained in this plan. The public should be given information on "infection control strategies for all times" and other public health measures as outlined in Chapter 6. Strategies for business continuity as outlined in Chapter 11 should also be communicated in advance.

The Health Unit has been providing presentations to several community organizations to assist them with initiating their pandemic planning. Members of the Health Unit are available to provide these presentations to businesses and other organizations that are initiating a pandemic preparedness process. As the media are a key partner in risk communication regarding an influenza pandemic, presentations will be offered to key media outlets. Presentations and meetings with the media before the arrival of pandemic influenza will facilitate their understanding of the issues and their ability to communicate this information to the public.

Communication during a pandemic: Communications to the public will need to include information on:

- Pandemic influenza;
- The current influenza situation in Middlesex-London and other jurisdictions;
- The impact of influenza on the health care system;
- Infection control strategies to decrease the chances of acquiring influenza infection;
- Self care advice when they become ill, for both adults and children;
- When, how and where to seek medical advice and care;
- Dates, times and location of influenza vaccination clinics;
- How to deal with arising issues that may affect their daily lives such as school closures and the availability of products and services;

Sources of public information: The following mechanism will be used or considered to ensure effective communication of the above information regarding pandemic preparedness and the information required during a pandemic.

- **Media**: Regular media updates will be provided via media releases, media interviews and media conferences. If necessary, media releases and conferences will need to be conducted on a daily basis. Key spokespeople will be selected from involved organizations and messages involving multiple organizations will be coordinated;
- **Telephone information line:** A staffed telephone information line will be run by the Middlesex-London Health Unit. The Health Unit has the telephone infrastructure to rapidly set up an information line that can respond to up to 50 callers at one time. The hours of operation will depend on the stage of the pandemic and the public's need for information. Questions and answers for staff members working on the information line will be developed for all commonly asked questions, and this document will be up-dated as changes arise. This ensures that consistent, accurate information is being provided to the public. Data collection mechanisms will need to be developed to efficiently record callers' requests and the advice provided.
- **Pre-recorded telephone messages:** Pre-recorded messages will be available through the Health Unit to provide answers to the most commonly asked questions.
- **Internet:** The Internet will be a very important source of health information during a pandemic. The Health Unit's web site at www.healthunit.com will provide up-to-date information on health issues as they arise and the process for obtaining medical advice and care. The Health Unit's web site will link with other credible sources of health information, including the Ontario Ministry of Health and Long-Term Care, the Public Health Agency of Canada and the World Health Organization, and the web sites of hospitals and other local health care providers as appropriate
- **Receiving e-mails:** The Health Unit will respond to requests for information via e-mail. The e-mail address, health@mlhu.on.ca , will be available from the Health Unit web site. Responses will be provided in a timely manner, however, personal health care advice will not be provided through this source.
- **Advertisements:** A media buy strategy will be initiated including radio, newspaper and television advertisements to disseminate key health messages and methods to access health care. Public service announcements will also be used;
- **Schools and workplaces:** Sending information home with school students and out to large workplaces will be considered as a method of reaching large numbers of people. Signs in schools and public places is another strategy to disseminate key messages;
- **Mass mailings and faxing:** In some instances, mass mailings and faxing will be considered to ensure key messages are received by as many members of the public as possible. Including information with utility or other widely distributed bills may also be considered.
- **Mass e-mails:** Mass distribution of information through access to large e-mail listserves may be an effective way to distribute information. This mechanism may be particularly effective in reaching people in large workplaces, and university and college students. Investigation will be required to determine if these e-mail listserves can be used for the distribution of health information in a pandemic. The use of text messaging will also be explored.

It is very important that all information that is produced related to pandemic influenza be at an appropriate literacy level for the public. As well, timely translation into several languages will be required.

Professional communication

The Middlesex-London Health Unit has traditionally provided information to health care providers. A mailing list of approximately 900 physicians and other health care providers is maintained by the Health Unit. Information is also sent to health care providers by several e-mail distribution lists developed by the Health Unit and a listserve developed and maintained by the Department of Family Medicine at the Schulich School of Medicine and Dentistry at the University of Western Ontario. A mechanism to mass fax to health care providers is also being developed at the Health Unit. If necessary, consideration will be given to establishing a dedicated information and reporting telephone line for health care providers to reach the Health Unit.

