



Coronavirus disease 2019 (COVID-19): Fact Sheet for Respiratory Therapists

This information sheet should not replace local policies and procedures, clinical guidelines or the clinical judgement of the health care provider. It summarizes some key information relating to the coronavirus disease 2019. Please refer to the referenced documents for additional details.

This document uses the updated name for this virus, as per the February 11, 2020 renaming by the World Health Organization. Where external documents continue to use “novel coronavirus”, “2019-nCoV” or “nCoV”, this has not been altered.

What is Coronavirus Disease 2019?

Coronaviruses are a family of viruses that cause illness ranging from the common cold to more severe disease^[1]. Coronaviruses such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) are viruses that have formerly caused severe disease^{[1][2][3]}. Coronavirus disease 2019 (COVID-19, SARS-CoV-2) is a newly discovered strain of coronavirus^[1]. SARS-CoV-2 was first discovered in December 2019^[3] and is the seventh coronavirus to cause illness in humans^[2].

Current updates on the incidence of infection are provided by the Government of Canada and more information can be found on their website.

How does a COVID-19 infection present?

There is growing data on the range of clinical illness associated with COVID-19 infection, and the World Health Organization (WHO) and Public Health Agency of Canada note that persons infected with COVID-19 may present with a wide range of symptoms which range from mild to respiratory failure, acute respiratory distress syndrome (ARDS), sepsis, septic shock, thromboembolism, and/or multiorgan failure^{[3][4]}.

Most people (~80%) with COVID-19 develop mild or moderate disease with 15% developing severe disease that requires oxygen therapy, and 5% develop critical disease leading to complications such as respiratory failure and ARDS^[4]. The presenting signs and symptoms of COVID-19 vary in frequency and severity, with the most common symptoms (> 50% of cases) including fever, cough, fatigue, loss of appetite, shortness of breath, loss of smell and/or taste^{[4][5]}. Loss of smell and loss of taste have been reported to precede the onset of respiratory symptoms^[4]. Less frequent symptoms (< 50% of cases) include, increased sputum production, muscle aches, chest pain, diarrhea, headache, dizziness sore throat, nausea and vomiting^[4]. Rare symptoms (< 10% of cases) include confusion, runny nose, fainting, and changes in skin^[5].



It is also important to recognize that some individuals with COVID-19 are asymptomatic which can complicate tracking and tracing of virus transmission [\[4\]](#).

The Government of Canada provides specific data on the incidence of each symptom on its website [COVID-19 signs, symptoms and severity of disease: a clinician guide](#). This guide includes specific information on symptom incidence for adult and pediatric age groups.

The reported signs and symptoms in pediatric patients are similar to those reported in adults, although they may be less severe or absent [\[4\]](#). A rare complication of pediatric COVID-19 infection is multi-system inflammation [\[4\]](#).

What are the risk factors for severe disease and death?

The WHO notes that older age, smoking and underlying chronic disease (diabetes, hypertension, cardiopulmonary diseases, cancer) are reported risk factors for severe disease and death. [\[4\]](#)

How is COVID-19 transmitted?

Transmission of COVID-19 primarily occurs from symptomatic people to others by close contact through respiratory droplets, by direct contact with infected persons, or by contact with contaminated object and surfaces [\[4\]](#). The incubation period for COVID-19 is on average 5-6 days, but can be up to 14 days, with most people developing symptoms within 11.5 days of exposure [\[5\]](#). There is also a 'pre-symptomatic' period, in which some infected persons can be contagious for 1-3 days prior to the onset of symptoms [\[4\]](#). The transmission of COVID-19 through asymptomatic people has been recognized and studied in a recent systematic review [\[6\]](#).

Aerosols have been recognized as a mode of transmission, particularly in small indoor spaces with poor ventilation [\[7\]](#). More evidence is needed to better understand conditions that enhance aerosol transmission.

How is COVID-19 infection confirmed?

The CSRT recommends referring to your local infectious disease testing procedures, and to the Government of Canada document [Pan-Canadian COVID-19 Testing and Screening Guidance: Technical guidance and implementation plan](#) [\[8\]](#).

