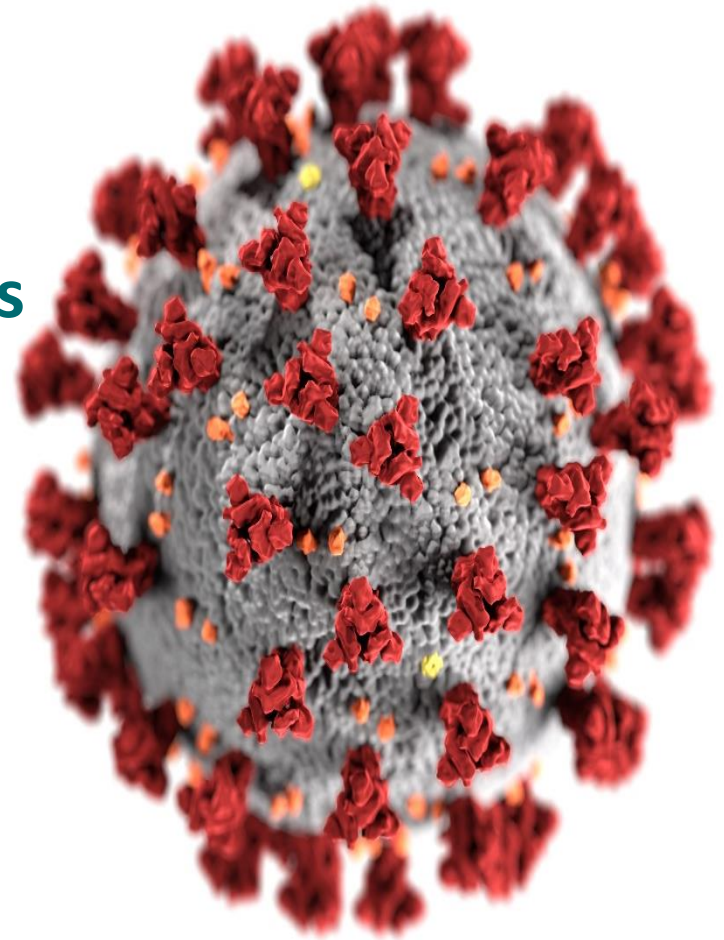


SARS-CoV-2 Testing Considerations

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Nursing Home COVID-19 Action Network
Conversation Series



