



BC Centre for Disease Control
Provincial Health Services Authority

Interim Guidance: Public Health Management of Cases and Contacts Associated with Novel Coronavirus (COVID-19) in the Community

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Introduction

CONTEXT

The British Columbia Centre for Disease Control (BCCDC) has adapted the interim guidance from the Public Health Agency of Canada (PHAC) for Regional Health Authorities (RHA) for public health management of human illness caused by the novel coronavirus (COVID-19).

This guidance is based on currently available scientific evidence and expert opinion and is subject to change as new information on the clinical spectrum, transmissibility, and epidemiology becomes available. This guidance builds upon relevant Canadian guidance developed for the current and previous coronavirus outbreaks (e.g. MERS-CoV and SARS-CoV), in addition to available guidance from the World Health Organization (WHO)ⁱ. It should be read in conjunction with relevant provincial and local legislation, regulations and policies. This guidance has been developed based on the Canadian situation; therefore, may differ from guidance developed by other countries. For information regarding current global status of COVID-19, visit the [BCCDC](#), [Canada.ca](#) and [WHO Novel Coronavirus](#) websites. This guidance is also based upon current knowledge and it should be understood that guidance is subject to change as new data become available and new developments arise with this new virus; furthermore, unique situations may require some discretion in adjusting these guidelines which are meant to be supportive, not prescriptive.

AUTHORITY

The authority for the control of communicable diseases, through case and contact management, including for COVID-19, exists under the [BC Public Health Act](#) (2008).

THE PATHOGEN

Coronaviruses have been identified as human pathogens since the 1960s. To date, seven coronaviruses have been shown to infect humans, including SARS-CoV-2 (1). Common coronaviruses include OC-43, HKU1, 229E, NL63; these cause illnesses ranging from common colds to severe respiratory illnesses. Other coronaviruses have emerged in recent years: SARS-CoV (2002) and MERS-CoV (2012). In late 2019, a novel coronavirus, SARS-CoV-2, was identified as the causative agent of a cluster of pneumonia cases (COVID-19) in Wuhan, China.

There are a number of emerging variants of SARS-CoV-2 of public health importance being identified that may have implications related to transmission dynamics and vaccine effectiveness. Further information on variants of public health concerns can be found in [Appendix 4](#).

For the purpose of this guideline, confirmed or probable cases are considered cases. The updated case definitions can be found [here](#).

CLINICAL ILLNESS

COVID-19 most commonly presents as a respiratory illness with cough and fever, but can present with a [variety of signs and symptoms](#). Symptoms absent at the onset of illness may develop over time with disease progression. Based on available data, neither the absence nor presence of signs or symptoms are accurate enough to rule disease in or out (2). People suspected of having COVID-19 should be tested based on the [COVID-19: Viral Testing Guidelines for British Columbia](#). People should always be encouraged to seek medical consultation if experiencing new or worsening symptoms.

The BCCDC [COVID-19 Symptoms](#) page provides a list of key symptoms that are more likely related to COVID-19.

The BCCDC [Priority Populations](#) page provides more information on risk factors for severe COVID-19 illness and death and other priority populations.

Many symptoms are present in other diseases. Clinical symptoms of COVID-19 may be mild or severe, with about 1 out of 6 infected people showing no symptoms (3-7). In Canada, children have been found to be asymptomatic in up to 36% of cases (8). For children, a cough and runny nose were the two most common symptoms; however, they were also common among those with negative test results and cannot be interpreted as predictive symptoms (8). The loss of smell and taste, nausea/vomiting, headache and fever were the most predictive symptoms in children.

Children might have their first identification of a COVID-19 infection when developing the Multi-system inflammatory syndrome in children and adolescents ([MIS-C](#)). MIS-C is reportable in BC with the case definition found [here](#). MIS-C may begin weeks after a child is infected with SARS-CoV-2 (9). The child may have been infected from an asymptomatic contact, and, in some cases, the child and their caregivers may not even know they had been infected.



An evidence review from the PHAC suggests the time from infection to MIS-C to be between 15 to 24 days (10). The delay in onset is further supported by low positivity rates (<50%) using RT-PCR compared to IgG serology (>75%). This suggests that MIS-C is often a post-infection syndrome, having a delayed onset after the acute COVID-19 infection.

IMMUNE RESPONSE TO NATURAL INFECTION & REINFECTION

Following infection, more than 90% of individuals will develop IgM and IgG antibodies within weeks of symptom onset (11). As stated by the Public Health Agency of Canada [guidelines](#), the relationship between antibody levels and the level of protection against reinfection remains undetermined, as well as the role of cellular immunity in preventing reinfection (including cross-protective immunity following exposure to common coronaviruses). Therefore, vaccination is a more reliable measure of protection than the immune response from natural infection.

INFECTION PREVENTION AND CONTROL

COVID-19-specific IPC guidance has been developed for acute health care settings and can be found on the [BCCDC website](#).

INCUBATION PERIOD

The incubation period is the time interval between initial contact with an infectious agent and the appearance of the first sign or symptom of the disease in question. The incubation period for COVID-19 is believed to be 2-14 days, with a median of 5 to 7 days. The Omicron variant of concern, which is currently the dominant strain in BC, has a shorter median incubation period of 3 days (range 0-8 days)(12-15). A very small proportion of individuals would still be incubating at 14 days, likely about 1%, perhaps up to 6.7% (16). There was some evidence that the average incubation period may be longer for children and older adults than adults, with the longest incubation period reported to be 32 days.

Some individuals could develop their infection after the end of their quarantine. Some individuals can be infectious even at the end of their quarantine without knowing it because they are asymptomatic, pre-symptomatic or very mildly symptomatic.

EPIDEMIOLOGY

The British Columbia Centre for Disease Control (BCCDC) has developed a [COVID-19 dashboard and produces weekly situation reports](#) that provide a more in-depth look at COVID-19 epidemiology.

