BCIT Safety Manual

INFLUENZA VIRUS

EXPOSURE CONTROL PLAN

Contents

1. Introduction

Influenza, commonly known as the flu, is a respiratory infection caused by the influenza viruses. A variety of strains of the influenza virus circulate year-round throughout the world, causing local outbreaks or epidemics. In Canada, influenza season usually starts in November and runs until April. It is estimated that approximately 10-25% of Canadian may get influenza each year. Although most of these people recover completely, as many as 8,000 Canadians die every year from pneumonia related to flu or complications of flu.

Pandemic influenza is a global scale outbreak of human influenza. Last century there were three pandemics that occurred when a radical change took place in the influenza A virus causing a new strain to emerge. Of particular importance, the influenza pandemic of 1918-1919 killed between 20 and 40 million people globally.

On the 24th April 2009, a new influenza virus A/H1N1 mixing swine, bird and human strains of the influenza virus was identified in the National Microbiology Lab in Winnipeg, Canada. The virus can spread from human-to-human with an approximately 10% fatality rate and has caused the first influenza pandemic in the 21th century. .

Avian influenza (or bird flu) is a contagious viral infection that mainly affects species of birds. Currently, two highly pathogenic avian influenza strains (H5N1 and H7N9) are circulating in the world, infecting poultry populations and some humans. However for most Canadians, the risk of getting avian influenza is very low. At present, there is no validated evidence of transmission of the H5N1 and H7N9 strains from person to person.

This Influenza Virus Exposure Control Plan focuses primarily on seasonal influenza but can be applied to the prevention and control of pandemic influenza. In the event of a pandemic, actions will be taken under the direction of the BCIT Pandemic Plan and the Emergency Operations Centre (EOC).

2. Purpose

This control plan has been developed to:

- Prevent exposure of BCIT employees, students, contractors and visitors to influenza viruses
- Ensure a system of reporting on, and alerting against influenza outbreaks at BCIT
- Provide awareness and educational information on influenza, the associated symptoms, and corresponding preventive and control measures

The plan is applicable to all employees, students, contractors and visitors of BCIT.

3. Definitions

Communicable Period
The time during which an infectious agent may be transferred directly or indirectly from an infected person to another person, from an infected animal to human, or from an infected person to animal, including anthropods (insects and related species).

Contagious Period
The time period during which the influenza virus may be spread from person to person or from living object to nonliving object to living object (such as person to object to person).

Disinfection
The killing of infectious agents on objects and surfaces by direct exposure to chemical or physical agents.

Droplet precautions
Precautions taken to prevent the spread of infectious agents by droplet transmission.

Droplet transmission
The transmission of organisms, such as a bacteria or viruses, by large droplets (greater than 5 microns in diameter) produced by sneezing, coughing, talking or singing. These droplets are propelled a short distance (1 meter/3 feet or less) through the air and can come in contact with the eyes, nose, or mouth of another person, thus infecting them.

Host
A person or other living animal infected by an organism such as a virus.

Epidemic
The occurrence of cases of an illness (or an outbreak of illness) in a community or region more often than would normally be expected.

Influenza
An infectious disease that affects birds and mammals caused by RNA viruses of the family Orthomyxoviridae (the influenza viruses)

Incubation Period
The time elapsed between exposure to influenza virus and when symptoms and signs are first apparent.

Isolation
The separation of an infected person or animal, during the communicable period of a disease, from others to prevent the spread of the infection to others.

Indirect transmission
The transmission of a pathogen from an infected person to an inanimate object and then to another person.

Infection
A condition in which organisms multiply within the body and cause a response from the host's immune defenses. Infection may or may not lead to clinical disease.

Infection control
Activities aimed at the prevention of the spread of pathogens between people or animals.

Infectious agent
A disease-causing virus, bacterium, parasite, or other microbe.

Infectious disease
A disease of humans or animals resulting from an infection.

Immunity
Resistance to an infectious agent usually associated with the presence of protective antibodies or cells.

Immunize
To make immune, that is able to resist a particular disease, most often through administration of a vaccine delivered by a needle.

Pneumonia
An inflammation of the lungs caused by infection.

Pathogen
Any organism capable of producing disease.

Quarantine
Restriction of the activities of well persons or animals who have been exposed to a case of communicable disease, during its period of communicability, in order to prevent transmission of that

disease during the incubation period if infection should occur.