For more information: www.cdc.gov/COVID19

Financial Disclosures

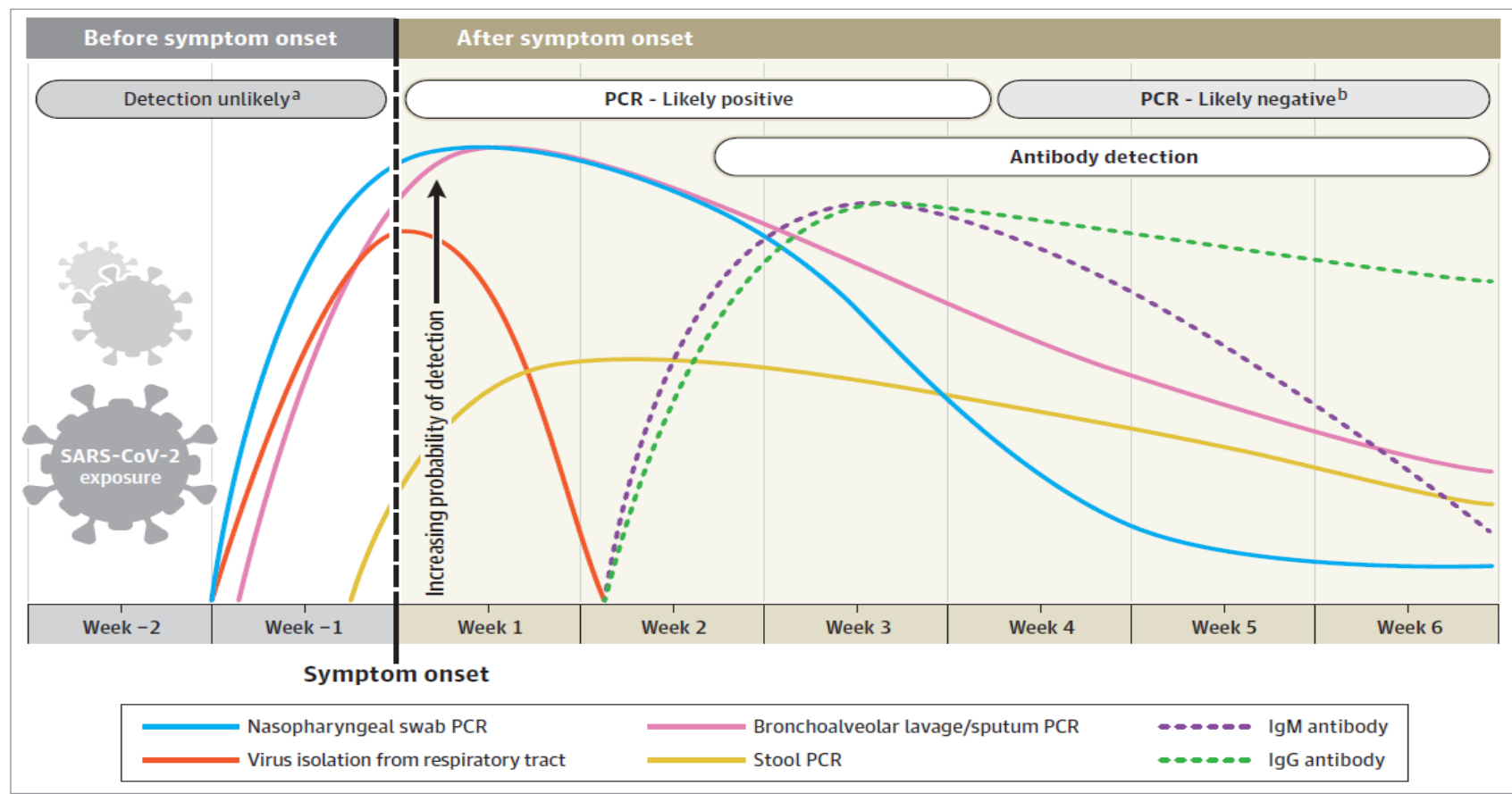
- No disclosures to report.

Learning topics

- Describe the different SARS-CoV-2 testing options and considerations for their use
- Apply the SARS-CoV-2 testing guidance for nursing home residents and healthcare personnel (HCP)
- Discuss factors that impact the interpretation of test results

COVID-19 infection timeline and testing

Figure. Estimated Variation Over Time in Diagnostic Tests for Detection of SARS-CoV-2 Infection Relative to Symptom Onset



Understanding SARS-CoV-2 tests

	Molecular	Antigen	Serology
Test type	Viral	Viral	Antibody
Diagnostic test	Yes	Yes	No
Measure	Current Infection with SARS-CoV-2	Current Infection with SARS-CoV-2	Past exposure to SARS-CoV-2
Testing window	Days 1-28 after symptom onset, optimal days 3-12	Days 1-28 after symptom onset, optimal days 3-12	IgA/IgM: From day 5 after symptom onset, optimal 14-21 IgG: From day 14 after symptom onset up to 6 weeks

- Only viral diagnostic tests can be used to determine presence of active COVID-19 infection
- Serology, or “antibody” testing is used to determine previous infection
 - Residents and staff with positive serology should still be included in facility-wide viral testing

Chau CH et al. *Pharmacotherapy* 2020 Jul 8;10.1002/phar.2439. doi: 10.1002/phar.2439
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html>



SARS-CoV-2 viral testing: Molecular vs. antigen

Table 2. Summary of Some Differences between RT-PCR Tests and Antigen Tests

	RT-PCR Tests	Antigen Tests
Intended Use	Detect current infection	Detect current infection
Analyte Detected	Viral RNA	Viral Antigens
Specimen Type(s)	Nasal Swab, Sputum, Saliva	Nasal Swab
Sensitivity	High	Moderate
Specificity	High	High
Test Complexity	Varies	Relatively easy to use
Authorized for Use at the Point-of-Care	Most devices are not, some devices are	Yes
Turnaround Time	Ranges from 15 minutes to >2 days	Approximately 15 minutes
Cost/Test	Moderate	Low

