



Coronavirus disease 2019 (COVID-19) is a respiratory tract infection first identified in Wuhan, China. It is caused by the coronavirus SARS-CoV-2 and is predominantly spread via respiratory droplets. As of April 17, 2020, there have been 305 cases of COVID-19 across Saskatchewan. The purpose of this document is to assist family physicians, nurse practitioners, and specialists in providing evidence-based care to patients with suspected and confirmed COVID-19. It was developed with support from critical care, emergency medicine, infectious diseases, internal medicine, and respiratory.

Which clinical presentations are consistent with COVID-19?

Common symptoms include fever (88%), non-productive cough (68%), fatigue (38%), sputum production (33%), dyspnea (19%), myalgia or arthralgia (15%), sore throat (14%), and headache (14%). Emerging evidence suggests that anosmia and dysgeusia may also be common. Bloodwork may show lymphopenia (63%) and elevated transaminases (37%). Bilateral pulmonary infiltrates and consolidation are seen on chest x-ray in patients with COVID-19 pneumonia. Bilateral ground glass opacities may be seen on CT. Important diagnostic considerations include other respiratory virus infections (e.g. influenza, RSV), bacterial pneumonia, acute exacerbation of COPD, and congestive heart failure.

How should patients with suspected COVID-19 be tested?

The Saskatchewan Ministry of Health recommends testing all patients with symptoms compatible with COVID-19. Testing should be done by nasopharyngeal swab for COVID-19, which can be arranged in emergency departments, acute care facilities, and at [Community COVID-19 Testing Sites](#). Up to date testing criteria can be found in the [Saskatchewan Clinical Guidelines for Testing, Management, and Reporting](#).

In which patients is self-isolation indicated?

Patients should self-isolate if they have travelled internationally and returned to Canada in the last two weeks, have symptoms consistent with COVID-19, have been in close contact with a case of COVID-19, or have been diagnosed with or are under investigation for COVID-19. Patients on self-isolation should remain at home and limit contact with other house members. Additional information on self-isolation can be found in the [Saskatchewan Clinical Guidelines for Testing, Management, and Reporting](#).

Which patients with COVID-19 require hospital admission?

Most patients with COVID-19 have mild disease and will not require hospital admission. To date, 19% of Canadian COVID-19 cases have been admitted to hospital and 5% have required critical care. Hospital admission is recommended for patients with severe disease (oxygen saturation $\leq 93\%$ on room air or respiratory rate ≥ 30). Hospital admission can be considered on a case-by-case basis for patients with risk factors for severe disease (e.g. age ≥ 65 , chronic pulmonary disease, diabetes, hypertension, and coronary artery disease) and for those who are unable to safely self-monitor at home. Patients with escalating COVID-19 symptoms but not requiring admission can be referred to a [COVID-19 Assessment and Treatment Site](#).

**How should patients requiring admission for COVID-19 be evaluated?**

The following investigations are recommended for evaluating for COVID-19 complications and alternate diagnoses in patients with severe disease:

- CBC, aPTT/INR, electrolytes, creatinine, ALT, AST, ALP, GGT, bilirubin
- Chest x-ray
- ECG

How should admitted patients with COVID-19 be cared for?**Establish goals of care**

We recommend that patients with COVID-19 have their goals of care reviewed. Advanced care planning is an important component for managing these patients given the potential for rapid deterioration. Treatment options in the event of clinical deterioration should be discussed and decided upon (e.g. full resuscitation, medical management only, or comfort care measures).

Wear appropriate personal protective equipment when caring for all patients with suspected and confirmed COVID-19

- Surgical mask, gloves, gown, and face shield should be used for most patients
- N95 masks, gloves, gown, and face shield should be used when performing [aerosol-generating medical procedures \(AGMP\)](#) including but not limited to high flow nasal cannula (HFNC), non-invasive positive pressure ventilation (NIPPV), intubation, cardiopulmonary resuscitation, bronchoscopy, nebulized therapy, open airway suctioning, and sputum induction
- AGMPs should be performed in an airborne infection isolation room (i.e. negative pressure room). If this is unavailable, AGMPs should be performed in a single room with hard walls with the door closed.

