

**DISCONTINUATION OF PRECAUTIONS** Non-test-based and test-based strategies can be used to inform when infection control precautions should be discontinued in patients with COVID-19 [112,113]. Non-test-based strategies allow for discontinuation of precautions based on improvement in symptoms and/or specific time intervals, whereas test-based strategies require two negative reverse-transcription polymerase chain reaction (RT-PCR) tests for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) on sequential respiratory specimens collected  $\geq 24$  hours apart. A detailed discussion of testing is found in a separate topic review. (See "[Coronavirus disease 2019 \(COVID-19\): Diagnosis](#)".)

If patients are ready to be discharged home prior to meeting criteria for discontinuation of precautions, they can be sent home with instructions to self-isolate until they meet criteria. (See "[Non-test-based strategies](#)" below and "[Test-based strategies](#)" below.)

Once infection control precautions/home isolation are discontinued, patients should still continue to follow public health recommendations for wearing masks in public settings. (See "[Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention](#)", section on '[Personal preventive measures](#)'.)

Additional considerations for HCWs are found below. (See "[After infection](#)" below.)

**Deciding whether to use a test- or non-test-based strategy** — For most patients with COVID-19, a non-test-based strategy should be used to determine when precautions can be discontinued. This approach is supported by both the United States Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) [112-114]. (See "[Non-test-based strategies](#)" below.)

The decision to use a test-based strategy should be determined on a case-by-case basis (eg, if it would result in a shorter time to discontinuation of precautions than symptom-based criteria would allow). Previously, test-based strategies were routinely used to discontinue precautions; however, some patients have persistently positive polymerase chain reaction (PCR) testing for SARS-CoV-2 for weeks to months after resolution of symptoms, and this can unnecessarily prolong the need for infection control precautions and isolation since prolonged viral RNA shedding after symptom resolution is not clearly associated with prolonged infectiousness. In addition to increased resource utilization (eg, PPE, tests, bed space on COVID-19 wards), prolonged isolation may have several unintended negative consequences, including decreased visits from providers to conserve PPE, prolonged visitor restrictions, and negative psychological effects [115].

Testing may be most helpful when used in conjunction with a non-test-based strategy in select patients. As an example, in severely immunocompromised patients and patients with severe disease, some institutions perform RT-PCR testing 10 to 20 days after symptom onset to obtain the cycle threshold (Ct; the number of cycles needed to amplify viral RNA to reach a detectable level). If the Ct is sufficiently high, precautions can then be discontinued. (See "[Non-test-based strategies](#)" below and "[Coronavirus disease 2019 \(COVID-19\): Diagnosis](#)", section on '[Cycle threshold](#)'.)

#### **Patients with confirmed infection**

**Non-test-based strategies** — Non-test-based strategies depend upon the severity of disease and the presence of certain underlying conditions. Available evidence suggests that transmission most likely occurs during the early stage of infection and that isolation of infectious virus more than 10 days after illness onset is rare in immunocompetent patients who have improved after nonsevere infection [12]. However, data are limited, and recovery of replication-competent virus for longer

periods of time after symptom onset has been occasionally described, mainly in patients with severe disease or in those who have severe immunocompromise. (See "[Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention](#)", section on 'Viral shedding and period of infectiousness'.)

**Patients with non-severe disease** — For patients with non-severe disease the decision to discontinue precautions depends upon the presence of symptoms and the degree of immunocompromise.

•**Immunocompetent patients** – For patients with mild to moderate disease (eg, signs and symptoms of COVID-19 without hypoxia [oxygen saturation  $\geq$ 94 percent on room air]), the CDC states that infection control precautions specific for COVID-19/home isolation can be discontinued when the following criteria are met [112,113]:

- At least 10 days have passed since symptoms first appeared **AND**
- At least one day (24 hours) has passed since resolution of fever without the use of fever-reducing medications **AND**
- There is improvement in symptoms (eg, cough, shortness of breath)

Some patients have laboratory-confirmed SARS-CoV-2 infection without any symptoms. For such patients, infection control precautions specific for COVID-19/home isolation can be discontinued when at least 10 days have passed since the date of their first positive COVID-19 test, as long as there was no evidence of subsequent illness. If symptoms developed, the symptom-based strategy should be used.

