

CORONAVIRUS (SARS-COV-2)

Disease Overview

Coronaviruses are a large family of viruses that infect mammals and birds. In humans they most commonly cause respiratory tract infections, which can vary from mild to severe. COVID-19 is a disease caused by the coronavirus SARS-CoV-2.

Symptoms

Symptoms may take up to 14 days to appear after exposure to SARS-CoV 2.

COVID-19 symptoms can vary significantly in type, frequency, and severity between individuals. Symptoms that are absent at the onset of illness may develop over time with disease progression. As new variants emerge there may be changes in the patterns of symptoms that individuals display. **Table 1** below outlines the common, less frequent, and rare symptoms in COVID-19 individuals.

Table 1: Common, less frequent, and rare symptoms with COVID-19*

Common symptoms (>50%)	Less frequent (≤ 50%)	Rare symptoms (<10%)
<ul style="list-style-type: none">• Runny nose• Sneezing• Sore throat• Headache	<ul style="list-style-type: none">• Persistent cough• Joint pain• Chills• Fever• Dizziness• Muscle pain• Gastro intestinal symptoms (nausea, diarrhea, abdominal pain)• New loss of or altered sense of smell	<ul style="list-style-type: none">• Swollen glands• Chest pain• Irregular heartbeat• Shortness of breath• Skin changes• Delirium• Confusion/brain fog

In a vulnerable setting testing is indicated when a resident has a cough or fever, or two or more of the above symptoms.

There is a spectrum of [COVID-19 disease severity](#), ranging from asymptomatic, mild, moderate, severe and critical disease. Severe disease more often occurs in those with increasing age and those with underlying medical conditions, with the risk increasing with the number of underlying conditions. This can include multisystem inflammatory syndrome in both children and adults.

Note: It is important to evaluate whether the patient's symptoms are new, worsening, or different from their baseline

Reservoir

Primarily humans with sustained person to person transmission.

SARS-CoV-2 will naturally develop mutations, which are changes to the genetic material in the virus over time. Overall, variants of concern represent the majority of recently reported COVID-19 cases across the country.

Humans infected with COVID-19 can transmit SARS-CoV-2 to animals. There is much unknown about implications of animal infections, for example if animals could become reservoirs.

Mode of Transmission

Droplet, aerosol, and contact transmission all have a potential role in the spread of COVID-19 however, COVID-19 is typically transmitted through droplets or small particle aerosols spread when someone coughs, sneezes, talks, or even breathes. Droplets vary in size, from large droplets that fall to the ground rapidly (within seconds or minutes) near the infected person, to smaller droplets, sometimes called aerosols, which linger in the air, especially in indoor spaces.

Incubation period

1 to 14 days, with an average of 5-6 days from exposure to symptom onset. Some variation from this may occur depending on the circulating variant.

Period Communicability

Evidence to date suggests that communicability starts up to 2 days before onset of symptoms (or 2 days before date of specimen collection for positive test result, if asymptomatic), with most people being non contagious by day 10.

If the case is immunocompromised or has severe illness (e.g. admitted to hospital due to COVID-19), symptoms may be experienced for days to weeks after testing positive, with prolonged period of positivity and communicability (viral shedding).

Risk Factors

Increased risk of severe illness for:

- Those who are:
 - 65 years and older
 - immunocompromised persons at any age; (active or recent cancer treatment, solid organ transplant, recent stem cell transplant, primary immunodeficiency, HIV / AIDS, immune suppression therapy, splenectomy, dialysis)
 - living with chronic conditions: lung disease, heart disease, hypertension (high blood pressure), diabetes, kidney disease, liver disease, mental health conditions, dementia, and stroke
 - pregnant
 - morbidly obese (BMI \geq 40); or
 - not up-to-date with the vaccine

Those at higher risk of exposure (close quarters and potential for easy spread):

- Nursing Homes and Adult Residential Facilities(ARF): residents of Long-Term Care (LTC)
- Corrections clients
- Homeless shelters / Isolation site / transition homes
- First Nations Communities

People at higher risk of transmitting COVID-19 to vulnerable individuals include:

- Health care and other care providers in facilities and community settings who, through their activities, are capable of transmitting COVID-19 to those at high risk of COVID-19 complications.
- Household contacts (adults and children) of individuals at high risk of COVID-related complications (whether or not the individual at high risk has been immunized)
- Those who provide services within closed or relatively closed settings to persons at high risk (e.g. crew on a ship).

