Influenza

Manitoba

Communicable Disease Control Unit

Case Definitions

Confirmed Case: Clinical influenza-like-illness with laboratory confirmation of infection:

- Isolation of influenza virus from an appropriate clinical specimen.

OR

- Demonstration of influenza virus antigen or nucleic acid in an appropriate clinical specimen.

Specimens for antigen detection or culture should be obtained early in the course of illness, preferably by naso-pharyngeal swab or aspirate.

Clinical Case: Influenza-like-illness (ILI) is characterized as follows:

- Adult (general population) ILI: Acute onset of respiratory illness with fever and cough and one or more of sore throat, arthralgia, myalgia or prostration which could be due to influenza virus.
- Long-term care (elderly) ILI: Acute onset of respiratory illness with cough and one or more of sore throat, arthralgia, myalgia, prostration. Affected persons often experience fever or feverishness with chills, but these symptoms may not be prominent in the elderly.
- Pediatric ILI: Acute onset of respiratory illness with cough and fever and one or more of sore throat, arthralgia, myalgia, or prostration. In pediatric age groups, ILI may be accompanied by nausea, vomiting or diarrhea. In the very young, fever may not be prominent.

Outbreak definitions

Influenza-like-illness (ILI) outbreak: At least two cases of influenza-like-illness (ILI) occurring within seven days of each other in an institution.

OR

Absenteeism > 10% due to ILI in a community school, daycare or workplace setting.

Influenza A outbreak: At least one laboratory-confirmed case of influenza A infection and at least one additional clinical case of influenza-like-illness (ILI) occurring within seven days of each other and within a defined population or setting. The Medical Officer of Health may also use judgment in accepting equivalent definitions; e.g., outbreak with identical features to a laboratory-confirmed influenza A outbreak with similar geographic and temporal setting.

Influenza A amantadine-resistant strain outbreak: In a situation where amantadine (Symmetryl®) prophylaxis has been initiated for more than 48 hours, and new clinical cases of influenza-like illness (ILI) continue to occur, two or more per day, for a total of at least six cases; and at least two of the new cases are laboratory confirmed as influenza A.

Influenza B outbreak: At least one laboratory-confirmed case of influenza B infection and at least one additional clinical case of influenza-like-illness (ILI) occurring within seven days of each other and within a defined population or setting. The Medical Officer of Health may also use judgment in accepting equivalent definitions; e.g., outbreak with identical features to a laboratory-confirmed influenza B outbreak with similar geographic and temporal setting.

Outbreak termination: An outbreak may be declared over when there are no more clinical or confirmed cases in staff or residents. This date is defined as a minimum of eight days after the onset of the last case, based on an average four-day period of infectiousness for the last case plus an average four-day incubation period for those potentially exposed.

Other Definitions

Institution: Personal Care Home, Hospital, or Long Term Care Facility where the potential for the spread of influenza to high-risk populations is greater and there is an increased risk of morbidity and mortality.

Oseltamivir (Tamiflu®) prophylaxis failure: Development of confirmed influenza four or more days following initiation of oseltamivir prophylaxis.

Reporting Requirements

- Institution or community outbreaks of ILI, influenza A, and influenza B are reportable within four days to Manitoba Health by health care professionals or laboratory operators throughout the influenza season.
- Laboratory-confirmed cases of influenza A and B are reportable to Manitoba Health by laboratory operators.
- Deaths among individuals with ILI residing in an institution with a lab-confirmed influenza outbreak are also reportable to Manitoba Health by health care professionals.
- An outbreak reporting form is included in this manual and available at: www.gov.mb.ca/health/publichealth/cdc/protocol/form10.pdf
- In conjunction with the submission of the final report of the outbreak investigation to the Communicable Disease Control (CDC) Unit, Manitoba Health, please report any unanticipated adverse reactions to antiviral agents and suspect oseltamivir failures.

