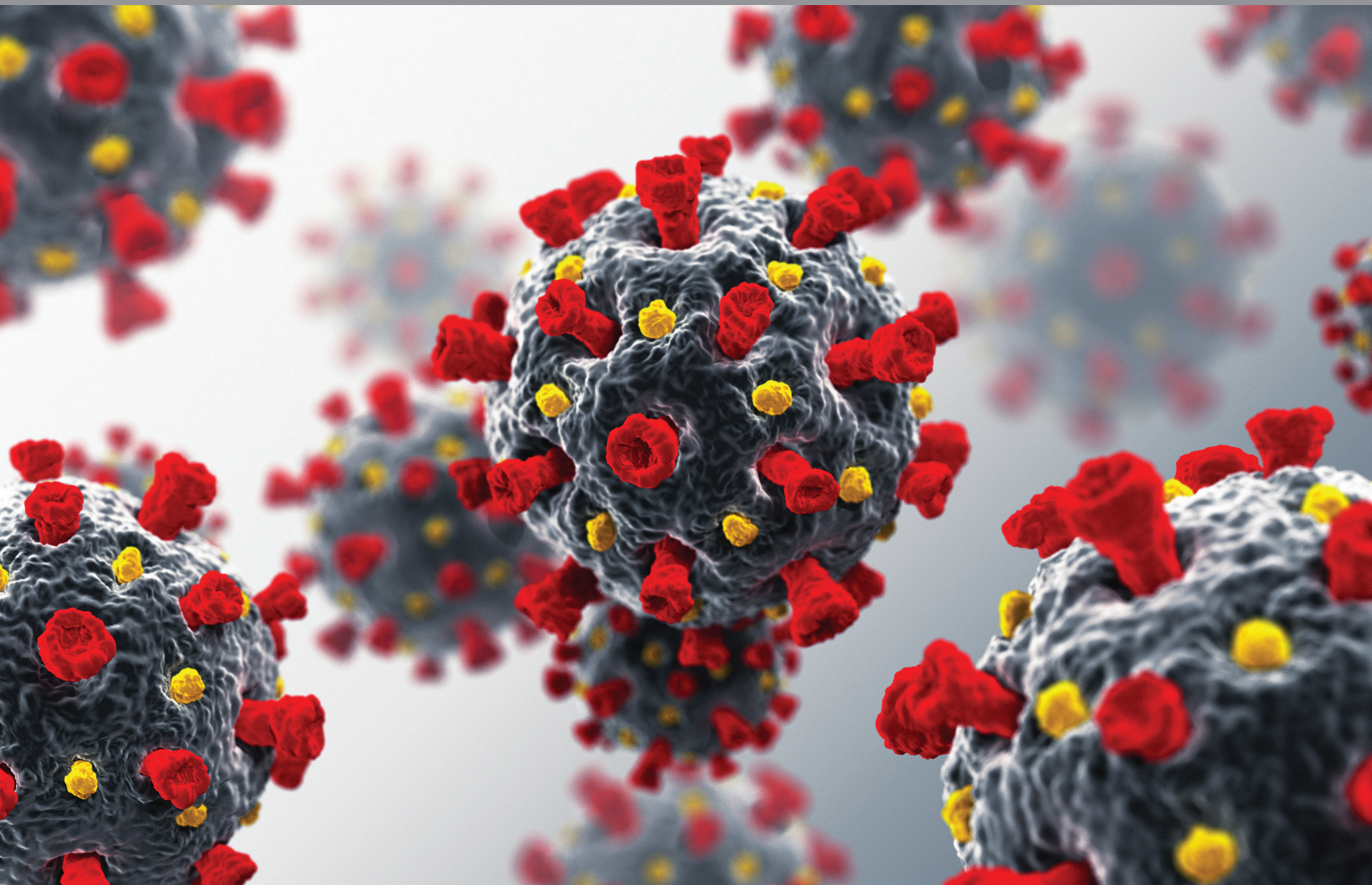


CATCH-UP

Improving access to COVID-19 testing in Oklahoma's communities

Oklahoma Shared Clinical and Translational Resources
National Institutes of Health RADx-UP U54GM104938

