

Ontario Public Health Standards:
Requirements for Programs, Services and Accountability

Infectious Disease Protocol

Appendix 1:

Case Definitions and Disease-Specific Information

Disease: Diseases caused by a novel coronavirus, including Coronavirus Disease 2019 (COVID-19), Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS)

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Diseases caused by a novel coronavirus, including Coronavirus Disease 2019 (COVID-19), Severe Acute Respiratory Syndrome (SARS), and Middle East Respiratory Syndrome (MERS)

☒ Communicable

☐ Virulent

[Health Protection and Promotion Act \(HPPA\)](#)¹

[Ontario Regulation \(O. Reg.\) 135/18 \(Designation of Diseases\)](#)²

Preamble

Coronaviruses are a large family of viruses that usually cause mild to moderate upper-respiratory tract illnesses in humans. However, three coronaviruses have caused more serious and fatal disease in people: SARS-CoV-2, which emerged in 2019 and causes coronavirus disease 2019 (COVID-19); SARS coronavirus (SARS-CoV), which emerged in November 2002 and causes severe acute respiratory syndrome (SARS); and MERS coronavirus (MERS-CoV), which emerged in 2012 and causes Middle East respiratory syndrome (MERS). Additionally, new novel coronaviruses may emerge in the future. This document provides case definitions and disease-specific information for COVID-19, SARS, and MERS, as well as novel coronaviruses generally.³

Provincial Reporting Requirements

☒ Confirmed case

☒ Presumptive confirmed case

☒ Probable case

☒ Laboratory-based case of reinfection (COVID-19 only)

☒ Time-based case of reinfection (COVID-19 only)

As per Requirement #3 of the "Reporting of Infectious Diseases" section of the [Infectious Diseases Protocol, 2018](#) (or as current), the minimum data elements to be reported for each case are specified in the following:⁴

- [O. Reg. 569](#) (Reports) under the HPPA;⁵
- The Case and Contact Management (CCM) software guides (for COVID-19);
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by PHO.

Please note that SARS, MERS and novel coronaviruses require immediate notification by phone to the Ministry of Health, 24/7 Health Care Provider Hotline at 1-866-212-2272. The reporting of these events will be notified to Public Health Agency of Canada (PHAC) as well as the World Health Organization through the International Health Regulations.

Type of Surveillance

Case-by-case.

Case Definition

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.

Section 1: Coronavirus Disease (COVID-19)

Case Definitions

Confirmed Case

A person with confirmation of SARS-CoV-2 infection documented by:

- Detection of at least one specific gene target by a validated laboratory-based nucleic acid amplification testing (NAAT) assay (e.g., real-time PCR) performed at a community, hospital or reference laboratory (e.g., Public Health Ontario Laboratory or the National Microbiology Laboratory);^{h,j}

OR

- A validated point-of-care (POC) NAAT that has been deemed acceptable by the Ontario Ministry of Health to provide a final result;^k

OR

- Demonstrated seroconversion or diagnostic rise (at least 4-fold or greater from baseline) in viral specific antibody titre in serum, plasma, or whole blood using a validated laboratory-based serological assay for SARS-CoV-2;^{j,n}

OR

- A report from an Ontario coroner, as defined in the *Coroners Act*, R.S.O. 1990, c. C.37, indicating that COVID-19 or SARS-CoV-2 was the cause of death or a contributing factor to the death.⁶

Probable Case

A person who:

- Has symptoms compatible with COVID-19;

AND

- Had high-risk or close contact exposure;^l **OR**
- Was exposed to a known cluster or outbreak;

AND

- In whom a laboratory-based NAAT-assay (e.g., real-time Polymerase Chain Reaction [PCR]) for SARS-CoV-2 has not been completed;^m **OR**
- SARS-CoV-2 antibody is detected in a single serum, plasma, or whole blood sample using a validated laboratory-based serological assay for

SARS-CoV-2 collected within 4 weeks of symptom onset;^{j,n}

OR

- Has symptoms compatible with COVID-19;

AND

- In whom a laboratory-based NAAT assay (e.g., real-time PCR) for SARS-CoV-2 was inconclusive;^{o,p}.

OR

- Is asymptomatic;

AND

- Had high-risk or close contact exposure;^l **OR**
- Was exposed to a known cluster or outbreak;

AND

- In whom a laboratory-based NAAT-based assay (e.g., real-time PCR) for SARS-CoV-2 is inconclusive.^{o,p}

Laboratory-Based Case of Reinfection

A previous confirmed case that has a subsequent confirmed SARS-CoV-2 infection where there is laboratory evidence supporting two different infections.

Laboratory evidence includes:

- Genome sequencing; **OR**
- Variant of concern (VOC) screening PCR testing indicates two distinct SARS-CoV-2 infections.