Surveillance Case Definition

Confirmed Case

A confirmed case of SARS-CoV-2 is defined as:

- The detection of at least one specific gene target by a validated laboratory based NAAT assay performed at a recognized laboratory,
- OR
- A validated point-of-care NAAT that has been deemed acceptable to provide a final result by the Government of New Brunswick,
- OR
- A four-fold or greater seroconversion/diagnostic rise in viral specific antibody titre in serum or plasma using a validated laboratory-based serological-based serological assay for SARS-CoV-2.

Laboratory Based Reinfection

A confirmed case of SARS-CoV-2 that was previously resolved (as per definition below) **AND** has a subsequent infection of SARS-CoV-2 with laboratory evidence indicating;

- Two distinct SARS-CoV-2 infections by genome sequencing or variant of concern (VOC) screening PCR testing,
- OR
- One of the infections was confirmed to be a variant of interest (VOI)/variant of concern (VOC) or mutations associated with VOI/VOC, **AND** the other infection occurred when the VOI/VOC was not circulating in Canada.

Time Based Reinfection

A confirmed case of SARS-CoV-2 that was previously resolved with a subsequent confirmed infection of SARS-CoV-2 at least 90 days after the first infection.

Resolved case

A case can be identified as resolved if fever has resolved without the use of medication, other symptoms have improved, **AND**

- At least ten days have passed since symptom onset/reported date for immunocompetent cases without severe illness,
- OR
- At least 20 days have passed for immunocompromised cases or cases with severe illness.

Deceased case

A confirmed case who was admitted to hospital and whose death occurred during their stay. A death due to COVID-19 does not mean that it was necessarily the primary or contributing factor to the cause of death. Aggregate death counts among individuals that experienced ILI symptoms will also be reported from facilities with a declared outbreak via the Respiratory Outbreak Surveillance Form.

Outbreak definition in a Vulnerable setting

An outbreak in a vulnerable setting (Nursing Home, Adult Residential Facility, or Correctional Facility) may be declared by Medical Officer of Health, typically when there are 2 or more confirmed (PCR or Molecular NAAT i.e. Abbott ID Now) cases among residents or staff with an epidemiological link within 10 days.

Under certain circumstances, the Medical Officer of Health may also operationalize outbreak recognition based upon two or more probable rapid antigen POCT cases among residents or staff with an epidemiological link within 10 days.

The Medical Officer of Health may declare the end of an outbreak 10 days after last high-risk exposure (close contact), and as per PH guidance.

Diagnosis And Laboratory Guidelines

The New Brunswick Public Health Laboratory is the reference laboratory for all COVID-19 testing.

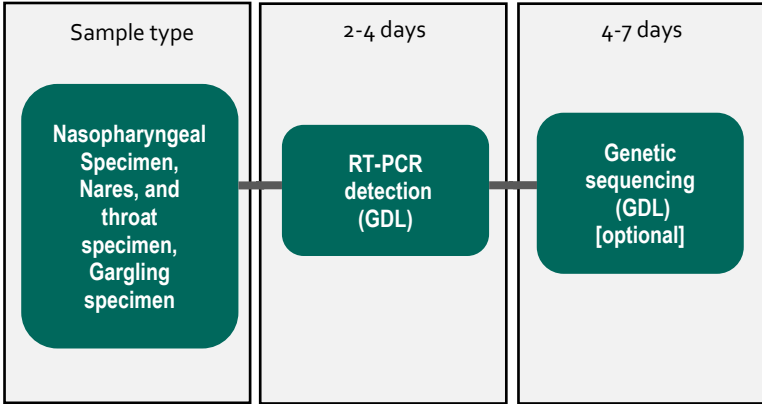
The gold standard method for detection of SARS-CoV-2 is the real-time RT-PCR, which detects specific section of genetic material related to the virus. It can be done on nasopharyngeal swabs, nares and throat swab and gargling sample.

The laboratory can do sequencing to determine the variant of the virus, but a request must be made in order to include a specific sample because sequencing is not conducted for every positive sample.

PCR tests may be ordered by a health care provider for individuals with COVID-19 compatible symptoms where the outcome of PCR testing will directly influence treatment or care.