- ▣ **Clinical sensitivity:**
 Accuracy of detecting positive patients with infection – lower sensitivity leads to higher false negative results
- ▣ **Clinical specificity:**
 Accuracy of detecting negative patients without infection – lower specificity leads to higher false positive results



<https://www.cdc.gov/coronavirus/2019-ncov/lab/resources/antigen-tests-guidelines.html>

Testing strategies

- Diagnostic testing
 - Intended to diagnose current infection and identify outbreaks
 - Performed when a person has signs or symptoms consistent with COVID-19, or when a person is asymptomatic but has recent known or suspected exposure to SARS-CoV-2
- Screening
 - Intended to identify infected persons who are asymptomatic and without known or suspected exposure to SARS-CoV-2.
 - Performed to identify persons who may be contagious so that measures can be taken to prevent further transmission



Current recommendations for testing in nursing homes

- Diagnostic testing:
 - Test any symptomatic residents and HCP immediately
 - Testing practices should aim for rapid turnaround times (e.g., less than 24 hours) in order to facilitate effective interventions
- Outbreak testing:
 - Triggered by a new SARS-CoV-2 infection in any HCP or any nursing home-onset SARS-CoV-2 infection in a resident
- Non-outbreak testing:
 - **Baseline testing:** Test all residents and staff once as part of reopening
 - **Serial staff screening:** test asymptomatic staff at frequency determined by county positivity (monthly, weekly, twice weekly)



<https://www.cms.gov/files/document/qso-20-38-nh.pdf>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>

Outbreak testing in response to a new SARS-CoV-2 case

- Expand diagnostic testing for all residents and HCP
 - Initiate facility-wide testing as soon the first SARS-CoV-2 case is confirmed
- Perform repeat testing of all previously negative residents and HCP
 - Optimal outbreak testing occurs every 3 days during the first 14 days from the initial case identification; followed by testing every 7 days
 - Continue serial testing until no new positive cases are identified for a period of 14 days from the most recent positive result.
 - If testing capacity is limited, prioritize testing for residents with known exposure to a case, residents and HCP on affected units, and residents who leave and return to the facility

