Ministry of Health

Infectious Diseases Protocol

Appendix A: Disease-Specific Chapters

Chapter: Diseases caused by a novel coronavirus, including Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS)

Effective: January 2020

Ontario

Novel Coronavirus

☒ Communicable

☐ Virulent

Health Protection and Promotion Act:
O. Reg. 135/18 (Designation of Diseases)

1.0 Aetiologic Agent

Coronaviruses are large, enveloped ribonucleic acid (RNA) viruses named after their corona- or crown-like surface projections observed on electron microscopy.[1] A novel coronavirus is a new strain that has not been previously identified in humans. Coronaviruses are zoonotic, as they transmit between animals and people. There are at least seven known coronaviruses that infect humans.

Coronaviruses are a large family of viruses, some causing illness in people and others that circulate among animals, including camels, cats and bats. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS (Middle East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome).[1] Past MERS and SARS outbreaks have been complex, requiring comprehensive public health responses.[2]

2.0 Case Definition

2.1 Surveillance Case Definition

See Appendix B

Should a novel coronavirus be identified, the ministry will issue a memo indicating it is now reportable and may issue a more focused case definition based on the epidemiological evidence available.

2.2 Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the Infectious Diseases Protocol, 2019 (or as current) for guidance in developing an outbreak case definition as needed.

Outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. Outbreak case definitions should be developed for each individual outbreak based on its characteristics, reviewed during the course of the outbreak, and modified if necessary, to ensure that the majority of cases are captured by the definition. The case definitions should be created in consideration of the outbreak definitions.

Outbreak cases may be classified by levels of probability (i.e., confirmed and/or probable).

3.0 Identification

3.1 Clinical Presentation

Clinically compatible signs and symptoms may vary by novel coronavirus. Common signs include fever, and respiratory symptoms such as cough, shortness of breath, and breathing difficulties. In more severe cases, infection can cause pneumonia, acute respiratory distress syndrome (ARDS), severe influenza-like illness, kidney failure and even death.[3]

3.2 Diagnosis

See Appendix B for diagnostic criteria relevant to the Case Definitions.

For further information about human diagnostic testing, contact the Public Health Ontario Laboratory or refer to the Public Health Ontario Laboratory Services webpage: http://www.publichealthontario.ca/en/ServicesAndTools/LaboratoryServices/Pages/default.aspx

4.0 Epidemiology

4.1 Occurrence

Outbreaks of novel virus infections among people are always of public health concern. The risk from these outbreaks depends on characteristics of the virus, including whether and how well it spreads between people, the severity of resulting illness, and the medical or other measures available to control the impact of the virus (for example, vaccine or treatment medications).[4]

SARS is thought to have originated in the Guangdong province of China, with emergence into human populations sometime in November 2002. The 2002-2003 epidemic was characterized by outbreaks worldwide including in Canada, Singapore, Viet Nam and China (originating in Guangdong Province and spreading to major cities in other areas, including Beijing, Taipei and the Special Administrative Region of Hong Kong).[5] The disease spread internationally along major airline routes and resulted in 8,096 reported SARS cases in 29 countries with 774 deaths (9.6%).[5] The exposure settings for most cases were hospitals and among families and close contacts of hospital workers.[5]

MERS was first reported in Saudi Arabia in 2012 and has since caused illness in people in more than 25 other countries.[2] Other affected countries in the Middle East with limited transmission among adults include Jordan, Oman, Qatar, the United Arab Emirates and Yemen. However, for these other countries, cases have almost been exclusively limited to adults who had contact with a case of MERS, a health care facility, or camels/camel products.[6]

The novel coronavirus (2019-nCoV) was first identified in December 2019, during an outbreak of pneumonia in Wuhan, China. The outbreak was initially associated with a market that sells mainly seafood, in addition to chickens, bats, marmots, and other wild animals. Subsequently, with limited human-to-human transmission, there was a spread

of cases in Wuhan and surrounding areas. By mid-January 2020, cases had been identified in Thailand, Japan, South Korea, and other Chinese cities, as well as the United States. The majority of initial cases outside of Wuhan had a travel history to Wuhan, China.[4]

4.2 Reservoir

Coronaviruses are considered zoonotic. Several known coronaviruses are circulating in animals that have not yet infected humans.

4.3 Modes of Transmission

Coronaviruses are a large family of viruses that are transmitted primarily through droplets and direct contact. They are generally not airborne unless through an aerosolizing procedure. Some cause illness in people; numerous other coronaviruses circulate among animals, including camels, cats, and bats. Rarely, animal coronaviruses can evolve and infect people and then spread between people such as has been seen with MERS.[1]

4.4 Incubation Period

The average incubation period for seasonal human coronavirus infections is 2 days (range of 12 hours-5 days). Novel coronaviruses have longer incubation periods. The SARS coronavirus demonstrated a prolonged incubation period (median 4-5 days; range of 2-10 days) and the incubation period for the MERS coronavirus is also prolonged at approximately 5 days (range of 2-14 days).

Allowing for variability and recall error, exposure history based on the prior 14 days is recommended at this time for novel coronaviruses with an unknown incubation period.[7]

4.5 Period of Communicability

Not completely understood and varies by type of coronavirus.

4.6 Host Susceptibility and Resistance

Unknown, but susceptibility is assumed to be universal.

5.0 Prevention and Control Measures

As per Requirement #3 of the “Reporting of Infectious Diseases” section of the Infectious Diseases Protocol, 2019 (or as current), the minimum data elements to be reported for each case are specified below.

- Ontario Regulation 569 (Reports) under the Health Protection and Promotion Act (HPPA);[8]
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by PHO.