Surveillance

Manitoba's Weekly Influenza Report is available at: www.gov.mb.ca/health/publichealth/cdc/surveillance/index.html#influenza

Manitoba Health participates in the National FluWatch Program co-ordinated by the Public Health Agency of Canada and the College of Family Physicians of Canada. During influenza season sentinel physicians throughout Manitoba provide weekly reports of influenza-like-illness to this national reporting system. Cadham Provincial Laboratory (CPL) forwards results of individual positive tests to Manitoba Health daily. Information on lab-confirmed outbreaks, combined with individual laboratory reports, are used by the CDC Unit Epidemiologist to assign a weekly influenza severity score for each region of the province.

Regional Health Authority public health nurses also assist with surveillance in schools. The purpose of school surveillance is to detect outbreaks in children early in the influenza season since such outbreaks may herald an outbreak in the general population. Following notification that a school has an absenteeism rate of 10% or more suspected to be due to ILI early in the influenza season, public health nurses may attempt to obtain up to six naso-pharyngeal specimens from children still at school who may be starting to feel unwell with respiratory or ILI symptoms. Specimen collection need only be done at the beginning of the influenza A and/or B season when lab-confirmed influenza activity has not yet been documented in the region. School nasopharyngeal specimen kits are distributed prior to each season to public health nurses. Additional kits are available from the CPL mailroom (204) 945-6805.

Clinical Presentation/Natural History

Influenza is an acute viral infection of the respiratory tract characterized by fever, headache, myalgia, prostration, coryza, sore throat and cough. Cough is often severe and protracted, but other manifestations are usually self-limited with recovery in two to seven days. Recognition is commonly by epidemiologic characteristics; sporadic cases can be identified only by laboratory tests. Influenza may be indistinguishable from disease caused by other respiratory viruses. Complications may include primary influenza pneumonia, secondary bacterial pneumonia, myositis, cardiac complications (myocarditis and pericarditis), and possibly CNS manifestations including Guillain-Barré syndrome, transverse myelitis, and encephalitis. GI (gastrointestinal) tract manifestations (nausea, vomiting, diarrhea) may accompany the respiratory phase, particularly in children, and have been reported in up to 25% of children in school outbreaks of influenza A (H1N1) and B.

Influenza derives its importance from the fact that it causes premature death, so called excess mortality. Excess mortality is a typical characteristic of all severe outbreaks which also are characterized by the rapidity with which they evolve, the widespread

morbidity and the seriousness of complications, notably viral and bacterial pneumonias.

During major epidemics, severe illness and death occur, primarily among the elderly and those affected by chronic underlying medical conditions such as cardiac, pulmonary, renal or metabolic disorders, cancer, and immune system disorders.

The use of salicylates in children with influenza-like illness increases the risk of Reye's syndrome, a rare disorder characterized by acute encephalopathy and liver dysfunction. It occurs mainly in children with influenza B disease and less frequently with influenza A.

Etiology

Influenza viruses belong to the family Orthomyxoviridae and are clasified into three distinct types on the basis of major antigenic differences: influenza A, B and C. Influenza A and B are responsible for epidemics while influenza C is associated with sporadic disease and minor localized outbreaks. Influenza A viruses are further categorized into subtypes on the basis of two surface antigens; hemagglutinin (H) and neuraminidase (N). There are 16 immunologically distinct H subtypes, of which H1, H2, H3, H5, H7 and H9 have, to date, been components of viruses causing human disease. There are two N subtypes (N1 and N2). Unlike influenza A, influenza B viruses are not categorized into subtypes and antigenic variation occurs more slowly.

The nomenclature of influenza virus is described by their geographic site of isolation, the culture number and the year of isolation. Examples of strains with these designations include A/New Caledonia/20/99 (H1N1), A/Wyoming/3/2003 (H3N2), and B/Jiangsu/10/2003.