TRANSMISSION

HUMAN TO HUMAN TRANSMISSION

- Contact/Droplets and aerosols (droplets vary in size from large droplets that fall to the ground rapidly [within seconds or minutes], to smaller droplets [i.e., aerosols] which linger in the air under some circumstances, such as within settings with poor ventilation) (17)
- Fomites (duration of virus survival on surfaces could be days)

The BCCDC [How it Spreads](#) page discusses how COVID-19 is spread for the general public.

ZOONOTIC TRANSMISSION

At this time, there is evidence that cats, dogs, ferrets, gorillas, and minks can naturally acquire SARS-CoV-2 infections from contact with human COVID-19 cases and can develop clinical signs. Onward transmission to other animals has been noted in cats, ferrets and minks. Dogs are considered to have low susceptibility to SARS-CoV-2.

[Appendix 3](#) provides more details, including information on the management of companion animals when a pet owner has been diagnosed with COVID-19, or when animals are visiting or residing in a facility affected by COVID-19, as well as animal testing guidelines. It also provides some information about mink farms and SARS-CoV-2.

PERIOD OF COMMUNICABILITY

The period of communicability is the time during which an infectious agent may spread directly or indirectly from an infected person to another person, from an infected animal to human, or from an infected person to animal—also known as the 'infectious period'.



At this time, there is no evidence to suggest that the period of communicability is different in the pediatric population compared to the adult population. Therefore, public health follow-up in pediatric cases mirrors that of adult cases.

Please use the definitions provided in the next section to determine the severity of COVID-19 illness and level of immune compromise; both factors influence the length of an infected person's infectious period.

DEFINITIONS OF ILLNESS SEVERITY AND IMMUNE COMPROMISE

For the purpose of determining the infectious and isolation period, we use the definitions below, aligned with updates to the [Interim Guidance: Discontinuing Additional Precautions Related to COVID-19 for Admitted Patients in Acute Care and High-Risk Outpatient Areas](#).

COVID-19 Illness Severity Criteria (applies to children and adults)

Asymptomatic illness: Cases with no COVID-19 compatible symptoms at the time of testing, and who do not develop symptoms during their isolation (if they develop compatible symptoms, they should be reclassified in the appropriate category based on severity of illness)

Mild to moderately severe illness: Cases that do not reach the threshold for severe illness. If a patient was admitted to the hospital for reasons unrelated to their COVID-19 illness, they should not automatically be considered as having severe COVID-19 illness.

Severe to critical illness in adults: Individuals for whom COVID-19 causes any one of the following: experienced oxygen saturation below 94% on room air, pneumonia, hypoxemic respiratory failure, multiple organ dysfunction, or septic shock(18, 19), hospitalized because of the severity of COVID-19 illness (hospitalization in those who have COVID-19 can be for other reasons than COVID-19 severity of illness, e.g. for a surgical procedure, for relief of LTC capacity, for another medical condition).

Level of immune compromise

Mildly immune compromised: Those with mild immune compromising conditions, such as diabetes, advanced age, and end-stage renal disease are treated the same as those without immune compromising conditions.

Moderately immune compromised (20, 21): Individuals with one or more of the following:

- Persons on chemotherapy for solid organ cancer (as determined by the most responsible physician [MRP])
- Human Immunodeficiency Virus (HIV) with a CD4 count of 50 - ≤200 cells/mm³ (inclusive)
- Any person taking a biologic/immunomodulatory therapy, prednisone >20 mg/day (or equivalent dose) for ≥14 days, tacrolimus, sirolimus, mycophenylate, methotrexate, or azathioprine

Based on their clinical judgement, MRPs may determine that there are other diagnoses and/or medications not listed above that support considering patients as moderately immune compromised. Consult an infectious disease specialist as needed.

Severely immune compromised (21-25): Individuals with one or more of the following (in consultation with the most appropriate care provider if needed):

- Bone marrow transplant
- Chronic lymphocytic leukemia
- Lymphoma
- Hypogammaglobulinemia
- Human Immunodeficiency Virus (HIV) with a CD4 count of < 50 or AIDS
- Chimeric antigen receptor T-cell therapy
- Use of rituximab

There may be other diagnoses or a combination of diagnoses and/or medications that support considering patients as severely immune compromised. Current evidence may not have demonstrated prolonged live viral shedding with such diagnoses and/or medications yet. Thus, clinical judgement remains important to determine if these patients should be considered as severely immune compromised to determine their communicability period.

Period of communicability

Cases are most infectious during the few days before and after symptom onset. Transmissibility declines rapidly 2-3 days after symptom onset, and is estimated to be less than 3% after seven days from symptom onset (26). Asymptomatic cases are estimated to be 25% less infectious than symptomatic cases(27).

Cases with asymptomatic illness

For the purpose of case isolation, the duration of infectiousness is considered to be 48 hours before a COVID-19 positive sample was taken until 10 days ^A after the sample was taken. Since the exact start of the infection is difficult to establish in asymptomatic cases, some case-by-case assessment is warranted. Sometimes, an earlier onset of infectiousness date may be considered to identify further potential exposures, especially if someone has been in a high-risk setting. If the case is immune compromised, the infectious period is longer, and may extend to 20 days after testing.

Cases with mild to moderately severe illness, and who are not immune compromised, or only mildly immune compromised

From 48 hours prior to onset of symptoms to 10 days ^A after onset of symptoms (see [Clinical Illness](#)). All possible symptoms should be considered, with particular attention to those that may be mild and/or nonspecific (e.g., fatigue, muscle pain) and those less common.

Cases with severe or critical illness, or moderately immune compromised

From 48 hours prior to onset of symptoms to 20 days ^A after onset of symptoms (see [Clinical Illness](#)). All possible symptoms should be considered, with particular attention to those that may be mild and/or nonspecific (e.g., fatigue, muscle pain) and those less common.

Cases who are severely immune compromised

From 48 hours prior to onset of symptoms to potentially more than 20 days ^A after onset of symptoms. In those individuals, it is recommended to consult with a Medical Health Officer and a test based strategy might be recommended to determine the most likely end to the infectious period.