*Genome sequencing indicates two distinct SARS-CoV-2 infections as:

- They belong to different genetic lineages; **OR**
- They belong to the same lineage but contain sufficient single nucleotide variants to support two different infections.

Time-Based Case of Reinfection

A previous confirmed case of SARS-CoV-2;^{q,s,u}

- That has a subsequent confirmed SARS-CoV-2 infection at least 90 days after the previous infection using episode date;^w

AND

- Does not meet the laboratory-based case of reinfection definition.

Clinical Presentation

Clinically compatible signs and symptoms may vary. See Public Health Agency of Canada's [COVID-19 signs, symptoms and severity of disease: a clinician's guide](#), for full description of clinical presentation.⁷

If an individual has [COVID-19 symptoms](#), they can assume that they may have the virus and may be contagious. Even if they do not meet the case definition, they are recommended to follow the case and contact guidance in this document.⁸

Approved/Validated Tests

Review [PHOL's Test Information Sheet for Coronavirus Disease 2019 \(COVID-19\)](#) for more information on laboratory testing.⁹

Case Management

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, 2018](#) (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation.⁴

Individuals who are confirmed or probable cases, OR have [COVID-19 symptoms](#), OR have tested positive on a rapid antigen test, are recommended to:⁸

- Self isolate until symptoms have been improving for 24 hours (or 48 hours if gastrointestinal symptoms) and no fever present.
 - Asymptomatic individuals with a positive test result do not need to self-isolate unless symptoms develop. If symptoms develop, they should self-isolate immediately.
- For a total of 10 days after the date of specimen collection or symptom onset (whichever is earlier/applicable), cases should:
 - Wear a well-fitted medical mask in all public settings (including schools and childcare, unless under 2 years old) and avoid non-essential activities where mask removal is necessary (e.g., dining out, playing a wind instrument, high contact sports where masks cannot be safely worn)
 - Reasonable exceptions would include temporary removal for essential activities like eating in shared space at

school/childcare/work while maintaining as much distancing from others as possible). Individuals who are unable to mask (e.g., children under two years of age) may return to public settings without masking.

- Avoid non-essential visits to individuals who are immunocompromised or at higher risk of illness (e.g., seniors).
- Avoid non-essential visits to highest risk settings such as hospitals and long-term care homes (see below for further guidance when case is an employee in high-risk settings).
- Where visits cannot be avoided, cases should wear a medical mask, maintain physical distancing, and notify the highest risk setting of their recent illness/positive test. If the individual being visited can also wear a mask, it is recommended they do so.
- Cases with immunocompromise may be infectious for longer and are generally recommended to isolate for 10 days from symptom onset (or positive test, whichever is earlier).
- Cases who are hospitalized for COVID-19 related illness can be removed from Droplet/Contact precautions in hospital based on consultation with an infectious diseases specialist and/or hospital infection prevention and control (IPAC).
 - Individuals with severe illness may be infectious for longer durations (e.g., 10 days or more), and even longer (e.g., 20 days or more) for those requiring ICU level of care for COVID-19.
- Testing for clearance is generally not recommended.
 - Serial testing may be considered for ending isolation due to the risk of prolonged shedding in those with severe immunocompromise.
- Individuals should follow any workplace guidance (as applicable) for return to work.
 - Individuals returning to work in highest risk settings (e.g., acute care, long-term care homes, etc.) should follow any relevant workplace guidance on return to work. In general, return to work in highest risk settings after self-isolating as above, may occur while following measures to reduce the risk of transmission for 10 days after symptom onset/positive test date, including:
 - Avoiding caring for patients/residents at highest risk of severe COVID-19 infection, where possible
 - Ensuring well-fitting source control masking (e.g., a well-fitting medical mask or fit or non-fit tested N95 respirator or KN95)

- Reviewing PPE and IPAC practices, where possible
 - Taking unmasked breaks in a separate breakroom, or with physical distancing, to avoid exposing co-workers
 - Working on a single ward or area of the setting as much as possible
 - Working in a single facility, as much as possible
- COVID-19 positive cases who live in highest risk settings (e.g., long-term care homes, retirement homes and congregate living settings) should follow setting-specific guidance, as applicable.
 - Where there is no setting-specific guidance, cases may follow general guidance above.
- Case management is at the discretion of the PHU.
 - PHUs may make specific considerations for case management for First Nations, Inuit, and Métis communities, in dialogue with the communities and/or Indigenous health service providers, and with respect of the principle of self-determination, to support ongoing surveillance and response that allows for differences in community needs, recognizes differential impacts to communities, and changing needs over time.
- PHUs should refer to CCM data entry guidance from Public Health Ontario.