Epidemiology

Reservoir and Source: Humans are the primary reservoir for human infections. Mammalian and avian reservoirs, such as swine and ducks, serve as potential sources of new human subtypes thought to emerge through genetic reassortment or antigenic shift. New subtypes of a virulent strain displaying new surface antigens can cause pandemic influenza by spreading through a susceptible population.

Mode of Transmission: Influenza is spread from person to person by deposition of particle droplets generated from unprotected coughing or sneezing onto the respiratory tract epithelium or by direct contact of respiratory tract epithelium with articles recently contaminated by nasopharyngeal secretions (Bridges 2003).

Occurrence: Influenza infection causes pandemics, epidemics, localized outbreaks and sporadic cases. Pandemics occurred in 1889, 1918, 1957 and 1968. Clinical attack rates during epidemics range from 10 to 20% in the general population to more than 50% in closed populations such as boarding schools or personal care homes. Epidemics of influenza occur almost every year and are caused primarily by type A viruses. However, epidemics of influenza B viruses also occur. In temperate zones, epidemics tend to occur during the winter months; in the tropics, they often occur in the rainy season, but outbreaks or sporadic cases can occur throughout the year.

Influenza virus infections of different antigenic subtypes occur naturally in swine, horses, mink and seals and in many domestic and wild avian species throughout the world. Interspecies transmission and reassortment of influenza A viruses have been reported to occur between swine, humans, ducks and turkeys. The human influenza viruses responsible for the 1957 and 1968 pandemics contained gene segments closely related to those of avian influenza viruses.

Since 1997, avian influenza virus infections of the A (H5N1) type have been identified in isolated human groups, with high fatality. In the first half of 2004, transmission gradually increased among poultry. Outbreaks of influenza A (H5N1) with transmission to humans occurred in nine countries including Thailand, Viet Nam, Cambodia, Azerbaijan, China, Egypt, Indonesia, Iraq and Turkey (NACI 2006). Probable person-to-person

transmission has been reported (Ungchusak, 2005). Isolated instances of limited, unsustained spread of this type can be expected (WHO, 2005).

Incubation Period: The incubation period for influenza is one to four days, with an average of two days (Heymann, 2004).

Susceptibility and Immunity: The presence of antibody to hemagglutinin is an important predictor of immunity. When a new subtype appears, children and adults are equally susceptible, unless they were infected in an earlier epidemic caused by the same or similar subtype. Infection produces immunity to the specific infecting virus, but the duration and breadth of immunity depend on the degree of antigenic drift, personal immunocompetence, and experience with previous infections. Vaccines produce serologic responses specific for the virus strains included in the vaccine and elicit booster responses to related strains with which the person has had prior experience.

Age-specific attack rates during an epidemic reflect persisting immunity from past experience with strains related to the epidemic subtype. As adults are more likely to have been exposed to different subtypes, the attack rate is often highest in school-aged children. Thus, with the H1N1 epidemics occurring after 1977, the incidence of disease has been greatest among those born after 1957; most people born before this time had partial immunity from infection with antigenically related H1N1 viruses that circulated between 1918 and 1957.

Period of Communicability: Adults are typically infectious from the day before symptoms begin through approximately four days after illness onset. A child or an elderly individual may continue to shed virus for up to 14 days after onset of their illness (NACI, 2006). Young children can shed virus for up to six days before their illness onset. Severely immuno-compromised persons can shed virus for weeks to months (CDC Atlanta, 2004).

Diagnosis and Typing

Diagnosis:[1] During the early febrile stage of disease, laboratory confirmation is made by isolation of influenza viruses from respiratory specimens in cell culture, and/or by identification of viral antigens. The specimen of choice is naso-pharyngeal swab (NPS) or naso-pharyngeal aspirate (NPA) taken early in the course of illness. See Appendix A, "Collection of Specimens." Influenza virus antigen may be detected by an Enzyme Linked Immunosorbent Assay (ELISA) test.