Health care providers will need access to all the information being provided to the public including business continuity planning and infection control practices as outlined in Chapters 11 and 6, and advice regarding stockpiles of personal protective equipment and other supplies. Plans for distribution of antiviral drugs and vaccines to the health care provider themselves and their patients will need to be disseminated as they are solidified. The mechanism for delivering health care during a pandemic will also need to be clearly communicated. Clinical protocols will be developed at the provincial and national level and will need to be made readily available to health care providers.

Next steps

A Communications Working Group will be established to ensure a coordinated public communication strategy is developed. Presentations and meetings will be offered to the media. Key pandemic influenza information will be placed on appropriate web sites, and fact sheets and other communications tools will be developed. A mechanism will be established to efficiently record and tracks calls to the information line, and use of mass mailing and mass e-mail distribution mechanisms will be explored. A communication strategy to health care providers will be developed to include mailing information on business continuity and offering presentations on pandemic preparedness. Communications regarding antiviral and vaccine distributions will be developed for health care providers as these plans are finalized.

CHAPTER 13

Mass Fatality Management

CHAPTER 13: Mass Fatality Management

Pandemic influenza is expected to result in an excess of deaths. In Middlesex-London, the Meltzer model using the most likely scenario for a 35% attack rate estimates an extra 416 deaths in a 6 to 8 week period. Funeral directors, cemetarians, coroners and their staff are expected to manage this increase in deaths during a time when up to one-third of their staff may be off ill. Business continuity planning as outlined in Chapter 11 is particularly important for individuals involved in handling dead bodies, funeral services, burial and cremation. The planning should consist of determining alternate sources of workers such as retired staff and volunteers. The following outlines some specific considerations for those involved in the bereavement sector**:**

Supplies

The Funeral Service Association of Canada suggests that funeral home operators consider establishing an inventory capable of sustaining their normal operations during the first wave of the pandemic. This is estimated to be supplies required for the number of deaths that normally occur during a six-month period. Supplies that can be stored include gloves, surgical masks, eye protection, gowns, head and foot covers, body pouches, identification wrist bands, embalming chemicals, plastic transfer boards and alcohol-based hand sanitizers. Embalming chemical companies have advised that there is an unlimited shelf life for most preparation room supplies with the exception of products containing gluteraldehyde in solution. Caskets, vaults and cremation containers will be more difficult to store because of their size. Storage areas containing supplies should be protected from moisture and temperature extremes.

Infection control

Dead bodies are not considered capable of transmitting influenza. However, the people attending funeral services and visitations may be incubating or already ill with influenza, either acquired from the deceased or elsewhere in the community. Aggregation at a funeral and visitation, and close contact in comforting the relatives and friends provides a potentially efficient route of transmitting influenza. To mitigate this risk, alcohol-based hand sanitizers and tissues should be readily available in funeral homes, along with waste baskets for tissue disposal. Signs should be posted to encourage the use of the alcohol-based hand sanitizers. Attention to environmental cleaning within the funeral home is also very important. Strategies to enhance social distancing during the funeral and visitation processes should also be considered.

Staff education

Staff will require reinforcement of education regarding routine infection control precautions. They should be advised that no additional precautions are required when managing a body of a person known or suspected to have died of influenza. Education should also include unlicensed staff, contract and part time employees who may not be fully aware of proper infection control practices.

Enhancing body storage capacity

It is expected that at the peak of an influenza pandemic, funeral homes, cemeteries and crematoria may have to operate extended hours, seven days a week. Even with this, the ability to keep up with burials and cremations may exceed the current capacity of the funeral homes in Middlesex-London. This will require temporary storage sites to be established. Dead bodies that are to be stored before burial should be embalmed or stored at 4 to 8^{o}C. Temporary storage facilities, such as refrigerated trailers or ice skating arenas, may have to be established at peak periods. Storage in these temporary locations will only delay, but not prevent the decomposition process. Plastic transfer boards should be purchased now, as they affordably and respectfully assist with the maneuvering of the deceased.

