

COVID-19 CLINICAL CORNER (ISSUE 7): OPTIMIZATION OF PATIENT SAFETY DURING COVID-19:
 PREVENTION AND TREATMENT OF INFLUENZA AND PNEUMONIA

CSC's influenza vaccine uptake in patients, though consistent with the rates seen in the general Canadian population (27-44% in 2018-2019 remains low. In 2018-2019, vaccination coverage at CSC was estimated at 42%. Among high-risk groups however, coverage for adults 65 years of age and older was higher (70%) but adults aged 18-64 years with a chronic medical condition (43%) remained below the national coverage goal of 80% (7). Measuring vaccination coverage is necessary to track CSC's progress towards achieving vaccination coverage goals by 2025 as set by the National Immunization Strategy by the Government of Canada. The national vaccination coverage goals for adults for influenza vaccine coverage is 80% vaccination coverage among adults 65 years of age or older and 80% vaccination coverage among adults 18-64 years of age with chronic medical conditions (8). CSC's proposed target for 2020-21 as a first step is 50% influenza vaccine coverage in those less than 65 years of age and 80% vaccine coverage in those 65 years and older. The goal is to increase CSC's vaccination rates to the described 2025 targets.

One of the most important ways to reduce rates of influenza among high-risk patient populations, e.g., older adults and people living with chronic conditions, is through widespread influenza vaccination and herd immunity, which is when a high enough percentage of the population is vaccinated the chance of becoming infected lowers for everyone.

Vaccine hesitancy is a major barrier to vaccine uptake and the achievement of herd immunity, which is required to protect the most vulnerable populations.

High vaccine coverage can help reduce influenza-related mortality, which may help preserve capacity and function of the health system during circulation of influenza viruses and SARS-CoV-2.

Influenza vaccine effectiveness varies by age, health status and season. Vaccination reduces the risk of influenza illness risk by an estimated 40% to 60% when circulating viruses are well-matched to the vaccine (9). While effectiveness is low compared to other vaccines, influenza vaccination is relatively safe and does not cause influenza (3). Low vaccination rates represent a missed opportunity for reducing influenza every year but could be particularly harmful this year in the context of a COVID-19 pandemic (3).

Pneumococcal Vaccine: Background

The bacterium *Streptococcus pneumoniae* is a common cause of pneumonia and can cause blood infections referred to as invasive pneumococcal disease (IPD). The burden of disease in Canada from pneumococcal disease is increasing dramatically. Approximately 1500 Canadian adults die each year from the infection (10). The disease typically presents as pneumonia, advancing to sepsis as the main cause of death (10).

Pneumococcal Vaccine: Coverage and Effectiveness

There are two types of pneumococcal vaccines for adults in Canada – **conjugate** [Pneu-C-13; Prevnar 13; administered IM] and **polysaccharide** [Pneu-P-23; Pneumovax 23; administered

S/C, IM] (10,11). Efficacy for these vaccines has been demonstrated in large randomized controlled trials (10). The immune response elicited by each type of vaccine varies based on its formulation.

Vaccine	Antigens of serotypes
Pneumovax 23	1, 3, 4, 5, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F, 2, 8, 9N, 10A, 11A, 12F, 15B, 17F, 20, 22F, 33F
Prevnar 13	1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F conjugated to nontoxic diphtheria CRM ₁₉₇ protein

Healthy Adults: Because of the burden of pneumococcal disease caused by serotypes included in the Pneumovax 23 vaccine, but not contained in the Prevnar 13 vaccine, NACI continues to recommend the administration of Pneumovax 23 for all adults 65 years of age and older, regardless of risk factors or previous pneumococcal vaccination (10,11). This also applies to immunocompetent adults with a history of alcoholism, smokers, and illicit drug users (10,11).

High-risk adults: For patients at high risk of IPD such as those with congenital or acquired immunosuppression (e.g., long-term corticosteroids, chemotherapy, and post-organ transplant therapy) and chronic diseases (e.g., chronic kidney disease and patients on dialysis, patients without a spleen), NACI recommends one dose of the conjugate vaccine, followed by the polysaccharide vaccine 8 weeks later (10,11).

CSC's Proposed Strategy for Expanding Influenza and Pneumococcal Vaccine Coverage

CSC's goal is to increase the influenza and pneumococcal vaccine coverage/uptake within its population.

In the current circumstances, it is especially important for all adults to be vaccinated with the seasonal influenza and pneumococcal vaccines, to help reduce the risk of pulmonary infections and decrease hospital admissions (12). Patient perception and knowledge about vaccines are significant drivers in increasing vaccination coverage (12). Please note that though the influenza vaccine is a seasonal vaccine, the pneumococcal vaccine can be offered outside of the influenza season as per the criteria. It is possible that the anxiety surrounding the severity of COVID-19 may influence patients to be vaccinated.

Both the influenza and pneumococcal vaccines can typically be administered in the same visit with the patient. To increase vaccination rates in the CSC inmate population this Fall, CSC health staff are encouraged to think of best practices and novel ways to increase participation, including health promotion materials to raise awareness, engagement with inmate committees, and recognition for health staff based on percent vaccine uptake levels for the season.

As an example, a new initiative was put forth in the Prairies region in 2019-20 where the process of vaccine intake and administration were coordinated through an interdisciplinary team for all new admissions with a standard vaccination form in Drumheller (**See Appendix B: Immunization Screening Form**). The absolute number of pneumococcal vaccines administered increased from 18 (pre-implementation of the screening form) to

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98 (in the 7 months of post-implementation of the screening form); which represents an increase in pneumococcal vaccine administration of 444% in the 7-month period.

However, routine influenza vaccine programs for inmates alone may not be sufficient to prevent outbreaks at sites. CSC is working with Health Canada to coordinate influenza vaccination clinics for CSC staff. Hosted by Health Canada, local Public Health Units, and/or local pharmacies. Staff are also encouraged to ensure that their vaccines status continues to be up-to-date.

Influenza: Treatment and Prophylaxis

CSC National Guidelines for the Management of Seasonal Influenza and Influenza Outbreak is available [here](#) for further information.

The use of antiviral treatment depends on illness severity, symptom onset, risk factors/comorbidities, influenza type, and whether it is a sporadic case or part of an outbreak. Oseltamivir (Tamiflu) and zanamivir (Relenza) are neuraminidase inhibitors, which works by blocking the exit of the influenza virus from respiratory cells; thereby preventing further replication of the virus. Because of their mechanism of action, these medications should be taken as soon as possible, **ideally within 48 hours of symptom onset**, when used for treatment. Later initiation may benefit patients with severe/deteriorating illness.

When an influenza outbreak is declared in an institutional setting, oseltamivir/zanamivir is recommended for:

- **Treatment** of patients who are ill and who meet the case definition regardless of vaccination status;
- **Prophylaxis** of patients who are not ill with influenza symptoms but are located within the outbreak area, regardless of vaccination status;
- **Prophylaxis** of unvaccinated staff members;
- **Prophylaxis** of vaccinated staff members in the event of a mismatch between the vaccine and circulating influenza strains, based on consultation with public health officials

Evidence shows reduction in duration of symptoms and complications with **treatment** of oseltamivir or zanamivir in influenza. Evidence also shows reduction in incidence of symptomatic influenza when taken for **prophylaxis** as defined in the CSC National Guidelines.

Please review the CSC guidelines and discuss among your health care team members to facilitate antiviral prophylaxis and treatment when an outbreak is declared at your institution.

Please discuss with your Regional Pharmacy regarding preparation for delivery of oseltamivir or zanamivir urgently during an outbreak situation, with consideration of the necessary components including prescriptions. As oseltamivir is renally cleared, it is important to be proactive in having a creatinine clearance on file for your patients in advance in the event of an outbreak.

Community-acquired Pneumonia (CAP): Treatment and Prophylaxis

CSC Empiric Antibiotic Guidelines and Intravenous to Oral Antibiotic Protocol is available [here](#) for further information.

It is important to emphasize prompt antibacterial drug therapy for all patients diagnosed with CAP in the context of COVID-19, as it is widely understood that it leads to some of the most serious consequences.

The bacterial pathogens responsible for CAP are reflective of the bacteria that often colonize the upper airway and opportunistically infect the lung during a respiratory illness. In the context of COVID-19, the same recommendations with regards to antibiotics apply (13). Empiric antimicrobial therapy recommendations can be found in [CSC's Empiric Antibiotic Guidelines and Intravenous to Oral Antibiotic Protocol](#). Review pneumococcal status of patient and offer pneumococcal vaccines.

What can we do for our patients?

Vaccines represent one of the safest and most effective public health tools available to prevent and control infectious diseases. With the expectation of a second wave of COVID-19, co-infections with viruses (e.g., influenza) and bacteria (e.g., *S. pneumoniae*) can enhance the risk of severe complications of COVID-19.

Therefore, increasing influenza and pneumococcal vaccine uptake becomes paramount, as these vaccines can effectively reduce the burden of diseases using strategies such as administering both vaccines in the same visit with the patient, using available health promotion materials to raise awareness, and/or incentives for patients such as canteen access. An option for consideration (where possible) is coordinating education of inmates with CSC Pharmacists regarding importance of the use of vaccines and oseltamivir/zanamivir.

Use of a comprehensive vaccine intake form at admission has demonstrated improved vaccine uptake at CSC as previously mentioned (see **Appendix B: Immunization Screening Form**). Screening on admission provides a valuable time to update patients' vaccine status. Introduction of a standard screening form can also be effective in helping health staff to screen patients for eligibility for the pneumococcal vaccine.

Staff should continue to review pneumococcal status and other pneumococcal vaccines in at-risk patients and in those diagnosed with CAP. Along with engaging in CSC's influenza campaign in the Fall/Winter 2020-2021, staff can print health promotional materials for influenza, vaccines, outbreaks, hand hygiene and COVID-19 to use as tools to educate patients to help them make informed decisions; these are available on the Health Services Health Promotion HUB site (please see Resources). Staff are also encouraged to ensure that their own adult vaccines status is up-to-date.

In preparation for outbreak management, calculation of creatinine clearance (Oseltamivir is renally cleared) ahead of the influenza season will assist in preparation for proper dosing (treatment and prophylaxis) in addition to acquiring these prescriptions from prescribers (e.g., standing orders). Advanced discussion with your CSC Regional Pharmacy will assist in being most prepared.

Patient-centered care delivered by a team of health practitioners working together, is key in optimizing vaccine and medication management. By working together, CSC can optimize vaccine administration/uptake which will help improve outcomes in the inmate population. Coordinated education from various health care professionals, may be beneficial in motivating patients

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regarding the benefits of vaccines including reduction in the number of hospitalizations and deaths.

Continue to emphasize personal protection measures to prevent transmitting, spreading, or acquiring COVID-19, specifically (14,15):

- Regular hand hygiene, using alcohol based hand rub or soap and water (dry hands with a single-use towel)
- Observe and maintain physical distancing
- Optimize respiratory hygiene. Cover mouth and nose with tissue when coughing or sneezing or cough into the bend of your arm, discard tissue immediately in a covered bin, and perform hand hygiene
- Avoid touching eyes, nose or mouth as the virus can survive on surfaces.

Continue to emphasize importance of vaccinations including pneumococcal vaccine given the increased risk of secondary bacterial infection with COVID-19 patients.

Stay tuned as more data becomes available.

Please send any other clinical questions related to COVID-19 to [GEN-NHQ Pharmacy](#).

References:

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Resources:
 Health Promotional material:

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- Flu – "It's time to get your flu shot" (Poster)
- Flu/Influenza (Fact Sheet)
- Flu Facts (Poster)
- Flu Shot (Fact Sheet)(PowerPoint)
- Common Cold (Fact Sheet)(PowerPoint)

Grabenstein JD, Manoff SB. Pneumococcal polysaccharide 23-valent vaccine: long-term persistence of circulating antibody and immunogenicity and safety after revaccination in adults. *Vaccine* 2012;30(30):4435-44.