For public information on recommendations for individuals with COVID-19 symptoms, please visit <https://www.ontario.ca/page/protection-covid-19-and-other-respiratory-illnesses>.⁸

Contact Management

A close contact is defined as:

- An individual who has a high-risk exposure to a case, an individual with COVID-19 symptoms, or an individual with a positive rapid antigen test, during their infectious period (i.e., within the 48 hours prior to the case's symptom onset if symptomatic or specimen collection date (whichever is earlier/applicable) and until the case has completed their self-isolation period
- A high-risk exposure is generally those who were in close proximity (less than 2 metres) for at least 15 minutes or for multiple short periods of time without measures such as masking, distancing, and/or use of personal protective equipment (PPE) depending on the nature of contact. This includes, but is not limited to:

- Household, roommates, or similar living situation contacts
- Individuals who had direct contact with infectious body fluids of the case (e.g., coughed on or sneezed on)
- Health care workers and/or staff who provided direct care for the case, or who had other similar close physical contact (i.e., less than 2 metres from the patient for more than a transient duration of time) **without** consistent use of PPE for the setting and interaction.
 - Workers should follow organizational policies on the use of PPE for patients with suspected and confirmed COVID-19. However, for public health follow-up purposes, if the exposed worker had consistent medical masking, this would generally not be considered a high-risk exposure.
- Management of close contacts
 - For a total of 10 days after the last exposure to the case, close contacts should:
 - Self-monitor for symptoms, and self-isolate immediately if symptoms develop
 - Wear a well-fitted mask in all public settings:
 - Individuals should maintain masking as much as possible in public settings (including school and child care, unless under 2 years old). Reasonable exceptions would include removal for essential activities like eating, while maintaining as much distancing as possible;
 - Participation in activities where masking can be maintained throughout may be resumed, but individuals should avoid activities where mask removal would be necessary (e.g., dining out; playing a wind instrument; high contact sports where masks cannot be safely worn); and
 - Individuals who are unable to mask (e.g., children under two years of age, etc.) may return to public settings without masking.
 - Avoid non-essential visits to anyone who is immunocompromised or at higher risk of illness (e.g., seniors)
 - Avoid non-essential visits to highest risk settings such as hospitals and long-term care homes.
 - Where visits cannot be avoided, close contacts should wear a medical mask, maintain physical distancing, and notify the highest risk setting of their recent exposure. If the individual

being visited can also wear a mask, it is recommended they do so.

- Close contacts who live in highest risk settings (e.g., long-term care homes, retirement homes and congregate living settings) should follow setting-specific guidance, as applicable.
 - Where there is no setting-specific guidance, contacts may follow guidance as above.
- For acute care settings, it is the **responsibility of the acute care setting** to identify, notify and manage close contacts of cases within the setting to reduce the risk of exposure to other patients and staff. It is up to the discretion of the acute care setting and/or PHU to notify close contacts who are no longer admitted in the acute care setting.
- Close contacts who work in a highest risk setting (e.g., acute care, long-term care, etc.), should follow any relevant workplace guidance on return to work.
 - Where feasible, additional workplace measures during the 10 days of self-monitoring may include:
 - Active screening for symptoms ahead of each shift, where possible
 - Close contacts should avoid removing their mask when in the presence of other staff to reduce exposure to co-workers (e.g., not eating meals/drinking in shared spaces) and maintain physical distancing if mask removal is required
 - Working in only one facility, where possible
 - Ensuring well-fitting source control masking for the staff to reduce the risk of transmission (e.g., a well-fitted medical mask or fit or non-fit tested respirator or KN95)
- Employers must also follow requirements as per the [*Occupational Health and Safety Act*](#).¹⁰

Risk of COVID-19 spread between people and animals

- There have been infrequent reports of SARS-CoV-2 spreading from animals to humans. Animal-to-human transmission is likely very uncommon and the risk to most people in Canada for acquiring COVID-19 from animals appears to be very low.¹¹
- See the Government of Canada's website for more information:
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/animals-covid-19.html>

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the [Infectious Diseases Protocol, 2018](#) (or as current) for guidance in developing an outbreak case definition as needed.⁴

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The 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 suspect).

Outbreak Case Definitions for Specific Settings

For Acute Care, Long-term Care Homes, Retirement Homes, and applicable Congregate Living Settings

Refer to the following document for further information on outbreaks in long-term care homes, retirement homes, and other congregate living settings:¹¹

https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/LTCH_RH_guidance_PHU.pdf.¹²

Declaring a confirmed outbreak:

- Two or more residents/patients who are epidemiologically linked (e.g., within a specified area/unit/floor/ward), both with positive results from a polymerase chain reaction (PCR) test OR rapid molecular test OR rapid antigen test within a 7-day period where **both** cases have reasonably acquired their infection in the setting.

Suspect outbreak:

- One positive PCR OR rapid molecular test OR rapid antigen test in a resident/patient (individual who lives in the setting) who has reasonably acquired their infection in the setting.