Special considerations

Special considerations will be required in the following circumstances:

- Some religious and ethnic groups have specific requirements in managing dead bodies. Religious and ethnic leaders should be contacted and encouraged to be involved in planning for funeral management and bereavement counselling to ensure that their specific needs can be accommodated.
- The public needs to be educated about the process to follow if a death occurs in the home.
- Financial allowances may need to be considered regarding the cost of the funeral and disposition given that families may be making arrangement for more than one individual within the course of a pandemic. Supplies of lower costs options should be maintained by funeral homes. Cremation may become a more frequently used option because of its lower cost and relatively simpler process.
- Alternate processes need to be developed at the provincial level to facilitate the prouncement of death, the certification of death by a health professional and the issuing of certified death certificates.
- Jurisdictions should ensure that unnecessary obstacles are not created when transferring the deceased from one jurisdiction to another.
- Decisions should be made and widely communicated regarding the feasibility of organ donation following an influenza-related death.

Next steps

The responsibility for pursing the next steps in the management of mass fatalities currently rests with the Mass Fatality Management Working Group. The group will focus ongoing efforts on obtaining an inventory of the current capacity within Middlesex-London to manage large numbers of fatalities. In addition, it will attempt to identify alternatives for temporary storage sites. Processes will continue to be developed to ensure that the management of dead bodies occurs as efficiently as possible during what will be a difficult time for all involved.

CHAPTER 14

Pandemic Influenza Outbreak Response

FIGURES

CHAPTER 14: Pandemic Influenza Outbreak Response

Integrated response plan

The Ontario Health Pandemic Influenza Plan outlines the provincial response infrastructure for health emergencies and the relationship to the broader emergency response. These relationships are outlined in Figure 14.1. Figure 14.2 provides an overview of the pandemic influenza outbreak response infrastructure for Middlesex-London. The lead for pandemic influenza response will be the Middlesex-London Health Unit. The Health Unit will work closely with the Ministry of Health and Long-Term Care who will provide provincial leadership to the health sector through the Ministry Emergency Operations Centre. As was the case during the SARS outbreak, the Ministry Emergency Operations Centre may issue directives to health units, hospitals, long term care facilities and physicians. The Health Unit will ensure that the response in Middlesex-London is coordinated with the provincial response and is consistent with the directives issued by the Ministry. The Health Unit will maintain regular communication with provincial officials.

The City of London and County of Middlesex Community Control Groups will be activated in the event of an influenza pandemic. These committees will receive regular information from the Middlesex-London Health Unit, and provincially from the Provincial Emergency Operations Centre. The Community Control Groups' functions will include: the declaration of an emergency as appropriate; ensuring that core municipal functions continue to operate; assistance with logistical, human resource and financial support for the pandemic response; and public communications regarding municipal functions.

The Health Unit will receive advice, information and support from the Community Control Groups and Health Emergency Sub-Committee. In addition, the Health Emergency Sub-Committee members will bring issues forward from the health care organizations they represent and disseminate information back to these organizations. (See Appendix 3-A for Terms of Reference and Membership for this Sub-Committee.) This Sub-Committee, or a smaller subgroup will meet on a regular basis during the outbreak (including daily meetings if needed) to ensure a coordinated response between the Health Unit, hospitals, long term care facilities, Community Care Access Centre, community health care providers, emergency services workers and the City of London and Middlesex County. As needed, representatives from the school boards, University of Western Ontario, Fanshawe College, and other organizations may be asked to join the outbreak response meetings. During in-person meetings, infection control precautions to prevent transmission among key decisions makers will be implemented. Videoconferencing may become an important tool for meetings between outbreak control groups at the various organizations.

The Ontario Health Pandemic Influenza Plan outlines a schedule for daily meetings. A similar schedule will be developed within Middlesex-London that accommodates the provincial schedule for teleconferences and the needs of local pandemic influenza responders.

Each organization involved in outbreak response will be expected to develop its own internal outbreak management plans, based on strategies suggested in Chapter 11 of this plan.