Based on their clinical judgement, most responsible physicians in consultation with Infectious Disease, Medical Microbiology or IPC, may determine that there are other diagnoses and/or medications not listed above that warrant considering patients as moderately or severely immune compromised. In those cases, in acute care or in high-risk outpatient settings, a test-

^A Case isolation is reduced to 5 days for those who are fully immunized for COVID-19 (i.e., completion of a 2-dose primary COVID-19 vaccine series, or > 14 days following completion of a 1-dose primary series [Janssen COVID-19 vaccine]) and individuals < 18 years of age regardless of vaccination status, provided the criteria outlined in [Table 1a](#) have been met.



based strategy might be used to cease the use of additional precaution. When this occurs, as part of discharge planning, consultation with an MHO is recommended.

DIAGNOSTIC TESTING

Testing for COVID-19 is available for patients with compatible symptoms; see the [COVID-19: Viral Testing Guidelines for British Columbia](#) for more details on testing considerations, including lower threshold, and asymptomatic testing.

Up to date laboratory testing guidelines for clinical purposes can be found on the [BCCDC Health Professionals page](#). These guidelines are not meant to direct public health practice related to testing. Medical Health Officers may recommend testing for individuals who are part of a public health investigation of a case, cluster or an outbreak, regardless of symptom profile.

Asymptomatic testing is not routinely recommended, but can be useful in specific circumstances as determined by the Medical Health Officer. A discussion with a Medical Health Officer (MHO) is warranted when considering asymptomatic testing.

Use of point-of-care testing continues to be evaluated in the COVID-19 response, as well as the role of serology and genomic testing. Nucleic acid amplification tests (NAAT; e.g., polymerase chain reaction or PCR) remain the most sensitive diagnostic test for COVID-19. While rapid antigen tests are less sensitive than standard NAAT tests, they provide faster results, can allow for self-testing and an increased number of individuals to be tested. Whether an individual receives a NAAT or rapid antigen test will depend on individual patient circumstances, local epidemiology, and availability of laboratory-based testing. For more information about rapid antigen testing for COVID-19, refer to the BCCDC [Rapid Antigen Testing for COVID-19](#) webpage.

SURVEILLANCE AND REPORTING

The Public Health Agency of Canada updated its case definition in early 2021, leading to an update in the BC case definitions. These case definitions can be found on the BCCDC website on the [Case Definitions](#) page, clicking on the COVID-19 link. Revised case definitions adjust the confirmed and probable criteria and include point-of-care and serological testing considerations.



As of April 1, 2022, local public health is no longer required to directly report COVID-19 cases to BCCDC. Confirmed cases are reported to BCCDC via positive PCR results from laboratory data, which are linked to hospitalization and Vital Statistics data. For more information regarding surveillance and reporting data, go to the BCCDC [COVID-19 Data Trends](#) webpage.

PUBLIC HEALTH MANAGEMENT OF CONFIRMED AND PROBABLE CASES

Public Health will provide overall coordination with health care providers and the BCCDC Public Health Laboratory for the public health management of the case and establish communication links with all involved health care providers for the full duration of the public health recommended observation and isolation period.

If a case lives in a First Nations community, lives off-reserve and receives services in a First Nations community, or has identified contacts within a First Nations community, the [COVID-19 Adapted Regional Health Authority - First Nations Health Authority Communicable Disease Protocol](#) provides information on the roles, responsibilities and activities of the First Nations Health Authority and the regional Health Authorities to guide the collaborative follow-up of such individuals.

Based on clinical need, hospital admission may be recommended for a case whose clinical condition requires acute care to ensure effective isolation and appropriate monitoring of illness. If transferring a case from the community to an acute care facility, it will be important to notify BC Emergency Health Services (BCEHS), if relevant, and the receiving facility prior to the case's arrival to ensure appropriate infection prevention and control (IPC) measures are in place.

CLINICAL MANAGEMENT

Guidance on the clinical management of people with COVID-19 can be found at: <http://www.bccdc.ca/health-professionals/clinical-resources/covid-19-care/clinical-care>.

CASE MANAGEMENT IN THE COMMUNITY

Epidemiologic evidence demonstrates that the majority of people with COVID-19 do not require care in a hospital (28). For cases being managed in the community, the following measures and activities are recommended:

- A case should remain isolated at home or in a suitable alternative environment if isolating at home is not possible (see [Appendix 1](#) for self-isolation considerations).
- A case should be instructed to isolate in a room alone as much as feasible. If it is unavoidable to be in the same room as someone else, the case and the other(s) in the room should wear a [well-constructed and well-fitting non-medical mask](#) over their nose and mouth, keep a 2 meter distance from others, and promote good ventilation in that space.
- Provide public health advice to the case about measures recommended on the [BCCDC self-isolation website](#) to prevent spreading COVID-19, and protective measures to [household \(or co-living setting\) contacts or their caregivers](#). There are scenarios where someone with COVID-19 has to take care of dependents or people with COVID-19 need care from someone who does not have COVID-19, and maintaining a 2-meter distance or wearing masks might not be feasible. Children's psychological needs still need to be tended to, including physical contact and comfort from a caregiver. It might also be impossible to prevent interaction between young siblings. Please refer to the section on [CONTACT IDENTIFICATION AND MANAGEMENT](#) for specific considerations for caregivers and dependents, as well as to [Appendix 1](#) with self-isolation considerations.

CEASING ISOLATION OF CASES

International travellers must adhere to the requirements of the [Quarantine Act](#). Note: self-isolation recommendations extend beyond 14 days for certain circumstances, including a case diagnosed after their first day of quarantine, as outlined in the Act. See [Appendix 2](#)

This section provides general guidance on criteria for ceasing isolation. The decision to discontinue isolation should be made by local public health in collaboration with the responsible health care provider(s), if needed, based on the potential risk of transmission to others. Public health will determine when isolation ends for cases managed in the community, including for the purpose of attending most medical appointments, in most settings. Particularly high-risk settings will have specific guidance (e.g. dialysis units). Health care providers can consult infection prevention and control practitioners and collaborate with public health, if relevant; to ensure appropriate infection prevention and control measures are

applied. See COVID-19 infection prevention and control guidelines for health care professionals [in general](#) and [discontinuation of precautions](#).