Notes on outbreaks considerations:

- A confirmed outbreak is based on two or more **patients/residents** who have reasonably acquired their infection in the setting, such as those admitted for more than four days before symptom onset or positive COVID-19 test result.
 - In the situation where the second case is a current or former roommate of a known case, and the second case has been appropriately maintained on Droplet and Contact Precautions since identification of the first case, **and** there is no other evidence of uncontrolled transmission or risks of exposures in the affected area, this would generally **not** trigger the declaration of an outbreak.
- At the discretion of the facility and the public health unit, an outbreak may be declared based on cases amongst staff when there is evidence of uncontrolled transmission in the facility.
- One positive patient who could reasonably have acquired their infection in the setting would not trigger the declaration of an outbreak. However, if the setting confirms a single nosocomial case, this should prompt a thorough investigation to obtain additional information and enhanced surveillance. Based on the case investigation, additional control measures may be warranted.
- Based on discussion with the facility and the public health unit, other similar situations where there is evidence to support a low likelihood of ongoing transmission beyond the initial two cases may also not trigger the declaration of an outbreak.

Declaring the outbreak over

- In consultation with the outbreak management team and the local public health unit, the outbreak may be declared over when no new cases, which were reasonably acquired in the setting, have occurred for 7 days, and there is no evidence of ongoing transmission.
 - For example, in the circumstance of a case in a roommate of a case, where the roommate had already been in isolation prior to testing positive and therefore did not pose a risk for ongoing transmission, the roommate should be counted as part of the outbreak, but would not extend the duration of the outbreak.

Prevention and Control Measures

Personal Prevention Measures

- All individuals presenting to a health care facility with symptoms of an acute respiratory infection should be provided with a medical 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.
- For COVID-19 specific personal prevention measures:
 - [COVID-19 Guidance for the Health Sector](#).¹³
 - [COVID-19 Vaccine-Relevant Information and Planning Resources](#).¹³

Infection Prevention and Control Strategies

Infection prevention and control strategies focus on the use of Routine Practices and additional precautions 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 PPE, based on their point of care risk assessment, 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.

For COVID-19 specific guidance on PPE, see [COVID-19 Guidance: Personal Protective Equipment \(PPE\) for Health Care Workers and Health Care Entities](#).¹⁴

For COVID-19 specific guidance for infection prevention and control measures in health care settings, see:

- [PHO's Interim Infection Prevention and Control Measures based on COVID-19 Transmission Risks in Health Care Settings](#).¹⁵
- [PHO's Interim Guidance for Infection Prevention and Control of SARS-CoV-2 Variants of Concern for Health Care Settings, 2nd revision](#).¹⁶

Encourage and maintain respiratory hygiene and cough etiquette in order to reduce transmission. 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.
- Wear a medical face mask

For the most up-to-date information on Infection Prevention and Control, please refer to PHO's IPAC webpage at: <https://www.publichealthontario.ca/en/Health-Topics/Infection-Prevention-Control>.¹⁷

Section 2: Severe Acute Respiratory Syndrome (SARS)

Case Definitions

Confirmed Case

A person with:

- Laboratory evidence of SARS-associated coronavirus (SARS-CoV) infection;

AND

- Early presentation of clinically compatible signs and symptoms of SARS with or without radiographic evidence consistent with SARS;

OR

A deceased person with:

- A history of early presentation of clinically compatible signs and symptoms of SARS (i.e., fever **AND** cough **OR** difficulty breathing resulting in death);

AND

- Autopsy findings consistent with SARS, i.e.:
 - Evidence of pneumonia or Acute Respiratory Infection (ARI) without an alternate identifiable cause;

AND

- Laboratory evidence of SARS-CoV Infection.

Probable Case

In the absence of laboratory evidence, a person with:

- Early presentation of clinically compatible signs and symptoms of SARS with or without radiographic evidence consistent with SARS;

AND

- An epidemiologic link to a person or place linked to SARS, including:

- Close contact^b with a confirmed SARS case, within 10 days of onset of symptoms;

OR

- Close contact^b with a symptomatic person who has laboratory evidence of SARS-CoV infection, within 10 days of onset of symptoms;

OR

- Residence, recent travel or visit to an “area with recent local transmission of SARS” within the 10 days prior to onset of symptoms;

OR

- Close contact^b with a probable case who has been to an “area with recent local transmission of SARS” within the 10 days prior to onset of symptoms; this includes health care workers who were not wearing personal protective equipment;

OR

Laboratory exposure to SARS-CoV where appropriate barriers and personal protective equipment were not in place;

OR

A deceased person with:

- A history of early presentation of clinically compatible signs and symptoms of SARS;

AND

- Autopsy findings consistent with SARS;

AND

- An epidemiologic link to a person or place linked to SARS.