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Appendix A:

Comparison between seasonal influenza and SARS-CoV-2

Characteristics	Seasonal influenza viruses	SARS-CoV-2
Primary route of transmission	Droplet	Droplet (airborne, fomite, and fecal-oral transmission possible but less important)
Overall infectivity	Less contagious	More contagious
Dynamics of infectivity	The basic reproduction number (R_0) of both viruses is highly dependent on NPIs effective in decreasing transmission	
	Patients are most infectious after symptom onset	Patients are most infectious starting 48 h prior to symptom onset ²
Incubation period	1-4 d (median, 2 d)	2-14 d (median, 5 d)
Risk factors for severe disease	<ul style="list-style-type: none"> • Age >65 y and <2 y • Immunosuppression • Pregnancy (through 2 weeks postpartum) • Morbid obesity • Chronic lung disease, cardiac disease, advanced liver disease, chronic kidney disease • Residence in nursing home or long-term care facilities • American Indian/Alaska Native heritage 	<ul style="list-style-type: none"> • Advanced age (risk increases with age) • Male sex • Obesity • Hypertension • Chronic lung disease, cardiac disease, type 2 diabetes, cancer, chronic kidney disease, advanced liver disease • Surgery during incubation period • Residence in nursing home • Structural racism, poverty³
Most common clinical manifestations	Fever, chills, headache, myalgias, cough, nasal congestion, sore throat, fatigue	Fever, chills, headache, myalgias, cough, shortness of breath, fatigue, anosmia
Pediatric disease	<ul style="list-style-type: none"> • Common, especially high risk in children <2 y • Children play a leading role in propagating outbreaks 	<ul style="list-style-type: none"> • Uncommon, with typically mild disease • Multisystem inflammatory syndrome has been observed in children, but is rare • Limited evidence on children as a source of infection
Case-fatality rate	≈0.1%	≈0.25%-3.0% ⁴
Dynamics of symptoms	Symptoms typically peak during first 3-7 d of illness	Symptoms can peak during week 2 or 3 of illness
Vaccine	Multiple approved	No vaccine currently licensed
Clinical diagnostics	Nucleic acid amplification and antigen-based assays from respiratory samples	<ul style="list-style-type: none"> • Nucleic acid amplification and antigen-based assays from respiratory samples • Serologies
Available antiviral agents	<ul style="list-style-type: none"> • Neuraminidase inhibitors • Cap-dependent endonuclease inhibitors • M2 channel blockers 	Nucleoside analogue (remdesivir)

Abbreviations: NPI, nonpharmacologic intervention; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

Reference: Solomon DA, Sherman AC, Kanjilal S. JAMA Insights. Clinical Update. Influenza in the COVID-19 Era. *JAMA* 2020. Published online August 14, 2020. Doi: 10.1001/jama.2020.141661.

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APPENDIX B:

PRA Region - Immunization Screening Form (pilot)

Effective as of August 2020

IMMUNIZATION SCREENING	FPS: Family Name: Given Name: Date of Birth:
Institution:	
Reference: CSC National Guidelines for the Immunization of Patients (June 2018)	
History of allergy or previous adverse affects following immunization: No <input type="checkbox"/> Yes <input type="checkbox"/> If 'yes', specify which vaccine and nature of the adverse affect (i.e. severe local reaction to systemic anaphylaxis) and consult with a physician prior to administering any vaccine.	
Hepatitis A vaccine (Havrix*)	
Previous HAV immunization: No <input type="checkbox"/> Yes <input type="checkbox"/>	Post Exposure: No <input type="checkbox"/> Yes <input type="checkbox"/> (if yes, consult with CSC National Guidelines for the Immunization of Patients and physician for vaccine recommendations)
Pre-immunization testing results:	
Anti-HAV positive: No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes' to both, indicates immunity and the vaccine is not required. If "no" to anti-HAV positive, the vaccine is recommended. If "no" to Anti-HAV IgM negative, indicates current or recent infection – consult with physician.
Anti-HAV IgM negative: No <input type="checkbox"/> Yes <input type="checkbox"/>	
Hepatitis B Vaccine (Engerix*)	
Previous HBV immunization: No <input type="checkbox"/> Yes <input type="checkbox"/>	Post Exposure: No <input type="checkbox"/> Yes <input type="checkbox"/> (if yes, consult with CSC National Guidelines for the Immunization of Patients and physician for vaccine recommendations)
*Immunocompromised: (i.e. chronic renal failure, on dialysis, and non-responder with advanced liver disease) No <input type="checkbox"/> Yes <input type="checkbox"/> (if yes, consult with CSC National Guidelines for the Immunization of Patients and physician for vaccine recommendations)	
Pre-immunization testing results:	
Anti-HBs titre of < 10 IU/L: No <input type="checkbox"/> Yes <input type="checkbox"/>	If yes, give one dose of the vaccine and test one month later before giving the full series. If the anti-HBs titre is still < 10 IU/L, then the second and third dose of the vaccine series are administered.
HBsAg positive: No <input type="checkbox"/> Yes <input type="checkbox"/>	If yes, indicates infection with virus or carrier. Follow-up testing is required in six (6) months to determine whether they are chronic carriers. Vaccine not required.
HBsAg negative and anti-HBs positive: No <input type="checkbox"/> Yes <input type="checkbox"/>	If yes, patient is already immune, either through immunization or infection. If no, and there is no contraindications, patient will be offered immunization.
Anti-HBc IgM positive: No <input type="checkbox"/> Yes <input type="checkbox"/>	If yes, active infection is present and follow up with physician is required.
Hepatitis A & B Vaccine combined (Twinrix*)	
Both Hep A & B immunizations are indicated: No <input type="checkbox"/> Yes <input type="checkbox"/> All patients not immune to both HAV and HBV and who have no contraindications to the vaccine, will be offered immunization.	
Measles, Mumps, Rubella (MMR)	
Pregnant and low titre for rubella antibodies: No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes', single booster should be given in the immediate post-partum period. If "No" to all, immunization can be offered. Pregnant or immunocompromised patients should not receive live vaccine.
Born in or before 1969: No <input type="checkbox"/> Yes <input type="checkbox"/>	
Documented evidence of MMR vaccination: No <input type="checkbox"/> Yes <input type="checkbox"/>	
Immunocompromised: No <input type="checkbox"/> Yes <input type="checkbox"/>	
Human Papilloma Virus (HPV) Vaccine (Gardasil-9)	
Female between 18-45 years: No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes' to any, immunization can be offered. Pregnant or immunocompromised patients should not receive live vaccines.
Male 18-26 years: No <input type="checkbox"/> Yes <input type="checkbox"/>	
*High risk male 27-45 years: No <input type="checkbox"/> Yes <input type="checkbox"/>	
*High risk males refer to the following: HIV infected, solid organ transplant recipients, individuals suffering from autoimmune diseases (lupus erythematosus, rheumatoid arthritis, type 1 diabetes, psoriasis), inflammatory bowel disease, multiple sclerosis, and MSM.	
Pertussis Vaccine (Adacel, Tdap)	
Pregnant women (26 weeks gestation or over) who have not been previously vaccinated in adulthood: No <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input type="checkbox"/>	If 'yes', immunization can be offered.
If Regional outbreak, pregnant women (26 weeks of gestation or over) irrespective of previous immunization: No <input type="checkbox"/> Yes <input type="checkbox"/> N/A <input type="checkbox"/>	If 'yes', immunization can be offered.
18 years or older and not previously vaccinated in adulthood or lacking adequate documentation of immunization including persons who have had natural pertussis infection (whooping cough) previously: No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes', immunization can be offered. If pregnant, apply criteria above.
If it is recommended that a 10-year diphtheria-tetanus (Td) booster dose be replaced once by a dose of the combined Tdap vaccine.	

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		Name: _____	FPS: _____
Tetanus and Diphtheria (Td)			
Previously documented immunization	No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'no' to any, this vaccine is recommended.	
Has received vaccine in last 10 years	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Varicella (Varirix®)			
Serologic Testing is negative (Only applicable to those age 18-49)	No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes' to any, this vaccine is recommended.	
Non-pregnant woman of child-bearing age (18 to 49 years of age)	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Immigrants and refugees from tropical regions (Caribbean, Central and South America (including Mexico); Africa; the Pacific Islands; South East Asia; Hawaii and Australia)	No <input type="checkbox"/> Yes <input type="checkbox"/>	DO NOT administer if pregnant or immunocompromised.	
Susceptible persons who have been exposed to varicella	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Persons receiving chronic salicylate therapy	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Cystic fibrosis	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Household contact of immunocompromised people	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Varicella-Zoster (Zostavax® II)			
Immunocompetent: <i>Patients DOES NOT HAVE any of the following: primary and/or acquired immunodeficiency, acute and chronic leukemia, lymphoma, conditions affecting bone marrow or lymphatic system, HIV/AIDS, cellular immune deficiencies, patients receiving immunosuppressive therapy or high doses of corticosteroids, active untreated tuberculosis or pregnant.</i>	No <input type="checkbox"/> Yes <input type="checkbox"/>	If "yes" to both, administer vaccine.	
Aged ≥65 years of age	No <input type="checkbox"/> Yes <input type="checkbox"/>	DO NOT administer if pregnant or immunocompromised.	
Pneumococcal Polysaccharide Vaccine (PNEU-P-23 (Pneumovax 23® (ppv-23)) (NO RX REQUIRED)			
> 65 years of age with no history of having received the vaccine	No <input type="checkbox"/> Yes <input type="checkbox"/>	If 'yes', vaccine is recommended.	
Asplenia, splenic dysfunction or sickle cell disease	No <input type="checkbox"/> Yes <input type="checkbox"/>	Do not administer Pneumococcal Polysaccharide vaccine concomitantly with Zostavax or PNEU-C-13. Refer to CSC Immunization Guideline.	
Chronic cardio-respiratory disease	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Asthma requiring medical care in the preceding 12 months	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Cirrhosis	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Alcoholism	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Chronic Renal Disease	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Nephrotic syndrome	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Diabetes mellitus	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Chronic CSF leak	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Smoker	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Injection drug users,	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Homeless	No <input type="checkbox"/> Yes <input type="checkbox"/>		
HBV or HCV with co-infection or how have cirrhosis	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Chronic neurologic condition that may impair clearance or oral secretions.	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Cochlear implants (including those who are to receive implants)	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Congenital immunodeficiencies	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Is the person at increased risk of invasive pneumococcal disease (IPD), regardless of age, and 5 years have passed since the initial dose? No <input type="checkbox"/> Yes <input type="checkbox"/> If 'yes', a booster dose is recommended.			
Has individual received both PNEU-C-13 and PNEU-P-23, are they at risk for IPD, and 5 years has passed since the last? No <input type="checkbox"/> Yes <input type="checkbox"/> If 'yes' to all, a booster dose is recommended.			
Pneumococcal Conjugate Vaccine- PNEU-C-13 (Prevnar13® (PCV-13)) (NO RX REQUIRED)			
HPV positive	No <input type="checkbox"/> Yes <input type="checkbox"/>	If 18 years and older and 'yes' to any of the following, carefully review the CSC Immunization Guidelines for administration recommendations.	
Hematopoietic stem cell transplants (HSCT)	No <input type="checkbox"/> Yes <input type="checkbox"/>		
Immunosuppressive conditions (radiation therapy, asplenia, sickle cell disease or other hemoglobinopathies, congenital immunodeficiencies, malignancies, or candidate for solid organ or islet cell transplant)	No <input type="checkbox"/> Yes <input type="checkbox"/>	Do not administer Pneumococcal Conjugate vaccine concomitantly with PNEU-P-23.	
Recommended Immunizations:			
Vaccine	Primary Series	Booster	
Nurse: _____ Signature: _____ Date: _____			
Updated: May 20, 2020			



CORRECTIONAL SERVICE CANADA

CHANGING LIVES. PROTECTING CANADIANS.