Table 1a: General criteria for ceasing isolation of cases that are not under a federal quarantine order *

Fully immunizedⁱ individuals	Cease isolation once the following criteria are met: a. At least 5 days have passed since onset of symptoms (or test date for asymptomatic cases); AND b. Fever has resolved for 24 hours without use of fever-reducing medication; AND c. Symptoms (respiratory, gastrointestinal, and systemic) have improved
Individuals < 18 years of age regardless of vaccination status	
Unimmunized or partially immunized individuals ≥ 18 years of age	Cease isolation once the following criteria are met: a. At least 10 days have passed since onset of symptoms (or test date for asymptomatic cases); AND b. Fever has resolved for 24 hours without use of fever-reducing medication; AND c. Symptoms (respiratory, gastrointestinal, and systemic) have improved
ⁱ Fully immunized is defined as completion of a 2-dose primary COVID-19 vaccine series, or > 14 days after completion of a 1-dose primary series (i.e., Janssen COVID-19 vaccine).	

* NOTE: These recommendations include those with severe or critical illness, and those who are moderately to severely immune compromised, who were previously recommended to isolate for an extended period of time (i.e., at least 20 days).

Coughing may persist for several weeks and does not mean the individual is infectious and must self-isolate.

Additional factors that should be considered about the individual when determining the end of isolation include:

- Whether the person is confirmed to be infected with a variant of concern with different transmission dynamics
- What are the activities of the recovering person
- If the person has close contact with vulnerable populations (e.g., seniors, immunocompromised)

- The person's ability to follow infection prevention measures (e.g., hand hygiene etc.)
- Their potential risk of understaffing in health care facilities
- Other individual and situation-specific factors

Test-based cessation of isolation

In general, repeat laboratory testing (e.g. a negative test result) as the basis for discontinuing home isolation is not recommended. In exceptional circumstances, a test-based strategy might be considered, at the discretion of the MHO, in the community. In health care settings, the decision would be based on the [Interim Guidance: Discontinuing Additional Precautions Related to COVID-19 for Admitted Patients in Acute Care and High-Risk Outpatient Areas](#), while other Infection Control Guidelines are available on the BCCDC [Infection Control](#) page. If a test-based strategy is needed in exceptional circumstances, testing should occur when the case can be reasonably expected to have a negative result. This is usually after 20 days for those who are severely immunocompromised or have recovered from severe illness. Based on their clinical judgement, most responsible physicians in consultation with Infectious Disease, Medical Microbiology or IPC, may determine that there are other diagnoses and/or medications that warrant considering a test-based strategy to cease the use of additional precaution. When this occurs, as part of discharge planning, consultation with an MHO is recommended.

Table 1b. Test-based cessation of isolation

	Symptomatic patients	Asymptomatic patients**
Test-based strategy	<p><u>Patients with severe COVID-19 illness and/or who are moderately immune compromised:</u></p> <ol style="list-style-type: none"> At least 10 days have passed since onset of symptomsⁱ <p>AND</p> <ol style="list-style-type: none"> At least 24 hours have passed since last fever without the use of fever-reducing medication <p>AND</p> <ol style="list-style-type: none"> Symptoms (respiratory, gastrointestinal and systemic) have improvedⁱⁱ <p>THEN re-test</p> <ol style="list-style-type: none"> Two consecutive negative nasopharyngeal (NP) specimens collected at least 24 hours apartⁱⁱⁱ 	<p><u>Patients who are moderately immune compromised:</u></p> <ol style="list-style-type: none"> At least 10 days have passed since the date of the first positive COVID-19 test <p>AND</p> <ol style="list-style-type: none"> Symptoms did not develop after the first positive test <p>THEN re-test</p> <ol style="list-style-type: none"> Two consecutive negative nasopharyngeal (NP) specimens collected at least 24 hours apartⁱⁱⁱ



	<p><u>Patients who are severely immune compromised:</u></p> <p>a. At least 20 days have passed since onset of symptomsⁱ</p> <p>AND</p> <p>b. At least 24 hours have passed since last fever without the use of fever-reducing medication</p> <p>AND</p> <p>c. Symptoms (respiratory, gastrointestinal and systemic) have improvedⁱⁱ</p> <p>THEN re-test</p> <p>d. Two consecutive negative nasopharyngeal (NP) specimens collected at least 24 hours apartⁱⁱⁱ</p>	<p><u>Patients who are severely immune compromised:</u></p> <p>a. At least 20 days have passed since the date of the first positive COVID-19 test</p> <p>AND</p> <p>b. Symptoms did not develop after the first positive test</p> <p>THEN re-test</p> <p>c. Two consecutive negative nasopharyngeal (NP) specimens collected at least 24 hours apartⁱⁱⁱ</p>
<p>ⁱ If unable to determine date of symptom onset, use collection date of initial positive laboratory result as the date of symptom onset.</p> <p>ⁱⁱ Improvement does not necessarily apply to pre-existing or chronic respiratory symptoms known to be caused by another etiology. Coughing may persist for several weeks and does not mean the patient is infectious and must remain on additional precautions, providing that the patient is afebrile and other symptoms have improved.²</p> <p>ⁱⁱⁱ Consult a Medical Health Officer when:</p> <ul style="list-style-type: none">• An individual refuses repeat testing, or if a NP specimen cannot be collected• the initial specimen that tested positive was not a NP swab to determine what type of specimen is needed for repeat testing• the repeat test result is positive to get guidance on when to re-test again. The individual should remain in isolation until then. <p>In individuals with persistently positive COVID-19 test results (e.g., individuals whose symptoms have resolved, but polymerase chain reaction testing still indicates the presence for virus RNA), consult a medical health officer and potentially a medical microbiologist. Based on their organizational risk assessment, health authorities may choose to identify a specific time period for when additional precautions can be discontinued for patients who persistently test positive.</p> <p>Ct values of laboratory specimens may also be considered to determine when repeat testing should be done. This should only be done in consultation with a medical microbiologist.</p>		



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CONTACT IDENTIFICATION AND MANAGEMENT

The goals of our pandemic response are to minimize severe illness and deaths while enabling normal societal function as much as possible. Vaccination is by far the most effective and safe public health intervention for achieving these goals, and British Columbia has one of the highest vaccinated populations in the world. Other public health measures, such as masking, are also effective for prevention of transmission and enabling societal function. Contact tracing has limited utility at this stage in the pandemic with the highly transmissible, but less severe Omicron variant and the population is highly vaccinated.

