COVID-19

Interim Guidance on Duration of Isolation and Precautions for Adults with COVID-19

Updated Feb. 13, 2021 Print

Summary of Recent Changes

Updates as of February 13, 2021

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- Added new evidence and recommendations for duration of isolation and precautions for severely immunocompromised adults.
- Added information on recent reports in adults of reinfection with SARS-CoV-2 variant viruses.

Accumulating evidence supports ending isolation and precautions for adults with laboratory-confirmed COVID-19 using a symptom-based strategy. This update incorporates recent evidence to inform the duration of isolation and precautions recommended to prevent transmission of SARS-CoV-2 to others, while limiting unnecessary prolonged isolation and unnecessary use of laboratory testing resources. This interim guidance is based upon information available to date and will be updated as new information becomes available.

CDC recommends that all people, regardless of symptoms and regardless of whether or not they have had laboratory-confirmed COVID-19 in the past, continue to use all recommended prevention strategies to prevent SARS-CoV-2 transmission (e.g., wear masks, stay at least 6 feet away from others who do not live with you, avoid crowds, and wash hands regularly).

Summary of Key Findings

1. Concentrations of SARS-CoV-2 RNA in upper respiratory specimens decline after onset of symptoms. [39,56,61,63,64,66]
2. The likelihood of recovering replication-competent virus also declines after onset of symptoms. For patients with

mild to moderate COVID-19, replication-competent virus has not been recovered after 10 days following symptom onset. [1,8,31,36,42,61,66] Recovery of replication-competent virus between 10 and 20 days after symptom onset has been reported in some adults with severe COVID-19; some of these cases were immunocompromised. [56] However, in this series of patients, it was estimated that 88% and 95% of their specimens no longer yielded replication-competent virus after 10 and 15 days, respectively, following symptom onset. Detection of sub-genomic SARS-CoV-2 RNA or recovery of replication-competent virus has been reported in severely immunocompromised patients (e.g., patients with chronic lymphocytic leukemia and acquired hypogammaglobulinemia, lymphoma and immunochemotherapy, hematopoietic stem-cell transplant, chimeric antigen receptor T-cell therapy, or AIDS) beyond 20 days, and as long as 143 days after a positive SARS-CoV-2 test result. [2,6,7,14,74]

3. In a large contact tracing study, no contacts at high risk of exposure developed infection if their exposure to a case patient started 6 days or more after the case patient's infection onset. [12]
4. Recovered patients can continue to have SARS-CoV-2 RNA detected in their upper respiratory specimens for up to 12 weeks after symptom onset. [31,33,34] Investigation of 285 "persistently positive" adults, which included 126 adults who had developed recurrent symptoms, found no secondary infections among 790 contacts to these case patients. Efforts to isolate replication-competent virus from 108 of these 285 case patients were unsuccessful. [31]
5. To date, reports of reinfection have been infrequent. Similar to other human coronaviruses where studies have demonstrated reinfection, the probability of SARS-CoV-2 reinfection is expected to increase with time after recovery from initial infection because of waning immunity and the possibility of exposure to virus variants. Circulation of variant viruses (such as the B.1.1.7 variant [20] or B.1.1.28 variant [67,68]) has been reported in several countries. Reinfection with a SARS-CoV-2 variant virus has been reported in Brazil, [69,70,71] the U.K., [72] and South Africa. [73] The risk of reinfection may be increased in the future with exposure to SARS-CoV-2 variant virus strains that are not neutralized by immune antisera, such as one recently described in South Africa. [60] The risk of reinfection also depends on the likelihood of re-exposure to infectious cases of COVID-19. Continued widespread transmission makes it more likely that reinfections will occur. Use of prevention strategies can prevent and slow transmission.

The current evidence includes the following limitations:

- In a study of skilled nursing facility workers followed prospectively for asymptomatic infection, one of 48 staff infected with SARS-CoV-2 had a nasopharyngeal swab that was weakly positive on a single-passage plaque assay (and therefore contained live virus) more than 20 days after initial diagnosis. However, the specimen was not subjected to serial passage to demonstrate the presence of replication-competent virus; [46] in other words, it is not known if the person was actually infectious.
- In one case report, an adult with mild illness provided specimens that yielded replication-competent virus for up to 18 days after symptom onset. [34]
- More data are needed concerning viral shedding in some situations, including in immunocompromised adults.
- Data currently available are from adults; comparable data from children and infants on the character of viral shedding or risk for reinfection are not presently available.