Clinical Presentation

Common early illness includes two or more of: fever (>38 degrees Celsius), chills, rigors, myalgia, headache, sore throat, or rhinorrhea. Mild-to-moderate respiratory illness includes fever and one or more clinical findings of lower respiratory illness

(e.g., cough, shortness of breath, and breathing difficulties). In severe cases, infection can progress to illnesses such as pneumonia, acute respiratory distress syndrome (ARDS), severe influenza-like illness, kidney failure and even death.

Approved/Validated Tests

Laboratory Confirmation

- Detection of SARS-CoV ribonucleic acid (RNA) in appropriate samples (with confirmation by NML or a designated laboratory) or isolation in cell culture from a clinical specimen.

OR

- Serologic detection of SARS-CoV in a convalescent sample taken > 28 days after onset of illness

OR

- Seroconversion between acute and convalescent blood samples collected at least 4 weeks apart.
- Clinical specimens include clotted blood or serum for serology, nasopharyngeal swab (NPS) or Nasopharyngeal aspirate (NPA), bronchoalveolar lavage (BAL)/bronchial washings and stools for viral RNA detection.

Case Management

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, 2018](#) (or as current),⁴ the board of health shall investigate cases to determine the source of infection. Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation.

Refer to the [Infectious Diseases Protocol, 2018](#) (or as current) document for further information.⁴

Contact Management

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.

Management of symptomatic contacts:

- Close contacts should self-monitor for symptoms, and self-isolate immediately if symptoms develop
- Symptomatic contacts would be a probable case.
 - The symptomatic individual should undergo immediate clinical investigation (including laboratory investigation) at a site where appropriate infection prevention and control precautions can be ensured.
 - The public health unit should monitor results of clinical investigations including laboratory results, which may result in a change of case status (i.e., change to "probable" or "confirmed" case based on a positive confirmatory laboratory test result or "does not meet" case definition based on a negative confirmatory laboratory test result or determination of an alternative diagnosis that can fully explain the illness).

* 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).

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the [Infectious Diseases Protocol, 2018](#) (or as current) for guidance in developing an outbreak case definition as needed.⁴

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The 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 suspect).

Prevention and Control Measures

Personal Prevention Measures

- Since there is no vaccine against SARS, 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 medical 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.

Infection Prevention and Control Strategies

Infection prevention and control strategies focus on the use of Routine Practices and additional precautions 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 PPE, based on their point-of-care risk assessment, 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 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.

For the most up-to-date information on Infection Prevention and Control, please refer to PHO's IPAC webpage at: <https://www.publichealthontario.ca/en/Health-Topics/Infection-Prevention-Control>.¹⁷

Section 3: Middle East Respiratory Syndrome (MERS)

Case Definitions

Confirmed Case

A person with laboratory confirmation^z of infection with the MERS-CoV virus.

Presumptive Confirmed Case

A person with a positive laboratory result of infection for MERS-CoV virus from the PHOL that is awaiting confirmation by the NML.

Probable Case

A person with an acute respiratory illness of any degree of severity who had close contact within 14 days before onset of illness with a confirmed case or presumptive confirmed case and from whom laboratory diagnosis of MERS-CoV is unavailable^x or inconclusive.^y

Person Under Investigation

A person with:

- an acute respiratory illness, which may include history of fever and new onset of (or exacerbation of chronic) cough or breathing difficulty with or without indications of pulmonary parenchymal disease (e.g., pneumonia or acute respiratory distress syndrome [ARDS]) based on clinical or radiological evidence of consolidation;

AND, any of the following:

- The person has a travel history or resided in one or more of the other affected countries^w within 14 days before onset of illness **AND** had any of the following associated risk factors:
 - The person had contact with a health care facility (i.e., as a patient, worker or visitor) in one of more of the other affected countries^w within 14 days before onset of illness; **OR**

- The person had contact with a camel or camel products (e.g., raw milk or meat, secretions or excretions, including urine) in one of more of the other affected countries^w within 14 days before onset of illness;

OR

- The person had close contact^b within 14 days before onset of illness with a person with acute respiratory illness of any degree:
 - who had a travel history to or residence to affected areas; **OR**
 - who had contact with a health care facility (i.e., as a patient, worker or visitor) or camel or camel products (e.g., raw milk or meat, secretions or excretions, including urine) in one or more of the other affected countries;^w

OR

- The person has acute respiratory illness of any degree of severity and, within 14 days before onset of illness, had close contact^b with a confirmed case, presumptive confirmed case, or probable case of MERS-CoV infection while the case was ill.

Clinical Presentation

Common signs include fever (>38 degrees Celsius), and respiratory symptoms such as cough, shortness of breath, and breathing difficulties.

In severe cases, infection can progress to illnesses such as pneumonia, acute respiratory distress syndrome (ARDS), severe influenza-like illness, kidney failure and even death.