Changes in the guidance for contact management reflect our need to focus these efforts towards those who are vulnerable to severe illness. These changes address our goals to minimize severe illness while enabling societal function and alleviating pandemic-related fatigue in the population.

CONTACT DEFINITIONS BY EXPOSURE RISK LEVEL

High-risk exposures (close contact) are defined as:

- Anyone who has been within 2 meters of a case for more than 15 minutes cumulatively in a day
- Anyone who is exposed to the infectious body fluids of a case
- Anyone who is a household-like contact, such as
 - Anyone who lived with a case before the case started isolation, or if the case is unable to isolate adequately in the household setting anyone who lives with the case during his or her isolation period; or
 - Anyone who has **direct** physical contact with a case, including the case's caregiver^B, an intimate partner or a child receiving care from the case^C even if not residing in the same household as the case.
 - Others, as determined by the MHO.

^B The caregiver should reduce their risk of COVID-19 infection by wearing a medical mask if available (preferred), or a well-constructed and well-fitting non-medical mask, when providing direct care, or within 2 metres of the case. They should also use appropriate eye protection. However, in most cases, this will not be sufficient to avoid the classification of the exposure as high-risk.

^C There are scenarios where someone with COVID-19 has to take care of dependents, or dependents with COVID-19 need care from someone without it. Psychological needs of children need to be attended too, frequently including physical contact and comfort from a caregiver. It might be impossible to prevent all interaction between young siblings.



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Factors to consider in determining if someone is a household-like contact include the number of hours or days spent with the case, sleeping arrangement, etc.

- A healthcare worker who provided direct physical care to a case, or a laboratory worker handling COVID-19 specimens, without consistent and appropriate use of recommended PPE and infection prevention and control practices.
- Anyone who has been identified by the local MHO as a possible high-risk contact.

Risk of disease transmission is further modified by the vaccination status and previous infection history of the contact. Vaccination markedly reduces the risk of developing disease after exposure as well as subsequent transmission should the contact become a case. For reference, a list of WHO approved vaccines is available [here](#). Similarly, a COVID-19 infection generates an immune response with detectable antibodies in most cases.

Additional factors to consider that may influence the risk stratification of contacts include:

- Use of PPE by the contact at the time of exposure
- Duration of the contact's exposure (e.g., a longer exposure time likely increases the risk)
- Household-like type of exposure versus other types of high risk exposure
- The case's symptom severity (coughing or severe illness likely increases transmission risk)
- Persons who engage in high-risk settings, e.g. daycares and health care, or situation where there is interaction with those at the extremes of age, who are immune compromised, medically extremely vulnerable or at risk of severe COVID-19 illness, etc.
- Whether the contact had exposure to a case infected with a variant of concern

For personal protective equipment (PPE) to be considered sufficient, at least a medical-grade mask and eye protection need to be worn by someone who has received appropriate training in the use of PPE and associated infection prevention and control practices. Wearing non-medical masks by either or both of the case and contact, in most situations, would not nullify an exposure. It is difficult to assess adequacy of mask's fit and material, and how consistently individuals wore masks.

Although outdoor settings are not generally considered high risk, the potential for transmission still exists under certain circumstances, such as close conversations or rigorous exercise when participants are in close proximity and are not wearing masks, case-by-case risk-assessment should be carried out for outdoor exposure.

CONTACT MANAGEMENT

Contacts are advised to monitor for symptoms of COVID-19, and isolate if symptoms occur. The following resources are available on the [BCCDC website](#) to support COVID-19 cases to notify their contacts:

- [I tested positive for COVID-19](#)
- [Instructions for close contacts](#)

As isolation and quarantine have negative social and economic impacts, we must ensure that self-isolation requirements are necessary and that the benefits outweigh the harms. There is a high and growing proportion of the general population 12 years of age and older that is fully immunized, and a smaller proportion of those under 12 years of age that is fully immunized (particularly children < 5 years who are not yet able to be immunized). As the burden of quarantine for close contacts who are not fully immunized would primarily be borne by children less than 12 years of age, causing disruption for child care, schools and parents, close contacts are no longer required to self-isolate even if not fully immunized. [Table 2: Contact management recommendations](#) outlines the guidance for all contacts following an exposure regardless of vaccination status.

Contact Tracing

While contact tracing has been an effective mechanism to prevent the spread of COVID-19 in the past, it is not currently an effective tool in preventing transmission with current variants. In March 2020, contact tracing was a useful tool to protect us from COVID-19 as we had high susceptibility to infection due to no previous infections and no vaccines. The incubation period of the reference variant was also longer. By identifying cases and contacts and having them quarantine, contact tracing was able to reduce transmission within the community.

With the emergence of more transmissible variants with shorter incubation periods (the period between contracting the virus and becoming infectious), it is more challenging to find contacts through contact tracing. Our seroprevalance studies in BC and in other regions show that only a fraction of all cases are known. Therefore, contact tracing cannot be done on many cases, which reduces the effectiveness of the intervention. Finally, close contacts are not required to self-isolate or take any special measures. Therefore, contact tracing does not prevent transmission.

It is also notable that contact tracing is not done for most common respiratory pathogens, e.g. influenza, RSV, enterovirus, for the same reasons.

Table 2. Contact management recommendations

All Contacts (regardless of vaccination status)
<ul style="list-style-type: none"> • Self-monitor for the appearance of symptoms consistent with COVID-19 • Follow recommended public health measures and orders • If symptoms occur, isolate away from others, particularly within the home or co-living setting as quickly as possible; put on a medical mask if available (preferred), or well-constructed and will-fitting non-medical mask. • Follow the COVID-19: Viral Testing Guidelines for British Columbia for testing recommendations.