Please note that this disease requires immediate notification by phone to the Ministry of Health, 24/7 Health Care Provider Hotline at 1-866-212-2272.

The reporting of this event may be notified to Public Health Agency of Canada (PHAC) as well.

6.0 Prevention and Control Measures

6.1 Personal Prevention Measures

Measures:

- Since there is no vaccine against coronaviruses the most effective measure is to prevent transmission from infected persons to susceptible persons;
- All individuals presenting to a health care facility with symptoms of an acute respiratory infection should be provided with a surgical face mask and receive information about the importance of respiratory etiquette and hand hygiene; and
- Ensure early recognition and prevention of transmission of novel coronaviruses and other respiratory viruses at the initial encounter with a health care facility.

6.2 Infection Prevention and Control Strategies

Strategies focus on the use of routine infection prevention and control practices in healthcare settings and among health care workers:

- All health care workers should be educated in regards to Routine Practices related to infection prevention and control; and
- All health care workers should wear appropriate Personal Protective Equipment (PPE) when assessing patients with suspect acute respiratory infections.

Educate health care staff about the importance of strict adherence to, and proper use of, routine infection prevention and control measures especially hand hygiene as well as isolation procedures and use of appropriate PPE.

Encourage and maintain respiratory hygiene and cough etiquette in order to reduce transmission of all forms of respiratory pathogens. Persons with signs and symptoms of respiratory infection should:

- Cover their nose and mouth when coughing and sneezing;
- Use tissues to contain respiratory secretions;
- Dispose of tissue in the nearest waste receptacle after use; and
- Perform hand hygiene after contact with respiratory secretions and contaminated objects and materials.

Refer to PHO's website at www.publichealthontario.ca for the most up-to-date information on Infection Prevention and Control.

6.3 Management of Cases

In addition to the requirements set out in the Requirement #2 of the "Management of Infectious Diseases – Sporadic Cases" and "Investigation and Management of Infectious Diseases Outbreaks" sections of the Infectious Diseases Protocol, 2019 (or as current), the board of health shall investigate cases to determine the source of

infection. Refer to Section 5: Reporting Requirements above for relevant data to be collected during case investigation.

- Epidemiological investigation:
  - Symptoms and date of symptom onset;
  - Travel history;
  - History of exposure or risk factors;
  - Earliest and latest exposure dates;
  - Occupational history; and
  - Residency/attendance at a facility or institution.

Period of isolation will vary by type of coronavirus. Cases should wear a face mask if required to travel for medical attention.

6.4 Management of Contacts

A close contact is defined as:*

- Anyone who provided care (e.g. bathing, toileting, dressing or feeding) for the probable, presumptive confirmed or confirmed case while the person was symptomatic, including a health care worker, family member, or individual who had other similarly close physical contact, OR
- Anyone who stayed at the same place (e.g. lived with, visited) while the case was ill.

For further information regarding case and contact management activities for MERS, refer to the guidance document: Public Health Management of Cases and Contacts of MERS Coronavirus in Ontario.

Management of asymptomatic contacts:

Contacts who were exposed but not symptomatic should be instructed to monitor themselves for the duration of the incubation period after last exposure for symptoms and be advised of home isolation and medical evaluation if symptoms appear. Board of health staff should stress to the contact that fever is usually the first symptom.

Management of symptomatic contacts:

- Immediate clinical investigation (including laboratory investigation) at a site where appropriate infection prevention and control precautions can be ensured. Symptomatic contacts would be a probable case and would likely be hospitalized.
- Monitor results of clinical investigation including laboratory results, which may result in a change of case status (i.e., change to “probable” or “confirmed” case

* This close contact definition assumes that the case self-isolated while symptomatic. If the case did not isolate while symptomatic - or if the case visited a health care setting while symptomatic - PHUs should consider additional environments where exposures may have occurred to identify contacts for follow-up and monitoring (e.g., workplace, places of worship, recreation centres, conveyance/vehicles, health care setting waiting area or room, and other health care setting exposures).

or exclusion of the case based on determination of an alternative diagnosis that can fully explain the illness).

6.5 Management of Outbreaks

Please see the Infectious Diseases Protocol, 2019 (or as current) for the public health management of outbreaks or clusters in order to identify the source of illness, manage the outbreak and limit secondary spread.

7.0 References

1. Committee on Infectious Diseases, American Academy of Pediatrics. Section 3: Summaries of Infectious Diseases: Coronaviruses, Including SARS and MERS. In: Kimberlin DW, Brady MT, Jackson MA, Long SS, editors. Red Book: 2018 Report of the Committee on Infectious Diseases. 31 ed. Itasca, IL: American Academy of Pediatrics; 2018.
2. Centers for Disease Control and Prevention: Coronavirus, Human Coronavirus [Internet]. Available from: https://www.cdc.gov/coronavirus/index.html
3. World Health Organization: Q & A on coronaviruses (2020) [Internet]. Available from: https://www.who.int/news-room/q-a-detail/q-a-coronaviruses
4. Centers for Disease Control and Prevention: 2019 Novel Coronavirus, Wuhan, China [Internet]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/summary.html
5. Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.
6. Ontario Ministry of Health: Guidance for Health Care Workers and Health Sector Employers on Middle East Respiratory Syndrome Coronavirus, 2018 [Internet]. Available from: http://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/guidance.aspx
7. World Health Organization: Global Surveillance for human infection with novel coronavirus (2019-nCoV) [Internet]. Available from: https://www.who.int/publications-detail/global-surveillance-for-human-infection-with-novel-coronavirus-(2019-ncov)
8. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2019). Available from: https://www.ontario.ca/laws/regulation/900569

8.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
January 2020		The appendix was created.


Ontario