Assessment

Duration of Isolation and Precautions

Available data indicate that adults with mild to moderate COVID-19 remain infectious no longer than 10 days after symptom onset. Most adults with more severe to critical illness or severe immunocompromise likely remain infectious no longer than 20 days after symptom onset; however, there have been several reports of people shedding replication-competent virus beyond 20 days due to severe immunocompromise. [2,6,7,14,74] Recovered adults can continue to shed detectable but non-infectious SARS-CoV-2 RNA in upper respiratory specimens for up to 3 months after illness onset, albeit at concentrations considerably lower than during illness, in concentration ranges where replication-competent

virus has not been reliably recovered and infectiousness is unlikely. The circumstances that result in persistently detectable SARS-CoV-2 RNA have yet to be determined. Studies have not found evidence that clinically recovered adults with persistence of viral RNA have transmitted SARS-CoV-2 to others. These findings strengthen the justification for relying on a symptom-based rather than test-based strategy for ending isolation of most patients, so that adults who are no longer infectious are not kept unnecessarily isolated and excluded from work or other responsibilities.

Role of Viral Diagnostic Testing after Discontinuation of Isolation or Precautions

The duration and robustness of immunity to SARS-CoV-2 remains under investigation. Among other human coronaviruses, reinfection appears to occur variably over time after onset of infection. [19,30] However, for SARS-CoV-2, reinfection appears to be uncommon during the initial 90 days after symptom onset of the preceding infection (Annex: Retesting and Quarantine of Adults Recovered from Laboratory-diagnosed SARS-CoV-2 Infection with Subsequent Re-Exposure). Thus, for adults recovered from SARS-CoV-2 infection, a positive SARS-CoV-2 RT-PCR result without new symptoms during the 90 days after illness onset more likely represents persistent shedding of viral RNA than reinfection.

- If such an adult remains *asymptomatic* during this 90-day period, then any viral retesting is unlikely to yield useful information, even if the adult had close contact with an infected person.
- If such an adult becomes *symptomatic* during this 90-day period, and an evaluation fails to identify a diagnosis other than SARS-CoV-2 infection (e.g., influenza), then the adult likely warrants evaluation for SARS-CoV-2 reinfection in consultation with an infectious disease or infection control expert. Isolation might be warranted before and during this evaluation, particularly if symptoms developed after close contact with an infected person or in association with an outbreak setting. Isolation might also be warranted to prevent transmission of any other potentially transmissible respiratory infections (e.g., that might be confirmed by pending cultures or additional testing).

Correlates of immunity to SARS-CoV-2 infection have not been established. Although a positive serologic test result may indicate resolving or previous infection, a positive test result is unlikely to indicate the onset of acute infection in lieu of a positive viral test result except in rare circumstances (i.e., a positive serologic test result 7 days to 3 weeks following acute illness onset in adults with a previous negative serologic test result). Therefore, only under a rare circumstance such as the one described could a serologic test be used to establish a diagnosis date for the purposes of assessing both the interval between past diagnosis and any new exposure and whether or not testing is indicated.

CDC will continue to closely monitor the evolving science for information that would warrant reconsideration of these recommendations.

Recommendations

1. **Duration of isolation and precautions**
    - For most adults with COVID-19 illness, isolation and precautions can be discontinued 10 days *after symptom onset** and after resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms.
        - Some adults with severe illness may produce replication-competent virus beyond 10 days that may warrant extending duration of isolation and precautions for up to 20 days after symptom onset; severely immunocompromised patients** may produce replication-competent virus beyond 20 days and require additional testing and consultation with infectious diseases specialists and infection control experts.
    - For adults who never develop symptoms, isolation and other precautions can be discontinued 10 days *after the date of their first positive RT-PCR test result for SARS-CoV-2 RNA.*
2. **Role of viral diagnostic testing (RT-PCR or antigen)*** to discontinue isolation or precautions**
    - For adults who are severely immunocompromised, a test-based strategy could be considered in consultation

with infectious diseases experts.

- For all others, a test-based strategy is no longer recommended except to discontinue isolation or precautions earlier than would occur under the strategy outlined in Part 1, above.