Guidelines for Testing, Management, and Preventing Spread of COVID-19 in Primary Care



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Health Sciences Center

 **SCTR**
Oklahoma Shared Clinical
& Translational Resources

RADxUP 

NIH  National Institutes of Health
Turning Discovery Into Health

Respiratory illness symptoms and screening

Symptom comparison for respiratory illnesses¹

| Symptom | COVID-19 | Influenza | Cold | Allergies |
|---------------------|-----------|-----------|-----------|-----------|
| Lost taste/smell | Often | Never | Never | Never |
| Short of breath | Often | Rare | Rare | Rare |
| Cough | Often | Often | Often | Sometimes |
| Fatigue | Often | Often | Sometimes | Sometimes |
| Fever/chills/rigors | Often | Often | Rare | Never |
| Myalgia | Sometimes | Often | Often | Never |
| Diarrhea/GI | Sometimes | Sometimes | Rare | Rare |
| Headache | Sometimes | Often | Rare | Rare |
| Sore throat | Sometimes | Sometimes | Often | Rare |
| Sneezing | Rare | Rare | Often | Often |
| Stuffy nose | Rare | Sometimes | Often | Often |

Ask 3 questions for all patients who call or come in

- 1 Have you been in contact with someone who has a positive COVID-19 test with or without symptoms, when neither wore masks and you were closer than six feet apart for at least 15 minutes?
- 2 Have you been in contact to someone with fever, cough, muscle aches, fatigue, or other symptoms of COVID-19 who has not been tested?
- 3 Do you have or have you had a fever, cough, loss of smell or taste, body aches, or shortness of breath?

IF YES TO ANY: treat as contagious, isolate, use PPE, & test

Testing for COVID-19 when upper respiratory symptoms and cough:²

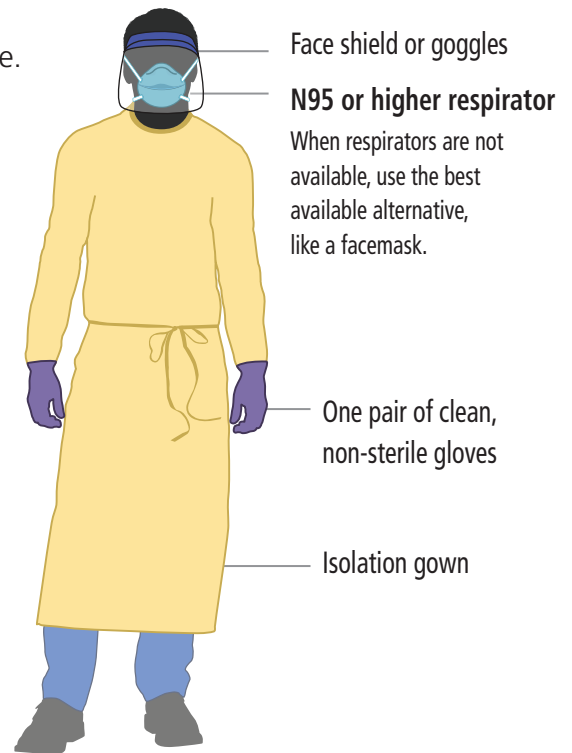
- Use only FDA approved tests.
- Use a *nucleic acid* or *antigen* SARS-CoV-2 “Viral Tests” on samples collected with a nasal swabs.
- Use either point-of-care Rapid Tests (results available < 1 hour) or tests that are sent to a laboratory and may take several days.
- Do not test the same individual more than once in a 24-hour period.



Do not use antibody tests to diagnose acute infection. Use in people who present late in their illnesses in conjunction with viral tests.

Personal Protective Equipment (PPE) checklist

- ✓ Identify and gather proper PPE ensuring correct gown size.
- ✓ Perform hand hygiene using hand sanitizer.
- ✓ Put on isolation gown tying all of the ties on the gown.
- ✓ Put on NIOSH-approved N95 filtering respirator; fit the nosepiece to the nose with both hands without bending or tenting; cover both mouth and nose.
- ✓ Place respirator straps on crown of head (top strap) and base of neck (bottom strap).
- ✓ Perform a user seal check each time you put on the respirator.
- ✓ Put on face shield or goggles.
- ✓ Put on gloves to cover the cuff of gown.