The WHO recommends upper respiratory tract specimen (nasopharyngeal and oropharyngeal) collection for all suspected cases of COVID-19 [\[4\]](#). In situations where upper respiratory tract specimens are negative, but differential diagnosis remains, specimen collection from lower respiratory tract (e.g. sputum expectoration, endotracheal aspirate, or bronchoalveolar lavage in ventilated patients) is recommend [\[4\]](#).



Molecular polymerase chain reaction (PCR) is recognized as the gold standard for diagnostic testing of COVID-19 and initially was the primary diagnostic technique for accurate diagnosis [8]. Health Canada has since authorized 36 different COVID-19 testing methods as of September 29, 2020 [8]. Testing methods include both PCR and serological tests [8].

What infection prevention and control precautions should be taken?

The CSRT recommends following all local Public Health and institutional infection prevention and control resources when managing a patient with suspected or confirmed COVID-19.

Infection prevention and control has been recognized as an essential element in reducing risk when providing care for COVID-19 patients [4].

Early recognition and isolation of suspected cases of COVID-19 is encouraged by the WHO. Suspected or confirmed COVID-19 patients should wear surgical masks and be placed in private rooms with the door closed [4]. Strict hand and respiratory hygiene measures (cover cough/sneeze with bent elbow or tissue, hand washing after contact with respiratory secretions) should be utilized [4].

Individuals with suspected or confirmed infection should be cared for in private, ventilated rooms [4]. Cohorting with other patients with COVID-19 may be employed when private rooms are not available [4]. Health care workers (as well as family and visitors, and those transporting the patient) should employ standard precautions, contact precautions and droplet precautions and use eye protection [4].

Aerosol generating procedures on patients with COVID-19 should be minimized as much as possible and performed in a negative pressure room [9] [10]. Healthcare workers must wear appropriately fitted N95 respirators and all other required personal protective equipment (PPE) (i.e. gloves, gown and eye protection) [9] [10]. For patients requiring endotracheal intubation, it is recommended that the procedure be performed by the healthcare worker with the most experience in airway management [9] [10].

The CSRT [Position Statement on Procedures Creating a Heightened Risk of Infection During an Outbreak of a Communicable Respiratory Disease](#) has practice recommendations relating to aerosol-generating procedures and appropriate PPE for use during the pandemic phase [11].

Recommendations for resumption of pulmonary function services are provided in the joint Canadian Thoracic Society/ CSRT position statement [Resumption of Pulmonary Function Testing during the Post-Peak Phase of the COVID-19 Pandemic](#) [12]. Both documents advise that an abundance of caution be followed in order to best protect health care workers and patients.



CANADIAN SOCIETY OF RESPIRATORY THERAPISTS

SOCIÉTÉ CANADIENNE DES THÉRAPEUTES RESPIRATOIRES

Interim guidance on infection prevention and control for COVID-19 is available from the WHO, here [\[13\]](#). Other infection prevention and control publications are available in the [CSRT Coronavirus resources page](#).

The WHO has also developed a self-paced online [course](#) for health care professionals relating to infection prevention and control. Other courses relating to the pandemic are listed on the [CSRT Coronavirus resources page](#).

What are the treatment options?

While not treatment for COVID-19, significant research has been dedicated to the creation of a vaccine. Pfizer-BioNTech was the first vaccine to be approved by Health Canada in Fall 2020, with numerous clinical trials ongoing. As of December 16, 2020, vaccine delivery had begun across Canada, with a phased approach prioritizing high-risk populations [\[14\]](#). A list of authorized vaccines is available through the [Health Canada website](#) and the CSRT has created a [COVID-19 Vaccine Resource](#) for respiratory therapists.

People with mild symptoms may be cared for at home in some circumstances [\[15\]](#). These are detailed in the WHO's publication [Homecare for patients with suspected novel coronavirus \(nCoV\) infection presenting with mild symptoms and management of contacts](#).

The goal of treatment for patients in-hospital with COVID-19 is based on supportive care. Several guidelines have been published that highlight treatment strategies for COVID-19, these are linked below [\[4\]](#) [\[9\]](#) [\[10\]](#). In brief summary, respiratory therapy interventions relevant to the management of COVID-19 include:

- Oxygen therapy and monitoring for clinical deterioration
 - Vigilant monitoring for signs of deteriorating clinical status, including severe hypoxemic respiratory failure.
 - Prone positioning for spontaneously breathing patients may also improve oxygenation.
 - High-flow nasal cannula (HFNC) oxygen and non-invasive ventilation (NIV) are recommended for patients with respiratory failure and poor response to conventional oxygen therapy.
 - National Institutes of Health (NIH) recommends the use of HFNC over NIV. HFNC and NIV, including bubble CPAP should be used with airborne precautions due to potential for aerosolization.
- Conservative fluid management in the absence of shock.
- Empiric antimicrobials to treat presumptive pathogens causing severe acute respiratory infections and/or sepsis.
 - Re-evaluate and de-escalate empiric therapy following clinical evidence and microbiology results.