Middlesex-London Health Unit response plan

As the lead organization in outbreak response, the Health Unit must have refined outbreak management capacity. The current response capacity is based on previous outbreak experiences. Figure 14.3 provides the overview of the organizational structure that has been designed for pandemic response within the Middlesex-London Health Unit. The organizational structure incorporates some of the key structures of the Incident Management System (IMS), which is an international emergency management structure used by the Government of Ontario. The IMS system involves the elements of Command, Operations, Planning, Logistics, and Finance and Administration. Within the Middlesex-London Health Unit response infrastructure, the planning function is done by the Directors Committee and leads from the areas of operations, logistics, finance and administration, human resources and communications.

A plan has also been developed to prioritize the current programs within the Health Unit. Stopping less urgent programs during an outbreak will free up staff members to assist with outbreak management. Training and learning opportunities are frequently offered within the Health Unit to support a level of cross-training among staff members so that they have the required knowledge and skills to assist in outbreak response in urgent situations.

Important elements in outbreak response

Some important elements to outbreak management based on lessons learned from previous experiences include the following:

Decision making

- Ensure that the appropriate people are at the table to provide balanced decisions that have considered all available options, including the pros and cons of each option.
- The Chair of the group should ensure that the discussion is focused, efficiently conducted and clear, and that reasoned decisions are arrived at in a timely manner. Decisions should be clearly summarized once they are reached to ensure a clear understanding by all participants. Action items should be assigned to responsible individuals.
- Ensure minutes are taken of each meeting that record all actions, responsible individuals and time lines.
- Ensure that mechanisms are in place to collect the required information to inform and support ongoing decision-making and to support an overall evaluation at the completion of the pandemic influenza response.
- Ensure that there are sufficient numbers of people who can do the tasks required based on the decisions of the outbreak management group.

Communications

- Ensure that once decisions are made or new information is obtained, these are clearly and consistently communicated to all parties involved in outbreak response. Ensure that those involved know when a new decision replaces a preceding decision.
- Ensure that all communications and documents are marked with a version number and the date and time of release. Post and organize all documents on a web site to ensure the most current version of the document is being used.

- Ensure that communication lists including telephone numbers, cell phones, pagers and e-mail addresses are accurate and widely circulated to all members of the outbreak response team.
- Although media communications are an important aspect of outbreak management, ensure that they do not dominate the management plan. Decisions should be made on how to manage the outbreak, and subsequent discussions should focus on how these decisions will be relayed to the media.

Avoiding burn out

- Taking breaks and rest are key to outbreak response. Tired people may make less than optimal decisions.
- Ensure that all key people involved in outbreak response have at least one, if not several, back-ups or "buddies" who can take over their full role and responsibility in order to allow each individual to have necessary breaks and to cover during illness.
- Ensure food and beverages are provided for all individuals who are required to work through meals.

Next steps

Organizations involved in the management of an influenza pandemic will be encouraged to develop business continuity plans. The outbreak response involvement of the Health Emergency Sub-Committee, the City of London and County of Middlesex Community Control Groups and other community stakeholders will be explored further. The use of videoconferencing to facilitate interagency communications will be refined. A daily meeting schedule will be established that accommodates the schedules of those involved in pandemic response. Lessons learned to enhance outbreak response will continue to be captured from lived experiences.