Physical distancing, facemasks, and eye protection prevent person-to-person transmission of SARS-CoV-2 and COVID-19.³

Nasal swab specimen collection

- **Insert** the swab tip into one of the patient's nostrils, up to *1 inch from the edge of the nostril*.
- **Roll the swab 5 times** along the mucosa inside the nostril to ensure that both mucus and cells are collected.
- **Using the same swab, repeat this process for the other nostril** to ensure that an adequate sample is collected from both nasal cavities.
- Withdraw the swab from the nasal cavity. The sample is now ready for processing using the BD Veritor™ System SARS-CoV-2 kit.



Images from BD Veritor™ System instructions.

Testing and characteristics of the BD Veritor™ System

Performance of the BD Veritor™ System versus RT-PCR for nasal swabs*

| BD Veritor Results | Reference PCR Results | | |
|--------------------|-----------------------|-----|-------|
| | POS | NEG | TOTAL |
| POS | 26 | 0 | 26 |
| NEG | 5 | 195 | 200 |
| TOTAL | 31 | 195 | 226 |

Positive Predictive Value: 100% (C.I. 89%, 100%)

Negative Predictive Value: 97.5% (C.I. 95%, 99%)

Sensitivity: 83.9%

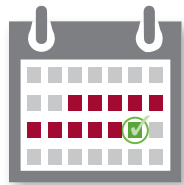
Specificity: 100%

Likelihood Ratios:

+LR = High -LR = 0.16



*From BD Veritor™ System package insert.



Isolation guidelines: For most persons with COVID-19 illness, isolation and precautions can generally be discontinued 10 days **after symptom onset** and resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms.

When is a positive COVID-19 test result "diagnostic"?^{2,4}

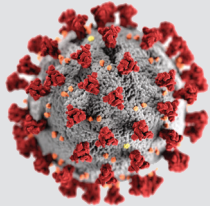
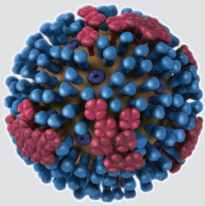


A single negative COVID-19 test DOES NOT rule out infection in patients with strongly suggestive symptoms.

Tests for SARS-CoV-2 infection⁵

| | Nucleic Acid (PCR) | Antigen | Antibody |
|----------------|---------------------------------|---------------------------------|----------------------------|
| Sample | Nasal swab | Nasal/oral swab | Blood |
| Results | Hours – days | Minutes – hours | Days |
| Use | + = Diagnosis - = Cannot R/O | + = Diagnosis - = Cannot R/O | Prior or current infection |

Comparison of SARS-CoV-2/COVID-19 and influenza⁶

| |  |  |
|-----------------------------|--|--|
| Characteristic | SARS-CoV-2/COVID-19 | Influenza |
| Transmission | Droplet > fomite | Droplet / airborne / fomite |
| Infectivity | More than influenza | Less than SARS-CoV-2 |
| Incubation | 2-14 days | 1-4 days |
| Severity risk | >65, male, HTN, obesity, DM2, CA, COPD, CAD, CKD, nursing home, poverty | >65, <2, immunosuppressed, pregnant, morbid obesity, COPD, CAD, CKD, nursing home, Native heritage |
| Signs & symptoms | Myalgia, cough, congestion, shortness of breath, hypoxia, viral pneumonia, rales; no sore throat | Myalgia, cough, congestion, sore throat, fatigue |
| Fatality | 0.25% – 3.0% | 0.1% |

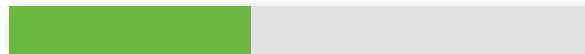
Interpreting test results and pretest probability⁴

If your patient has a **50% chance of having COVID-19**, and you test 100 people just like her, you will catch 42 of the people with COVID-19, but will miss 8 people who DO have COVID-19 but test negative.