Respiratory etiquette
Simple tips to keep respiratory infections from spreading such as covering your nose and mouth every time you sneeze or cough; using a tissue when you blow your nose; putting used tissues in the trash; and washing your hands frequently, especially if you or someone you are close to is sick.

Social distancing
A way to reduce the risk of exposure to an organism, such as the the influenza virus, by reducing or avoiding contact with other people as much as possible.

Strain
A specific genetic variant of an organism.

Sub-clinical infection
The presence of an infection without recognizable signs or symptoms. Of importance because an individual may appear well although infected and thus be capable of spreading the infection to others.

Supervisor
A BCIT employee who instructs, directs, and controls employees and/or students in the performance of their duties and activities.

Surveillance
An on-going, systematic method for continuous monitoring of diseases in a population, in order to detect changes in disease patterns and implement prevention and/or control measures in a timely fashion.

Susceptible
A person or animal not possessing sufficient resistance against a particular pathogenic agent to prevent contracting infection or disease when exposed to the agent.

Symptoms
Any perceptible change in the body's normal function, appearance or sensation which is experienced by the patient and indicates a disease process.

Transmission
Any mechanism by which an infectious agent is spread from a source of infection to other persons or animals.

Vaccination
The act of administering a vaccine.

Vaccine
A dead or weakened form of an infectious organism that is injected into the body to stimulate an immune response, without causing disease, and thereby protect against subsequent infection by that organism.

Virus
A group of infectious agents characterized by their inability to reproduce outside of a living host cell. Viruses may subvert the host cells' normal functions, causing the cell to behave in a manner determined by the virus.

4. Applicable Legislation and Reference Materials

Public Health Agency of Canada - Influenza
Canadian Centre for Occupational Health and Safety - Influenza
World Health Organization - Influenza
BC Centre for Disease Control – Influenza – "the flu"
WorkSafeBC – General Information about Avian Influenza
WorkSafeBC – Regulation- Exposure Control Plans
BCIT Pandemic Support Plan
BCIT Emergency Response Plan

5. Roles & Responsibilities

BCIT is committed to protecting the health of employees, students, and visitors. Employees and students shall be made aware of the potential risks of seasonal and pandemic influenza and protect themselves by following the precautions that are outlined in this Exposure Control Plan.

5.1 BCIT

- Support the Institute Influenza Virus Exposure Control Plan
- Support this Control Plan by ensuring:
  1) awareness and education on prevention of seasonal influenza and pandemic is given to employees and students by their supervisors, as needed
  2) medical and first aid services are provided
- Advise the community in the event of a pandemic or a major epidemic of flu on campus

5.2 Safety, Security and Emergency Management (OHS Group)

- Develop and maintain an effective Influenza Virus Exposure Control Plan
- Ensure compliance with this Exposure Control Plan
- Facilitate response and coordinate emergency response to epidemic or pandemic influenza at BCIT and provide the appropriate communication to the BCIT community
- Act as an advisory resource for preventing/reducing transmission of influenza
- Arrange influenza and pandemic awareness and education for employees and students, as needed

5.3 Biosafety Occupational Health and Safety Special Committee

- Review the Exposure Control Plan as necessary
- Provide updated information and input regarding influenza prevention and pandemic preparation
- Provide advice and any necessary assistance in the event of epidemic or pandemic influenza at BCIT

5.4 BCIT Medical Services

- Provide medical advice on preventing infection and transmission of influenza
- Provide flu patients appropriate medical services or refer them for additional treatment as necessary
- Provide employees and students annual flu vaccination
- Maintain close surveillance of flu incidence at BCIT
- Notify OHS manager in the event of flu outbreak on campus
- Provide medical advice and necessary assistance in the event of a pandemic or a major epidemic of the flu on campus

5.5 Supervisor

- Ensure that employees and students have awareness of this Exposure Control Plan

Ensure that work practices eliminate or minimize the risk of exposure to the influenza virus Monitor the workplace to ensure that safeguards are used, precautions are taken and work procedures are followed during practicum in healthcare settings

- Ensure that employees or students who develop symptoms of influenza-like-illness (ILI) seek First Aid for medical assistance immediately, follow the directions from medical professionals and stay home if necessary. Greater attention should be paid to those who come form or return from traveling to countries where there are reports of epidemic influenza
- Follow the instruction provided by BCIT in response to epidemic or pandemic influenza