- If intubation is required, it should be performed under airborne precautions by a trained and experienced provider.
- Recommendations for mechanically ventilated patients with ARDS
 - Low tidal volumes (4-8 mL/kg of predicted body weight)
 - Low inspiratory pressures (plateau pressure less than 30 cmH₂O)
 - Individualized PEEP [\[16\]](#) [\[17\]](#) [\[18\]](#)
 - Prone position from 12-16 hours per day, with 16 hours per day preferred.
 - Avoiding circuit disconnection is recommended
 - The use of in-line suction catheters and endotracheal tube clamps for when circuit disconnection is necessary is recommended.

A list of clinical management resources is available on the [CSRT Coronavirus resources page](#). A list of drugs and vaccines authorized by Health Canada for use in the management of COVID-19 is available on the [Health Canada website](#).

Does tobacco use impact the severity of COVID-19 disease?

One systematic review concluded that individuals with Chronic Obstructive Pulmonary Disease (COPD) had a higher risk for more severe disease compared to individuals without COPD [\[19\]](#). COPD patients also had a higher mortality rate [\[19\]](#).

The WHO released a scientific brief on smoking and COVID-19 on June 30, 2020 [\[20\]](#). The scientific brief assessed the peer-reviewed literature on smoking and COVID-19, in which the evidence suggested that smoking is associated with a more severe disease course and increased death. The WHO Scientific Briefing further concludes that tobacco users should take prompt action to cease tobacco use, and that evidence-based interventions should be used to support cessation.

What long term effects are there?

There is growing evidence following anecdotal experiences of “long COVID”, which is a term that describes people who have recovered from COVID-19 and continue to have symptoms of the infection much longer than what would be expected [\[21\]](#). The long-term effects of other coronaviruses have been studied, one studied showed that 40% of people recovering from SARS had chronic fatigue 3.5 years later [\[22\]](#). The long-term effects of COVID-19 are currently being investigated to better understand why symptoms persist in some patients [\[23\]](#). The WHO published a resource to assist people recovering from COVID-19 in self-rehabilitation [\[24\]](#).

Where can I go for more information?

The World Health Organization, Centers for Disease Control and Health Canada all have frequently updated COVID-19 information and guidelines:

- [Health Canada](#)



CANADIAN SOCIETY OF RESPIRATORY THERAPISTS

SOCIÉTÉ CANADIENNE DES THÉRAPEUTES RESPIRATOIRES

- [US Centers for Disease Control](#)
- [World Health Organization](#)

The CSRT has developed a list of resources to provide respiratory therapists with information relating to COVID-19. This can be viewed on the CSRT website and includes information from provincial health agencies.



References:

1. Coronavirus disease (COVID-19). (12 October 2020). Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19>
2. Andersen, K. G., Rambaut, A., Lipkin, W. I., Holmes, E. C., & Garry, R. F. (2020). The proximal origin of SARS-CoV-2. *Nature Medicine*, 26(4), 450–452. <https://doi.org/10.1038/s41591-020-0820-9>
3. Government of Canada. (2020, December 09). Retrieved from <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals.html>
4. Clinical management of COVID-19. (2020, May 27). Retrieved from <https://www.who.int/publications/i/item/clinical-management-of-covid-19>
5. Government of Canada. (2020, September 18). Government of Canada. Retrieved from <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/signs-symptoms-severity.html>
6. Yanes-Lane, M., Winters, N., Fregonese, F., Bastos, M., Perlman-Arrow, S., Campbell, J. R., & Menzies, D. (2020). Proportion of asymptomatic infection among COVID-19 positive persons and their transmission potential: A systematic review and meta-analysis. *PLoS ONE*, 15, 1–22. <https://doi.org/10.1371/journal.pone.0241536>
7. Government of Canada. (2020, November 05). Retrieved from <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/main-modes-transmission.html>
8. Government of Canada. (2020, October 07). Retrieved from <https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/medical-devices/testing/pan-canadian-guidance.html>
9. Alhazzani, W., Møller, M. H., Arabi, Y. M., Loeb, M., Gong, M. N., Fan, E., ... Rhodes, A. (2020). Surviving Sepsis Campaign: guidelines on the management of critically ill adults with Coronavirus Disease 2019 (COVID-19). *Intensive Care Medicine*, 46(5), 854–887. <https://doi.org/10.1007/s00134-020-06022-5>
10. NIH. (2020). Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. Disponible en: <https://covid19treatmentguidelines.nih.gov/>. *Nih*, 2019, 130.
11. CSRT. (2020, April). Position Statement on Procedures Creating a Heightened Risk of Infection During an Outbreak of a Communicable Respiratory Disease. Retrieved from <https://www.csrt.com/wp-content/uploads/CSRT-Procedures-Duringan-Outbreak-April-2020-v2.pdf>
12. Stanojevic, S., Beaucage, F., Comondore, V., Faughnan, M., Kovesi, T., McCoy, C., . . . Kooperberg, M. (2020, July 12). Resumption of Pulmonary Function Testing during the Post-Peak Phase of the COVID-19 Pandemic A Position Statement from the Canadian Thoracic Society and the Canadian Society of Respiratory Therapists. Retrieved from



- https://www.csrt.com/wp-content/uploads/CTS_CSRT_COVID_PFT_Final-July12_2020.pdf
13. Infection prevention and control during health care when coronavirus disease (COVID-19) is suspected or confirmed. (2020, June 29). Retrieved from <https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-2020.4>
 14. Government of Canada. (2020, December 18). Retrieved from <https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines.html>
 15. Home care for patients with suspected or confirmed COVID-19 and management of their contacts. (2020, August 13). Retrieved from [https://www.who.int/publications/i/item/home-care-for-patients-with-suspected-novel-coronavirus-\(ncov\)-infection-presenting-with-mild-symptoms-and-management-of-contacts](https://www.who.int/publications/i/item/home-care-for-patients-with-suspected-novel-coronavirus-(ncov)-infection-presenting-with-mild-symptoms-and-management-of-contacts)
 16. Piraino, T., Brochard, L. COVID-19 Message to Respiratory Therapists. (March 21, 2020) Toronto Centre of Excellence in Mechanical Ventilation
 17. Marini, J. J., & Gattinoni, L. (2020). Management of COVID-19 Respiratory Distress. *JAMA*, 323(7), 2329-2330. doi:10.1001/jama.2020.6825
 18. Roesthuis, L., Van Den Berg, M., & Van Der Hoeven, H. (2020). Advanced respiratory monitoring in COVID-19 patients: Use less PEEP! *Critical Care*, 24, 1–4. <https://doi.org/10.1186/s13054-020-02953-z>
 19. Alqahtani, J. S., Oyelade, T., Aldhahir, A. M., Alghamdi, S. M., Almeahmadi, M., Alqahtani, A. S., ... Hurst, J. R. (2020). Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: A rapid systematic review and meta-analysis. *PLoS ONE*, 15(5), 1–13. <https://doi.org/10.1371/journal.pone.0233147>
 20. WHO. (2020, June 30). Smoking and COVID-19. Retrieved from https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Smoking-2020.2
 21. Mahase, E. (2020). Covid-19: What do we know about “long covid”? *The BMJ*, 370, 9–11. <https://doi.org/10.1136/bmj.m281522>
 22. Lam, M. H. B., Wing, Y. K., Yu, M. W. M., Leung, C. M., Ma, R. C. W., Kong, A. P. S., ... Lam, S. P. (2009). Mental morbidities and chronic fatigue in severe acute respiratory syndrome survivors long-term follow-up. *Archives of Internal Medicine*, 169(22), 2142–2147
 23. Long-Term Effects of COVID-19. (2020, November 13). Retrieved December 22, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects.html>
 24. WHO Europe. Support for Rehabilitation: Self-Management after COVID-19 Related Illness. (2020, June 25). Retrieved from <https://www.who.int/publications/m/item/support-for-rehabilitation-self-management-after-covid-19-related-illness>