Approved/Validated Tests

Review [PHOL's Test Information Sheet for MERS-CoV](#) for more information on laboratory testing.¹⁸

Case Management

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, 2018](#) (or as current), the board of health shall investigate cases to determine the source of infection. Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation.⁴

Refer to the [Public Health Management of Cases and Contacts of MERS Coronavirus in Ontario](#) webpage for further information.¹⁹

Contact Management

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.

Management of symptomatic contacts:

- Close contacts should self-monitor for symptoms, and self-isolate immediately if symptoms develop
- Symptomatic contacts would be a probable case.
 - The symptomatic individual should undergo immediate clinical investigation (including laboratory investigation) at a site where appropriate infection prevention and control precautions can be ensured.
 - The public health unit should monitor results of clinical investigations including laboratory results, which may result in a change of case status (i.e., change to "probable" or "confirmed" case based on a positive confirmatory laboratory test result or "does not meet" case definition based on a negative confirmatory laboratory test result or determination of an alternative diagnosis that can fully explain the illness).

[†] 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).

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the [Infectious Diseases Protocol, 2018](#) (or as current) for guidance in developing an outbreak case definition as needed.⁴

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The 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 suspect).

Prevention and Control Measures

Personal Prevention Measures

- Since there is no vaccine against MERS, 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 medical 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.

Infection Prevention and Control Strategies

Infection prevention and control strategies focus on the use of Routine Practices and additional precautions 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 PPE, based on their point of care risk assessment, 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 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.

For the most up-to-date information on Infection Prevention and Control, please refer to PHO's IPAC webpage at: <https://www.publichealthontario.ca/en/Health-Topics/Infection-Prevention-Control>.¹⁷

Section 4: Novel Coronavirus

Case Definitions

Case Definitions

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.

Confirmed Case

Laboratory confirmation of infection with a novel coronavirus.^a

Presumptive Confirmed Case

A person in whom a laboratory test for the novel coronavirus is positive from the Public Health Ontario Laboratory and is awaiting confirmation by the National Microbiological Laboratory (NML).^a

Probable Case

A person with:

- Fever (over 38 degrees Celsius) **AND** new onset of (or exacerbation of chronic) cough or breathing difficulty **AND** evidence of severe illness progression *e.g.*, acute respiratory distress syndrome (ARDS) or severe influenza-like illness (may include complications such as encephalitis, myocarditis or other severe and life-threatening complications);
AND, any of the following:
- Close contact^b with a confirmed or probable case of novel coronavirus; **OR**
- A history of residence in or travel to a novel coronavirus affected area^c within one full incubation period^d before onset of illness; **OR**
- A close contact with a person with acute respiratory illness who has a direct epidemiological link to a novel coronavirus affected area within one full incubation period prior to their illness onset; **OR**
- Direct contact with animals (if an animal source is identified)^e in countries where the novel coronavirus is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission;

AND

- In whom laboratory diagnosis of novel coronavirus is not available^f or inconclusive^g or negative (if specimen quality or collection time is suspect).

Person under Investigation

- A person with acute respiratory illness;
AND, any of the following:
- Close contact with a confirmed or probable case of novel coronavirus; **OR**
- A history of residence in or travel to a novel coronavirus affected area within one full incubation period before onset of illness; **OR**
- A close contact with a person with acute respiratory illness who has a direct epidemiological link to a novel coronavirus affected area within one full incubation period prior to their illness onset; **OR**
- Direct contact with animals (if an animal source is identified) in countries where the novel coronavirus is known to be circulating in animal populations or where human infections have occurred as a result of presumed zoonotic transmission.

Clinical Presentation

Clinically compatible signs and symptoms may vary by novel coronavirus. Common signs include fever (>38 degrees Celsius), and respiratory symptoms such as cough, shortness of breath, and breathing difficulties.

In severe cases, infection can progress to illnesses such as pneumonia, acute respiratory distress syndrome (ARDS), severe influenza-like illness, kidney failure and even death.

Laboratory Confirmation

Laboratory tests and testing recommendations will change accordingly as new assays are developed and validated. Laboratory confirmation of infection with a newly emerged novel coronavirus would initially consist of positive real-time PCR on at least two specific genomic targets or a single positive target with sequencing **AND** confirmed by NML by nucleic acid testing.

Approved/Validated Tests

For information on testing guidelines for novel coronavirus, contact the Public Health Ontario Laboratory, or refer to the Public Health Ontario Laboratory Services webpage: <https://www.publichealthontario.ca/en/laboratory-services/about-laboratory-services>.

Case Management

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, 2018](#) (or as current), the board of health shall investigate cases to determine the source of infection.⁴ Refer to Provincial Reporting Requirements above for relevant data to be collected during case investigation.

Additional information on case management would be developed as more information is known about the novel coronavirus.

Contact Management

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.

A close contact is generally 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.

[†] 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).

Additional information on contact management would be developed as more information is known about the novel coronavirus.