All specimens are inoculated on cell culture whether or not the Rapid test is performed. A preliminary report of "hemadsorbing virus" is sent when a virus is isolated. Viral speciation of hemadsorbing viruses by direct fluorescent antibody microscopy is performed on Wednesdays at Cadham Provincial Laboratory. This test further identifies the virus as influenza A or B and a final report is sent.

Later, infection may be confirmed by demonstrating a four-fold rise between acute and convalescent sera taken 10-14 days apart.

Rapid antigen detection can be performed by Cadham Provincial Lab (CPL) at the request of a Medical Officer of Health or designate in situations where rapid confirmation of diagnosis is important (e.g., a suspected influenza outbreak in a personal care home where the use of antiviral prophylaxis is being considered). Most of the rapid influenza tests are > 70% sensitive for detecting influenza and > 90% specific compared with virus culture. Thus, most tests with positive results correctly identify infection, but as many as 30% of negative test results may be falsely negative. The tests are most reliable when influenza is circulating and when they are performed on specimens from patients with early symptoms of ILI. The rapid test is ideally performed on a nasopharyngeal swab, or aspirate. In situations where this is impractical, a throat swab is the next best alternative. However, sensitivity may fall significantly when throat secretions are tested. Specimens should be transported with a cold pack (4°C) to CPL as soon as possible. Call (204) 945-6953 to alert in advance for specimens requiring immediate attention.

1 As of 2005-2006 influenza season, diagnostic testing for influenza is be performed in two laboratories in Manitoba: Cadham Provincial Laboratory and Westman Laboratory. The diagnostic tests available at each are different.

In a situation where there is a relative shortage of rapid test kits, a process to ration testing will be determined by the CDC Unit in consultation with clinicians, Medical Officers of Health, and CPL.

Typing and Resistance Analysis: Cadham Provincial Lab (CPL) can determine whether a detected virus is type A or B and the hemagglutinin and neuraminidase antigen configuration (e.g., H1N1 or H3N2) but not the precise variant (e.g., Wyoming vs. Fujian). Variant typing is presently carried out at the National Microbiology Lab (NML) in Winnipeg.

Amantadine-resistance testing can be performed at the NML. To arrange testing, contact CPL at 945-6858.

Isolate Referral: Manitoba Laboratories other than CPL are required to forward clinical human influenza isolates to CPL.

Management and Control of Institutional Outbreaks

Given the high rates of influenza A resistance to amantadine, in June 2006, the National Advisory Committee on Immunization (NACI) has advised that neuraminidase inhibitors be used as the first line antiviral agents for the prevention of influenza rather than amantadine.

Pre-outbreak Planning: All institutions should have pre-approved physician standing orders for oseltamivir for patients/residents. For the administration of oseltamivir, weights and serum creatinine levels obtained within the last year are likely to be sufficient for these calculations for residents with stable renal function. For residents with changing or declining renal function, judgement of the attending physician will be required as to how recently renal function test results should be available. Arrangements should be made by the institution, before the influenza season begins, to have rapid access to oseltamivir stocks should the need arise.

Health care administrators must anticipate the increased demand for medical care during epidemic periods and possible absenteeism of health care personnel as a result of influenza. To prevent this, health care personnel should be immunized annually.

Management of Cases in Institutions: If a resident of an institution not known to have any cases of influenza, develops ILI a nasopharyngeal swab or aspirate should be collected immediately. If illness involves several residents, no more than six persons should have a swab. The local public health unit should be notified immediately upon the definition of an ILI outbreak being met. Outside of regular business hours the on-call Medical Officer of Health can be reached at (204) 945-0183. Specimens should be sent for culture and/or rapid antigen testing to CPL. Even if influenza is established as the cause of the outbreak, nasopharyngeal swabs should continue to be collected from one or two apparent new cases (staff or residents) every three or four days to confirm the duration of the outbreak. An outbreak reporting form should be faxed to the Communicable Disease Control Unit, Manitoba Health at (204) 948-2040. Laboratory outbreak testing coordination and outbreak code assignment can be arranged through an MOH or by contacting the CPL Outbreak Coordinator at 945-6123 (see also 2005 CPL Guide to Services, pages 12-14 for further information).