5.6 BCIT Employees and students

- Read and understand the Exposure Control Plan, as necessary
- Attend awareness and education sessions, when provided

- Instructor and students in Health Science departments who are occupationally involved in contact with patients during their practicum must follow the guides and OHS regulations developed by the WHO, BCCDC and WorkSafeBC with regard to influenza and pandemic. This includes use of personal protective equipment (PPE) and refusal of unsafe work
- Be aware of pandemic and epidemic warnings and follow the guidance from the government, institutes and departments
- Take corresponding preventive measures as necessary
    - Self monitoring after traveling to, or coming from, countries or provinces where there is a high incidence of influenza
    - Report ILI symptoms to supervisors and First Aid Attendants as soon as possible
    - Restrict contact with those who have ILI symptoms and/or who are under medical observation
- Follow the advice given by medical professionals during medical observations and/or treatments and stay home/hospital when required or necessary
- Consider acquiring immunization by vaccination before influenza season

6. Risk Identification, Assessment, Communication and Control

6.1 Risk Identification and Assessment

In the event of a major epidemic flu at BCIT or a pandemic, actions must be taken under direction of the BCIT Pandemic Plan and the EOC. The BCIT Safety, Security and Emergency Management Department, Medical Services, the Biosafety Committee and other applicable stakeholders may hold a joint meeting to evaluate the risk for the campuses. The risk identification and exposure assessment would be based on the following factors:

Health Effects

Symptoms of the different strains of influenza are similar but transmission efficiency and mortality can be quite different. Susceptible hosts infected with influenza viruses may develop the following symptoms:

- fever
- headache
- fatigue
- dry cough
- sore throat
- runny or stuffy nose
- muscle aches
- Stomach symptoms, such as nausea, vomiting, and diarrhoea, can also occur

The incubation period differs between different influenza strains but is typically about one to four days with an average of approximately two days.

Risk of severe health effects from influenza exist, especially for those with:

- Heart conditions
- Asthma and other lung conditions
- Diabetes
- Kidney problems
- Impaired immunity

Mortality strongly depends on the subtype of the flu strain. On average, seasonal flu has mortality of less than 0.5% in developed countries. The newly identified H1N1 flu virus is killing victims with fatality of 7-10%, while the more deadly avian flu has mortality up to 60%.

Transmission Routes

Influenza is primarily transmitted from person-to-person via virus-laden droplets generated when infected hosts cough or sneeze; these droplets can settle on the mucosal surfaces of the upper respiratory tracts of susceptible persons who are within 1-2 meter (about 6 feet) from infected persons. Transmission can also occur through direct contact or indirect contact with respiratory secretions such as when touching surfaces contaminated with influenza virus and then touching the nose, eyes or mouth. The communicable period typically lasts from 1 day prior to having symptoms to approximately 5 days after symptoms start. People with weakened immune systems may be infectious and able to spread influenza to others for 10 or more days after symptoms begin.

People at Risk of Exposure

The following groups of people would be at higher risk:

- Individuals who have direct contact with a person who has ILI symptoms
- People who will or have traveled to a country or a province where influenza is prevailing
- Instructors and students conducting practicum in hospitals where they are more likely to be in contact with infected patients
- Health professionals such as First Aid Attendants and Medical Services staff

Work Environment

Handling or contacting ILI patients in environments that lack the controls to restrict transmission of the virus increase the risk of infection. Controls, as discussed in section 4.3, include appropriate personal hygiene, ventilation, safe work procedures, and personal protective equipment.

Season

Data from the Global Influenza Surveillance System suggests that, in temperate regions of the Northern Hemisphere, seasonal epidemics of influenza have greater chance to occur during the winter and spring. Pandemic, on the other hand, may happen in any season with 2-3 waves of infection following the first wave.

Other Risk Factors

- Other risk factors that should be considered in the risk assessment may include:
    - The incidence rate in the area(s)/region(s) where seasonal/pandemic influenza strains or avian flu strains are circulating
    - The distance and connections between British Columbia and these area(s)/region(s)
    - Whether any BCIT employee or student visited or came from these area(s)/region(s)
    - The information provided by external agencies (WHO, BCCDC, Health Canada, etc)
    - The number of cases and the trend (increasing/decreasing) of the incidence
    - The number of students and employees providing care in external healthcare settings
    - Employee and student awareness and use of preventative measures
    - Effectiveness of preventative measures
    - Effectiveness of communication to address the BCIT community

- In cases of epidemic or pandemic influenza a risk assessment should be performed by the BCIT Safety, Security and Emergency Management Department, Medical Services, the Biosafety Committee and other applicable stakeholders
- The outcome of this risk assessment may result in the activation of the BCIT Pandemic Plan, BCIT Emergency Response Plan and the Emergency Operations Centre.