Management of symptomatic contacts:

- Close contacts should self-monitor for symptoms, and self-isolate immediately if symptoms develop.
- Symptomatic contacts would be a probable case.
 - The symptomatic individual should undergo immediate clinical investigation (including laboratory investigation) at a site where appropriate infection prevention and control precautions can be ensured.
 - The public health unit should monitor results of clinical investigations including laboratory results, which may result in a change of case status (i.e., change to "probable" or "confirmed" case based on a positive confirmatory laboratory test result or "does not meet" case definition based on a negative confirmatory laboratory test result or determination of an alternative diagnosis that can fully explain the illness).

Outbreak Case Definition

The outbreak case definition varies with the outbreak under investigation. Please refer to the [*Infectious Diseases Protocol, 2018*](#) (or as current) for guidance in developing an outbreak case definition as needed.⁴

The outbreak case definitions are established to reflect the disease and circumstances of the outbreak under investigation. The 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 suspect).

Prevention and Control Measures

Personal Prevention Measures

- Since there is no vaccine against novel 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 medical face mask and receive information about the importance of respiratory etiquette and hand hygiene; and
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Infection prevention and control strategies focus on the use of Routine Practices and additional precautions in healthcare settings and among health care workers:

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- All health care workers should wear appropriate PPE, based on their point of care risk assessment, 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 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.

For the most up-to-date information on Infection Prevention and Control, please refer to PHO's IPAC webpage at: <https://www.publichealthontario.ca/en/Health-Topics/Infection-Prevention-Control>.¹⁷

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Case Definition Endnotes

- a. "Laboratory confirmation" will depend on the testing available for the novel coronavirus. For most novel coronaviruses, laboratory confirmation will require NML confirmation of testing conducted at the Public Health Ontario Laboratory.

In the situation where confirmation of laboratory testing by the NML is no longer required, a Presumptive Confirmed case will be the same as a Confirmed case. Laboratory confirmation of infection with a newly emerged novel coronavirus would initially consist of positive real-time PCR on at least two specific genomic targets or a single positive target with sequencing **AND** confirmed by NML by nucleic acid testing.

- b. Close contacts are 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.
- c. Epidemiological information on 'novel coronavirus affected area' will be subject to change as new information evolves with each novel coronavirus. The Ministry of Health will provide additional information on current guidance for 'novel coronavirus affected area' definitions, as well as any additional exposures within the novel coronavirus affected area that would increase the risk of acquisition.

[§] 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).

- d. Where the incubation period of the novel coronavirus is unknown, assume incubation period of 14 days based on the Middle East Respiratory Syndrome Coronavirus incubation period.
- e. Animal source to be updated if identified.
- f. A laboratory test is not available if there is no possibility of acquiring samples for testing.
- g. Inconclusive is defined as a positive test on a single real-time PCR target or a positive test with an assay that has limited performance data available.
- h. Laboratory tests continue to evolve, and laboratory testing recommendations will change accordingly as new assays are developed and validated.
- i. Some hospital and community laboratories have implemented and validated COVID-19 NAAT testing inhouse and report final positive results, which is sufficient for case confirmation. Other hospital and community laboratories will report positives as preliminary positive during the early phases of implementation and will require confirmatory testing at another licenced laboratory with a validated SARS-CoV-2 NAAT assay, which can be a community, hospital or reference laboratory (e.g., Public Health Ontario's laboratory or the National Microbiology Laboratory).
- j. In cases where individuals received a Health Canada approved COVID-19 vaccine, detection of the nucleocapsid antibody can be used to determine exposure to SARS-CoV-2 through natural infection. Spike antibody can be generated through natural exposure and/or COVID-19 vaccination, but cannot differentiate between the two. Seroconversion of the spike and/or nucleocapsid antibody in an individual who has received no doses of vaccine suggests natural exposure to SARS-CoV-2.
- k. All positive results issued from molecular point-of-care assays are reportable to public health units. Final results can be issued from certain Ministry of Health approved POC assays that have been evaluated, and do not require further testing for confirmation (see [Ministry guidance on cases and contacts of COVID-19](#)). Additional testing may be recommended to guide case and public health management.²¹
- l. A close contact is defined as a person who has an exposure to a confirmed positive COVID-19 case or an individual with a positive rapid antigen test result. This includes household, community and healthcare exposures as outlined in [Ministry guidance on cases and contacts of COVID-19](#).²¹