CONTACT TRACING IN OUTBREAK SITUATIONS

In an outbreak context, contact tracing and management also serves the purpose of active case finding during an investigation. Where an outbreak is suspected, the regional health authority may adopt a situation-specific definition for those at high risk of exposure (i.e., "close contact") to help efficiently target their contact investigation and case finding efforts. This approach may be considered when the outbreak setting results in a high risk of exposure for most participants, or where individual risk assessments are not feasible.

Outbreaks may have a significantly higher impact in some populations due to their vulnerabilities or their potential for widespread transmission. For case and contact finding in the context of an outbreak in these populations, it may be useful for the regional health authority to adopt a more sensitive definition for those at high risk of exposure (i.e., close contacts), to facilitate case finding.

Currently, Public Health provides consultation and/or leadership for cluster and outbreak management. Guidelines for Outbreaks in Long Term Care Facilities are found [here](#), and for schools, daycares and camps guidance documents are found [here](#).

MHO CONSIDERATIONS FOR DECLARING COVID-19 OUTBREAKS IN LONG-TERM CARE FACILITIES

An outbreak is described as an unexpected or unusual increase in COVID-19 cases or case severity amongst residents, characterized by transmission within the facility and necessitating additional public health action beyond usual surveillance, case management and baseline

infection prevention and control measures (e.g., daily symptom screening, timely testing and isolation of those with symptoms).

Outbreak declarations have become more nuanced in light of the i) transitory epidemiological state of COVID-19 during each wave (particularly with the Omicron variant) and because ii) the clinical and public health significance of a case identified in long-term care has decreased over time due to substantial protection against severe outcomes through widespread vaccination. Thresholds previously used (e.g., one resident case) in declaring an outbreak are no longer the only consideration in light of these transitory epidemiological states, especially because long-term care facilities are not closed environments, i.e. facilities are likely to reflect community levels of transmission. In addition, unlike influenza outbreaks, which are managed using antiviral medications, there is currently no equivalent prophylactic therapeutic intervention for COVID-19 to administer upon the declaration of an outbreak. This means that approach to COVID-19 in long-term care facilities is more similar to the management of other respiratory pathogens other than influenza (e.g., vaccination, prompt identification and isolation of cases, and infection prevention and control measures).

For the purposes of this document, a case of COVID-19 in long-term care is considered to be a resident who exhibits symptoms compatible with COVID-19 illness and subsequently tests positive for the SARS-CoV-2 virus either by PCR or by a point-of-care test. Given the wide range of symptoms with COVID-19 from very mild to severe disease along with many having milder illness as a result of vaccination, this case definition will continue to be evaluated so that it balances identifying those with clinically significant illness while having a low threshold to identify cases and inform the application of infection control measures.

Currently, declaration of an outbreak generally implies a need for additional disease control measures beyond individual case management. Many infection control and prevention measures have been implemented at baseline and reduce the severity of COVID-19 amongst facility residents. Imposition of further measures requires an assessment of the potential benefits and potential harms of the additional measures. As the pandemic evolves with the ongoing arrival of new variants, there may be changes in transmission patterns, severity of illness, baseline measures, and vaccine effectiveness that will affect the decision for an outbreak declaration. To guide the need for an outbreak declaration, MHOs will consider the following factors within individual facilities:

- **Transmission pattern:** Rapid increase in cases amongst residents with no known contact with other identified cases



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- **Resident susceptibility to severe outcomes:**
 - Vaccination coverage among staff and residents
 - Vaccine effectiveness against severe disease caused by known circulating variants
 - Severity of illness greater than expected based on known circulating variants
- **Existing infection prevention and control measures and compliance:** Some facilities or situations may benefit from reinforcement of existing measures
- **Benefits and harms of additional measures:** If any additional measures are contemplated (see Appendix 6 for examples), consider the expected marginal impact on public health outcomes (benefits and harms) in the context of expected duration and sustainability of such measures.

Current outbreak definition in long-term care:

A COVID-19 outbreak in long-term care is declared when the following criteria are met:

1. An unexpected increase in COVID-19 cases or case severity among residents which may involve a rapid increase in cases amongst residents with no known contact with other identified cases; which
2. Is not responding or expected to respond to usual infection prevention and control measures; and/or resident susceptibility to severe illness has been deemed to be particularly high; and
3. The application of additional control measures (i.e., those in Appendix 6) are considered to have a higher overall benefit than risk

An outbreak is declared over when:

1. Resident cases no longer continue at unexpected levels; and
2. Transmission in a long-term care facility appears to be responding to usual infection prevention and control measures



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APPENDICES

Appendix 1: Self-isolation considerations for cases

The location where a person will self-isolate will be determined by their healthcare provider and their health authority. When determining the location, several factors to determine the suitability of the home setting are described below. 'Case' refers to confirmed and probable cases.

- **Severity of illness.** The case is exhibiting mild symptoms that do not require hospitalization, taking into consideration their baseline health status including older age groups, or chronic underlying or immunocompromising conditions that may put them at increased risk of complications from COVID-19. The ill person should be able to monitor their own symptoms and maintain [respiratory etiquette](#) and [hand hygiene](#).
- **Suitable home care environment.** In the home, the case should ideally stay in a room of their own so that they can be isolated from other household members. If residing in a dormitory, such as at a post-secondary institution or where there is overcrowded housing, efforts should be made to provide the case with a single room (e.g., relocate any other roommates to another location) with a private bathroom. If a separate room is not feasible, ensure that shared spaces are well ventilated (e.g., windows open, as weather permits) and that there is sufficient room for other members of the home setting to maintain a two-metre distance from the case whenever possible. If it is difficult to separate the case physically in their own room, hanging a sheet from the ceiling to separate the ill person from others may be considered. If the ill person is sleeping in the same room as other persons, it is important to maintain at least 2 meters of separation from others (e.g., separate beds and have people sleep head-to-toe, if possible). If a separate bathroom is not available, the bathroom should be cleaned and disinfected frequently, and ventilated as feasible. Information on cleaning and disinfection can be found [here](#).
- **Cohorting cases in co-living settings (e.g., those living in university dormitories, [work camps](#), shelters, overcrowded housing, and group homes).** Special consideration is needed to support cases in these settings when self-isolating. If it is not possible to provide the case with a single room and a private bathroom, efforts should be made to cohort ill persons together. If there are two cases who reside in a co-living setting and single rooms are not available, they could share a double room.