If available, point of care tests are suggested for anyone presenting COVID-19 symptoms, who is at greater risk for more severe illness, and who intends to pursue access to antiviral treatment. For asymptomatic people or people in the early stages of the disease, point of care tests are not as sensitive and the results should be interpreted with caution.

Figure 1: COVID-19 laboratory testing process:



Reporting

RHA Public Health is required to report all lab-confirmed COVID-19 outbreaks in long-term care facilities and other vulnerable settings as well as influenza-like-illness outbreaks in schools to the Office of the Chief Medical Officer of Health and Epidemiology (OCMOHE) on a weekly basis via the SOLAR module on [Canadian Network for Public Health Intelligence \(CNPHI\)](#). RHA Public Health is also required to submit the **New Brunswick Long-Term Care Facility Respiratory Outbreak Surveillance Form** to OCMOHE upon declaration of an outbreak and once the outbreak is declared over.

Case and Contact Management

RHA Public Health will be informed of COVID-19 cases within long-term care facilities through established communication channels (i.e. e-mail or phone call). RHA Public Health may also receive information via line list submissions from facilities in outbreak.

An ARF with 10 or fewer residents will self-manage 2 or more cases of respiratory illness; however, the ARF may reach out to RHA Public Health for support and guidance. Best practice recommendations for case and situation management in this setting still apply.

Close contacts (high risk exposure) are people who:

- Have shared space with the case when they were in their contagious period. Sharing space includes being within two meters for a total of 15 minutes (cumulative over a 24-hour period) without appropriate personal protective equipment (PPE). This may be less than 15 minutes, depending upon the level of exposure and if PPE was not appropriately used (e.g. kissing, sharing drinks).

Cases and contacts within vulnerable sectors will be managed as part of an outbreak as per sector guidance.

There are no requirements for case and contact management for the community sector.

Additional Information

Appendix A: Guidance and other Public Health measures for Vulnerable Individuals

Appendix B: Treatment of Cases: Eligibility criteria for Paxlovid™

Appendix C: Recommendations for Retesting for Vulnerable Individuals who previously tested positive (PCR / POCT) for COVID-19*

Appendix D: Recommendations for Retesting for persons in a Vulnerable Setting who previously tested positive (PCR/POCT) for COVID-19

Management Of Special Situations

Measures to contain outbreaks include case management, contact management, immunization, prophylaxis, cohorting, masking, testing, ventilation, environmental cleaning, exclusion, social distancing, and others.

Refer to Sector Guidelines (filed on External SharePoint: [Final Regional PH Documents/Transition Phase/Sector Guidance General and Outbreak](#)):

Long-term care (LTC):

- Management of Infection and Outbreak due to Respiratory Illness in Nursing Homes
- Management of Infection and Outbreak due to Viral Respiratory Illnesses in Adult Residential Facilities

Shelter and Transition Homes :

- Living with COVID-19 for Emergency Shelters For The Homeless & Transition Houses

Corrections

- COVID Response Plan for Correctional Services

Education

The case or relevant caregiver and contacts should be informed about:

- Nature of the infection, length of the communicable period, signs and symptoms, and modes of transmission
- Severity of COVID disease and when to seek medical attention
- Hand hygiene
- Cough and sneeze etiquette (respiratory hygiene)
- Masking
- Immunization and availability of treatment if eligible
- Exclusion from vulnerable work
- Ventilation

Immunization

Immunization of unvaccinated individuals and those not up-to-date remains the most effective prevention measure against severe health outcomes such as hospitalizations and death.

- Refer to eligibility criteria for publicly funded Coronavirus vaccine.
- Refer to National Advisory Committee on Immunization (NACI) Statements on COVID-19 vaccines and Canadian Immunization Guide Chapter on COVID-19.
- Continue to advise offering immunization to both residents and staff for the duration of the respiratory season.
- When an outbreak is declared by Public Health in a facility (or unit/area) whether due to influenza, covid, or other, it is recommended to cease or avoid any planned immunization activities in the affected outbreak areas/units until such time as the outbreak is declared over (or as otherwise directed by local Public Health).
- Resume all planned immunization activities as soon as the outbreak is declared over, or as otherwise directed by Public Health.

Treatments

Therapeutic treatments are available for certain individuals who are at higher risk of severe illness from COVID-19. [COVID-19 treatments \(gnb.ca\)](#) contains an up-to-date list of available treatments, and Appendix C contains further information regarding how to access the therapeutic treatment after testing positive.