- m. Any case classified as probable based on a high-risk exposure (i.e., close contact) or exposure to a known cluster or outbreak, which subsequently tests negative/not detected for SARS-CoV-2 by NAAT should no longer be classified as a probable case. Exceptions may be made for negatives on a compromised sample or if NAAT testing is delayed (e.g., >10 days following symptom onset), whereby such persons remain as probable cases.
- n. COVID-19 antibody (serology) testing should not be used as an acute screening or diagnostic tool or used to determine a patient's immune status, vaccination status, or infectivity. It may be considered as an adjunct to SARS-CoV-2 NAAT in individuals with compatible symptoms who present late and therefore may test negative, and in the diagnosis of multisystem inflammatory syndrome in children (MIS-C) and multisystem inflammatory syndrome in adults (MIS-A). Only results from a laboratory in Ontario that is licensed to conduct serology testing AND where testing is done for clinical purposes will be reported to the Medical Officer of Health and used for case classification. SARS-CoV-2 IgM and serology POC tests are not widely available and are not recommended for use at this time due to a lack of adequate performance data.
- o. Inconclusive is defined as an
 - i. indeterminate result on a single or multiple NAAT gene target(s)
 - OR**
 - ii. a positive test with an assay that has limited performance data available.

An indeterminate result on a real-time PCR assay is defined as a late amplification signal in a real-time PCR reaction at a predetermined high cycle threshold (Ct) value range (note: Ct values of an indeterminate range vary by assay and not all assays have an indeterminate range). This may be due to low viral target quantity in the clinical specimen approaching the limit of detection of the assay, or alternatively in rare cases may represent nonspecific reactivity (false signal) in the specimen. When clinically relevant, repeat testing is recommended.

- p. For clearance definitions refer to the [Management of Cases and Contacts of COVID-19 in Ontario](#).²²
- q. A viral lineage is a group of viruses defined by a founding variant and its descendants.

- r. Persistent positive results due to prolonged viral shedding are very rare after 90 days. Public health or clinical judgement should be used when assessing if a subsequent confirmed SARS-CoV-2 infection occurring 90 days or more after the previous infection is a persistent positive result rather than a reinfection. For more information on management of Previously Cleared Cases with New Positive Results, refer to [Ministry guidance on cases and contacts of COVID-19](#).²¹
- s. If case is symptomatic, then episode date uses symptom onset date. If symptom onset date is unavailable or the case is asymptomatic, then the earliest of the following dates could be used as proxy for classification: laboratory specimen collection date, laboratory testing date or reported date.
- t. The Medical Officer of Health or relevant public health authority may be consulted when considering the management of potential reinfection cases that do not meet the time-based case of reinfection criteria (e.g., new symptoms within 90 days of the previous confirmed infection, low Ct value). For example, if there is high suspicion of reinfection within 90 days of the previous confirmed infection using episode date consider requesting genome sequencing or VOC PCR (if not already done) and follow laboratory-based case of reinfection criteria.
- u. VOC PCR screen testing and/or genome sequencing is not routinely required if the case meets the time-based case of reinfection definition.
- v. Seroconversion or a diagnostic rise in antibody titre can be established using paired acute and convalescent sera taken 2-4 weeks apart.

Saudi Arabia is experiencing continuing local transmission of MERS-CoV. Other affected countries in the Middle East with limited transmission among adults include Bahrain, Jordan, Iraq, Iran, Kuwait, 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-CoV, a health care facility (such as a patient, worker or visitor) or camels/ camel products (e.g., raw milk or meat, secretions or excretions, including urine). The risk of MERS-CoV infection for individuals from these other affected countries without exposure to a case of MERS-CoV, a health care facility or camels/ camel products is extremely low. As this list of affected countries is subject to change, health care workers and health sector employers should review [Summary of Assessment of Public Health Risk to Canada Associated with Middle East Respiratory Syndrome Coronavirus \(MERS-CoV\)](#).²³

- w. A laboratory diagnosis of MERS-CoV is unavailable if there is no possibility of acquiring samples for testing.
- x. Inconclusive is defined as a positive test on a single target, a positive test with an assay that has limited performance data available, or a negative test on an inadequate specimen.
- y. In Canada, laboratory confirmation of infection with MERS-CoV is done by the NML. After the PHOL had identified a presumptive confirmed case, the sample will be sent to the NML for confirmation.

Document History

Revision Date	Document Section	Description of Revisions
January 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
January 2022	Epidemiology: Occurrence section	Removed.
January 2022	ICD Codes	Removed.
January 2022	Case definition	COVID-19 case definition added.
January 2022	Clinical information	Removed "novel" from section.
January 2022	Laboratory evidence	Addition of PHOL's Test Information Sheet for Coronavirus Disease 2019 (COVID-19) for information on laboratory testing.
January 2022	Contact management	Addition of guidance document link for COVID-19 case and contact management.
February 2022	Footnotes	Entire section updated.
April 2022	COVID-19 sections	Updated to reflect current practices and included outbreak case definitions.
July 2022	Case Management (pg. 19)	Removed reference to former SARS appendices.
April 2023	COVID-19 sections	Updated outbreak case definitions. Updated case and contact management information.
May 2023	Entire Document	Document reorganized Endnotes updated References updated Embedded links updated
September 2023	COVID-19 Sections	Case definitions.