Clinical Management of Patients with COVID-19

GUIDANCE DOCUMENT FOR HEALTHCARE PROFESSIONALS

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CSC - CLINICAL MANAGEMENT OF PATIENTS WITH COVID-19

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Document History

Document Date	Document Sections	Description of Revisions
April 9, 2020	Document was created	The document was approved by the National Medical Advisory Committee (NMAC) at the April 5, 2020 meeting.
May 1, 2020	Minor changes throughout the document were made. Other main sections included changes to the "Clinical Presentation/Symptoms", the addition of "Best Practices for Nasopharyngeal Swabs".	The document was reviewed and approved by NMAC at the April 30, 2020 meeting.
July 3, 2020	Added a description on frail older adults and those who are immunosuppressed, added spiritual care to Goals of Care, updated dietary recommendations.	The document was reviewed and approved by NMAC at the June 4, 2020 meeting. No changes were recommended at the National Medical Advisory Committee (NMAC) meeting, June 25, 2020.
September 2020		Next Review

Accountability

This policy was initially reviewed and approved by the National Medical Advisory Committee (NMAC) on April 5, 2020, and will be reviewed at least every 30 days by NMAC to ensure it remains consistent with the risks posed by the COVID-19 pandemic.

Introduction

COVID-19 is a respiratory tract infection caused by a newly emergent coronavirus (SARS-CoV-2) that was first recognized in Wuhan, China, in December 2019. Genetic sequencing of the virus suggests that it is closely linked to the SARS virus.

Most people with COVID-19 develop only mild or uncomplicated illness (81%), approximately 14% develop severe disease that requires hospitalization and oxygen support and approximately 5% require intensive care unit support.

Those with co-morbidities, who are immunocompromised or are older, are at an increased risk for severe illness and may decompensate or deteriorate quickly once mild symptoms are noted. The median day for clinical deterioration was approximately 8 to 9 days after symptom onset.

Note: This document is intended as a guidance tool for the management of patients with COVID-19. Clinical judgement continues to paramount in the application of these recommendations. Please be aware that the information continues to evolve in this area and all efforts will be made to update the information as it becomes available.

Prevention Strategies/Measures

- **Physical distancing** where possible minimum 6 feet (2 meters) apart.
- **Frequent hand hygiene** with soap and water or if not available, alcohol based hand rub for a minimum of 20 seconds.
- **Frequent cleaning and disinfecting** of frequently touched objects and surface.
- **Prompt identification and isolation** of those with symptoms.
- **Practice respiratory hygiene** (cover mouth and nose with tissue when coughing or sneezing or cough into the bend of your arm, discard tissue immediately in a covered bin, and perform hand hygiene).

Clinical Presentations / Symptoms

Clinical Presentations			
Symptoms		n=	7 239
	Cough	5 411	(75%)
	Headache	4 157	(57%)
	Weakness	4 115	(57%)
Pre-Existing Conditions		n=	7 015
	Respiratory disease	841	(12%)
	Cardiac	795	(11%)
	Diabetes	617	(9%)
	Other	1 421	(20%)
Complications		n=	3 644
	Pneumonia	445	(12%)
	Dyspnea	286	(8%)
	Abnormal lung auscultation	251	(7%)
	Other	355	(10%)

Clinical presentation summary of COVID-19 cases reported in Canada,
 retrieved from the COVID 19 Daily
 Epidemiology Update, PHAC, April 20, 2020.

Epidemiological summary of COVID-19
 cases in Canada

Frail older adults and those who are immunosuppressed can present with atypical symptoms. Fever, cough and dyspnea may be absent despite respiratory disease. In frail older adults, atypical symptoms may include milder symptoms, delirium or acute functional decline, little or no temperature elevation, mild hypoxia (O₂ sat<90%) without respiratory symptoms. Patients on immunosuppressive therapies may not display normal, high spiking fevers, and their white blood cell counts may not be as high. (Reference: COVID-19 Clinical Corner: Treatment Considerations for Specific Patient Populations, Issue 3).

Classification of Severity of Disease

Mild Illness: Ambulatory COVID-19 patients, estimated mortality <1%: These are patients who would normally be managed outside of hospital, and do not require supplemental oxygen, intravenous fluids, or other physiologic support.

Symptoms of mildly ill patients include:

- Uncomplicated upper respiratory tract viral infection may have non-specific symptoms such as fever, fatigue, cough (with or without sputum production), anorexia, malaise, muscle pain, sore throat, nasal congestion, or headache.
- Rarely, may also present with diarrhea, nausea, and vomiting.

- Older and/or immunosuppressed patients may present with atypical symptoms.

Moderate Illness: COVID-19 Treatment Unit patients, estimated mortality <5%: These are patients who would normally be managed on a hospital medical/general ward. This could include low-flow supplemental oxygen (e.g., 1-5 L/min via nasal prongs)

Pneumonia can present as mild with no need for supplemental oxygen. However, pneumonia can be severe and can present as:

- Prolonged fever
- Respiratory rate >25 breaths/minute
- SpO₂ ≤93% on room air
- Tachycardia
- Temperature >39

Severe Illness: These patients require immediate transfer to outside hospital. These patients will have symptoms of severe respiratory distress which include:

- Respiratory rate >30 breaths/minute
- SpO₂ ≤93% on 5 litres oxygen
- Heartrate >130 bpm
- Signs of dyspnea or increased work of breathing (e.g. grunting, nasal flaring, wheezing)

Investigations of Suspected Cases of COVID-19

Initiate droplet contact precautions as per CSC Infection Prevention and Control Guidelines.

Mildly ill COVID-19 Patient:

These patients would not normally require any investigation but each patient should have a nasopharyngeal (NP) swab for COVID-19 and if requested by the physician, influenza.

Moderately ill COVID-19 Patient:

These patients would be admitted to the COVID Treatment Unit:

- 1) Initiate specimen collections for laboratory diagnosis;
- 2) NP Swab if not previously collected for both COVID-19 and Influenza;
- 3) Initiate Serology Specimens collection :

<ul style="list-style-type: none"> • CRP • CK • ALP • AST / ALT • LDH • Cr • eGFR • Lactate • Electrolytes 	<ul style="list-style-type: none"> • CBC 	<ul style="list-style-type: none"> • PT • PTT • INR • D-Dimer
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- 4) Chest X-ray (portable, if possible)
- 5) ECG

Best Practices for Nasopharyngeal Swabs

Risk of transmission while collecting an NP swab from a patient can be reduced by placing a procedural mask over the patient's mouth. This can help contain coughing and sneezing. Persons in the room during the procedure should, ideally, be limited to the patient and the person obtaining the specimen. Proper PPE should be worn.

Persons performing the testing should stand to the side of the patient, not directly in front of them, and should move away from the patient (to more than 2 meters away) when the procedure is complete.

Patients should return mask to proper position (covering mouth and nose) after the procedure is complete. Hand hygiene should be performed by all persons.

Management/Treatment COVID-19 (within CSC)

Mildly ill COVID-19 Patient:

These are patients who if in the community would stay at home. They require simple supported care and monitoring. Please see nursing care for patient with mild COVID-19 (Appendix A).

Moderately ill COVID-19 Patient:

These are patients who will be managed in the COVID Treatment Unit. They will require close monitoring and nursing care. These patients will be cared for by a clinical team including a primary care physician, nurse, pharmacist and other health disciplines as well have access to an ID physician for consultation.

- **Nursing:** See nursing care for patient with moderate COVID-19 (Appendix B) ;
- **Fever:** Acetaminophen 500 mg PO/PR every 4 hours (as needed) ;
- **Antiviral Therapy:**
 - Antiviral therapies are not yet proven effective for treatment of suspected or confirmed COVID-19.
- **Antibiotics:**
 - If a superimposed bacterial pneumonia is considered to be present, this should be regarded as a community acquired pneumonia.
 - Before therapy is commenced if possible an ID physician should be consulted. Antibiotic therapy would be provided based on guideline for adult outpatient community acquired pneumonia (CAP). (See Appendix C)
<http://thehub/En/aboutcsc/sectors/health-services/pharmacy/Pages/default.aspx>
- **Immunocompromised Patient, consideration:**
 - Recommend to consult ID Physician for **all** immunocompromised patients, for example (e.g., hematological malignancies, transplantation, immunosuppressive agents, etc.)

Monitoring/Follow-up

Mildly ill COVID-19 Patient:

- See nursing care for patients with mild COVID-19. (Appendix A)

Moderately ill COVID-19 Patient:

- See nursing care for patients with moderate COVID-19 (See Appendix B);
- Monitor for signs of symptomatic improvement;
- Close monitoring emphasized for patients aged 50 years and above with underlying comorbidities that may increase their risk of disease progression including:
 - Cardiovascular disease, cerebrovascular disease, chronic respiratory diseases, chronic kidney disease, chronic liver disease, diabetes, hypertension, cancer, immunocompromising conditions.
- Pregnant Women, consultation with obstetrician and ID Physician;
- The National Early Warning Score (NEWS) 2 aggregate scoring system may be helpful when monitoring for clinical deterioration that would warrant transfer to a higher level of care. (See Appendix D, E & F).

Additional Points for Consideration, Mild & Moderate

- Avoid nebulized medications ;
 - Patients with inflammatory conditions on stable doses of NSAIDs could remain on them unless evidence changes (Ref #1 below) ;
 - ACE inhibitors and Angiotensin Receptor Blockers – patients should be maintained on their therapy in the absence of clinical data suggesting risk, to avoid decompensation of cardiac disease (Ref #1 below) ;
 - Use of ORAL corticosteroids is not recommended in patients with COVID-19. Inhaled corticosteroids are considered safe to use in those who have had them previously prescribed. There is no clinical evidence to support or deny the continued use of oral steroids in patients who have had them previously prescribed, it is known, however, that oral corticosteroids can increase the incidence of some respiratory infections, Consult with healthcare provider and pharmacy with regards to all corticosteroid use.
1. Reference: The COVID-19 Antimicrobial Management Working Group, Alberta Health Services. Recommendations for Antimicrobial Management of Adult Hospitalized Patients with COVID-19.
<https://www.google.ca/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwiCkp0oMfoAhUHGuwKHdXYBzcQFjAAegQIARAB&url=https%3A%2F%2Fwww.albertahealthservices.ca%2Fassets%2Finfo%2Fppih%2Fif-ppih-covid-19-recommendations.pdf&usg=AOvVaw3eAEVUtUhn4cXRRBrPG7wk>

Plan of Care

Treatment plan:

- All patients with suspected or confirmed COVID-19 should have a plan of care documented in the Electronic Medical Record.

Dietary Advice:

- Dietary recommendations during a COVID-19 pandemic and specifically for a patient with COVID-19 are provided in appendices F and G respectively.

Goals of Care:

- For each patient in the COVID-19 Treatment Unit or moderate illness, the clinical team should discuss goals of care up to and including specific patient wishes about end of life care (See Appendix I – Guidance on Staff Communication and Engagement with Patients about COVID-19).
- Spiritual care should be considered as an essential service in supporting patients with COVID-19.

End of Life Care:

- When providing end of life care, attention should be given to non-pharmacological symptom management as well as medications for specific symptoms. With the patient's permission, family and friends should be updated regularly on the patient's condition.
- See [CSC 's Palliative Care Guidelines](#).
- See Chart in Appendix K - End-of-life care in the emergency department for the patient imminently dying of a highly transmissible acute respiratory infection (such as COVID-19).