In the event of a COVID-19 outbreak in a nursing home or correctional facility, the attending physician or the facility's Medical Advisor/House Physician *may* consult with the Regional Medical Officer of Health (RMOH). The responsibility for individual resident treatment decisions during the outbreak remains with the attending physician.

Anyone who meets eligibility from other vulnerable sectors would need to consult their primary care provider. Individuals who are currently clients of the Extramural Program (EMP) would consult with their EMP provider to access treatments, or if health concerns exist. If they do not have or cannot reach their primary care provider, and are not clients of EMP, individuals may [contact a participating pharmacy](#), 811 or visit <https://www.evisitnb.ca/>.

NOTE: While other virtual care provider services may be available to conduct an assessment for Paxlovid treatment, eVisit NB is the only virtual care provider that is publicly funded for New Brunswick citizens who provide a valid New Brunswick Medicare Card.

Appendices

Appendix A: Guidance and other Public Health measures for Vulnerable Individuals

Groups – symptomatic	Subgroup	Guidance	Other PH measures
Vulnerable individuals	50 years and older.	<ul style="list-style-type: none"> • Stay home <ul style="list-style-type: none"> ○ While sick, and until <ul style="list-style-type: none"> ▪ symptoms improving and ▪ at least 24 hrs without fever (and without taking fever reducing medication) if fever is present, and no diarrhea or vomiting for 48 hours. • Get tested as per GNB COVID-19 testing if you're eligible for treatment. • When to seek emergency medical attention: <ul style="list-style-type: none"> ○ Always look for emergency warning signs* for someone who may have COVID-19. If the affected person is showing any of these signs, seek emergency medical care immediately: <ul style="list-style-type: none"> ▪ Trouble breathing ▪ Persistent pain or pressure in the chest ▪ New confusion ▪ Inability to wake or stay awake ▪ Pale, gray, or blue-colored skin, lips, or nail beds, depending on skin tone <p>*This list does not contain all possible symptoms. Please call your medical provider for any other symptoms that are severe or concerning to you. Call 811 or call ahead to your local emergency facility: Notify the operator that you are seeking care for someone who has or may have COVID-19 Note: Mild-to-Moderate COVID Illness** is defined below.</p>	<p>For at least 5 days after leaving home:</p> <ul style="list-style-type: none"> • Wear a multi-layer well-fitting mask • Physical distance from others as best as possible. • Avoid gatherings • Avoid visiting vulnerable setting such as (LTC, Corrections, etc) • Wash or sanitize hands frequently • If you work or live in a vulnerable setting, please inform the setting of your illness <p>Access COVID treatment if eligible.</p>
	Pregnant	Same as 50 years and older.	Same as 50 years and older.
	Immunocompromised	Same as 50 years and older.	Same as 50 years and older, except duration of measures should be prolonged to a minimum of 10 days***.

** Mild-to-Moderate COVID Illness is defined as:

- Clinical signs of pneumonia (fever, cough, dyspnea, tachypnea) may or may not be present.
- No signs of severe pneumonia (i.e. respiratory rate > 30 breaths/min, SpO₂ ≤ 92% on room air, severe respiratory distress (ex. breathlessness at rest; talks in words only and not sentences or phrases))
- Patient NOT requiring supplementary or additional oxygen.

*** Immunocompromised individuals who have recently tested positive are encouraged to use protective measures for at least 10 days after leaving home. This reduces the risk of spreading COVID 19 to other individuals, particularly those who are also immunocompromised or who live or work in a vulnerable setting.

Immune compromised individuals may obtain ongoing positive test results due to drawn-out viral shedding. Prolonged viral shedding is unlikely to pose harm to those who are healthy and fully vaccinated, however, it is best to avoid visiting with other immune compromised individuals or vulnerable settings.

Clinicians who care for immune compromised individuals with prolonged positive test results may want to consider extending transmission-based precautions for these patients; and using rapid testing to guide removal of transmission precautions in the clinical or vulnerable setting.

Appendix B: Treatment of Cases: Eligibility criteria

Paxlovid™, an oral anti-viral treatment for COVID-19 is available in New Brunswick for certain individuals.