Antivirals: Not every patient with influenza requires treatment with antiviral medication. Consideration for treatment with antivirals is advisable in any person experiencing a potentially life-threatening influenza-related illness or any person at high risk for serious complications of influenza.

During a confirmed institutional outbreak of influenza, oseltamivir, a neuraminidase inhibitor licensed for use in Canada (Tamiflu®), should be given to all residents who are not already ill with influenza, whether previously vaccinated or not, and to unimmunized staff (due to egg allergy or a documented medical reason) during influenza outbreaks. Oseltamivir is not effective in providing prophylaxis for respiratory infections other than influenza. Therefore, it is critically

important to base decisions regarding prophylactic use on appropriate epidemiologic, clinical, and laboratory data regarding the etiology of prevalent infections.

To be effective, oseltamivir must be started within 48 hours of symptom onset. No data are available to support oseltamivir safety and efficacy in adult patients who commence treatment after 48 hours of symptom onset.

Management of Contacts in Institutional Outbreaks:

Chemoprophylactic drugs are not a substitute for annual vaccination although they are critical adjuncts in preventing and controlling influenza in institutional outbreaks.

Prophylaxis should also be considered for HCWs, regardless of vaccination status, during outbreaks that are not well matched by the vaccine.

Prophylaxis should be given until the outbreak is declared over. This date may be defined as a minimum of eight days after the onset of illness in the last case based on a maximum four-day period of communicability in a healthy adult and a maximum four-day incubation period for those potentially exposed.

Because antiviral agents taken as prophylaxis may prevent illness but not subclinical infection, some persons who take these drugs may still develop immune responses that will protect them when they are exposed to antigenically-related viruses in later years. However, antiviral prophylaxis should not replace annual influenza vaccination in groups for whom vaccine is recommended.

Oseltamivir (Tamiflu®): In Manitoba, the use of oseltamivir provided by Public Health is restricted to prophylaxis of PCH residents or selected acute care hospital patients who are contacts of lab confirmed influenza A or B. However, in a declared outbreak, should influenza-like-illness develop in a resident/patient receiving oseltamivir prophylaxis, dosage can be increased to provide treatment doses if desired.

Having established that there is an influenza A or B outbreak occurring, the Medical Officer of Health, in consultation with personal care home staff, will recommend whether or not to initiate oseltamivir prophylaxis and release the product. In the event that oseltamivir prophylaxis has been initiated and subsequent information reveals that the outbreak is caused by an influenza A strain presumed or found sensitive to amantadine, oseltamivir prophylaxis should be continued. This will eliminate confusion involved in switching to amantadine.

The product is stored at the Provincial Biologics Warehouse. Call (204) 633-2621 or 1-800-665-7315. After hours: (204) 781-5342. Specify the number of 75mg capsules and the destination. Product will be shipped as full packages containing 10 capsules each.

Administration Procedure: All patients or residents or their proxy should provide informed consent and this should be documented in the chart. A question-and-answer fact sheet (Appendix D) has been developed for this purpose. Fact sheets may be ordered by fax from the Material Distribution Agency (MDA) at (204) 942-6212 or by e-mail from InformationResources@gov.mb.ca or downloaded from www.gov.mb.ca/health/publichealth/cdc/vpd.html

Prescriptions may need to be written by the medical director or attending physicians.

See Oseltamivir Treatment Information for Physicians – see Appendix B.

Amantadine (Symmetrel®): Amantadine is no longer to be used as first line antiviral agent for the prevention of influenza given the high rates of influenza A resistance to amantadine.

Other Measures to Control Institutional Influenza Outbreaks:

- Any unimmunized staff and residents should be offered immunization. This may not prevent illness during the current outbreak, but will provide protection against different strains should they circulate later in the season.