6.2 Risk Communication

In the event of a major flu epidemic or pandemic, the Safety, Security and Emergency Management Department, Medical Services, BCIT Biosafety Committee, and other applicable stakeholders will issue health alert notices for all staff and students. This alert will be based upon the Risk Assessment in order to maintain effective hazard communication.

6.3 Infection Control

BCIT employees and students should take the following measures to prevent infection of influenza viruses.

Personal Hygiene

Good personal hygiene is the key to reduce the risk of infection and the spread of influenza. The following hygiene practices are recommended:

- Wash hands often and well, especially after contact with fluid from your nose, mouth, throat or eyes (i.e. coughing or sneezing or blowing the nose). Hand washing should be done using soap and warm water for a minimum of 20 seconds. Alcohol-based (minimum 60% alcohol) waterless hand rinses may be substituted for hand washing.
- Cover mouth and nose with a tissue when sneezing or coughing
- Dispose of used tissues or other articles that have come in contact with fluid from your nose, throat, mouth or eyes into regular waste bins
- Avoid sharing eating and drinking utensils

- Avoid direct contact with ill persons
- Clean all surfaces that are possibly contaminated with the viruses
- Avoid frequently going to crowded places whenever possible
- Ensure sufficient sleep, a balanced diet (with vitamins and hydrates) and regular exercises in order to maintain good health
- Avoid contact with those animals that are suspected to carry influenza viruses

Vaccination

Vaccination has proved an effective measure to prevent influenza and reduce the risk of implications from the flu. However, the effectiveness of flu shots highly depend on a variety of factors, which include, but is not limited to, matching between the vaccine and the circulating strains, the recipient's age, and hosts' health status and immunity. Medical Services provides seasonal flu vaccination prior to the arrival of influenza season each year and reminds employees and students of the services on an annual basis. Additional vaccination may be provided in the event of pandemic, but will unlikely be available in the initial stages of pandemic. Those instructors and students conducting practicum in hospitals and health professionals such as First Aid Attendants and Medical Services staff are strongly recommended, and often required, to take influenza vaccine.

Ventilation

Ventilation is a type of engineering control which can help reduce airborne concentrations of viruses and filter out other microbes.

- Whenever practicable, classrooms, laboratories, libraries, workshops, offices, and cafeterias at BCIT should be appropriately and sufficiently ventilated to ensure a supply of clean air
- Should a suspicious H1N1 or avian flu case be identified/reported on campus, the ventilation system providing HVAC to the room where the carrier has stayed may be shut down for disinfection

Surveillance and Reporting

Epidemiological surveillance and early reporting play important roles in preventing and controlling the spread of influenza. If a pandemic occurs, screening measures may be implemented at BCIT when necessary.

- Individuals who have a fever over 38.0^{o}C (100.4^{o}F) and one or more of the following respiratory symptoms: cough, shortness of breath or difficulty breathing, headache, muscle aches, sore throat and fatigue after visiting an area with H1N1 or avian cases or contacting animals must report to their family physician or local health authority immediately and seek medical advice as soon as possible
    - These individuals should inform their family physician or Medical Services of when and where they traveled and indicate whether there was contact with anyone who had ILI symptoms
- All suspected H1N1 or avian flu cases on campus should be immediately reported to the

Supervisor, First Aid Attendant/Medical Services, and the Director of Safety, Security and Emergency Management
- The Director of Safety, Security and Emergency Management/Medical Services will report suspect case(s) to the local health authority as necessary

International Students

- International students coming from a country where H1N1 or avian flu is prevailing may attend BCIT and work on campuses if no suspicious symptoms have been developed
- These students must inform their instructors/supervisors and monitor their health for 10 days after arrival to British Columbia
- All international students must abide by the stipulations in Surveillance and Reporting section