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- **Access to supplies and necessities.** The case should have access to food, running water, drinking water, and supplies for the duration of the period of self-isolation. Those residing in remote and isolated communities may wish to consider having additional supplies, as well as food and medications usually taken, if it is likely that the supply chain may be interrupted or unreliable.
- **Risk to others in the home.** Household members with conditions that put them at greater risk of complications of COVID-19 (e.g., underlying chronic or immunocompromising conditions, or the elderly) should not provide care for the case and alternative arrangements may be necessary.
 - For breastfeeding mothers: considering the benefits of breastfeeding and the insignificant role of breast milk in transmission of other respiratory viruses, breastfeeding can continue. If the breastfeeding mother is a case, she should wear a medical mask, or if not available, a non-medical mask or facial covering (e.g., homemade cloth mask, dust mask, bandana), when near the infant, practice respiratory etiquette, and perform hand hygiene before and after close contact with the infant(29).
 - Other cases in the home, e.g., non-breastfeeding parent or other caregiver should refrain from contact with the infant.
- **Access to care.** While it is expected that the case convalescing at home will be able to provide self-care and follow the recommended preventative measures, some circumstances may require care from a household member (e.g., the case is a child). The caregiver should be willing and able to provide the necessary care and monitoring for the case.

Psychosocial Considerations. Health authorities should encourage individuals, families and communities to create a supportive environment for people who are self-isolating to minimize stress and hardship associated with self-isolation as the financial, social, and psychological impact can be substantial. Obtaining and maintaining public trust are key to successful implementation of these measures; clear messages about the criteria and justification for and the role and duration of self-isolation and ways in which persons will be supported during the self-isolation period will help generate public trust. Additional information is available on the BCCDC [Mental well-being during COVID-19](#) page.

Appendix 2: Travel

The Quarantine Act (S.C. 2005) was introduced to prevent the spread of communicable diseases. All international travellers must respect the requirements from the federal order under the Quarantine Act. The order specifies exceptions of certain exempted groups (see international travellers who are essential workers below).

Not respecting the mandatory requirements is a serious offence with consequences and penalties.

Instructions for Canadian travellers from the Government of Canada can be found [here](#). Information specific to BC self-isolation and travel are here: [BC's self-quarantine requirements](#).

International travellers who are essential workers or otherwise exempt from quarantine

Several groups are considered essential for the continued functioning of the health care system and the transportation of essential goods. International travellers who are deemed essential workers or exempt from quarantine requirements must follow all other public health guidance to reduce the risk of disease transmission. These individuals are also required to self-monitor for 14 days, and if they develop symptoms, should self-isolate immediately, contact 8-1-1 and their employer. For more information on which workers are considered essential, see information for [Employers and Businesses](#).

Appendix 3: Evidence summary regarding zoonotic transmission and case management

At this time, there is evidence that cats, dogs, ferrets, gorillas, and minks can naturally acquire SARS-CoV-2 infections from contact with human COVID-19 cases and can develop clinical signs. Onward transmission to other animals has been noted in cats, ferrets and mink. Dogs are considered to have low susceptibility to SARS-CoV-2.

Experimental studies have shown the following levels of susceptibility to SARS-Cov-2 in animals:

- High susceptibility: bats (Egyptian fruit bats), cats (domestics and big cats), deer mice, ferrets, hamsters, minks, non-human primates, raccoon dogs, deer, rabbits, and tree shrews
- Medium to high: bank voles, bushy-tailed woodrats, deer
- Medium: skunks
- Extremely low: cattle, swine
- None: Big brown bats, house mice, poultry (chickens, ducks, geese, quail, turkeys), prairie dogs, raccoons, and squirrels (fox and Wyoming ground).

There is currently no evidence that household pets or food-producing animals are a source of transmission to humans. Mink can transmit the virus back to humans and has been noted in Denmark and the Netherlands (see below).

Routine testing of animals for SARS-CoV-2 is not recommended at this time. However, if indicated, testing can be performed by veterinarians at regular clinics in accordance with the [veterinary guidance](#) and in consultation with the Chief Veterinarian's Office and the BC Centre for Disease Control.

Companion animals

There is currently no evidence demonstrating pet to human transmission; however, it is theoretically possible. Cat to cat transmission has been demonstrated; however, there is no evidence for cat to human transmission.

When a pet owner has been diagnosed with COVID-19 the following measures are recommended to protect the pet and other animals:

- Limit contact with pets and all other animals during illness
- If possible, have another member of the household take care of the pets
- If an infected person must care for a pet, they should wash their hands before and after interacting with the pet, its food and supplies

- Avoid close contact with the pet, such as snuggling and letting them sleep on the bed
- Pet owners should restrict their animal's contact with other people and animals outside their home until their illness has resolved

In cats, too few natural infections have been reported to accurately assess the incubation period. The current recommendation for pet monitoring after a SARS-CoV-2 exposure is 14 days based on public health guidance for human cases.

In the case of an animal testing positive for SARS-CoV-2 in the household, the above measures apply with the addition of a ten-day isolation after onset of clinical symptoms. These recommendations are also based on the public health guidance for human cases.

Specific considerations need to be made for companion animals living in Assisted Living and LTC facilities with their owners. In case of an outbreak, pets and service animals should be restricted from entering the facility until the outbreak is declared over.

For pets that reside in the facility, the recommendations are as follows:

- Isolate the animals for the duration of the outbreak and in the location of the outbreak in the facility
- Do not let animals intermingle with other animals that reside in areas of the facility that are not included in the outbreak
- Practice hand hygiene after any animal handling or interaction (petting, feeding, etc.)
- If an animal becomes symptomatic, contact the veterinarian to discuss the need for treatment and/or testing.