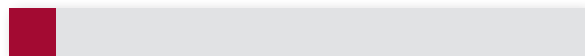
Pretest Probability of 50%

If you test 100 people:

42% have COVID-19 and test positive



8% have COVID-19 but test negative

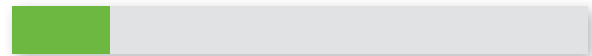


Bottom line: A positive test is conclusive; a false negative test may occur in 3-13%.

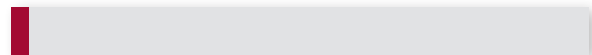
Pretest Probability of 20%

If you test 100 people:

17% have COVID-19 and test positive



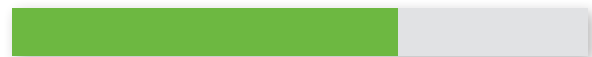
3% have COVID-19 but test negative



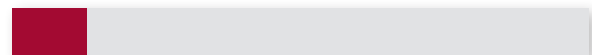
Pretest Probability of 80%

If you test 100 people:

67% have COVID-19 and test positive

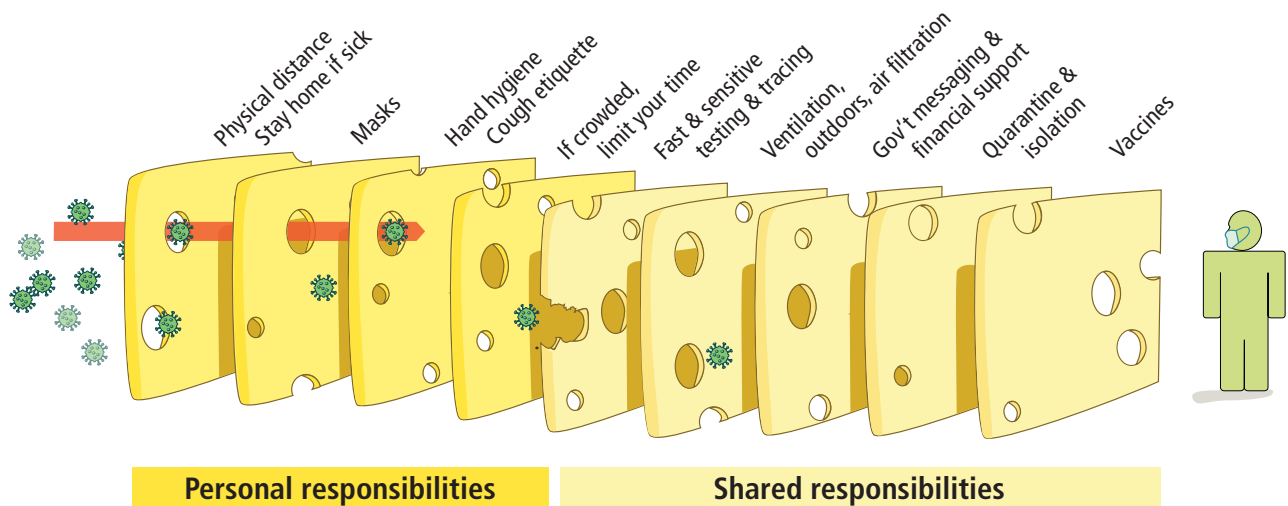


13% have COVID-19 but test negative



Visit bit.ly/COVID_testresult for a probability calculator

The “Swiss Cheese” protection model⁷



Each intervention (layer) has imperfections (holes). Multiple layers improve success.