Communication with Community Hospital:

- Agreement should be reached with the community hospital on the clinical guidelines for transfer of care of a patient with COVID-19. The protocol to follow for transfer to hospital should be known by the clinical team and operations.

Promoting Mental Health

COVID-19: Promoting Mental Health and a Sense of Purpose and Meaning

Everyone is potentially vulnerable to the deleterious effects of stress and social isolation during a pandemic, and those with pre-existing mental or physical illness, multiple stressors and limited social supports even more so. The role of ongoing provision of mental health, spiritual and cultural services during such times cannot be overemphasized, and the role of health and mental health professionals, chaplains and Indigenous Elders is critical.

It is important for mental health services to identify and prioritize high risk or vulnerable patients for assessment and follow up. This includes prioritizing new referrals and patients already known to the service. Factors to consider in prioritizing cases include: those at increased risk for suicide or serious self-harm, on enhanced observation, acutely unstable and/or at risk of serious mental or physical deterioration (e.g. those with considerable or higher needs on the *Mental Health Needs Scale*). This would also include prioritizing those on medical isolation whose daily health visits should include inquiring as to how they are coping, their emotional well being, if they are having any suicidal urges and if they would like to see mental health staff, a chaplain and/or Elder. It can also involve asking people in medical isolation if there are any messages they would like relayed to significant others, and conversations where relevant around end of life issues and wishes. Virtual sessions using telephone or videoconferencing should be encouraged when possible for sessions with mental health staff, chaplains and Elders while social distancing measures remain in effect, otherwise a two metre distance should be respected.

It is important to allow people an opportunity to talk about their fears, and take the time to educate them about COVID-19 and the measures being taken. It is also important to focus on things they can control, including things they can do to lessen the chance of transmission, developing a schedule/routine, finding diversionary activities (e.g. Puzzles, drawing, music, TV, exercise, letters, journaling, reading, studying, etc.), and promoting spiritual and cultural practises as appropriate (e.g. readings, meditation, prayer). Mental health visits should involve review of relevant symptoms, including suicidal or self-harm urges, and medication, including for adherence and drug use, with adjustments to the treatment plan as indicated. Reframing distressing emotions (e.g. fear as indicative of caring for themselves and others) and teaching other stress/emotion regulation management approaches is also encouraged.

*For more details on strategies to promote stress management, resilience and mental health, please see [COVID-19 Clinical Corner, Issue #2, March 27, 2020](#). (See Appendix J).

Appendix A: Nursing Care and Management of a Patient with Mild COVID 19 Symptoms

This document outlines the care plan when providing care for a patient experiencing **mild COVID 19 symptoms** - fever, chills, cough, fatigue, aches and pains, congestion, runny nose, diarrhea and sore throat.

Ensure you practice good handwashing and wear appropriate PPE.

Monitor and record Vital Signs BID, assess for changes, abnormal results or worsening of symptoms

- temperature
- heart rate
- respiratory rate
- blood pressure
- SpO2

Assess general appearance

When assessing respiratory status specifically assess for:

- SOB, at rest, when speaking or with exertion
- persistent pain or pressure in the chest
- bluish lips or face

Nutrition and hydration :

- Monitor nutrition and hydration (Is the patient eating and drinking well? Are they voiding & going to the bathroom regularly?)
- Monitor patient's own use of over the counter medications (i.e. Tylenol for fever and prescribed medications)

If you assess any of the following:

- SaO2 <95 on Room Air
 - Increased work of breathing as assessed above
 - increased respiratory rate
 - increased heart rate > 110 bpm
- OR
- Any abnormal vital signs or worsening of any symptoms

Notify the physician immediately.

Appendix B: Nursing Care and Management of a patient with Moderate COVID 19 Symptoms

This document outlines the care plan for a patient experiencing **moderate COVID 19 symptoms** - fever, chills, cough, fatigue, aches and pains, congestion, and may have chest tightness or pain, feeling SOB, persistent fever, poor fluid intake.

Ensure you practice good handwashing and wear appropriate PPE.

Monitor and record **Vital Signs q4h**, assess for changes, abnormal results or worsening of symptoms:

- temperature
- heart rate
- respiratory rate
- blood pressure
- SpO2
- auscultation of the chest at least once daily

Initiate oxygen therapy to maintain SpO2 >93%:

- Start with 2 L/min by nasal cannula or mask and titrate to a max of 5 L/min.

Complete a general assessment including mental health:

- Assess for new confusion or drowsiness

When assessing respiratory status specifically assess for:

- SOB, at rest, when speaking or with exertion
- Persistent pain or pressure in the chest
- Bluish lips or face

Nutrition and hydration:

- Monitor nutritional status (Are they eating and drinking sufficiently? Record fluid intake and output and monitor bowel functioning).

Pharmacist to review medications on admission to the unit.

If you assess any of the following:

- respiratory rate > 25/min
- SpO2 <93 on NP 5L/min
- increased heart rate > 130 bpm
- increased work of breathing as assessed above
- change in orientation, confusion (for example, GCS <13)
OR
- a NEWS 2 score of ≥5 (see Appendix D, E, and F)

Notify the physician immediately. Consider emergent transfer to outside hospital.

Appendix C: Community acquired pneumonia (CAP)

Adult outpatients: The CRB-65 (please see in notes/references) does not require any blood work & is used easily in an office setting to identify patients who may require hospital admission. Recommended to check pneumococcal vaccine status when patients are diagnosed with CAP.

Infection	Regimen	Usual Duration	Notes/References
CAP, mild to moderate OUTPATIENT without comorbidity/ modifying factors Check pneumococcal vaccine status	1 st line: Amoxicillin 1 g TID 2 nd line: doxycycline 100 mg BID ; Azithromycin 500 mg daily on first day then 250 mg daily x 4 days or 500 mg daily x 3 days; Clarithromycin 500 mg BID	5-14 days Depends on various factors such as clinical presentation, comorbidities, age, and drug selected. Patients should be treated for a minimum of 5 days, be afebrile for 48-72 hours, and otherwise clinically stable before discontinuing therapy. Exception: azithromycin	Review antibiotics prescribed for any type of infection in the previous 3 months; if significant exposure to particular antibiotic class, consider selecting an alternate class. Comorbidity/modifying factors: hospitalization in the past 3 months and/or chronic heart, lung, liver or renal disease, diabetes mellitus, alcoholism, malignancies, asplenia, immunosuppression, age>65 years Consider using a macrolide in patients where atypical organisms are suspected (e.g., more severe illness, positive urine antigen test, or during summer months for Legionella) or in the case of severe penicillin allergy. ** In regions with a high rate (>25%) of macrolide resistant S. pneumoniae, consider use of alternative agents, including those patients without comorbidities. Fluoroquinolones (FQ) should be reserved for treatment failures, comorbidities with recent antibiotic use, allergies or documented infections with highly drug-resistant pneumococci or Legionella due to concerns over rapid emergence of FQ-resistant pneumococci and C. difficile-associated disease.
CAP, mild to moderate OUTPATIENT with comorbidity/ modifying factors Check pneumococcal vaccine status	1 st line: Any one of the beta-lactam agents in COLUMN A plus one of the agents listed on COLUMN B COLUMN A Amoxicillin-clavulanate 875mg BID Cefuroxime axetil 500 mg BID Cefprozil 500 mg BID 2 nd line/if beta-lactam allergic: Levofloxacin 750 mg once daily x 5 days; Moxifloxacin 400 mg once daily x 5 days		
CAP, mild to moderate OUTPATIENT with comorbidity/modifying factors – suspected aspiration ^a Check pneumococcal vaccine status	1 st line: Amoxicillin-clavulanate 875 mg BID; Clindamycin 300 to 450 mg QID		

^a Anaerobic coverage is indicated in the classic aspiration pleuropulmonary syndrome in patients with a history of loss of consciousness because of alcohol/drug overdose or after seizures in patients with concomitant gingival disease or esophageal motility disorders. Consider aspiration pneumonia in patients with difficulties swallowing who show clinical signs of a lower respiratory tract infection
 CAP = Community-acquired pneumonia
 Adapted from: Anti-infective Review Panel. Anti-infective guidelines for community-acquired infections. Toronto: MUHS Health Clearinghouse; 2019. Rx Files Antibiotics and Common Infections. Stewardship, Effectiveness, Safety and Clinical Pearls. October 2016.

Resources:
 1. Rx Files. Antibiotics and Common Infections. Stewardship, Effectiveness, Safety and Clinical Pearls. October 2016. Available from: https://www.rxfiles.ca/files/uploads/downloads/documents/ARX_Newsletter_2019_COMPLETTE.pdf. Accessed on February 20, 2019.
 2. Toronto Central Local Health Integration Network. Management of Community-Acquired Pneumonia in Adults. Available from: <https://www.antiinfectivesociety.com/community-acquired-pneumonia/>. Accessed on February 20, 2019.
 3. Mellay JP, Waterer GW, Long AC et al. Diagnosis and Treatment of Adults with Community-Acquired Pneumonia. An official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. Retrieved from: <https://www.atsjournals.org/doi/pdf/10.1164/rccm.201908-1581S>

CRB-65		Points
Criteria		
Confusion: new onset based on a specific mental test, or disorientation to person, place or time		1
Respiratory rate ≥30 breaths/minute		1
Age ≥ 65 years		1
Low Blood pressure: SBP <90mmHg or DBP ≤60mmHg		1
Score	Risk of Mortality	Suggested Management
0	< 2%	• Outpatient
1-2	~9%	• Consider hospital admission
≥ 3	>19%	• Hospital admission

If a recent urea is available, may use CURB-65 where BUN >7mmol/L = 1 point.

Appendix D: National Early Warning Score (NEWS) 2 - Chart 1

Chart 1: The NEWS scoring system

Physiological parameter	Score						
	3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO ₂ Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO ₂ Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

Reproduced by: Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS*. Updated report of a working party. London: RCP, 2017.

Appendix E: National Early Warning Score (NEWS) 2 - Chart 2

Chart 2: NEWS thresholds and triggers

NEWS score	Clinical risk	Response
Aggregate score 0–4	Low	Ward-based response
Red score Score of 3 in any individual parameter	Low–medium	Urgent ward-based response*
Aggregate score 5–6	Medium	Key threshold for urgent response*
Aggregate score 7 or more	High	Urgent or emergency response**

* Response by a clinician or team with competence in the assessment and treatment of acutely ill patients and in recognising when the escalation of care to a critical care team is appropriate.

**The response team must also include staff with critical care skills, including airway management.

Reproduced by: Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS*. Updated report of a working party. London: RCP, 2017

Appendix F: National Early Warning Score (NEWS) 2 - Chart 4

Chart 4: Clinical response to the NEWS trigger thresholds

NEW score	Frequency of monitoring	Clinical response
0	Minimum 12 hourly	<ul style="list-style-type: none"> Continue routine NEWS monitoring
Total 1–4	Minimum 4–6 hourly	<ul style="list-style-type: none"> Inform registered nurse, who must assess the patient Registered nurse decides whether increased frequency of monitoring and/or escalation of care is required
3 in single parameter	Minimum 1 hourly	<ul style="list-style-type: none"> Registered nurse to inform medical team caring for the patient, who will review and decide whether escalation of care is necessary
Total 5 or more Urgent response threshold	Minimum 1 hourly	<ul style="list-style-type: none"> Registered nurse to immediately inform the medical team caring for the patient Registered nurse to request urgent assessment by a clinician or team with core competencies in the care of acutely ill patients Provide clinical care in an environment with monitoring facilities
Total 7 or more Emergency response threshold	Continuous monitoring of vital signs	<ul style="list-style-type: none"> Registered nurse to immediately inform the medical team caring for the patient – this should be at least at specialist registrar level Emergency assessment by a team with critical care competencies, including practitioner(s) with advanced airway management skills Consider transfer of care to a level 2 or 3 clinical care facility, ie higher-dependency unit or ICU Clinical care in an environment with monitoring facilities

Reproduced by: Royal College of Physicians. *National Early Warning Score (NEWS) 2: Standardising the assessment of acute-illness severity in the NHS*. Updated report of a working party. London: RCP, 2017

Appendix G: Dietary Recommendations during COVID-19

Maintaining a healthy balanced diet will help to support a patient's resistance to the virus.