Anyone who meets the eligibility criteria for Paxlovid™ can consult their primary care provider to complete the assessment required to obtain a prescription. If they are currently clients of the Extramural Program (EMP) they would consult with their EMP provider to access treatments, or if health concerns exist. If they do not have or cannot reach their primary care provider, and are not clients of EMP, a [participating pharmacy](#) may be contacted to complete the assessment. If unable to contact a provider or pharmacist, individuals may contact 811, or [eVisitNB](#), to be assessed for eligibility and receive a prescription, if they qualify.

Other available treatments such as monoclonal antibodies may be initiated through consultation with an Infectious Disease Specialist.

1. COVID-19 infection **confirmed** by
 - POCT, Abbott ID NOW, or PCR.
2. Case has mild-to-moderate symptoms . Cases with severe symptoms (severe respiratory distress or requiring oxygen) do not benefit from this medication.
3. Treatment initiated within **five days** from symptom onset.
4. Over 18 years of age, and at higher risk of severe outcomes. Individuals may be considered at higher risk for severe outcomes if they meet one or more of the following categories:
 - a. It has been at least 6 months* from the previous COVID-19 vaccine dose or known SARS-CoV-2 infection (whichever is more recent),
 - b. Are an older adult, as risk increases with age,
 - c. Have one or more chronic medical conditions,
 - d. Are moderately to severely immunocompromised due to a medical condition or treatment.
 - e. Reside in a long-term care setting; or living in, or from First Nations communities or those receiving home care services.

Depending on age and health status, an individual may be considered at higher risk of developing severe outcomes even if they have received all of the COVID-19 vaccine doses for which they are eligible.

Appendix C: Recommendations for Retesting for persons previously tested positive (PCR / POCT) for COVID-19* -Vulnerable Individuals

***Note:** This is not applicable to individuals in vulnerable sectors.

	Number of days past since positive COVID-19 result		
	More than 90 days	Between 30 days and 90 days	Less than 30 days
Further Testing recommendations for symptomatic individuals who are at greater risk to experience more severe illness and who did not take Paxlovid during their most recent illness	For individuals experiencing new or worsening symptoms (as per symptom criteria), testing is recommended following established testing pathways.	For individuals experiencing new or worsening symptoms, (as per symptom criteria), testing is recommended . While PCR testing may be ordered by a primary care provider, a POCT test is recommended during this time. Per GNB guidance , if negative upon the 1 st test, should symptoms worsen or new symptoms appear, the individual should repeat their test in 24 hours . If negativity and symptoms persist, the individual should repeat their POCT in 48 hours. Individuals eligible for Paxlovid™ For referral for Paxlovid™ PCR, Abbott ID NOW and healthcare worker observed point of care (POCT) are accepted options when accessible.	No additional testing is generally recommended. However, should a risk of exposure and reinfection be of concern, POCT use may be considered.

Appendix D: Recommendations for Retesting for persons who previously tested positive (PCR/POCT) for COVID-19 – Vulnerable setting

Note: This applies to community based vulnerable settings such as the long-term care sector, correctional facilities, shelters etc. Acute health care institutional protocols may differ.

Number of days past since positive COVID-19 result			
	More than 90 days	Between 30 days and 90 days	Less than 30 days
Further testing recommendations for symptomatic individuals	For individuals experiencing new or worsening symptoms, testing is recommended following established testing pathways.	For individuals experiencing new or worsening symptoms, testing is recommended . While PCR testing remains available, a POCT test is recommended during this time to reduce the risk of false positives from a recent previous infection. If you work or live in a vulnerable setting, you should test with POCT. If negative, repeat POCT in 24 hours. If negativity and symptoms persist, repeat POCT in 48 hours. Note that If the first test is positive, the second test is not required. Treatment: For referral for Paxlovid™, PCR, Abbott ID NOW and healthcare worker observed point of care test (POCT) are accepted options when accessible. Trained personnel can observe or perform POCT tests in LTCFs and ARFs.	No additional testing is generally recommended. However, should a risk of exposure and reinfection be of concern, POCT use may be considered
CT value (for CD staff/MOH interpretation)		If PCR is completed between 30-90 days, a determination as to whether this is a new infection will be required. In addition to considering clinical and epidemiological factors, the CT value may be helpful. If < 25, this suggests a new infection. Follow isolation protocols. If CT value between 25 and 35, further review would be required to determine if this is an acute or old infection. If > 35, this suggests an old infection. Ruling out an acute infection requires epidemiological information, symptom history, and previous POCT/PCR results to be considered. The integrity of the sample can also affect CT values. Retesting in 48h may be necessary.	