If the facility opts to arrange for alternate housing of animals during outbreak, then animals should be put in isolation at new location for 14 days after last exposure event at the LTC facility.

Mink Farms

A significant number of outbreaks of SARS-CoV-2 in mink have been detected on mink farms worldwide. Several mutations have been detected, but only the Cluster 5 variant (a cluster of 4 cumulative mutations in the spike protein) has raised significant concerns due to its effect on antigenicity. This mutation was found in 12 people in Denmark. However, it is considered no longer circulating since September 2020. Significant regional public health measures have been implemented in affected regions globally. This situation is being monitored closely by public health and animal health experts.



BC has several mink farms, with all active mink farms located in the Fraser Health Authority region. Intensive surveillance and control measures are in place to rapidly identify and prevent spread of SARS-CoV-2 related to mink farms.



Appendix 4: Public Health Variants of Concern

Information on new SARS-CoV-2 variants of public health concern is constantly emerging. Further information can be found from these sources:

BC Centre for Disease Control:

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

Centers for Disease Control and Prevention:

<https://www.cdc.gov/coronavirus/2019-ncov/transmission/variant.html>

PHAC:

<https://health-infobase.canada.ca/covid-19/epidemiological-summary-covid-19-cases.html#VOC>



Appendix 5: Contact tracing strategies and considerations

In addition to traditional contact tracing methods, RHAs and MHO/designate may consider alternative contact management approaches and/or backward contact tracing in specific circumstances.

Alternative contact management approaches:

To accommodate limited local resources, regional health authorities may consider alternative approaches to traditional contact tracing when experiencing a local increase in cases(30). These may include the following:

- Using well-trained non-public health staff and volunteers for certain contact tracing activities;
- Repurposing existing resources, such as call centres or hotlines;
- Reducing the intensity of follow-up of contacts based on risk assessment, for example, automated calls or text messages to low-risk contacts, or follow-up text messages instead of daily calls; and
- Leveraging available technology, such as contact tracing software, as well as web-based and mobile phone applications.

During local peaks in COVID-19 cases and declared outbreaks, regional health authorities may also consider prioritizing contact tracing activities for specific settings where transmission may have occurred (for example, schools, events, workplaces, etc.), and/or specified contacts (for example, those who are vulnerable, provide care to someone who is vulnerable, etc.)(31)

Regional health authorities may also consider alternative approaches where cases, employers, or event coordinators notify contacts (i.e., simple referral); or notify contacts and provide additional information related to infection prevention and control, quarantine (self-isolation), and symptom monitoring (i.e., enhanced referral)(32). Evidence suggests that these approaches will be less effective than traditional contact tracing approaches, and there is no evidence currently available to support these approaches in the context of COVID-19 (31).

Backward or bidirectional contact tracing

In addition to traditional (forward) contact tracing, regional health authorities may consider 'backward' contact tracing, which focuses on trying to determine where and when the case likely acquired their infection. It is considered to be most effective when localized outbreaks

may be occurring in areas experiencing relatively low levels of transmission. The single most helpful question to assist in backward contact tracing is: Where do you think you have contacted COVID-19?

While COVID-19 has been observed to spread steadily in the community, with one case infecting one or two other cases on average, clusters have been identified where some individuals disproportionately infect a larger number of secondary cases. This is the statistical concept called over-dispersion, where a single case infects more people than expected. These clusters have been referred to as super-spreading events (SSEs).

In these circumstances, 'backward' contact tracing may help to:

1. Find additional cases by focusing on the setting where a case's exposure likely took place; and
2. Interrupt more chains of transmission by then employing traditional (forward) contact tracing for the newly identified additional cases.

Backward contact tracing is considerably more challenging when there is widespread community transmission, due to the volume of cases and uncertainty created by having multiple potential sources of transmission for any given case. It may also be less useful during periods of restrictive public health measures, due to fewer events or localized settings where outbreaks or SSEs might occur. Employing backward contact tracing approaches may have significant resource implications, depending on the specific contact tracing strategies used, approaches to testing, and local epidemiology.

There is currently some evidence regarding the effectiveness of backward, or bidirectional tracing in relation to COVID-19. A limited number of countries have utilized this strategy. In these countries beneficial impact was correlated with low incidence and limited community transmission.

A recent review on the effectiveness of contact tracing strategies (16) found that "bidirectional contact tracing (contact tracing as early as 6 days prior to symptoms) more than doubles the reduction to R_e when compared with only forward tracing (contacts of the case from 1-2 days prior to symptoms until isolation) (8, 13). However, the latter requires more public health capacity. Bidirectional contact tracing to identify the primary case of a cluster was found to be 2-3 times more effective against the spread of SARS-CoV-2 when compared to forward contact tracing alone (23)."



Appendix 6: Examples of additional outbreak control measures with associated harms and benefits

Measure	Anticipated benefits	Anticipated harms
Broad asymptomatic testing of staff and residents	Identification of asymptomatic positive cases leading to reduced transmission	<ul style="list-style-type: none">• Isolation of staff/residents with limited capability to transmit• Prolonged isolation of residents• Exacerbation of staffing shortages• High frequency of testing needed to appreciably impact transmission
Isolation of all residents on an affected unit	Reduced opportunities for transmission from resident to resident	<ul style="list-style-type: none">• Prolonged isolation of residents (who are neither cases nor symptomatic)• Increased resident isolation and decreased wellbeing (particularly for wandering residents)
Cessation of group activities and communal dining	Reduced opportunities for transmission from resident to resident or from staff to resident	<ul style="list-style-type: none">• Increased resident isolation and decreased wellbeing• Disruption of resident life• Increased staffing needs (individual meal trays and resident supervision)
Stopping admissions and transfers	Reduced opportunity for new introduction of COVID-19 onto a unit Protecting newly admitted resident from acquiring COVID-19	<ul style="list-style-type: none">• Impacts to acute care access and flow• Delays in repatriating patients back to home• Patients in hospital may still be susceptible to COVID-19 and other hospital acquired infections due to prolonged admission



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