Meals

- Encourage patients to eat 3 meals per day;
- Encourage patients to try to eat as much as they can at each meal;
- If a patient has a low appetite, encourage them to eat more frequently (in between meals);
- Encourage patients to choose fruits and vegetables rich in colour (dark green, orange, red, etc.) to increase intake of antioxidants and other nutrients that support immune function.

Fluids

- Water is naturally part of many foods like vegetables and fruit; milk products; hot and cold beverages as well as soup;
- Encourage patients to drink cold or warm liquids according to their preference;
- Encourage patients to drink often, with meals and in between meals.

Other tips

- Encourage patients to get plenty of rest (at least 7 to 9 hours every night)
- If a patient is age 60 years or older, consider whether it would be helpful if they took a multivitamin.

A patient cannot “boost” their immune system through diet, and no specific food or supplement will prevent the patient catching COVID-19/Coronavirus. Remind the patient to good hygiene practice remains the best means of avoiding infection.

As no one food or supplement can prevent illness, remind the patient to eat a variety of foods to maintain a healthy balanced diet.

If a patient indicates their appetite is poor and/or they have lost weight, please contact the Regional Dietitian for advice.

Caution: If a patient has specific nutrition needs, it is important that they continue to follow the dietary recommendations made by the dietitian / doctor. If a patient has any dietary concerns, please request a consultation with the regional dietitian for advice.

Appendix H: Dietary Recommendations for a patient with COVID-19 - Confirmed or Suspected

Drink often

It is important that a patient drink often because fever makes a person sweat. This causes a person to lose water and electrolytes.

Water is naturally part of many foods like vegetables and fruit; milk products; hot and cold beverages as well as soup.

Encourage the patient to drink cold or warm liquids according to their preference.

Monitor for signs of dehydration:

- Extreme thirst, dry mouth and tongue, infrequent urination or very dark urine, feelings of dizziness, confusion or headaches.
- Encourage patients to report any concerning symptoms to Health Services

Sore throat

Hard candies or pastilles, preferably without sugar, can also be used to soothe a sore throat.

Fatigue affecting oral intake

It is important that to encourage the patient to eat and drink regularly even if you have a low appetite.

Encourage patients to eat fruits and vegetables rich in colour (dark green, orange, red, etc.) to increase intake of antioxidants and other nutrients that support their body's immune function.

Encourage patients to try to eat as much as they can at each meal;

If a patient's appetite is poor and they are having trouble eating, consult the Regional Dietitian for advice.

GI complaints (nausea, vomiting, diarrhea or severe abdominal pain) that may affect oral intake

It is important that the patient eat and drink, even if they are not feeling well.

If their appetite is poor and they are having trouble eating, speak with the Regional Dietitian for advice.

Appendix I: Guidance on Staff Communication & Engagement with Patients about COVID-19, April 20, 2020

Communication tips

The purpose of these Communication Tips is to help support Healthcare Staff in conversations with patients diagnosed with COVID-19.

As Healthcare Professionals, you are playing a critical role in identifying, reporting and managing cases of COVID-19 within CSC's Institutions.

As there is currently no cure for this virus, infection can sometimes lead to death especially for those most vulnerable (those aged 65 and older; those with compromised immune systems; and those with underlying medical conditions such as, but not limited to, diabetes, heart disease and asthma).

These are unprecedented times and while most of those who contract COVID-19 will recover, it is important to remind all patients to:

- focus on staying healthy;
- practice physical distancing as much as possible;
- wash hands frequently; and,
- follow their current treatment plans.

Acknowledge fears and feelings of uncertainty

Given the potential seriousness of the diagnosis, patients may show signs of anxiety and uncertainty. Some may verbalize their fears and express anxiety about what kind of care they will receive.

- It is important to acknowledge their fears and take the time to talk about their concerns.
- Asking what they are worried about in particular may open the dialogue.
- They may ask how they contracted the virus. Did they infect others?
- Some may be worried about their family and friends and ask if they can connect with them; some may seek spiritual care and guidance for comfort.
- All efforts should be made to reassure patients they will receive the appropriate medical care and that most with the virus will recover.
- In addition, it is important that patients understand the importance of staying as healthy as possible and to follow treatment recommendations for existing conditions.

Discuss goals of care

When a patient is diagnosed with COVID-19, it will be important to explain the kinds of care they will receive and assure them they will be included in all care planning decisions.

- Discuss the range of outcomes, noting that most people infected with COVID -19 virus have mild symptoms and recover. For example about 80% of patients have mild to moderate symptoms. Older persons and those with underlying conditions (hypertension, diabetes, cardiovascular disease etc.) are at higher risk for more severe disease. Therefore, it is important to carefully follow treatment recommendations for existing conditions to stay as healthy as possible.
- Assure the patient they will receive the care they need, including comfort care to avoid distress or discomfort.
- While there may be hope for a patient's full recovery, this is an opportunity to ask the patient whether they have an advanced care plan, should their condition deteriorate.
- Inquire as to whether or not they have completed a DNR.
- Have they identified a substitute decision maker?
- If no advance care planning is in place, initiate the conversation and document the patient's wishes.
- Ask if they have any wishes or messages for loved ones and assure them, you will do your best, within your power, to convey those messages.

Be honest, direct and empathic

- It is important to be honest, direct and empathetic when talking with a patient who has been diagnosed with COVID-19.
- Start the conversation early while the patient is well enough and has the energy for the discussion.
- As some patients may have limited literacy skills, it is important that the information shared, be in words the patient understands so they are better able to participate in discussions about their future care.
- You may also wish to take the time to explain the extra precautions Healthcare Staff are taking (i.e. face masks, gloves, etc.) to avoid the spread of the virus.

Take a moment to prepare yourself for the conversation

- You may be very familiar with the patient as you may have been providing healthcare to them for many years, especially those with underlying chronic conditions. They will be looking to you for reassurance that they are being kept as safe as possible.
- Given that the information on COVID -19 is evolving daily, provide a response based on the most current messaging from Public Health.
- Some discussions will not be easy. Take a moment, to gather your thoughts.

This is a difficult time in healthcare especially for those providing care in challenging environments such as correctional institutions. We recognize that as you come to work every day in CSC, you may also be worried about family and friends at home. We thank you for your professionalism, dedication and service.

CSC Health Services, April 20, 2020

Sources:

- *Coronavirus disease (COVID-19): For health professionals; Canada.ca/coronavirus. Government of Canada website.*
- *Tips to Make the Most Difficult Conversations Easier, ACP Hospitalist; Hospital Medicine, May 2014.*
- *Dying Well in Custody Charter- Self- Assessment Tool; A National Framework for Local Action, April 2018. EndofLifeCareAmbitions.org.uk/tag/prison*
- *COVID Communication Skills, A Playbook of Vital Talk Tips; Vital Talk 2020 website.*
- *What Recovery from COVID-19 Looks Like, Public Health, Scientific American; April 11, 2020.*

Appendix J: COVID-19 Clinical Corner, Issue #2, March 27, 2020

What are the potential effects of stress?

These are unprecedented stressful times, and stress is unavoidable for all of us and those we care for. Stress occurs when our mind perceives a threat, real or imagined, and it can have both positive and negative effects. With acute danger, stress can mobilize us to act to protect ourselves from imminent threat (e.g. fight, flight or freeze response). When the stress is imperceptible or chronic, it can still motivate us into action, but it can also be more prone to have deleterious effects – cognitive, emotional, physical and behavioural. These may include:

Cognitive:

- difficulty concentrating or thinking
- memory problems
- negativity or lack of self-confidence
- constant worrying
- difficulty making decisions

Emotional:

- moodiness or irritability
- anxiety or nervousness
- depression, sadness or guilt
- low morale, hopelessness or helplessness
- feeling agitated or unable to relax

Physical:

- headaches
- muscle tension or other physical pain or discomfort
- stomach problems, nausea, diarrhea or vomiting
- loss of appetite or sex drive
- rapid heart rate, high blood pressure
- insomnia
- fatigue

Behavioural:

- changes in appetite or sleep patterns
- social withdrawal

- nervous habits such as nail biting, teeth grinding or foot tapping
- increased use of caffeine, alcohol, drugs or cigarettes
- neglect of family or work responsibilities
- decline in performance or productivity.

Who is most vulnerable to the deleterious effects of stress?

All of us are vulnerable to the deleterious effects of stress, but some of us are more vulnerable than others. Factors that may make a person more vulnerable include:

- limited social support
- multiple stressors
- uncertainty
- pre-existing mental or physical illness
- difficulty regulating or balancing emotions
- lack self-confidence
- sense of helplessness or powerlessness

What can we do to manage stress during a crisis?

Know that stress is normal under these extraordinary circumstances, but we can all play a role to manage our stress so it can more likely be channelled constructively to promote mental health – our own mental health and that of our family, friends, co-workers and patients. In order to do this, a key to keep in mind is to stay focussed on what is in our control vs what isn't, that is to live by the Serenity Prayer:

Grant me the serenity to accept the things I cannot change, the courage to change the things I can and the wisdom to know the difference.

What is in our control are our actions and words, not our automatic thoughts, feelings and urges, nor the actions, words thoughts or feelings of others. When we focus on what's in our control, we can then feel empowered and be more effective to influence some of these other things in a positive direction.

What we can do for our own health?

First and foremost, it is essential that we look after ourselves if we are going to be of help to others. We can do this by following any and all precautions and advice from public health authorities to stay healthy, minimize our risk of contracting COVID-19 or spreading the disease. Prioritizing our own health will not only improve our own safety but also the safety and health of others. It will also improve our resilience, lessen our anxiety and allow us to better support and care for others (see Keep Informed under Resources for links to various public health agencies).

What can we do for our own mental health?

In addition to protecting our physical health, we can do additional things to promote our mental health and resilience. These include:

- **Connect with others:** It has become more important than ever to stay connected during this time of physical social distancing and isolation. Understanding, compassion and kindness go a long way to mitigating one another's stress. Reach out to family, friends, coworkers or your social or spiritual community, and support one another without judgement. Use the telephone, social media and messenger apps. Don't be afraid to tell others how you are feeling, and don't be afraid to ask for help, including professional help if you are really struggling.
- **Take time for yourself:** Set aside 20-30 minutes at least once and preferably

twice a day to care for yourself. Do some mindful breathing, meditate, stretch, or take a warm bath. Do some activities you usually enjoy – listen to music, watch a movie, play games, or go for a walk. Be patient with yourself, and know that your stress can be channeled to keep yourself safe and to help others.

- **Honour and respect your feelings:** Know that stress and distress are normal at this difficult time, and are a testament to caring for yourself and for others. Be patient with yourself. Avoid blaming yourself if something unfortunate happens. Know that guilt is commonplace, and is not indicative of having done something wrong, but rather is a testament to wishing things were different. And if you did make a mistake, forgive yourself and allow it to promote learning. Talk to select others about your feelings, and consider journaling or using some other art form to express your feelings to avoid things from building up.
- **Live with intention by actively managing your own wellbeing:** Maintain routines where possible: eat regular nutritious meals, drink plenty of fluids, stay physically active and allow adequate time for sleep. Continue with any treatment for pre-existing physical or mental health conditions. Make a list of priorities and try to focus on one thing at a time.
- **Be grateful for good things:** Make it a point to take special note of those people and things in the world that you are grateful for. If it helps, you can write these down in a journal, say them out loud before a meal or post one thing each day on a gratitude tree. You can also invite others in your home or place of work to do same to build a small community of awareness of what there is to be grateful for.
- **Practise good sleep hygiene:** Go to bed and wake up at a regular time and allow

yourself enough sleep to be rested (8 hours for most of us); avoid sleeping in and curtail time in bed during the day and if you must take a nap, limit these to no more than 20-30 minutes; exercise daily, but not right before bed; avoid caffeine within 6 hours of bedtime; have a wind down pre-bedtime ritual (e.g. light reading, music, a light bedtime snack but avoid excess fluids before going to bed); insulate your room from excess light or noise; make sure you have comfortable pillows, set a comfortable temperature on the thermostat; void before retiring; and only use a sleep aid if these other things don't work (consult with your doctor as to which one).