Figure 14.1 Provincial Emergency Response Infrastructure

Figure 2: Emergency Management Roles and Relationships

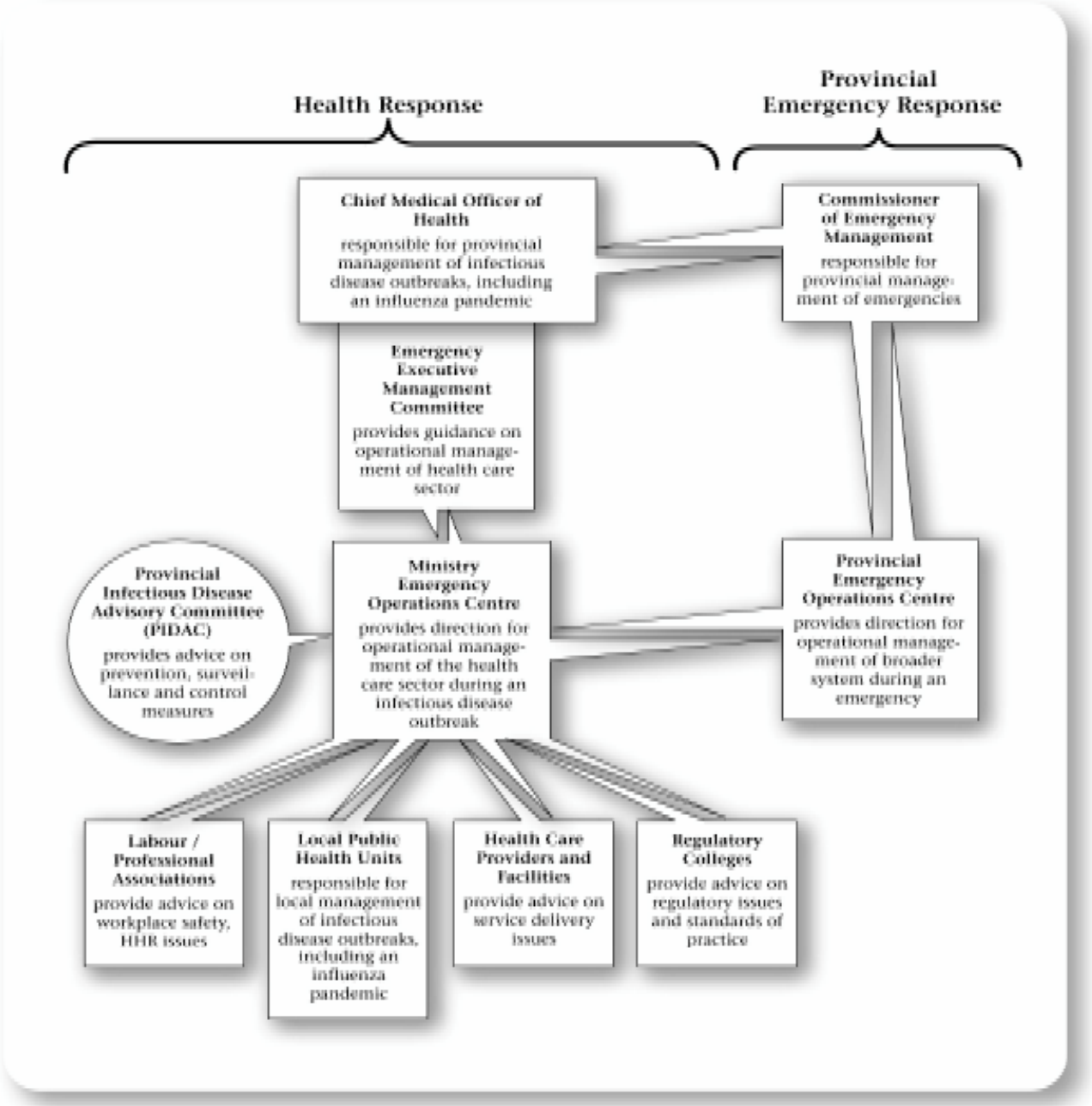

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Figure 14.2 Middlesex-London Outbreak Response Infrastructure