3. **Viral diagnostic testing (RT-PCR or antigen)*** and quarantine after discontinuation of isolation or precautions**
   - **For adults previously diagnosed with symptomatic laboratory-confirmed COVID-19 who remain asymptomatic after recovery**, retesting or quarantine is not recommended if another exposure occurs or might have occurred within 90 days after the date of symptom onset from the initial SARS-CoV-2 infection.
   - **For adults who develop new symptoms consistent with COVID-19 during the 90 days after the date of initial symptom onset**, if an alternative etiology cannot be readily identified by a healthcare provider, then the adult likely warrants retesting. Consultation with infectious disease or infection control experts is recommended, especially in the event that symptoms develop within 14 days after close contact with a person infected with SARS-CoV-2. Adults being evaluated for reinfection with SARS-CoV-2 or any potentially transmissible respiratory infection should be isolated under recommended precautions before and during evaluation. If reinfection is confirmed or remains suspected, they should remain under the recommended SARS-CoV-2 isolation period until they meet the criteria for discontinuation of precautions – for most adults, this would be 10 days after symptom onset and after resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms.
   - **For adults with past laboratory-confirmed SARS-CoV-2 who have never had symptoms and have had a subsequent exposure or possible exposure**, the date of first positive viral diagnostic test result (RT-PCR or antigen) for SARS-CoV-2 should be used in place of the date of symptom onset to determine the interval between past infection and the recent exposure. This interval can then be used to inform decisions about testing for the recent exposure.
   - **Adults who have a past history of symptoms consistent with COVID-19 but who did not have laboratory confirmation of COVID-19 with a viral diagnostic test (RT-PCR or antigen)** and who present with new symptoms consistent with COVID-19 should be tested and undergo quarantine.
   - **For children and infants**, the data pertaining to the risk of reinfection within 90 days following laboratory-confirmed diagnosis are extremely limited. However, in the context of a pandemic, children and infants should be managed as recommended for adults above. CDC will continue to monitor closely the evolving science for information that would warrant reconsideration of these recommendations for this population.
4. **Role of serologic testing**
   - Although serologic testing indicating the presence of SARS-CoV-2 antibodies may signify resolving or previous infection, it should not generally be used to establish the presence or absence of acute SARS-CoV-2 infection. In addition, the date of a positive serologic test should not generally be used to determine the start of the 90-day period following SARS-CoV-2 infection for which retesting or quarantine is not recommended. However, if no positive viral diagnostic test (RT-PCR or antigen) indicating infection is available, a positive serologic test 7 days to 3 weeks following acute illness onset in an adult with a history of a previous negative serologic test can be used to establish the presence of absence of infection and the start date of the 90-day period.

* *Symptom onset* is defined as the date on which symptoms first began, including non-respiratory symptoms.

** The studies used to inform this guidance did not clearly define severe immunocompromise. For the purposes of this guidance, CDC defines severe immunocompromise as certain conditions, such as being on chemotherapy for cancer, untreated HIV infection with CD4 T lymphocyte count <200, combined primary immunodeficiency disorder, and receipt of prednisone >20mg/day for more than 14 days, that may cause a higher degree of immunocompromise and therefore should inform decisions regarding the duration of isolation. Other factors, such as advanced age, diabetes mellitus, or

end-stage renal disease, may pose a much lower degree of immunocompromise and do not clearly affect decisions about duration of isolation. Ultimately, the degree of immunocompromise for the patient is determined by the treating provider, and preventive actions should be tailored to each patient.

[***] *RT-PCR testing* is defined as the use of an RT-PCR assay to detect the presence of SARS-CoV-2 RNA.

Annex: Interim Guidance on Retesting and Quarantine of Adults Recovered from Laboratory-diagnosed SARS-CoV-2 Infection with Subsequent Re-exposure

Accumulating evidence supports the recommendation that people who have recovered from laboratory-confirmed COVID-19 do not need to undergo repeat testing or quarantine in the case of another SARS-CoV-2 exposure within 90 days of their initial diagnosis. Evidence does not indicate the definitive absence of re-infection during this period, only that risks of potential SARS-CoV-2 transmission from recovered persons are likely outweighed by the personal and societal benefits of avoiding unnecessary quarantine. CDC recommends that all people, regardless of symptoms, and regardless of whether or not they have had laboratory-confirmed COVID-19 in the past, continue to use all recommended prevention strategies to prevent SARS-CoV-2 transmission (e.g., wear masks, stay at least 6 feet away from others who do not live with you, avoid crowds, and wash hands regularly). This interim guidance is based upon information available to date and will be updated as new information becomes available.

Summary of Key Findings:

1. There are few overall reports of reinfection that have been confirmed through the detection of phylogenetic differences between viruses isolated during the initial and reinfection episodes. Some of these reports demonstrate reinfection occurring at least 90 days after infection onset, [15,21,23,50,54,55] although other reports suggest that reinfection is possible as early as 45 days after infection onset. [4,32,41,44,52,53]
2. An increasing number of published studies suggest that >90% of recovered COVID-19 patients develop anti-SARS-CoV-2 antibodies. [17,22,28,57-58] Additional studies also demonstrate antibody response, including neutralizing antibodies and antibody response following mild or asymptomatic infection, can be durable for 6 months or more. [13,16,24,43] This evidence must be interpreted cautiously, as anti-SARS-CoV-2 antibodies have not been definitively correlated with protection from SARS-CoV-2 infection, and it is unclear what antibody titer would be associated with protection.
3. Some studies have also noted lower titers and faster waning of anti-SARS-CoV-2 antibodies in mild or asymptomatic cases of COVID-19. [26,35,40,43,49,51,59]
4. It is important to note that antibodies are only one component of human immunity and that immunity may be achieved through other mechanisms such as virus-specific memory T and B cells. [10,29,47,48] Studies suggest that the memory T and B cell response can be durable for 6 months or more. [16,24,65] However, one study found that T cell responses were 50% higher among symptomatic adults compared with asymptomatic adults at 6 months post-infection. [65]
5. Animal challenge studies with SARS-CoV-2 [11,18] and investigations of seropositive adults in outbreak settings [5,45] provide initial evidence of protection against reinfection after prior infection with SARS-CoV-2. Serological surveys have also provided evidence linking antibody presence to protection against reinfection, [4,25,37] and an additional animal challenge study demonstrated that exogenously administered anti-SARS-CoV-2 antibodies protected against reinfection in a dose-dependent manner. [38]

Assessment

Despite millions of SARS-CoV-2 infections worldwide, including the United States, to date, surveillance and investigations have thus far demonstrated few confirmed cases of reinfection. Currently, it is unknown if recovered adults are definitively immune to SARS-CoV-2 reinfection because biologic markers of immunity have not been correlated with protection from infection. However, available evidence suggests that most recovered adults would have a degree of immunity for at least 90 days following initial diagnosis of laboratory-confirmed COVID-19. If the present guidance is implemented with current prevention strategies to prevent SARS-CoV-2 transmission (i.e., wear masks, stay at least 6 feet away from others who do not live with you, avoid crowds, and wash hands regularly), the risks of potential SARS-CoV-2 transmission from recovered adults is generally too low to justify retesting and quarantine.

However, there could be scenarios in which the risk of reinfection and potential transmission may be deemed high enough to warrant retesting and quarantine of the exposed individual who has recovered from laboratory-confirmed SARS-CoV-2 infection; this can include settings where there is low tolerance for introduction of SARS-CoV-2, such as certain congregate settings.

Circulation of variant viruses (such as the B.1.1.7 variant [20] or B.1.1.28 variant [67,68]) has been reported in several countries. Reinfection with a SARS-CoV-2 variant virus has been reported in Brazil, [69,70,71] the U.K., [72] and South Africa. [73] The risk of reinfection may be increased in the future with exposure to SARS-CoV-2 variant virus strains that are not neutralized by immune antisera, such as one recently described in South Africa. [60] This guidance will be updated as additional evidence emerges regarding the reinfection risk that new variants may pose.

Recommendation

If an adult has a new exposure to someone with suspected or confirmed COVID-19 and:

1. Has recovered from illness due to laboratory-confirmed (RT-PCR or antigen) SARS-CoV-2 infection and has already met criteria to end isolation, and
2. Is within the first 90 days following the onset of symptoms of their initial laboratory-confirmed SARS-CoV-2 infection or within the first 90 days of their first positive SARS-CoV-2 test result if they were asymptomatic during initial infection, and
3. Has remained asymptomatic since the new exposure,

then that adult does not require repeat testing or quarantine for SARS-CoV-2 in the context of this new exposure.

If an adult has a new exposure to a person with suspected or confirmed COVID-19 and meets the first two above criteria, but has or develops new symptoms consistent with COVID-19 within 14 days of the new exposure, consultation with a health care provider is recommended, and consultation with infectious disease or infection control experts may be necessary. If an alternative cause of the symptoms cannot be readily identified, retesting for SARS-CoV-2 infection may be warranted. In the absence of clinical evaluation to rule out SARS-CoV-2 reinfection, this adult should be isolated for the duration recommended in the memo above – for most adults, this would be 10 days after symptom onset and after resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms. Transmission-based precautions should be used as currently recommended in adults with suspected respiratory infection.

Among children and infants, data pertaining to the risk of reinfection following laboratory-confirmed diagnosis are extremely limited. However, in the context of a pandemic, children and infants should be managed as recommended for adults above.

There also may be circumstances (such as certain congregate settings) where there is increased concern for SARS-CoV-2 transmission. Under these circumstances, repeat testing for SARS-CoV-2 or quarantine can be considered if a new exposure occurs more than 90 days after recovery from a prior infection. As above, the decision to retest or quarantine should be made in consultation with a healthcare provider; consultation with infectious disease or infection control experts may also be necessary.

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