Consider intravenous fluids in patients with poor oral intake, hypotension, or acute kidney injury

- A restrictive fluid resuscitation strategy is recommended to prevent volume overload and worsening respiratory failure. Balanced crystalloids (e.g. Ringer's Lactate) are preferred over normal saline.

Use supplemental oxygen for hypoxemic patients

- Oxygen by nasal cannula should be titrated to SpO₂ 90-94% in most patients, and to 88-92% if known or suspected carbon dioxide retention (e.g. COPD, OSA, and OHS)
- High-flow nasal cannula (Optiflow, AIRVO) should be used for patients who are hypoxemic on nasal prongs or simple face mask
- Non-rebreather mask can be considered if HFNC unavailable
- There is no role for non-invasive positive pressure ventilation (i.e. CPAP/BPAP) in patients with COVID-19 infection and hypoxemic respiratory failure. However, it can be considered if there are other clear indications for non-invasive ventilation (e.g. hypercapnic respiratory failure in acute exacerbation of COPD, CHF exacerbation, or hypercapnic respiratory failure associated with OSA, obesity hypoventilation syndrome, or chest wall conditions). Consultation with Respiriology consult service or ICU is highly recommended.



Consider empiric treatment for bacterial pneumonia and/or influenza in patients with severe disease until these conditions are ruled out, especially when sepsis is present

- Azithromycin 500mg PO/IV daily x 3 days AND ceftriaxone 2g IV q24h x 7 days (moxifloxacin 400mg PO daily x 7 days if beta-lactam allergy)
- Oseltamivir 75mg PO BID x 7 days (30mg PO bid for eGFR 31-60, 30mg PO daily for eGFR 11-30)

Consider symptomatic therapy for dyspnea and fever

- Salbutamol MDI 100mcg 2 puffs q1h PRN and ipratropium 20mcg 2 puffs q1h PRN
- Acetaminophen is preferred for management of pain or fever over the use of NSAIDS

Which patients with COVID-19 require transfer to a regional or provincial hospital?

- Transfer is recommended for patients with high oxygen needs (>5L/minute), patients who remain hemodynamically unstable after fluid resuscitation, or patients who are otherwise deteriorating
- Transfer is also recommended for patients that require investigations or subspecialist support only available at a regional or provincial hospital (e.g. hemodialysis, echocardiography)

References

[Alhazzani, W., Møller, M. H., Arabi, Y. M., Loeb, M., Gong, M. N., Fan, E., ... & Du13, B. Surviving Sepsis Campaign: Guidelines on the Management of Critically Ill Adults with Coronavirus Disease 2019 \(COVID-19\).](#)

[Canadian Critical Care Society. \(2020\). Clinical Management of Patients with Moderate to Severe COVID-19 – Interim Guidance.](#)

[Centers for Disease Control. \(2020\). Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease \(COVID-19\).](#)

[Government of Canada \(2020\). Epidemiological summary of COVID-19 cases in Canada.](#)

[Government of Saskatchewan. COVID-19: information for healthcare providers.](#)

[Guan, W. J., Ni, Z. Y., Hu, Y., Liang, W. H., Ou, C. Q., He, J. X., ... & Du, B. \(2020\). Clinical characteristics of coronavirus disease 2019 in China. *New England Journal of Medicine*.](#)

[Lechien et al. \(2020\). Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease \(COVID-19\): a multicenter European study. *Eur Arch Otorhinolaryngol*. 2020 Apr 6.](#)

[Saskatchewan Health Authority \(2020\). COVID-19 pandemic practitioner order set.](#)

[Siemieniuk, R. A., Chu, D. K., Kim, L. H. Y., Güell-Rous, M. R., Alhazzani, W., Soccia, P. M., ... & Iruen, E. M. \(2018\). Oxygen therapy for acutely ill medical patients: a clinical practice guideline. *Bmj*, 363.](#)

[World Health Organization \(2020\). Report of the WHO-China Joint Mission on Coronavirus Disease 2019 \(COVID-19\).](#)

[Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., ... & Guan, L. \(2020\). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *The Lancet*.](#)