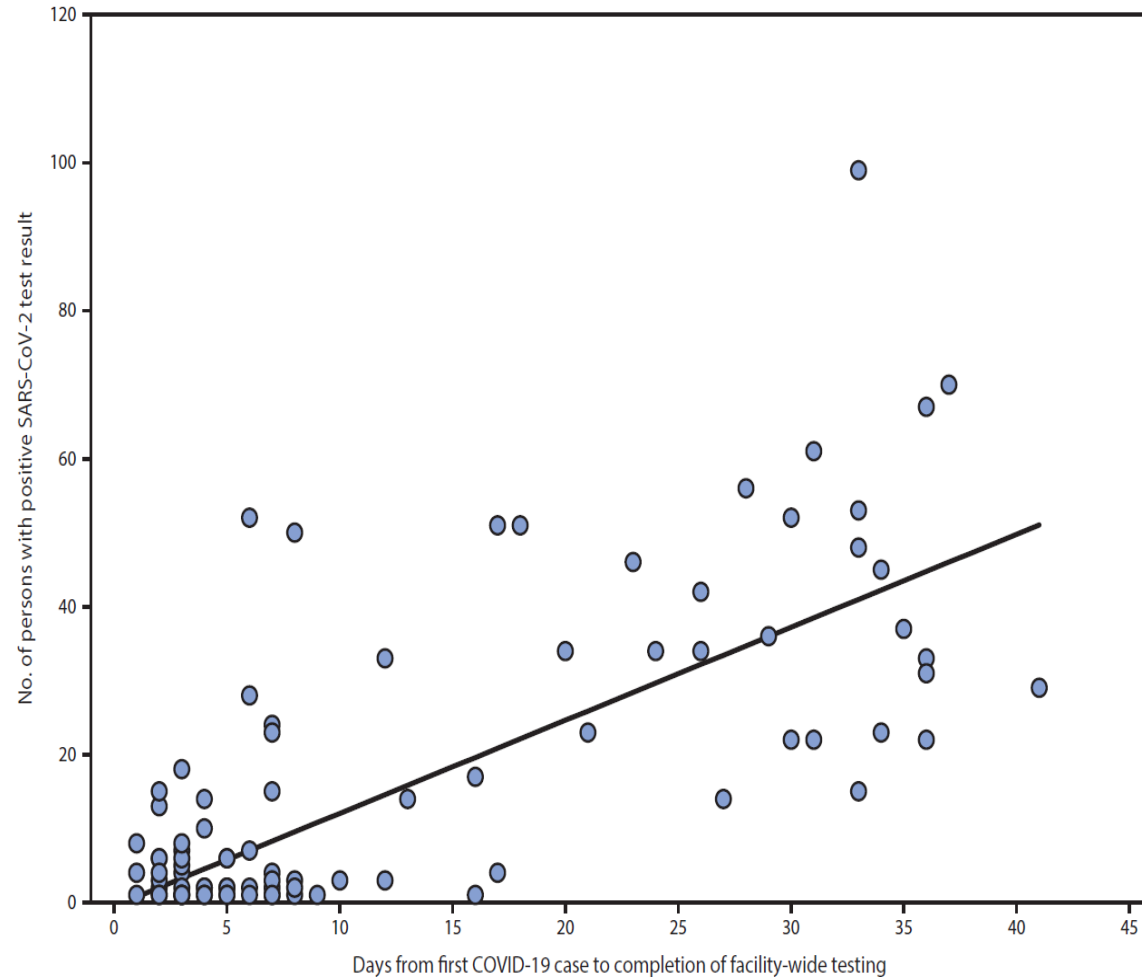


<https://www.cms.gov/files/document/qso-20-38-nh.pdf>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>

Timing of facility-wide testing associated with new cases

FIGURE. Association between total number of persons with positive SARS-CoV-2 test results after facility-wide testing and number of days from first case identification until completion of facility-wide testing* — five state and local health department jurisdictions,[†] United States, March–June 2020



- 93 nursing homes working with 5 health departments performed targeted COVID-19 testing in response to a case
- Median time was 7 days from first case to facility-wide testing (range: 1-41)
- For each additional day before completion of initial facility-wide testing, an estimated 1.3 additional cases were identified



Considerations when implementing testing in nursing homes

- Managing residents and HCP clinically recovered from COVID-19
 - *If within 3 months* of symptom onset of their most recent illness, no need to quarantine or retest for SARS-CoV-2 during outbreak response or staff screening
 - If testing positive for SARS-CoV-2 more than 3 months from recovery, should be considered infectious and placed in isolation or work exclusion
 - Retesting within first 3 months may be warranted for new symptoms consistent with COVID-19 if alternative etiologies for the illness cannot be identified
- Unclear benefit to regular screening tests for asymptomatic residents outside of outbreak response
 - Could result in false-positive results and lead to unnecessary testing
 - Consideration could be given to testing asymptomatic residents who frequently leave the facility of medical treatment, especially in communities with moderate to substantial SARS-CoV-2 transmission



<https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html#Testing-in-Nursing-Homes>