- Ill residents should be confined to their rooms while they are acutely ill until asymptomatic (at least 72 hours) as this may prevent spread of infection.
- Group activities should be stopped, reduced, or restricted to a given ward.
- New admissions should be canceled, if appropriate and feasible; if not possible, immunization and chemoprophylaxis should be provided.
- Visitors should be notified so those at high risk of complications from influenza may elect to cancel their visit.
- Institutional staff with ILI should not return to work until five days after the onset of symptoms and not work at other institutions in the meantime.
- Individual staff members should work with either ill or well residents. If they must work with both, they should move from non-infected to infected patients with handwashing between.
- In order to protect vulnerable patients in an outbreak, it is reasonable to exclude from direct patient care Health Care Workers who develop confirmed or presumed influenza and unvaccinated HCWs who are not taking antiviral prophylaxis. Health care organizations should have policies in place to deal with this issue (NACI, 2004).

Other Preventive Measures in the Community

Annual Immunization: Immunization is the most effective means to reduce the impact of influenza. Persons not eligible for publicly funded vaccine should be encouraged to receive the vaccine at their own cost. Immunization may provide 70-80% protection against infection in healthy young adults when the vaccine antigen matches the circulating strains of virus.

Infection Control Measures: Promotion of hand hygiene and care with personal hygiene have been shown to be effective. Closing of individual schools has not proven to be an effective control measure.

Travel Considerations: People at high risk of influenza complications embarking on travel to destinations where influenza is likely to be circulating are eligible for publicly funded vaccine in Manitoba. Immunization with the most current available vaccine should be considered for all individuals who wish to avoid influenza while travelling to areas where influenza is likely to be circulating. In the tropics, influenza can occur thoughout the year. In the southern hemisphere, peak activity occurs from April through September; in the northern hemisphere, it occurs from November through March. Travel may expose individuals to infectious persons from other regions of the world and to situations that facilitate the transmission of influenza. The effectiveness of influenza immunization for travellers may vary, depending on differences between influenza strains encountered abroad and those included in the current vaccine available in Canada. There is insufficient evidence at this time to advise in favour of or against routine re-immunization of travellers who were immunized in the fall and who are subsequently travelling to regions where influenza may be circulating in the late spring and summer months (CATMAT, 2005).

Additional Resources

- Collection of Specimens – Appendix A
- Oseltamivir (Tamiflu®) Treatment Information for Physicians – Appendix B,
- Letter to Relatives of Residents – Appendix C
- Information About Oseltamivir (Tamiflu®) – Appendix D
- Influenza Vaccine Fact Sheet: Information about the vaccine and advice for the public during outbreaks is available at www.gov.mb.ca/health/publichealth/cdc/fs/influenza.pdf or from the Materials Distribution Agency warehouse at tel: (204) 945-3000, fax (204) 942-6212, or by e-mail at: Information.resources@gov.mb.ca

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Appendix A:
Collection of Specimens

Supplies for collection of specimens: Viral transport medium (VTM) shelf life is one week in the refrigerator at 4°C or 12 weeks frozen at -20°C. VTM may be refrozen if melted during delivery.

Nasopharyngeal Swab:

a) *Per nasal method (preferred):* Wearing appropriate personal protective equipment (PPE) where necessary, remove excess secretions and exudates from the anterior nares. Have the patient sit with the head tilted slightly backward. Insert a small-tipped Dacron or Rayon flexible wire shafted swab gently through a single nostril parallel to the palate until in the nasopharynx (see figure below) and leave in for a few seconds to absorb secretions. Repeat for opposite nostril, place swab or express the swab into Viral Transport Medium (VTM) and cut wires short enough to fit in bottle.