Social Distancing

- Individuals who experience the flu-like symptoms that were mentioned above after traveling to an area/country with H1N1 or avian flu cases may attend BCIT and work on campuses if no suspicious symptoms have been developed
- If the individual mentioned in the previous bullet develops ILI symptoms they should NOT attend BCIT until they have been evaluated and cleared by public health officials and should minimize close contact with other persons
- The individual or his/her family members should contact their community health center, or their family physicians by phone prior to going for assessment to ensure that the proper precautions are taken in order to minimize the risk of spread to others
- If the symptoms are not H1N1 or avian flu related, the employee/student may be allowed to return to BCIT
- All suspected H1N1 or avian flu cases reported on campus should be appropriately quarantined immediately
- Employees and students residing with individuals who have symptoms of, or confirmed H1N1 or avian flu may be asked to voluntarily remain at home
- Employees and/or students who have had contact with the individual(s) who are suspected H1N1 or avian flu cases will be notified/alerted and monitored and may need to be quarantined
- If the Emergency Response Plan and the Emergency Operation Centre is activated the Institute will follow the BCIT Pandemic Plan and the Institute's Emergency Response Plan
- Should pandemic or a major influenza epidemic occur, BCIT will respond and may temporarily alter business operations, including and up to closure or partial closure

Personal Protective Equipment

Use of personal protective equipment may be an effective approach to prevent influenza transmission. Personal protective equipment includes respiratory protection, eye protection and skin protection and will be assigned based upon the results of the Risk Assessment. Facemasks and respiratory protection equipment (a N95 respirator) must be appropriately chosen and fit-tested and must be stored or disposed properly.

Students and instructors conducting practicum and/or working in healthcare settings shall follow the established guidelines for the setting including established safe work procedures.

7. Education

Education is crucial for awareness, early detection and prevention.

- As necessary, supervisors shall ensure that employees and students have read and understood this Exposure Control Plan. Employees and students should have sufficient awareness and be able to answer seven key questions:
    1) What is seasonal influenza and pandemic?
    2) How is influenza transmitted?
    3) What are the typical symptoms of influenza infection?
    4) What precautions and control/protective measures are required to prevent influenza infection and transmission?
    5) What should you do when you (or others) have suspicious symptoms?
    6) Where can you obtain further information and help?
- BCIT Safety, Security and Emergency Management, Medical Services and Biosafety Committee will continuously provide education on influenza prevention by means of bulletins, websites, brochures and seminars

BCIT Employees and students are also encouraged to use the websites provided by Government of Canada, Public Health Agency of Canada, BCCDC and WHO to acquire general information on influenza.

8. Work Procedures

Students and instructors conducting practicum in healthcare settings and/or performing analyses of human specimens in medical laboratories are required to strictly follow the work procedures, prevention guidelines and precautions established by the appropriate health authorities and the WHO.

9. Hygiene Facilities and Decontamination Procedures

Hygiene facilities for influenza prevention and control include, but are not limited to, general ventilation for biosafety, local exhaust/fume hoods, quarantine wards, ventilator with HEPA filter for H1N1 or avian flu patients, sinks and hand sanitizer, eye washing facilities, change rooms, biosafety waste containers, and facilities for disinfection.

- Students and instructors conducing practicum in healthcare settings and/or performing analyses of human specimens in medical laboratories are required to use the hygiene facilities provided whenever applicable

- Areas and surfaces in the workplace or on campuses that are contaminated or possibly contaminated by influenza viruses should be thoroughly cleaned, disinfected and ventilated

10. Health Monitoring

- Individuals who have visited an area/country where H1N1 or avian flu is prevailing should monitor their health for 10 days after departure from the area/country
- International students who come from any countries where H1N1 or avian flu is prevailing must monitor their health for 10 days after arrival in British Columbia
- Individuals who have flu-like symptoms within 10 days after traveling to or coming from an area/country with H1N1 or avian flu cases must seek medical attention and should refrain from accessing BCIT for 72 hours or until it is confirmed that they are not contagious
- All recovered/recovering H1N1 or avian flu patients should be monitored by their family physicians or local health authorities for appropriate period of time for their health and virus-carrying status

11. Documentation

Records of education on influenza and prevention will be kept following BCIT records retention policy. Copies of records will be forwarded to Biological Safety Committee and Director of Safety , Security and Emergency Management upon request.

12. Program Review

This Control Plan will be reviewed annually for the following:

- The most updated information on the epidemic and pandemic influenza
- The effectiveness of this Exposure Control Plan
- Documentation for awareness and education

The annual review will be done in consultation with BCIT Joint Occupational Health and Safety Committee and BCIT Biological Safety Occupational Health and Safety Special Committee.