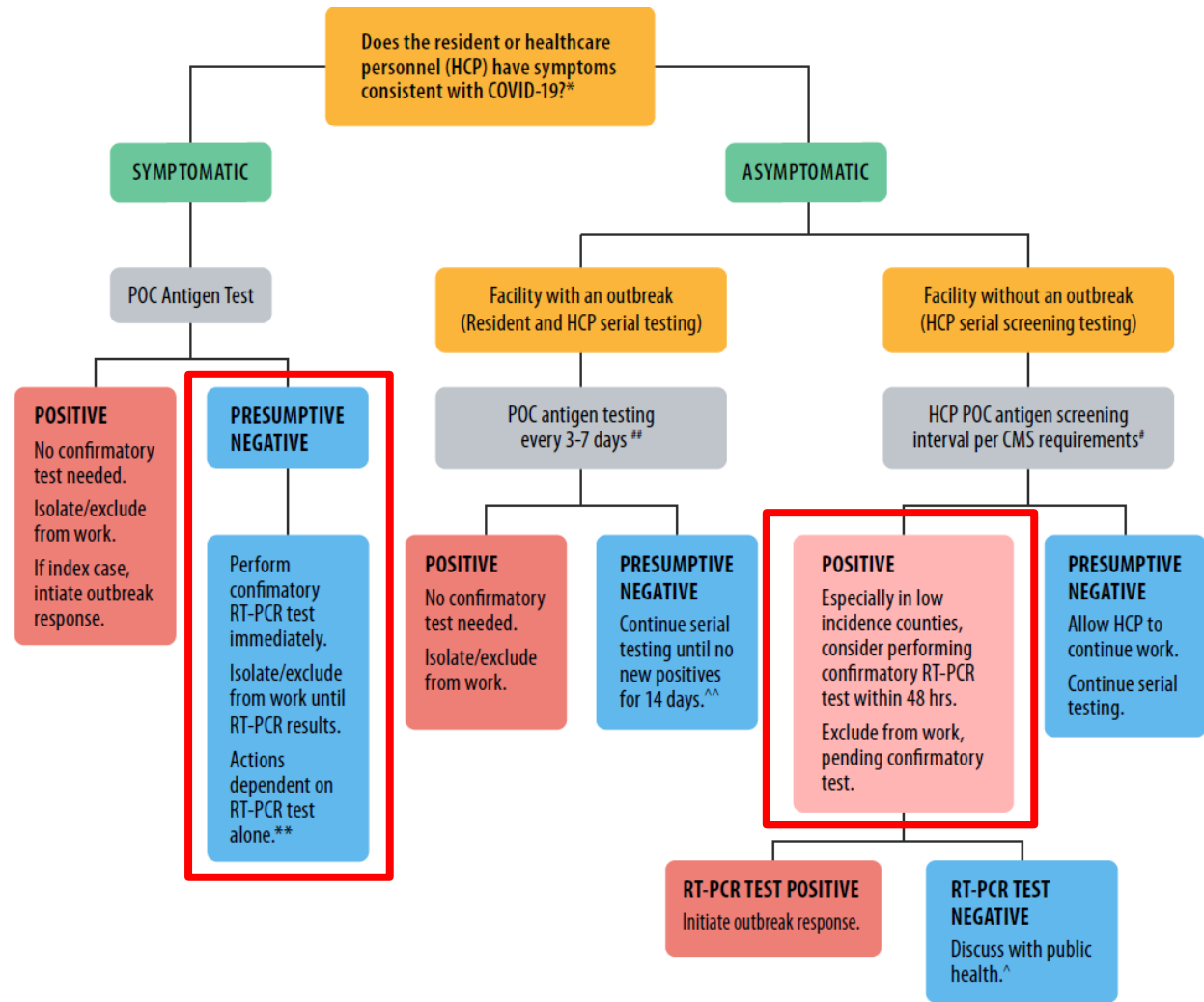
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html#Patients-with-Persistent-or-Recurrent-Positive-Tests>

Considerations for use of SARS-CoV-2 POC antigen tests

■ Testing scenarios:

- Symptomatic individuals
- Asymptomatic individuals in facilities with an outbreak
- Asymptomatic staff in facilities without an outbreak

■ Identifies when POC antigen results should be confirmed by RT-PCR



Factors that can impact interpretation of test results

- Quality of the specimen collection
 - Inadequate sampling or specimen mishandling
 - Running tests on specimens collected outside of the recommended time period recommended by manufacturer's instructions for use
- Proper use of the testing platform
 - Trained personnel, proficient in sample handling with dedicated time
 - Space designated for running POC tests should be free of clutter, with regular surface cleaning/disinfection to prevent sample contamination
 - Quality controls should be used according to manufacturer's instructions for use (e.g., new operators, new lots of test kits/reagents)
- Clinical presentation at the time of the test (e.g., symptoms)
- Prevalence of COVID-19 infections in the center and community



<https://www.youtube.com/watch?v=8oCRqIY1kJw>

<https://www.cdc.gov/coronavirus/2019-ncov/lab/lab-biosafety-guidelines.html#decentralized>