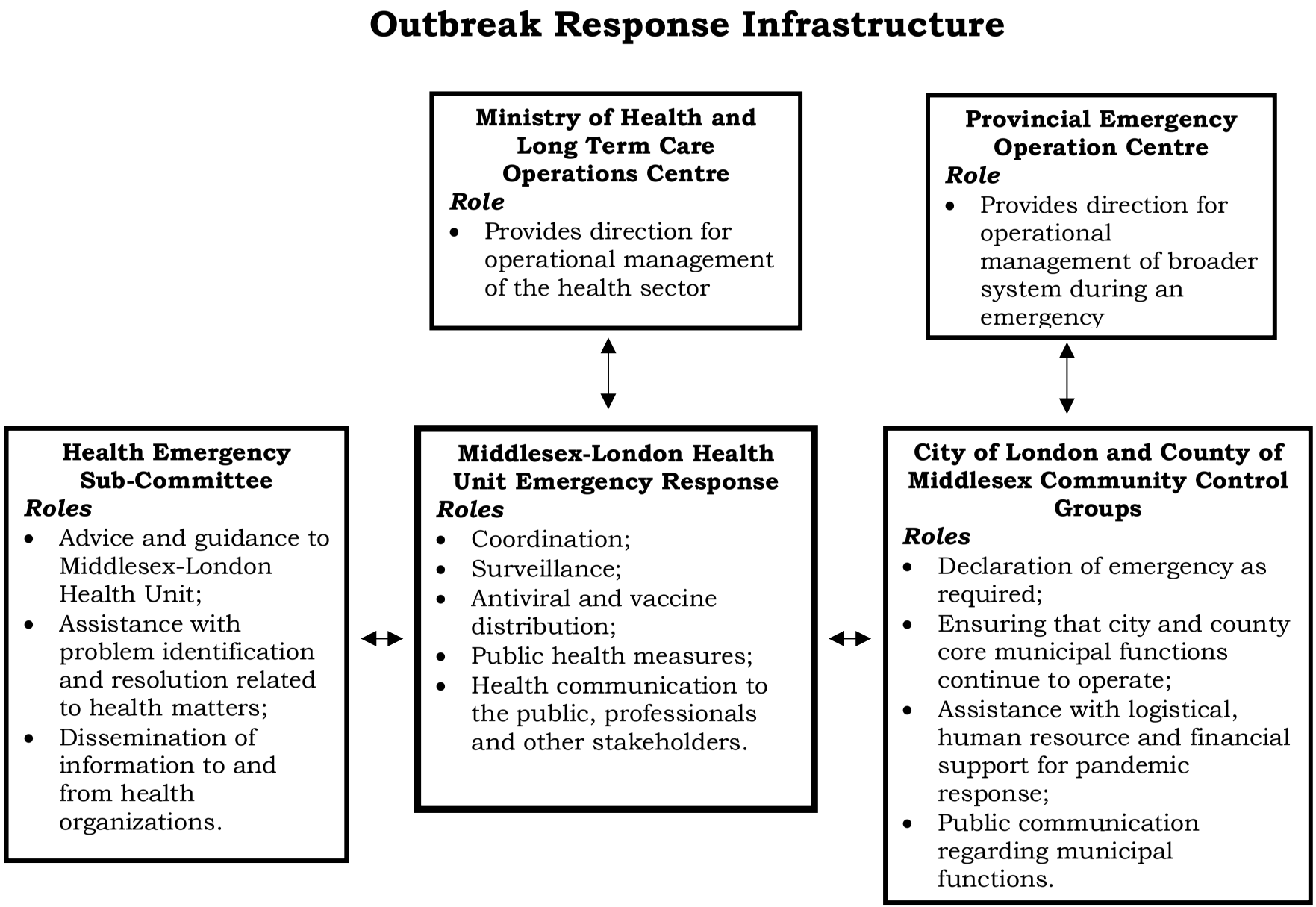
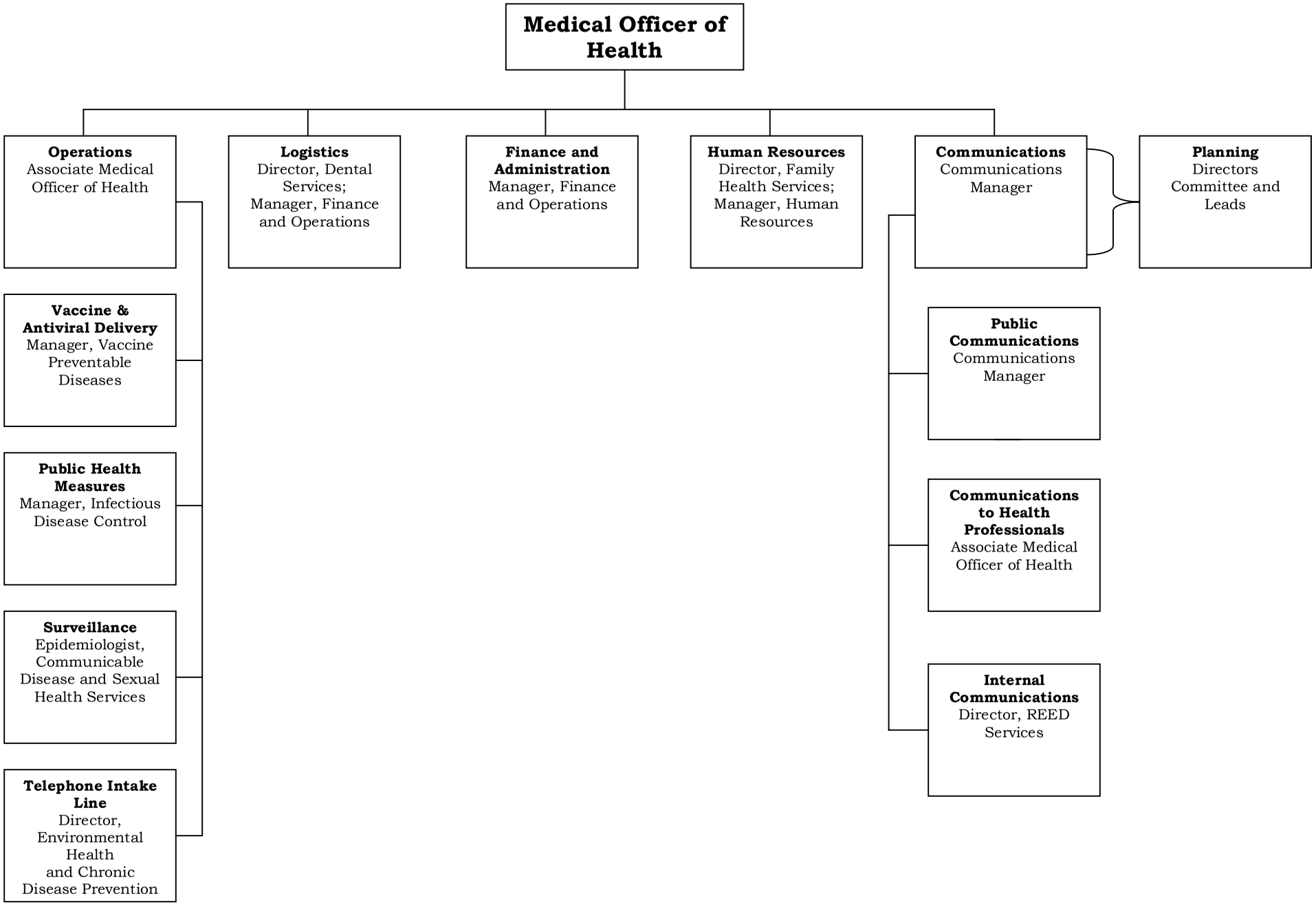