- **Stay informed while managing exposure to media:** News is everywhere 24 hours a day. Too much exposure in such uncertain times can increase our fear and anxiety. To minimize its potential adverse impact, we can read, watch or listen to the news at a specific time each day to receive the updates we need while avoiding being inundated with sensationalistic stories. Use only reputable/reliable sources like the local, provincial or national agency of public health, the CDC or WHO.
- **Help others:** Helping others contributes to our own mental health by giving us a sense of purpose, meaning, value and self-worth (see below for how).

What can we do to help others?

Whether it's at home or at work, there is lot's we can do to help others, most of all by being a role model ourselves. Be aware that even small gestures can go a long way: a kind word, gentle encouragement, respecting social distancing, disinfecting a surface, or offering soap or a hand sanitizer. Be aware too that we help others by respecting those in need of physical isolation such as the elderly, sick or other people at increased risk, but do

reach out to them to offer social support with a text message, phone call or facetime. Reach out to those known to be vulnerable to stress or who are struggling (e.g. those with mental illness or who are socially isolated). Ask others what they need, and offer support while respecting all precautions. Offer those in isolation to deliver food, medicine or other essentials leaving these 6 meters outside their door. And offer your kindness, patience and social support.

At home or at work, we can work with others to designate chairs, work stations, dishes, utensils, computers, telephones and bathrooms for use by a specific person, and assign particular responsibilities to those who are able (e.g. to disinfect high touch surfaces, clean the dishes, take out the garbage, prepare meals, do essential shopping). We can help by respecting any direction to work from or stay at home, and all directions in the work place to stay safe (social distancing, handwashing, use of PPE when indicated).

With our family, friends, co-workers and patients, we can also help by educating them about stress, and reminding them of the message of the serenity prayer to focus on those things that are in their control, such as the things listed in this Clinical Corner, to look after themselves and others.

You can also contact Employee Assistance Services at 1-800-268-7708, which is a 24/7 number. The TTY number is 1-800-567-5803.

Please send any other clinical questions, suggestions or resources related to COVID-19 to the following email account: [GEN-NHQ Pharmacy](mailto:GEN-NHQ@Pharmacy)

*Information presented in this Clinical Corner has been sourced from the websites of the Public Health Agency of Canada, Canadian Mental Health Association, Centers for Disease Control and World Health Organization

*See the following page for resources on keeping informed and managing stress

Resources:

Keep informed:

Public Health Agency of Canada (1 844-280-5020)

<https://www.canada.ca/en/publichealth/services/diseases/coronavirus-disease-covid-19.html>

Newfoundland and Labrador (811)

<https://www.gov.nl.ca/covid-19/>

Prince Edward Island (811)

<https://www.princeedwardisland.ca/en/topic/covid-19>

Nova Scotia (811)

<https://novascotia.ca/coronavirus/>

New Brunswick (811)

https://www2.gnb.ca/content/gnb/en/departments/ocmoh/cdc/content/respiratory_diseases/coronavirus.html

Quebec (1 877 644-4545)

<https://www.inspq.qc.ca/>

Ontario (1 866 797-0000)

<https://www.publichealthontario.ca/>

Manitoba (1 888 315-9257)

<https://www.gov.mb.ca/health/publichealth/index.html>

Saskatchewan (811)

<https://www.saskatchewan.ca/residents/health/~link.aspx?id=6C6BF971659346E0B8E9DE4AE3B2AFF9&z=z>

Alberta (811)

<https://www.alberta.ca/coronavirus-info-for-albertans.aspx>

British Columbia (811)

<http://www.bccdc.ca/health-info/diseases-conditions/covid-19>

Nunavut (1 877 975-5772)

<https://gov.nu.ca/health/information/covid-19-novel-coronavirus>

Northwest Territories (911)

<https://www.hss.gov.nt.ca/en/services/coronavirus-disease-covid-19>

Yukon (811)

<https://yukon.ca/en/health-and-wellness/health-concernsdiseases-and-conditions/find-information-about-coronavirus-covid>

Centers for Disease Control

<https://www.cdc.gov/coronavirus/2019-nCoV/index.html>

World Health Organization

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

Stress and how to manage it:

Canadian Mental Health Association

<https://cmha.ca/documents/stress>

Heart and Stroke Canada

<https://www.heartandstroke.ca/get-healthy/reduce-stress/manage-your-stress>

My Health Alberta

<https://myhealth.alberta.ca/youth-addiction-mentalhealth/stress/stress-self-care-resources>

Healthlink BC

<https://www.healthlinkbc.ca/health-topics/rlxsk>

WebMD

<https://www.webmd.com/balance/guide/tips-to-control-stress#1>

Mayo Clinic

<https://www.mayoclinic.org/tests-procedures/meditation/indepth/meditation/art-20045858>

Positive Psychology

<https://positivepsychology.com/stress-management-techniquetips-burn-out/>

Centre for Addiction and Mental health

<https://www.camh.ca/en/health-info/mental-health-and-covid-19>

Finding Help

<https://www.ementalhealth.ca/>

Guided relaxation and anti-stress meditations:

English

https://www.youtube.com/watch?v=OS_iqfGjL78

<https://www.youtube.com/watch?v=DTmGznab4>

<https://www.youtube.com/watch?v=YFSc7Ck0Ao0>

<https://www.youtube.com/watch?v=Mlr3RsUWrdo>

<https://www.youtube.com/watch?v=CdbzDMSGsyg>

Français

<https://www.youtube.com/watch?v=DczdZpTrMFQ>

<https://www.youtube.com/watch?v=zCxHCJLSvrw>


<https://www.youtube.com/watch?v=jCdhiqhYWfM>

<https://www.youtube.com/watch?v=Z9cZbUlaO1g>

https://www.youtube.com/watch?v=fTvbIw-u_O8

Appendix K: End-of-Life Care in the ED

End-of-Life Care in the ED for the patient imminently dying of a highly transmissible acute respiratory infection (like COVID19)

<p>For all patients</p> <ul style="list-style-type: none"> ● Document discussion around GOC and update category status ● Consider involving spiritual care or palliative care. Ensure COVID status is documented ● Place the patient in a private room with appropriate droplet/contact precautions ● Encourage telephone or video conferencing to minimize visitors ● Ensure my visitors are following appropriate PPE procedures 	<p>Non-pharmacological symptom management</p> <ul style="list-style-type: none"> ● Frequent symptom assessment using validated tools for signs of distress ● Frequent patient repositioning ● Eye and mouth care (avoid deep suctioning) ● Emotional support to patient and family ● Consider discontinuing any therapy or monitoring not contributing to patient comfort 	<p>Avoid the use of</p> <ul style="list-style-type: none"> ● Fan  ● Oxygen > 6 L/minute ● High flow nasal cannula oxygen ● BiPAP or CPAP ● ALL nebulized treatments <p>-----</p> <p>During withdrawal of life-sustaining therapy, do not extubate the patient in the ED, but decrease ventilatory support and ensure comfort throughout.</p>
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Pharmacological symptom management		
<p>Airway Secretions</p> <ul style="list-style-type: none"> ● Glycopyrrolate 0.4mg subcut/IV q4h prn OR ● Scopolamine 0.4mg subcut/IV q4h prn (more sedating, may have a benefit with agitation) 	<p>Dyspnea</p> <p>If opioid-naïve, low-dose morphine is the medication of choice:</p> <ul style="list-style-type: none"> ● Morphine 1-2.5mg subcut/IV q30min prn ● or Hydromorphone 0.25-0.5mg subcut/IV q30min prn ● or Fentanyl 12.5-50mcg subcut/IV q15min prn <p>If opioid tolerant, give breakthrough doses to effect:</p> <ul style="list-style-type: none"> ● Breakthrough dose = 10% of total daily dose of subcut/IV opioid in 24 hours <p>Second line: Midazolam 0.5-1mg subcut/IV q30min prn</p> <p>-----</p> <p>For severe respiratory distress, consider Ketamine in dissociative dosing as a temporizing measure:</p> <ul style="list-style-type: none"> ● Ketamine 1-2mg mg/kg IV or 4 mg/kg IM 	<p>Nausea</p> <ul style="list-style-type: none"> ● Haloperidol 0.5-1mg subcut/IV q4h prn OR ● Ondansetron 4mg subcut/IV q6h prn <p>Fever</p> <ul style="list-style-type: none"> ● Acetaminophen 650mg po/pr q4h prn
<p>Agitation/Delirium</p> <ul style="list-style-type: none"> ● Haloperidol 0.5-1mg subcut/IV q2h prn ● 2nd line: Midazolam 0.5mg subcut/IV q30min prn ● Refractory: consider adding methotrimeprazine 12.5-25mg subcut/IV q4h prn 		
<p>Pain</p> <p>If opioid naïve:</p> <ul style="list-style-type: none"> ● Morphine 2.5-5 mg subcut/IV q2h prn OR ● Hydromorphone 0.5-1mg subcut/IV q2h prn <p>If opioid-tolerant, refer to opioid equi-analgesia and conversion tables</p>		

Infographic created by Dr. Shahbaz Syed, Department of Emergency Medicine, University of Ottawa

Hendin A., La Rivière C.G., Willisroft O.M., O'Connor E., Hughes J., Fischer, L.M. End-of-life care in the Emergency Department for the patient imminently dying of a highly transmissible acute respiratory infection (such as COVID-19). CJEM. March 2020.

Image: EM Ottawa - <https://emottawablog.com/2020/03/end-of-life-care-in-the-ed-related-to-covid-19/>

Article: « End-of-life care in the emergency department for the patient imminently dying of a highly transmissible acute respiratory infection (such as COVID-19) ». Hendin, A., La Rivière, C., Willisroft, D., O'Connor, E., Hughes, J., & Fischer, L. (2020). CJEM, 1-4. doi:10.1017/cem.2020.352

Additional Resources

1. Clinical Management of Patients with Moderate to Severe COVID-19 - Interim Guidance, Retrieved April 2, 2020, Public Health Agency of Canada. This guidance document has been endorsed by: Canadian Critical Care Society and Association of Medical Microbiology and Infectious Disease (AMMI) Canada. <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/clinical-management-covid-19.html#1>
2. Infection prevention and control for coronavirus disease (COVID-19): Interim guidance for acute healthcare settings <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/health-professionals/interim-guidance-acute-healthcare-settings.html>
3. BMJ Best Practice. Coronavirus disease 2019 (COVID-19) Best Practice Clinical Guidelines. Retrieved March 24, 2020, from <https://bestpractice.bmj.com/topics/en-gb/3000168>
4. Centers for disease Control and Prevention. Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19). Retrieved April 3, 2020, from <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>
5. Public Health Agency of Canada. (2020, March 23). Government of Canada. Retrieved March 24, 2020, from <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/cleaning-disinfecting-public-spaces.html>
6. World Health Organization. (2020, March 13). Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected. Retrieved March 24, 2020, from [https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-\(ncov\)-infection-is-suspected](https://www.who.int/publications-detail/clinical-management-of-severe-acute-respiratory-infection-when-novel-coronavirus-(ncov)-infection-is-suspected)
7. ICD-10-CA Coding Direction for Confirmed COVID-19 Cases - <https://www.cihi.ca/en/bulletin/icd-10-ca-coding-direction-for-confirmed-covid-19-cases>
 - As direction from the World Health Organization (WHO), when there is documentation of a confirmed case of COVID-19, assign *U07.1* Emergency use of U07.1.
 - Note: Do not assign U07.1 when COVID-19 is only suspected.