Adapted from the original illustration by Ian M Mackay, virologydownunder.com

Diagnosis and management of COVID-19 by stage and severity⁸

| | Asymptomatic or presymptomatic | Mild illness | Moderate illness | Severe illness | Critical illness |
|--------------------------------------|--|---|---|--|---|
| Features | Positive SARS-CoV-2 test; no symptoms | Mild symptoms (e.g., fever, cough, or change in taste or smell); no dyspnea | Clinical or radiographic evidence of lower respiratory tract disease; oxygen saturation $\geq 94\%$ | Oxygen saturation $< 94\%$; respiratory rate ≥ 30 breaths/min; lung infiltrates $> 50\%$ | Respiratory failure, shock, and multiorgan dysfunction or failure |
| Testing | Screening testing; if patient has known exposure, diagnostic testing | Diagnostic testing | Diagnostic testing | Diagnostic testing | Diagnostic testing |
| Isolation | Yes | Yes | Yes | Yes | Yes |
| Proposed disease pathogenesis | | | | | |
| Potential treatment | | | | | |
| Management considerations | Monitoring for symptoms | Clinical monitoring and supportive care | Clinical monitoring; if patient is hospitalized and at high risk for deterioration, possibly remdesivir | Hospitalization, oxygen therapy, and specific therapy (e.g., remdesivir, dexamethasone) | Critical care and specific therapy (e.g., dexamethasone, possibly remdesivir) |

Quarantine and isolation guidelines

- Quarantine keeps someone who **might have been exposed** to the virus away from others.
- Isolation keeps someone who **is infected** with the virus away from others, even in their home.
- People should quarantine if they have been within 6 feet of someone who has COVID-19 for 15 minutes or more.
 - Stay home 14 days after last contact with person with COVID-19.
 - Watch for fever (100.4° F), cough, short-of-breath, or symptoms.
 - If possible, stay away from others, especially people who are at higher risk for getting very sick from COVID-19.

Partnering organizations



Located in the Oklahoma Clinical and Translational Science Institute at The University of Oklahoma Health Sciences Center, the Oklahoma Primary Healthcare Improvement Cooperative (OPHIC) is the academic research arm of a community-engaged system with a mission to facilitate the diffusion of research innovations into community clinical delivery systems. OPHIC partners include our state's County Health Improvement Organizations and other entities critical for translational research in community settings.



The pandemic caused by the novel coronavirus SARS-CoV-2 has resulted in substantial morbidity and mortality that has disproportionately affected underrepresented populations, and caused unprecedented interruptions in nearly all aspects of our lives. The Oklahoma Shared Clinical and Translational Resources (OSCTR) and its Community-engaged Approaches to Testing in Community and Healthcare settings for Underserved Populations (CATCH-UP) program will involve both practice-based and community-based approaches to implement pragmatic practice-based and community interventions to respond to changing attitudes, barriers, environments, and technology developments to produce more effective viral testing that can provide rapid results to patients.



The overarching goal of the RADx-UP initiative is to understand the factors associated with disparities in COVID-19 morbidity and mortality and to lay the foundation to reduce disparities for those underserved and vulnerable populations who are disproportionately affected by, have the highest infection rates of, and/or are most at risk for complications or poor outcomes from the COVID-19 pandemic.



Balanced information for better care

This material was produced by Alosa Health, a nonprofit organization that produces educational content and manages and provides consulting for clinical outreach education initiatives. Alosa Health is not affiliated with any pharmaceutical company. For more information, visit AlosaHealth.org.

REFERENCES:

(1) Courtesy of Yale New Haven Health. (2) "COVID-19 Testing Overview." Centers for Disease Control and Prevention, www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/testing.html. Accessed February 2, 2021 (3) Chu DK, et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *Lancet*. 2020 Jun 27;395(10242):1973-1987. (4) Interpreting a covid-19 test result. *BMJ* 2020;369:m1808. (5) Cheng A, Caruso D, McDougall C. Outpatient Management of COVID-19: Rapid Evidence Review. *Am Fam Physician*. 2020 Oct 15;102(8):478-486. PMID: 33064422. (6) Adapted from Solomon DA, Sherman AC, Kanjilal S. Influenza in the COVID-19 Era. *JAMA*. 2020;324(13):1342-1343. (7) Adapted from Ian M Mackay, virologydownunder.com. With thanks to Jody Lanard, Katherine Arden & the Uni of Qld. Based on the Swiss cheese model of accident causation, by James T Reason, 1990. (8) Adapted from Gandhi RT, et al. Mild or Moderate Covid-19. *N Engl J Med*. 2020 Oct 29;383(18):1757-1766.