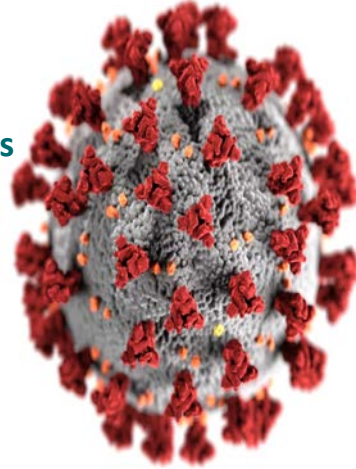


## SARS-CoV-2 Testing Considerations

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Nursing Home COVID-19 Action Network  
Conversation Series



For more information: [www.cdc.gov/COVID19](https://www.cdc.gov/COVID19)

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## Learning topics

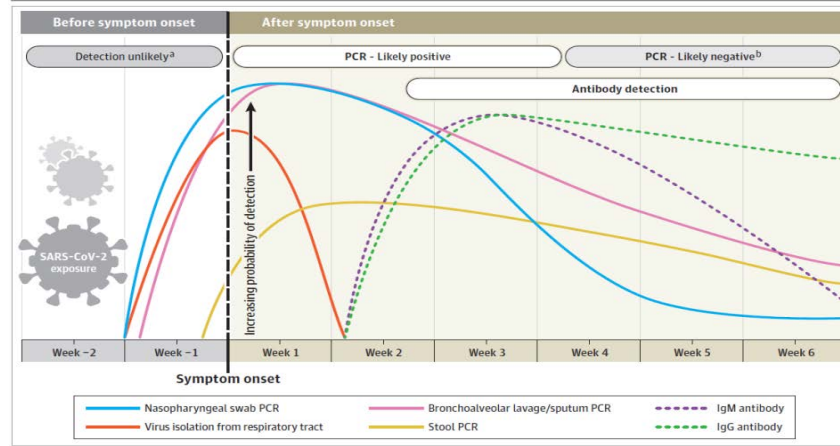
- Describe different SARS-CoV-2 testing options
- Apply the SARS-CoV-2 testing guidance for nursing home residents and healthcare personnel (HCP)
- Discuss factors that impact the interpretation of test results



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## 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



Sethuraman N et al. JAMA May 2020 DOI: 10.1001/jama.2020.8259

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## 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



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>

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## Nasopharyngeal swab versus blood test

- 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



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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



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

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- **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



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## Testing strategies

### Diagnostic testing

- diagnose current infection
- identify outbreaks
- Person with signs or symptoms consistent with COVID-19,
- asymptomatic person with suspected exposure to SARS-CoV-2



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## Testing Strategies

- Screening
  - Identify asymptomatic infected persons
  - Find contagious people so measures can be taken to prevent further transmission



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## Current recommendations for testing in nursing homes

### Diagnostic testing:

- Test all symptomatic residents and staff
- Testing should have 24 hour turn around time



<https://www.cms.gov/files/document/qso-20-38-nh.pdf>  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>

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## Current recommendations for testing in nursing homes

### Outbreak testing:

- Triggered by a new COVID19 infection in any staff or 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>

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

- Expand diagnostic testing for all residents and staff
  - Initiate *facility-wide testing* if COVID19 positive index case
- Perform repeat testing of all previously negative residents and HCP
  - Optimal testing = every 3 days during the first 14 days of index case
    - Thereafter, testing every 7 days
  - Continue serial testing until no new positive cases from last COVID19 +.
- If testing capacity is limited, prioritize testing for residents with known exposure to a case, residents and staff on affected units, and residents who leave and return to the facility

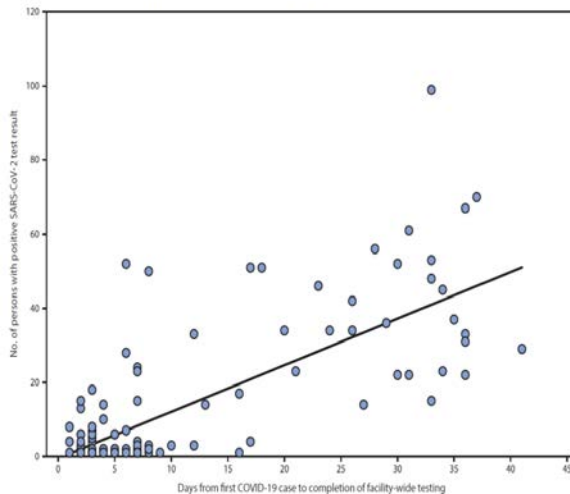


<https://www.cms.gov/files/document/qso-20-38-nh.pdf>  
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/nursing-homes-testing.html>

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## 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



- N = 93 SNFs
- 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



<https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6932e5-H.pdf>

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## Considerations when implementing testing in nursing homes

- Managing residents and staff clinically recovered from COVID-19
  - 0 – 3 months post infection: no quarantine or retest\*
  - > 3 months post infection: retest if symptoms, if positive, manage as a new infection
- \* Retesting within first 3 months may be warranted for new symptoms consistent with COVID-19 if alternative etiologies for the illness cannot be identified