Responding to POC antigen results

- While awaiting confirmatory test results for potential false-negative or false-positive antigen test results, maintain IPC measures (e.g., HCP work exclusion, resident placement in Transmission-Based Precautions)
 - Select a confirmatory test with high sensitivity (e.g., RT-PCR)
 - Perform confirmatory test within 2 days of initial result
 - Additional testing of asymptomatic residents or other close contacts can be delayed until results of confirmatory testing are available, unless additional symptomatic individuals are identified
 - *Only move residents with confirmed infection to a dedicated COVID-19 unit*
- Confirmatory RT-PCR testing after a positive antigen test result is not recommended when the person being tested is symptomatic or had recent exposure to a SARS-CoV-2 case (e.g. during an outbreak)



Limitations to SARS-CoV-2 testing

- A single negative test may not rule out COVID-19 infection in asymptomatic individuals
 - A person can be incubating SARS-CoV-2 for up to 14 days before manifesting clinical illness or having detectable virus
 - Testing immediately before or after admission cannot be used to remove a resident from 14-day quarantine
- Clinicians must consider the likelihood of COVID-19 infection as part of interpreting test results
 - A negative test in someone with exposure and symptoms consistent with COVID-19 infection should be verified
 - A positive test in an asymptomatic person, in a community with low prevalence of COVID-19 infection should be verified
- Testing alone cannot prevent the spread of SARS-CoV-2
 - Facilities must remain committed to all infection prevention strategies to protect residents and staff



CDC Testing Guidance and FAQs

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

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Coronavirus Disease 2019 (COVID-19)

Your Health Community, Work & School Healthcare Workers & Labs Health Depts Cases & Data More

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Healthcare Workers

- Testing
- Clinical Care
- Infection Control
 - Infection Control Guidance
 - Using PPE
 - Hand Hygiene
 - Alternate Care Sites
 - Assisted Living Facilities
 - Blood & Plasma Facilities
 - Dental Settings
 - Dialysis Facilities
 - Nursing Homes & Long-Term Care Facilities
 - Infection Control for Nursing Homes
 - Responding to COVID-19
 - Testing Residents
 - Testing Facility-Wide
 - Traveling Care Units

HEALTHCARE WORKERS

Testing Guidelines for Nursing Homes

Interim SARS-CoV-2 Testing Guidelines for Nursing Home Residents and Health

Updated July 21, 2020

Print

Summary of Changes:

Revisions were made on July 17, 2020, to reflect the following:

- Updated "Testing to determine resolution of infection" to add information about people immunocompromised.

Revisions were made on July 1, 2020, to reflect the following:

- Focus on testing recommendations for nursing home residents only.
- Create separate guidance for testing healthcare personnel (HCP), which is available in the [Testing Healthcare Personnel for SARS-CoV-2](#).

Note: This document is intended to provide guidance on the appropriate use of testing residents and does not dictate the determination of payment decisions or insurance coverage except as may be otherwise referenced (or prescribed) by another entity or federal or state agency.

Nursing home residents are at high risk for infection, serious illness, and death from COVID-19 virus that causes COVID-19, in respiratory specimens can detect current infections (referred to as residents in nursing homes). Viral testing of residents in nursing homes, with authorized nucleic acid assays, is an important addition to other [infection prevention and control](#) (IPC) recommendations for COVID-19 from entering nursing homes, detecting cases quickly, and stopping transmission. This document provides available information about COVID-19 and will be refined and updated as more information becomes available.

Testing conducted at nursing homes should be implemented *in addition to* recommended IPC

Healthcare Workers

- Testing
 - Testing Overview
 - Performing Broad-Based Testing
 - Testing Healthcare Personnel
- Clinical Care
- Infection Control
- Optimize PPE Supply
- Potential Exposure at Work
- First Responder Guidance
- Healthcare Facility Tools
- Veterinary Clinics
- Pandemic Planning Scenarios
- Guidance for U.S. Facilities
- Operational Considerations for Non-US Settings
- Training for Healthcare Professionals

HEALTHCARE WORKERS

Interim Guidance on Testing Healthcare Personnel for SARS-CoV-2

Updated July 17, 2020

Print



Note: This document is intended to provide guidance on the appropriate use of testing among healthcare personnel and does not dictate the determination of payment decisions or insurance coverage of such testing, except as may be otherwise referenced (or prescribed) by another entity or federal or state agency.