The World Health Organization (WHO) endorses the use of similar non-test-based strategies to end precautions/isolation [114], but for symptomatic patients, they suggest patients be without any respiratory symptoms for at least three days [114].

Some institutions have modified these guidelines to simplify the decision-making process. As an example, at Duke University, infection control precautions for COVID-19 are discontinued 10 days after the first positive test in immunocompetent patients with non-severe disease (regardless of when symptoms occur); although this approach may extend the duration of isolation, it avoids confusion about defining the exact date of symptom onset. Information on other institutional protocols is found elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Management in hospitalized adults](#)", section on 'Institutional protocols'.)

•**Immunocompromised patients** – Non-test-based strategies can also be used for most immunocompromised patients with non-severe disease, as described above [113]. However, for those with significant immunocompromise (eg, patients within one year of receiving a hematopoietic stem cell or solid organ transplant, patients with cancer receiving chemotherapy, patients with HIV and a CD4 count  $<$ 200 cells/microL, combined primary immunodeficiency disorder, receipt of [prednisone](#)  $>$ 20 mg/day for more than 14 days), the CDC recommends that the duration of time from symptom onset to discontinuing infection control precautions specific for COVID-19 be extended. Such patients can discontinue precautions when the following criteria are met:

- At least 10 and up to 20 days have passed since symptoms first appeared **AND**
- At least one day (24 hours) has passed since resolution of fever without the use of fever-reducing medications **AND**
- There is improvement in symptoms (eg, cough, shortness of breath)

Similarly, severely immunocompromised patients who have laboratory-confirmed SARS-CoV-2 infection without any symptoms should continue infection control precautions specific for COVID-19 until at least 10 to 20 days have passed since the date of their first positive COVID-19 test, as long as there was no evidence of subsequent illness. If symptoms developed, the symptom-based strategy should be used.

The decision to discontinue precautions within this 10- to 20-day time frame should be individualized based upon available data on transmission [12] and made in consultation with infection prevention or public health experts when they are locally available. (See "[Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention](#)", section on '[Viral shedding and period of infectiousness](#)'.)

In some cases, obtaining a PCR test to measure the Ct may be useful to help guide these decisions. As an example, in severely immunocompromised patients, some institutions perform RT-PCR testing 10 to 20 days after symptom onset to assess the Ct; when the Ct is >32, precautions can be discontinued. More detailed discussions of Ct are presented elsewhere. (See '[Test-based strategies](#)' below and "[Coronavirus disease 2019 \(COVID-19\): Diagnosis](#)", section on '[Cycle threshold](#)'.)

**Patients who have severe or critical disease** — Patients with severe or critical illness (eg, oxygen saturation <94 percent on room air, need for oxygenation or ventilatory support) may discontinue infection control precautions specific for COVID-19 when the following criteria are met [112,113]:

- At least 10 and up to 20 days have passed since symptoms first appeared **AND**
- At least one day (24 hours) has passed since resolution of fever without the use of fever-reducing medications **AND**
- There is improvement in symptoms (eg, cough, shortness of breath)

These criteria are the same for all patients, regardless of underlying conditions (eg, degree of immunocompromise). The decision to discontinue precautions within this 10- to 20-day time frame should be individualized based upon available data on transmission [12] and made in consultation with infection prevention or public health experts when they are locally available. (See "[Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention](#)", section on '[Viral shedding and period of infectiousness](#)'.)

Similar to immunocompromised patients, measuring the Ct may be helpful in guiding these decisions, as described above.

**Test-based strategies** — If a test-based strategy is used, symptomatic patients may discontinue infection control precautions specific for COVID-19 in the health care setting when there is:

- Resolution of fever without the use of fever-reducing medications **AND**
- Improvement in symptoms (eg, cough, shortness of breath) **AND**
- Negative results of a molecular viral assay for SARS-CoV-2 from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens). In the United States, this should be a US Food and Drug Administration emergency use authorized test.