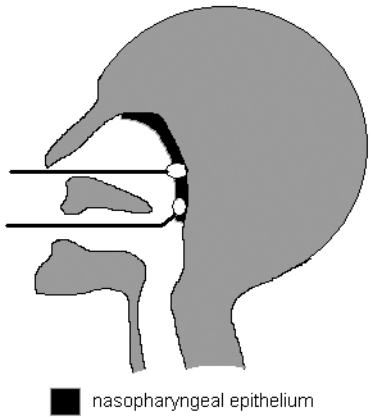
b) *Per oral method:* Bend a small-tipped Dacron or Rayon flexible wire shafted swab to give a slight curve. Wearing appropriate PPE, swab the nasopharynx by passing the swab up behind the soft palate (see figure below). Vigorous swabbing will be more likely to produce the needed nasoepithelial cells. Place or express the swab into VTM.

Nasopharyngeal Aspirate: This is the specimen of choice for detection of respiratory viruses. Wearing appropriate PPE, remove excess secretions and exudates from the anterior nares. Place a flexible plastic catheter gently through a single nostril into the posterior nasopharynx. Apply gentle suction with a syringe or wall suction, collect sample into a trap device, flush with 2.0 ml of VTM, then transfer to a sterile bijou bottle. Do not submit the trap or tubing to the lab.

Throat Swab: Using a tongue blade, depress the tongue and swab the posterior pharynx quickly and vigorously. Place the tip of the swab into the bottle of thawed virus transoport medium (VTM), break off the stem short enough so it will not touch the lid and close tightly.

Labelling, Handling, and Shipping: Label the bottle before proceeding to the next patient. Ensure the facility name and number, outbreak code and the MOH or PHN names are on each requisition.

Specimens should be held no longer than 24 hours at a fridge temperature of 4°C prior to shipping.



Appendix B:

Oseltamivir (Tamiflu®) Treatment Information for Physicians

Oseltamivir, when taken as recommended for the treatment of influenza, alleviates symptoms and reduces their duration. Studies have also shown that early treatment of influenza infection with oseltamivir reduces hospitalizations by 60% in healthy adults and up to 50% in high-risk and elderly patients.

In December 2003, Health Canada licensed the neuraminidase inhibitor, oseltamivir, for postexposure prophylaxis against influenza A and/or B. Oseltamivir is also licensed for pre-exposure prophylaxis (NACI 2006).

There have been no drug interactions described to date.

Asymptomatic residents should receive prophylaxis at 75 mg OD for 10 days or until the outbreak is determined to be over, whichever occurs first. If the outbreak is not over after 10 days, the local Medical Officer of Health should be consulted to determine if prophylaxis should continue.

Recovered patients/residents with prior, laboratory-confirmed influenza A or B during the outbreak in question do not require treatment or prophylaxis.

If a resident receiving prophylaxis appears to develop influenza, dosage should be increased to 75 mg p.o. b.i.d for five days (except if creatinine clearance is ≥ 10 ml/min but < 30 ml/min, in which case dosage should not be increased), after which no more oseltamivir should be prescribed. In order to document the failure of prophylaxis, a nasopharyngeal aspirate or swab or throat swab should be collected when feasible.

No dosing recommendation is available for patients with a creatinine clearance of < 10 ml/min and those undergoing hemodialysis and peritoneal dialysis (NACI, 2004). Patients/residents with estimated creatinine clearances ≥ 10 ml/min but < 30 ml/min should receive prophylaxis at the reduced dosage of 75 mg EOD, or 30 mg of suspension every day orally (NACI, 2004).

Calculation of Estimated Creatinine Clearance:

Male:

$$\text{CrCl mL/min} = \frac{(140 - \text{age}) \times \text{weight (kg)}}{\text{Serum creatinine (µmol/L)} \times 0.81}$$

Female:

$$\text{CrCl mL/min} = \frac{0.85 \times (140 - \text{age}) \times \text{weight (kg)}}{\text{Serum creatinine (µmol/L)} \times 0.81}$$

Patients/residents who are < 1 years of age must not receive oseltamivir for prophylaxis.

The safety and efficacy of oseltamivir in individuals with hepatic impairment has not been established.