Figure 14.3: Middlesex-London Health Unit Outbreak Response Organizational Chart



CHAPTER 15

Conclusions

CHAPTER 15: Conclusions

Pandemic influenza planning is a complicated, iterative process. This first Pandemic Influenza Plan for Middlesex-London is not an end unto itself, but rather a step towards an end. It is intended that the plan will help the community response to an influenza pandemic, but that it will also serve to assist in responding to other emergencies.

The plan is written in varying levels of detail depending on the degrees of certainty about a topic and the amount of discussion and decision-making that has occurred with respect to that topic. In some areas the plan contains very specific details, in others it contains a range of options and in others it contains ideas to consider. Next steps to move the process forward are defined in most chapters and the infrastructure to continue to work on these next steps has been established in most cases. Additional thinking is required in the areas of business continuity and social supports to ensure that the appropriate structures have been created to continue the work in these areas.

It is hoped that this plan will serve as a catalyst to assist individuals and organizations in considering issues such as pandemic planning, business continuity in emergencies, infection control, preventative health measures, volunteerism, and social supports. To this end, the Middlesex-London Health Unit is prepared to provide presentations and workshops, and to meet with community organizations. Fact sheets and educational materials will be developed to assist with promoting the concepts in the plan.

The Health Unit and Health Emergency Sub-Committee would appreciate any comments or suggestions regarding this plan. One measure of the plan's success will be to have sparked a few... "Have you thought about this?" ideas. Please do not hesitate to contact us with any thoughts, comments, suggestions or ideas.

Another measure of the plan's success will be to test it in simulated scenarios. Plans to test the effectiveness of the plan will be developed and implemented. It is sincerely hoped that this is the closest we will ever come to needing many of the processes outlined in this plan.

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