CORRECTIONAL SERVICE CANADA

CHANGING LIVES. PROTECTING CANADIANS.



Clinical Management of Patients with COVID-19

GUIDANCE DOCUMENT FOR HEALTHCARE PROFESSIONALS

UPDATED OCTOBER 8, 2020

Created: April 8, 2020



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CSC - CLINICAL MANAGEMENT OF PATIENTS WITH COVID-19

Document History

Document Date	Document Sections	Description of Revisions
April 9, 2020	Document was created	The document was approved by the National Medical Advisory Committee (NMAC) at the April 5, 2020 meeting.
May 1, 2020	Minor changes throughout the document were made. Other main sections included changes to the "Clinical Presentation/Symptoms", the addition of "Best Practices for Nasopharyngeal Swabs".	The document was reviewed and approved by NMAC at the April 30, 2020 meeting.
July 3, 2020	Added a description on frail older adults and those who are immunosuppressed, added spiritual care to Goals of Care, updated dietary recommendations.	The document was reviewed and approved by NMAC at the June 4, 2020 meeting. No changes were recommended at the NMAC meeting, June 25, 2020.
October 8, 2020	Integrated relevant guidance from PHAC's Clinical management of patients with COVID-19: Second interim guidance. Updates include: prevalence of common signs, symptoms, and comorbidities; potential complications; reinfection; managing co-infections; and recommendations regarding the use of dexamethasone and Remdesivir.	The document was reviewed and approved by NMAC at the September 24, 2020 meeting. The document was reviewed and approved by HSET at the October 8, 2020 meeting.

Accountability

This policy was initially reviewed and approved by the National Medical Advisory Committee (NMAC) on April 5, 2020, and will be reviewed at least every 30 days by NMAC to ensure it remains consistent with the risks posed by the COVID-19 pandemic.

Introduction

COVID-19 is a respiratory tract infection caused by a newly emergent coronavirus (SARS-CoV-2) that was first recognized in Wuhan, China, in December 2019. Genetic sequencing of the virus suggests that it is closely linked to the SARS virus.

According to recent data from the Public Health Agency of Canada, most Canadians with COVID-19 develop only mild or uncomplicated illness (84%), approximately 13% develop severe disease that requires hospitalization and oxygen support and approximately 3% require intensive care unit support. See [Canada COVID-19 Daily Epidemiology Report](#) for the most recent figures.

Those with co-morbidities, who are immunocompromised or are older, are at an increased risk for severe illness and may decompensate or deteriorate quickly once mild symptoms are noted.

According to a recent epidemiological report by the Public Health Agency of Canada, the median time from symptom onset to hospital admission is 5 days. Among hospitalized patients, the median length of stay is 11 days. See [Canada COVID-19 Weekly Epidemiology Report](#) for the most recent figures.

Note: This document is intended as a guidance tool for the management of patients with COVID-19. Clinical judgement continues to paramount in the application of these recommendations. Please be aware that the information continues to evolve in this area and all efforts will be made to update the information as it becomes available.

Prevention Strategies/Measures

- **Physical distancing** where possible minimum 6 feet (2 meters) apart.
- **Frequent hand hygiene** with soap and water or alcohol based hand rub for a minimum of 20 seconds.
- **Frequent cleaning and disinfecting** of frequently touched objects and surface.
- **Prompt identification and isolation** of those with symptoms.
- **Practice respiratory hygiene** (cover mouth and nose with tissue when coughing or sneezing or cough into the bend of your arm, discard tissue immediately in a covered bin, and perform hand hygiene).
- **Universal Masking**, as per the CSC's [COVID-19 update: guidance on the use of non-medical masks and personal protective equipment](#).

Additional risk mitigation measures are outlined in CSC's [Risk Management Framework](#).

Clinical Presentations / Symptom

Clinical presentation and symptoms of COVID-19 vary in frequency and severity. Symptoms absent at the onset of illness may develop over time with disease progression.

The current estimates of the incubation period range from 1-14 days with median estimates of 5-6 days between infection and the onset of clinical symptoms of the disease. People infected with SARS-CoV-2 may be infectious before symptom onset. The risk of infection from most patients at more than 8 days post symptom onset is likely to be low.

According to PHAC, it has been estimated that up to half of persons infected with COVID-19 will remain pauci-symptomatic (positive case in the presence of very limited symptomatology) or asymptomatic.

Signs and symptoms

Reported frequency of symptoms

More frequent (>50%)	Less frequent (<50%)	Rare (<10%)
<ul style="list-style-type: none"> Fever (44-91%) Cough (57-74%) Shortness of breath (31–63%) Fatigue (31–70%) Loss of appetite (39-84%) Loss of smell and/or taste (54-88%) 	<ul style="list-style-type: none"> Sputum production (28–33%) Muscle aches (11–44%) Chest pain (16-36%) Diarrhea (5-24%) Nausea/vomiting (5-19%) Headache (6-70%) Dizziness (9-17%) Sore throat (11-13%) 	<ul style="list-style-type: none"> Confusion Runny nose Fainting Skin manifestations

Source: PHAC. (2020-June-18). [COVID-19 signs, symptoms and severity of disease: A clinician guide](#)

Frail older adults and those who are immunosuppressed can present with atypical symptoms. Fever, cough and dyspnea may be absent despite respiratory disease. In frail older adults, atypical symptoms may include milder symptoms, delirium or acute functional decline, little or no temperature elevation, mild hypoxia (O2 sat <90%) without respiratory symptoms.

Disease severity and risk factors for severe disease

Common comorbidities in COVID-19 cases

More frequent (>40%)	Less frequent (10-39%)	Infrequent (<10%)
<ul style="list-style-type: none"> Hypertension (17%-82%) Cardiovascular disease 	<ul style="list-style-type: none"> Chronic respiratory disease (12%-22%) 	<ul style="list-style-type: none"> Cancer (2%-7%) Atrial fibrillation/arrhythmia (3%-6%)

More frequent (>40%)	Less frequent (10-39%)	Infrequent (<10%)
including heart failure (5%-55%) <ul style="list-style-type: none"> Diabetes (4%-40%) 	<ul style="list-style-type: none"> Chronic renal disease (11%-14%) Obesity (22-29%) Asthma (11%) 	<ul style="list-style-type: none"> Endocrine disorders (6%) Gastrointestinal disease (5%) Chronic liver disease (2%-3%) Neurologic diseases, including dementia and stroke (8%-13%)

Source: PHAC. (2020-June-18). [COVID-19 signs, symptoms and severity of disease: A clinician guide](#)

Patients on immunosuppressive therapies may not display normal, high spiking fevers, and their white blood cell counts may not be as high. (See [COVID-19 Clinical Corner: Treatment Considerations for Specific Patient Populations](#), Issue 3).

Complications

In severe cases, COVID-19 can be complicated by respiratory failure, acute respiratory distress syndrome (ARDS), sepsis and septic shock, and multi-system organ failure, including acute kidney injury and cardiac injury.

Patients with COVID-19 may be susceptible to venous thromboembolism (VTE) due to severe infection and inflammation. VTE can present as deep vein thrombosis or pulmonary embolism. Lab abnormalities include elevated D-dimer and fibrinogen levels. A markedly elevated D-dimer is considered a poor prognostic indicator and is associated with increased risk of death from COVID-19. (See [COVID-19 Clinical Corner: Considerations for Thrombosis](#), Issue 5)

Reinfection

There have recently been reported a small number of cases of probable reinfection. The reported case did not show a consistent pattern of presentation. It is known that following infection, the majority of individuals will develop IgM and IgG antibodies within days to weeks of symptom onset. However, the relationship between antibody levels and the level of protection against reinfection, as well as the role of cellular immunity in preventing reinfection (including cross-protective immunity following exposure to common coronaviruses) remains undetermined. Any case of potential reinfection would need specific advice from both an infectious disease physician and the public health physician or the laboratory medicine physician.

For other coronaviruses (e.g. MERS-CoV and SARS-CoV-1), protective antibodies have been reported to decline as early as several months following infection.

Classification of Severity of Disease

There is a spectrum of COVID-19 disease severity, ranging from asymptomatic or mild, to moderate and severe disease. This guidance document mainly addresses the clinical management of mild and moderate illness, as those with severe disease require transfer to outside hospital.

Mild Illness

Ambulatory COVID-19 patients, estimated mortality <1%: These are patients who would normally be managed outside of hospital, and do not require supplemental oxygen, intravenous fluids, or other physiologic support.

Symptoms of mildly ill patients include:

- Uncomplicated upper respiratory tract viral infection may have non-specific symptoms such as fever, fatigue, cough (with or without sputum production), anorexia, malaise, muscle pain, sore throat, dyspnea, nasal congestion, conjunctivitis, loss/alteration of smell and taste, or headache.
- Rarely, may also present with diarrhea, abdominal pain, nausea, and vomiting.
- Many are afebrile or have low-grade fever.
- Older and/or immunosuppressed patients may present with atypical symptoms.
- Symptoms due to physiologic adaptations of pregnancy or adverse pregnancy events, for example, dyspnea, fever, GI symptoms or fatigue, may overlap with COVID-19 symptoms.

Moderate Illness

COVID-19 Treatment Unit/Regional Hospital patients, estimated mortality <5%: These are patients who would normally be managed on a hospital medical/general ward. This could include low-flow supplemental oxygen (e.g., 1-5 L/min via nasal prongs)

Pneumonia can present as mild with no need for supplemental oxygen. However, pneumonia can be severe and can present as:

- Prolonged fever or suspected respiratory infection plus one of the following:
- Respiratory rate >25 breaths/minute
- SpO₂ ≥ 90% on room air
- Respiratory distress
- Tachycardia

Severe Illness

These patients require immediate transfer to outside hospital. These patients will have symptoms of severe respiratory distress which include:

- Respiratory rate >30 breaths/minute
- SpO₂ ≤93% on 5 litres oxygen

- Heart rate >130 bpm
- Signs of dyspnea or increased work of breathing (e.g. grunting, nasal flaring, wheezing)

Investigations of Suspected Cases of COVID-19

Medically isolate the patient and initiate contact and droplet precautions, as per:

- Patient Journey: Symptomatic inmates and close contacts
- COVID-19 update: Guidance on the use of non-medical masks and personal protective equipment
- CSC's Infection Prevention and Control Guidelines

All patients who are clinically suspected of infection with COVID-19 should be tested. Currently, PCR-based molecular testing is predominantly being used in Canada. Since the sensitivity and specificity are linked to the viral load in the specimen, test performance varies during the course of the illness and by specimen type and quality of specimen collection.

Note: False negative test results/interpretations can occur when:

- The patient was not infected at the time of the initial swab, but became infected from a later exposure.
- The patient is infected but is not yet shedding much virus in the upper respiratory tract.
- The patient is shedding the virus but the sample collection was poor.
- Patient's infection is manifesting outside the upper respiratory tract. In symptomatic people with mild infection, the virus is shed just before or soon after symptom onset and in high numbers in the upper respiratory tract, lasting for at least 5-7 days.

Mild Illness

These patients would not normally require any investigation but each patient should have a nasopharyngeal (NP) swab for COVID-19 and if requested by the physician, influenza.