This document provides a summary of considerations and current Centers for Disease Control and Prevention (CDC) recommendations regarding testing healthcare personnel (HCP) for SARS-CoV-2. This document does not apply to individuals who do not meet the definition of HCP as defined below. The CDC recommendations for SARS-CoV-2 testing have been developed based on what is currently known about COVID-19 and are subject to change as additional information becomes available.

Testing of HCP can be considered in four situations:

- Testing HCP with [signs or symptoms](#) consistent with COVID-19
- Testing asymptomatic HCP with known or suspected exposure to SARS-CoV-2
- Testing asymptomatic HCP without known or suspected exposure to SARS-CoV-2 for early identification in [special settings](#) (e.g., nursing homes)
- Testing HCP who have been diagnosed with SARS-CoV-2 infection to determine when they are no longer infectious

Viral tests (authorized nucleic acid or antigen detection assays) are recommended to diagnose acute infection. Testing practices should aim for rapid turnaround times (i.e., less than 24 hours) in order to facilitate effective interventions. Testing the same individual more than once in a 24-hour period is not recommended.

HCP undergoing testing should receive clear information on:

- the purpose of the test
- the reliability of the test and any limitations associated with the test

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/testing-healthcare-personnel.html>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/faq.html#Testing-in-Nursing-Homes>

COVID-19 Resources for Nursing Homes

Healthcare Workers

HEALTHCARE WORKERS

Nursing Homes and Long-Term Care Facilities

Updated Aug. 24, 2020 [Print](#)

[Infection Control Guidance](#)

[SARS-CoV-2 Testing Guidance](#)

[Infection Control for Nursing Homes](#)

[Testing Nursing Home Residents](#)

[Public Health Response in Nursing Homes](#)

[Testing Healthcare Personnel](#)

[Infection Control in Memory Care Units](#)

[Facility-wide Testing in Nursing Homes](#)

[Infection Control FAQs](#)

[Testing FAQs](#)

Infection Control Assessment Tool

[Nursing Home COVID-19 Infection Control Assessment and Response \(ICAR\) Tool](#)

Tool to help nursing homes and assisted living facilities develop a comprehensive COVID-19 response plan.

Training Resources

[Applying COVID-19 Infection Control Strategies in Nursing Homes](#)

Clinical Outreach and Communication Activity (COCA) Webinar, June 16, 2020. Case-based scenarios are used to discuss how to apply infection prevention and control guidance for nursing homes and other long-term care facilities preparing for and responding to COVID-19.

[Nursing Home Infection Preventionist Training Course \(CDC TRAIN\)](#)

CDC TRAIN course, a free service from the Public Health Foundation

Videos for Training Front Line Long-Term Care Staff

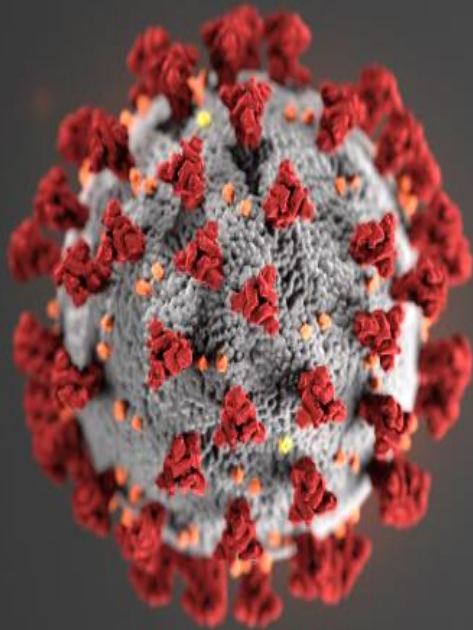
[Mini Webinar training series for front-line staff to help protect residents from COVID-19](#)

• [Keep COVID-19 Out](#)

- Infection Control Guidance
- SARS-CoV-2 Testing Guidance
- Assessment tools
- Training resources



<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-home-long-term-care.html>



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

Thank you!

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