Patients with SARS-CoV-2 infection who are asymptomatic also require negative results of a molecular viral assay from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens).

There is no clear guidance as to when repeat testing should be performed. The timing depends in part upon why a test-based strategy is being used (see ['Deciding whether to use a test- or non-test-based strategy'](#) above). However, if the first test is positive, we wait 72 hours before obtaining a second test. Once the first test is negative, the second test should be obtained 24 hours later.

We use the same approach to discontinuing precautions when using a test-based strategy in patients who are being cared for at home, although the CDC does not specify improvement in fever and symptoms when using this strategy outside of the health care setting.

When a test-based strategy is used, some patients may have persistently positive PCR testing for SARS-CoV-2 for weeks after resolution of symptoms. This can pose unresolved questions in the health care setting, since concerns that the patient could still be infectious may result in continued infection control precautions and possible further delay of important elective procedures or tests. There is no standardized approach when this occurs, since viral culture, the gold standard for determining infectivity, is not routinely available. However, available data suggest that prolonged viral RNA shedding after symptom resolution is not clearly associated with prolonged infectiousness, particularly in those with mild to moderate disease. This is why symptom- and time-based approaches for discontinuing precautions are recommended for most patients, as described above. More detailed information on the transmission of SARS-CoV-2 is presented elsewhere. (See ["Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention"](#), section on ["Viral shedding and period of infectiousness"](#).)

There has been interest in the use of Ct to help guide decisions regarding infectivity in patients with persistently positive tests or in patients who had severe disease or are severely immunocompromised; the higher the Ct, the fewer the RNA copies. Although Ct may be included in the decision-making process when deciding if precautions can be discontinued, there is no standard Ct threshold cut-off, and the Ct results can vary with different assays. (See ['Non-test-based strategies'](#) above and ["Coronavirus disease 2019 \(COVID-19\): Diagnosis"](#), section on ["Cycle threshold"](#).)

There has also been interest in whether development of antibody correlates with disease activity. However, there are insufficient data to use this information to guide decisions at this time. (See ["Coronavirus disease 2019 \(COVID-19\): Diagnosis"](#), section on ["Serology to identify prior/late infection"](#).)

**Suspected cases with negative initial testing** — In some patients, initial testing is negative, but there is still suspicion for COVID-19. In this setting, a second test should be performed, and infection control precautions should be continued pending the result. False-negative nucleic acid amplification tests (eg, RT-PCR) from upper respiratory specimens have been well documented. (See ["Coronavirus disease 2019 \(COVID-19\): Diagnosis"](#), section on ["Accuracy"](#).)

When two tests are negative, precautions for COVID-19 can often be discontinued; however, if concern for COVID-19 remains high (eg, a patient with consistent clinical symptoms and an exposure to a person with known or suspected COVID-19), and there is no alternative diagnosis, infection control precautions should be continued at least until criteria for discontinuation of precautions using a symptom-based strategy are met ([table 1](#)). Such patients should be managed in conjunction with an infectious diseases specialist, if possible, to help evaluate for alternative etiologies.

**Suspected cases when testing was not performed** — In some cases, testing for COVID-19 may not be accessible, particularly for individuals who have a compatible but mild illness that does not warrant hospitalization. In areas where community transmission of SARS-CoV-2 is widespread, these patients are often treated presumptively for COVID-19 (eg, home isolation, supportive care) and the decision to discontinue transmission-based precautions should be made using the symptom-based strategy described above. (See '[Non-test-based strategies](#)' above.)

#### **ADDITIONAL CONSIDERATIONS**

**Health care workers** — Health care workers (HCWs) are at risk for developing COVID-19 through exposures in the community and in the health care setting. In an analysis of data from 13 sites in the United States, 6 percent of adults hospitalized with COVID-19 were HCWs [116]. To reduce transmission of infection to patients and coworkers, certain work restrictions should be implemented after an exposure or infection.