Oseltamivir should be used in pregnancy or during lactation only if the potential benefit justifies the potential risk to the fetus or infant. Insufficient data are available regarding possible toxic effects on the fetus and whether oseltamivir or its metabolites are excreted in human milk.

The most common adverse events include headache, nausea, vomiting and abdominal pain.

Appendix C:
Letter to Friends and Relatives of Residents

Dear Relative/Friend:

An outbreak of influenza is presently occurring in this Personal Care Home/Long Term Care Facility/Hospital.

To help prevent the spread of influenza some special measures will be taken. These may include:

- giving residents/patients an antiviral drug called oseltamivir to give them additional protection against influenza;
- notifying visitors so that they can choose to avoid visiting if they wish;
- placing ill patients in the same location or room;
- temporarily stopping or reducing the number of group activities;
- temporarily stopping new admissions, if appropriate and feasible.

Please do not visit if you have symptoms of a respiratory infection yourself.

In most cases, these measures are not required for more than two weeks.

If you have questions, please contact:

Appendix D:

Information about oseltamivir (Tamiflu®)

An outbreak of influenza (also known as the flu) is occurring in this facility. A drug called oseltamivir (Tamiflu®) can help prevent the spread of a flu outbreak. The following question and answer sheet has been created to help you or the person you represent decide whether to take this medication.

What is influenza (the flu)?

Influenza is a viral illness spread from person to person by coughing or through contact with nasal fluids. It is most common in the late fall and winter.

Symptoms may include fever, cough, sore throat, headache, muscle aches and extreme fatigue, lasting for two to seven days. The flu can make heart, lung and kidney problems worse and can result in pneumonia, hospitalization and sometimes death. It is estimated that about 4,000 Canadians die from influenza complications every year.

Is a flu shot enough protection?

Hospital patients and personal care home residents are often seniors who may suffer from one or more chronic illnesses. These factors can result in a weaker immune system response to the flu shot.

While the flu vaccine prevents infection in 70% of healthy adults, it is only about half as effective in seniors with chronic illness. However, it is still important for everyone age 65 and older to get an annual flu shot because the shot gives added protection against getting a severe case of the flu.

Influenza outbreaks are common in Personal Care Homes, even when residents are vaccinated. When they get sick with the flu, about 10% of personal care home residents may have to be admitted to hospital.

What is oseltamivir (Tamiflu®)?

Oseltamivir is a prescription drug effective in treating and preventing influenza. It is a capsule that is taken by mouth.

Oseltamivir is a medication that can control outbreaks caused by the influenza virus. In addition, it has been shown to be effective in reducing symptoms and complications as a result of the flu.

What are the side effects?

The most common side effects are nausea, vomiting and diarrhea. This does not happen with very many people who take the drug and the effects do not last long. If these side effects do occur, they usually happen after the first dose. Taking the drug with food may reduce these side effects.

More serious reactions have been reported but the medication has not been proven to be the cause.

Does oseltamivir interact with other drugs?

Current information does not show that there are any clinically important interactions with other medications.

How long do I take this drug?

Oseltamivir is usually given for about 10 days, the average time that a flu outbreak lasts.

What happens if I get the flu while taking the drug?

Since oseltamivir can reduce symptoms and complications, it can help to fight the flu when someone has already caught the virus. In such cases, a higher dose of oseltamivir is usually prescribed for five days and then stopped.

Do I have to take oseltamivir?

No. You can choose if you wish to take oseltamivir or not. No changes will be made to any care or treatment that you are already receiving.

Is there a cost?

In an outbreak situation, the medication is provided at no charge by Manitoba Health when used for prevention.

Who should not take oseltamivir?

You should not take this medication if you had a previous severe allergic reaction to oseltamivir. If you suffer from severe kidney disease you should check first with the doctor prescribing oseltamivir.

Oseltamivir should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Oseltamivir should not be used by mothers breastfeeding infants under one year of age.

More information?

If you have other questions about oseltamivir or its use, please contact the doctor prescribing this medication at your personal care home or hospital for more information.