Moderate Illness

These patients would be admitted to the COVID-19 Treatment Unit or a Regional Hospital:

- 1) Initiate specimen collections for laboratory diagnosis;
- 2) NP Swab if not previously collected for both COVID-19 and Influenza;
- 3) Initiate laboratory specimen collection:

<ul style="list-style-type: none"> • CRP • CK • ALP • AST / ALT • LDH • Cr • eGFR • Lactate • Electrolytes • Glucose 	<ul style="list-style-type: none"> • CBC 	<ul style="list-style-type: none"> • PT • PTT • INR • D-Dimer
<p>Note: Lymphopenia, neutrophilia, elevated serum alanine aminotransferase and aspartate aminotransferase levels, elevated lactate dehydrogenase, high CRP, and high ferritin levels may be associated with greater illness severity. (Source: PHAC's Clinical management of patients with COVID-19: Second interim guidance)</p>		

- 4) Chest X-ray (portable, if possible)
- 5) ECG

Best Practices for Collection of Nasopharyngeal Specimens

Risk of transmission while collecting an NP swab from a patient can be reduced by placing a procedural mask over the patient's mouth. This can help contain coughing and sneezing. Persons in the room during the procedure should, ideally, be limited to the patient and the person obtaining the specimen. Proper PPE should be worn (see [COVID-19 update: Guidance on the use of non-medical masks and personal protective equipment](#)).

Persons performing the testing should stand to the side of the patient, not directly in front of them, and should move away from the patient (to more than 2 meters away) when the procedure is complete.

Patients should return mask to proper position (covering mouth, nose, and chin) after the procedure is complete. Hand hygiene should be performed by all persons.

Management/Treatment COVID-19 (within CSC)

Mildly ill COVID-19 Patient:

These are patients who, if in the community, would stay at home. They require simple supported care and monitoring. Please see nursing care for patient with mild COVID-19 (Appendix A).

Counsel patients with mild COVID-19 about the signs and symptoms of complications that should prompt urgent care (difficulty breathing, pain or pressure in chest, confusion, drowsiness, or weakness). Emphasize importance of immediately reporting these symptoms to health services.

Moderately ill COVID-19 Patient:

These are patients who will be managed in the COVID-19 Treatment Unit or Regional Hospital. They will require close monitoring and nursing care. These patients will be cared for by a clinical team including a primary care physician, nurse, pharmacist and other health disciplines as well have access to an ID physician for consultation.

The decision regarding the location of care (i.e. COVID-19 Treatment Unit/Regional Hospital vs. outside hospitalization) should be made on a case-by-case basis and will depend on the clinical presentation, requirement for supportive care, and potential risk factors for severe disease. For patients at high risk for deterioration, admission to hospital should be considered. The median time to acute respiratory distress syndrome (ARDS) ranges from 8 to 12 days.

- Nursing:
 - See nursing care for patient with moderate COVID-19 (Appendix B) ;
- Fever:
 - Acetaminophen 500 mg PO/PR every 4 hours (as needed) ;
- Antiviral Therapy:
 - Antiviral therapies are not yet proven effective for treatment of suspected or confirmed COVID-19.
- Antibiotics:
 - If a superimposed bacterial pneumonia is considered to be present, this should be regarded as a community acquired pneumonia.
 - Before therapy is commenced if possible an ID physician should be consulted. Antibiotic therapy would be provided based on guideline for adult outpatient community acquired pneumonia (CAP). (See Appendix C)
<http://thehub/En/about-csc/sectors/health-services/pharmacy/Pages/default.aspx#1>
- Immunocompromised Patient, consider:
 - Recommend to consult ID Physician for all immunocompromised patients, for example (e.g., hematological malignancies, transplantation, immunosuppressive agents, etc.)

Note:

- **Dexamethasone:** PHAC received recommendations from the Canadian Clinical Pharmacology Taskforce Group, CPTG, that among hospitalized adult patients who have COVID-19 and require supplemental oxygen or mechanical ventilation, clinicians should strongly consider dexamethasone 6 mg IV daily for 10 days (or until off oxygen or discharge if earlier) or equivalent glucocorticoid dose. This recommendation is categorized under the management of **critical** COVID-19 patients (see Appendix D).
- **Remdesivir:** Regarding the use of Remdesivir, the COVID-19 Clinical Pharmacology Task Group, CPTG, provided PHAC a recommendation that its use can be considered either as a therapy or preferably as part of a randomized controlled trial (see Appendix E). Presently, supply and access to Remdesivir may be limited in Canada, likely until the end of 2020. The benefit of Remdesivir on reducing time to recovery in the main clinical trial was highest among hospitalized patients who were not intubated but required supplemental oxygen. Remdesivir is indicated for the treatment of COVID-19 in adults and adolescents (≥12 years with body weight ≥ 40 kg) with pneumonia requiring supplemental oxygen. See [Remdesivir product monograph](#) for dosing information.
 - *Note: Remdesivir is administered by IV infusion only, generally in hospital settings. The product monograph recommends clinicians assess kidney and hepatic function at baseline and during treatment.*
- For more information, see:
 - PHAC. (2020). [Clinical management of patients with COVID-19: Second interim guidance](#).
 - Beigel, J. H., Tomashek, K. M., Dodd, L. E., Mehta, A. K., Zingman, B. S., Kalil, A. C., ... & Lopez de Castilla, D. (2020). [Remdesivir for the treatment of Covid-19—preliminary report](#). *New England Journal of Medicine*.
 - Horby, P., Lim, W. S., Emberson, J. R., Mafham, M., Bell, J. L., Linsell, L., ... & Prudon, B. (2020). [Dexamethasone in Hospitalized Patients with Covid-19—Preliminary Report](#). *The New England Journal of Medicine*.

Treatment of Co-Infections

The prevalence of acute co-infections or secondary infections coinciding with COVID-19 is not well understood but appears to be low. Overuse of antibiotics should be avoided, and decisions about antibiotic therapy should be made in consultation with an ID physician if possible.

The clinical presentation of COVID-19 is similar to influenza and other respiratory pathogens. During the pandemic, the possibility of COVID-19 should always be considered. Clinical investigation for co-infections, including the potential for influenza, should take into account local epidemiology. When there is ongoing local circulation of influenza, empiric therapy with a neuraminidase inhibitor should be considered for the treatment of influenza viruses in patients with or at risk for severe disease.

For more information, see:

- PHAC. (2020). Treatment of co-infections. Clinical management of patients with COVID-19: Second interim guidance.
- Kondo, Y., Miyazaki, S., Yamashita, R., & Ikeda, T. (2020). Coinfection with SARS-CoV-2 and influenza A virus. BMJ Case Reports CP, 13(7), e236812.

Monitoring/Follow-up

Mildly ill COVID-19 Patient:

- See nursing care for patients with mild COVID-19. (Appendix A)

Moderately ill COVID-19 Patient:

- See nursing care for patients with moderate COVID-19 (See Appendix B);
- Monitor for signs of symptomatic improvement;
- Close monitoring emphasized for patients aged 50 years and above with underlying comorbidities that may increase their risk of disease progression including:
 - Cardiovascular disease, cerebrovascular disease, chronic respiratory diseases, chronic kidney disease, chronic liver disease, diabetes, hypertension, cancer, immunocompromising conditions.
- Pregnant Women, consultation with obstetrician and ID Physician;
- The National Early Warning Score (NEWS) 2 aggregate scoring system may be helpful when monitoring for clinical deterioration that would warrant transfer to a higher level of care. (See Appendix F, G & H).

Additional Points for Consideration, Mild & Moderate

- Avoid nebulized medications ;
- Patients requiring CPAP for sleep disordered breathing (SDB) should be managed as per the COVID -19: Interim Revisions to Continuous Positive Airway Pressure (CPAP) Procedures (presently under review);
- Patients with inflammatory conditions on stable doses of NSAIDs could remain on them unless evidence changes¹;
- ACE inhibitors and Angiotensin Receptor Blockers – patients should be maintained on their therapy in the absence of clinical data suggesting risk, to avoid decompensation of cardiac disease¹;
- Use of ORAL corticosteroids is not recommended in patients with COVID-19. Inhaled corticosteroids are considered safe to use in those who have had them previously prescribed. There is no clinical evidence to support or deny the continued use of oral steroids in patients who have had them previously prescribed, it is known, however, that oral corticosteroids can increase the incidence of some respiratory infections, Consult with healthcare provider and pharmacy with regards to all corticosteroid use.

1. Source: The COVID-19 Antimicrobial Management Working Group, Alberta Health Services. Recommendations for Antimicrobial Management of Adult Hospitalized Patients with COVID-19.

Plan of Care

Treatment plan:

- All patients with suspected or confirmed COVID-19 should have a plan of care documented in the Electronic Medical Record.

Dietary Advice:

- Dietary recommendations during a COVID-19 pandemic and specifically for a patient with COVID-19 are provided in appendices I and J respectively.

Goals of Care:

- For each patient in the COVID-19 Treatment Unit or moderate illness, the clinical team should discuss goals of care up to and including specific patient wishes about end of life care (See Appendix K – Guidance on Staff Communication and Engagement with Patients about COVID-19).
- Spiritual care should be considered as an essential service in supporting patients with COVID-19.

End of Life Care:

- When providing end of life care, attention should be given to non-pharmacological symptom management as well as medications for specific symptoms. With the patient's permission, family and friends should be updated regularly on the patient's condition.
- See CSC's Palliative Care Guidelines.
- See Chart in Appendix L - End-of-life care in the emergency department for the patient imminently dying of a highly transmissible acute respiratory infection (such as COVID-19).

Communication with Community Hospital:

- Agreement should be reached with the community hospital on the clinical guidelines for transfer of care of a patient with COVID-19. The protocol to follow for transfer to hospital should be known by the clinical team and operations.

Promoting Mental Health

COVID-19: Promoting Mental Health and a Sense of Purpose and Meaning

Everyone is potentially vulnerable to the deleterious effects of stress and social isolation during a pandemic, and those with pre-existing mental or physical illness, multiple stressors and limited social supports even more so. The role of ongoing provision of mental health, spiritual and cultural services during such times cannot be overemphasized, and the role of health and mental health professionals, chaplains and Indigenous Elders is critical.

It is important for mental health services to identify and prioritize high risk or vulnerable patients for assessment and follow up. This includes prioritizing new referrals and patients already known to the service. Factors to consider in prioritizing cases include: those at increased risk for suicide or serious self-harm, on enhanced observation, acutely unstable and/or at risk of serious mental or physical deterioration (e.g. those with considerable or higher needs on the *Mental Health Needs Scale*). This would also include prioritizing those on medical isolation whose daily health visits should include inquiring as to how they are coping, their emotional well being, if they are having any suicidal urges and if they would like to see mental health staff, a chaplain and/or Elder. It can also involve asking people in medical isolation if there are any messages they would like relayed to significant others, and conversations where relevant around end of life issues and wishes. Virtual sessions using telephone or videoconferencing should be encouraged when possible for sessions with mental health staff, chaplains and Elders while social distancing measures remain in effect, otherwise a two metre distance should be respected.

It is important to allow people an opportunity to talk about their fears, and take the time to educate them about COVID-19 and the measures being taken. It is also important to focus on things they can control, including things they can do to lessen the chance of transmission, developing a schedule/routine, finding diversionary activities (e.g. Puzzles, drawing, music, TV, exercise, letters, journaling, reading, studying, etc.), and promoting spiritual and cultural practises as appropriate (e.g. readings, meditation, prayer). Mental health visits should involve review of relevant symptoms, including suicidal or self-harm urges, and medication, including for adherence and drug use, with adjustments to the treatment plan as indicated. Reframing distressing emotions (e.g. fear as indicative of caring for themselves and others) and teaching other stress/emotion regulation management approaches is also encouraged.

*For more details on strategies to promote stress management, resilience and mental health, please see [COVID-19 Clinical Corner, Issue #2, March 27, 2020](#).