**After potential or known exposure** — For HCWs who have had a potential exposure to COVID-19, the United States Centers for Disease Control and Prevention (CDC) has provided [guidelines for work restriction and monitoring](#) [26]. The approach depends upon the duration and proximity of exposure, the type of personal protective equipment (PPE) used by the provider, whether the source patient wore a mask, and whether an aerosol-generating procedure was performed. HCWs with high-risk exposures, particularly household and community exposures, should be excluded from work for 14 days whenever possible, even if testing during this period does not identify SARS-CoV-2 infection [117]. However, differences in return-to-work policies may vary among individual institutions, and the CDC states alternatives to the 14-day quarantine can be considered to mitigate staffing shortages [118]. As an example, for asymptomatic HCWs, the duration of quarantine may be reduced to 10 days, or to 7 days provided the individual has a negative nucleic acid amplification test (NAAT) or antigen SARS-CoV-2 test within 48 hours of the planned end of quarantine. When the duration of quarantine is reduced, HCWs should be monitored closely for symptoms and wear a medical mask for source control through day 14 since there may be an increased risk of transmission, as described above [59,118] (see '[Patients who have had an exposure to COVID-19](#)' above). After day 14, the HCW should resume the standard policies for symptom monitoring and source control specified by their institution.

**After infection** — For HCWs with confirmed or suspected COVID-19, decisions about return to work should be made in the context of the provider's local circumstances (eg, availability of testing, staffing shortages) [119]. Non-test-based strategies are generally recommended. More detailed information regarding criteria for return to work, as well as return to work practices and work restrictions, is found on the [CDC website](#).

**Long-term care facilities** — Similar to other health care settings, certain measures should be used for all patients, visitors, and providers entering long-term care facilities. These include symptom screening and use of masks for everyone entering the facility, regardless of symptoms. The CDC also recommends that nursing homes employ a strategy of frequent point prevalence testing for HCWs and/or residents to preempt and identify outbreaks. In some cases, a patient may be entering a facility after being hospitalized for COVID-19. Infection control precautions for COVID-19 are still required if the patient is discharged from the hospital before criteria for discontinuing precautions are met. More detailed information on infection prevention in long-term care facilities can be found on the [CDC website](#) and in a separate topic

review. (See "[Coronavirus disease 2019 \(COVID-19\): Management in nursing homes](#)".)

**Dialysis** — Similar to other health care settings, dialysis centers should identify patients with signs and symptoms of respiratory infection (eg, fever, cough) before they enter the treatment area. If a patient has suspected infection when they arrive, they should be placed in a private room with the door shut and testing should be arranged. If that is not possible, they should wear a mask and be separated by at least six feet (two meters) from the nearest patient. Staff should wear PPE as described above. A more detailed discussion of infection control in dialysis centers is presented in a separate topic review. (See "[Coronavirus disease 2019 \(COVID-19\): Issues related to kidney disease and hypertension](#)", section on 'Patients receiving in-center hemodialysis'.)

**Role of serologic testing** — Serologic tests may be able to identify patients who have a prolonged illness (eg, greater than 14 days) and a negative polymerase chain reaction (PCR) test, as well as those who had previous infection. However, these tests are not useful for assessing the presence of infection in an exposed patient and, until their sensitivity and specificity are further assessed, they should not be used for determining the use of infection control precautions. Additional information on serologic testing is presented elsewhere. (See "[Coronavirus disease 2019 \(COVID-19\): Diagnosis](#)", section on 'Serology to identify prior/late infection'.)

**Preventing infection in the community** — Several strategies have been implemented to reduce the risk of SARS-CoV-2 transmission in the community. These include social distancing, the use of facemasks, frequent hand washing, and frequent cleaning of high-touch surfaces in homes. This is discussed in detail in separate topic review. (See "[Coronavirus disease 2019 \(COVID-19\): Epidemiology, virology, and prevention](#)", section on 'Personal preventive measures'.)

#### **SOCIETY GUIDELINE LINKS**