<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>

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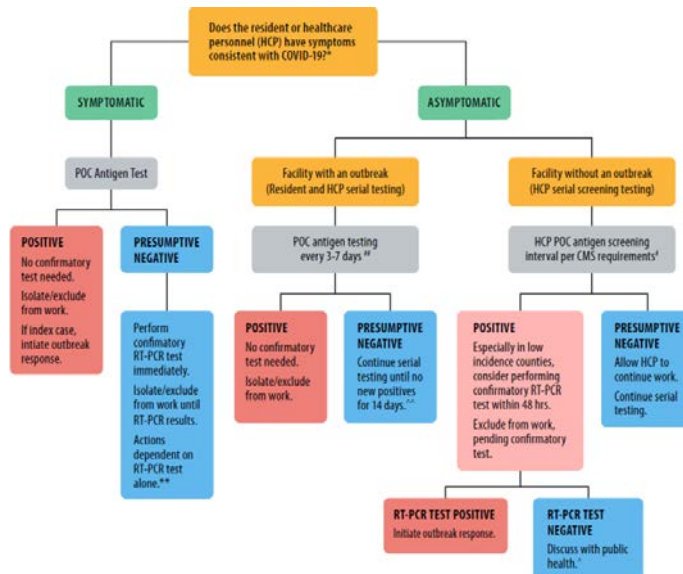
## Considerations when implementing testing in nursing homes

- Unclear benefit to regular screening tests for asymptomatic residents outside of outbreak response
  - Could result in false-positive results and lead to unnecessary testing
  - Test asymptomatic residents who frequently leave the facility of medical treatment



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## Antigen test strategies



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

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## In CHAT BOX

- Indicate if you use the COVID-19 antigen test
  - YES or NO



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## 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



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

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

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## Factors that can impact interpretation of test results

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)



<https://www.youtube.com/watch?v=8oCRqIY1kIw>

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

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## Responding to + antigen results

- Get PCR test
- Staff work exclusion, resident placement in Transmission-Based Precautions)
- 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)**



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

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## Limitations to COVID19 testing

- A single negative test may not rule out COVID-19 infection in asymptomatic individuals
  - 14 day window 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



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## Limitations to COVID19 testing

- 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



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## Limitations to COVID19 testing

- Testing alone cannot prevent the spread of COVID
  - Facilities must remain committed to all infection prevention strategies to protect residents and staff



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## CDC Testing Guidance and FAQs

The screenshot displays the CDC website's navigation and content for COVID-19 testing guidance. The main heading is "CDC Testing Guidance and FAQs". Below this, there are two primary sections:

- Testing Guidelines for Nursing Homes:** This section includes a "Summary of Changes" dated July 1, 2020. It notes updates to testing recommendations for nursing home residents and the creation of separate guidelines for testing healthcare personnel (HCP). A key note states: "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." It also mentions that nursing home residents are at high risk for infection, serious illness, and death from COVID-19.
- Interim Guidance on Testing Healthcare Personnel for SARS-CoV-2:** This section provides a summary of considerations and current CDC recommendations for testing HCP. It lists four situations where testing can be considered:
  - Testing HCP with significant asymptomatic contact with COVID-19.
  - Testing asymptomatic HCP with recent or suspected exposure to SARS-CoV-2.
  - Testing asymptomatic HCP without known or suspected exposure to SARS-CoV-2 for early identification in specific HHS/USDA long-term care settings.
  - Testing HCP who have been diagnosed with SARS-CoV-2 infection to determine when they are no longer infectious.

- <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>

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## COVID-19 Resources for Nursing Homes

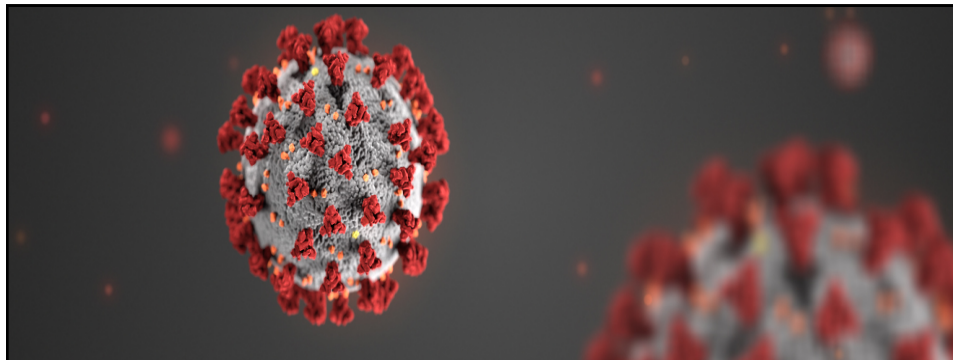
The screenshot shows a webpage with a left-hand navigation menu and a main content area. The navigation menu includes categories like 'Healthcare Workers', 'Clinical Care', 'Infection Control', 'Nursing Homes & Long-Term Care Facilities', and 'Pharmacies'. The main content area is titled 'Nursing Homes and Long-Term Care Facilities' and features several resource sections: 'Infection Control Guidance' with links for nursing homes, public health response, memory care units, and FAQs; 'SARS-CoV-2 Testing Guidance' with links for residents, personnel, and facility-wide testing; 'Infection Control Assessment Tool' for developing response plans; and 'Training Resources' including a webinar and a training course.

- 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>

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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.



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