Clinical Laboratory COVID-19 Response Call
Monday, March 22, 2021 at 3:00 PM EDT

• Welcome
  – Jasmine Chaitram, Division of Laboratory Systems, CDC

• SARS-CoV-2 Variants Update
  – Vivien Dugan, CDC Laboratory and Testing Task Force for the COVID-19 Response

• COVID Detect: Longitudinal Comparison of Multimodal CoV Test Results with Live Virus Shedding
  – Christopher Brooke, University of Illinois
  – Rebecca Smith, University of Illinois

• CMS Update
  – Monique Spruill, Centers for Medicare and Medicaid Services (CMS)

• FDA Update
  – Tim Stenzel, U.S. Food and Drug Administration (FDA)
Laboratories or point-of-care testing sites that have applied for a CLIA Certificate of Waiver to perform SARS-CoV-2 point-of-care testing can begin testing and reporting SARS-CoV-2 results as soon as they have submitted their application to the State Agency, as long as they meet any additional state licensure requirements that apply.
Antibody Testing Update


Interim Guidelines for COVID-19 Antibody Testing

Updated as of March 17, 2021

Updates as of March 17, 2021

- Updated information on available serologic tests.
- Updated information on relationship between presence of anti-SARS-CoV-2 antibodies and immunity from subsequent infection.
- Guidance on interpretation of SARS-CoV-2 serologic tests performed on persons previously vaccinated for SARS-CoV-2.
- Guidance for quarantine of seropositive persons who have had recent exposure to someone with suspected or confirmed COVID-19.

Who this is for:
Healthcare providers considering serologic testing of persons with history of possible coronavirus disease 2019 (COVID-19) or public health officials and other researchers conducting investigations involving serologic tests.
Find CLCR call information, transcripts, and audio recordings on the CDC Preparedness Portal

The next call will be on **Monday, April 5** from 3:00 PM to 4:00 PM EDT
Training and Workforce Development

Questions about education and training?
Contact LabTrainingNeeds@cdc.gov
How to Ask a Question

- Using the Zoom Webinar System
  - Click the Q&A button in the Zoom webinar system
  - Type your question in the Q&A box and submit it
  - Please do not submit a question using the chat button

- For media questions, please contact CDC Media Relations at media@cdc.gov
- If you are a patient, please direct any questions to your healthcare provider
Slide decks may contain presentation material from panelists who are not affiliated with CDC. Presentation content from external panelists may not necessarily reflect CDC’s official position on the topic(s) covered.
SARS-CoV-2 Variants Update

Vivien Dugan

CDC Laboratory and Testing Task Force for the COVID-19 Response
Variant Classifications

- Established in collaboration with the SARS-CoV-2 Interagency Group (SIG)
  - Each variant class includes possible attributes of lower classes; variant status might escalate or deescalate based on scientific evidence

- **Variant of Interest**: contains specific genetic markers associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity

- **Variant of Concern**: evidence of an increase in transmissibility, more severe disease (increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures

- **Variant of High Consequence**: clear evidence that prevention measures or medical countermeasures (MCMs) have significantly reduced effectiveness relative to previously circulating variants
## Variants of Interest

<table>
<thead>
<tr>
<th>Name (Pango lineage)</th>
<th>Substitution</th>
<th>Name (Nextstrain*)</th>
<th>First Detected</th>
<th>Predicted Attributes</th>
</tr>
</thead>
</table>
| **B.1.526**          | **Spike:** (L5F*), T95I, D253G, (S477N*), (E484K*), D614G, (A701V*)  
**ORF1a:** L3201P, T265I, Δ3675/3677  
**ORF1b:** P314L, Q1011H  
**ORF3a:** P42L, Q57H  
**ORF8:** T11I  
**5'UTR:** R81C | 20C New York/November 2020 | • Potential reduction in neutralization by monoclonal antibody treatments  
• Potential reduction in neutralization by convalescent and post-vaccination sera |
| B.1.525              | **Spike:** A67V, Δ69/70, Δ144, E484K, D614G, Q677H, F888L  
**ORF1b:** P314F  
**ORF1a:** T2007I  
**M:** I82T  
**N:** A12G, T205I  
**5'UTR:** R81C | 20C New York/December 2020 | • Potential reduction in neutralization by monoclonal antibody treatments  
• Potential reduction in neutralization by convalescent and post-vaccination sera |
| **P.2**              | **Spike:** E484K, D614G, V1176F  
**ORF1a:** L3468V, L3930F  
**ORF1b:** P314L  
**N:** A119S, R203K, G204R, M234I  
**5'UTR:** R81C | 20J Brazil/April 2020 | • Potential reduction in neutralization by monoclonal antibody treatments  
• Potential reduction in neutralization by convalescent and post-vaccination sera |
# Variants of Concern

<table>
<thead>
<tr>
<th>Name (Pango lineage)</th>
<th>Spike Protein Substitutions</th>
<th>Name (Nextstrain)</th>
<th>First Detected</th>
<th>Known Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.1.1.7</td>
<td>Δ69/70 Δ144Y (E484K&lt;sup&gt;+&lt;/sup&gt; (S494P&lt;sup&gt;+&lt;/sup&gt;) N501Y A570D D614G P681H</td>
<td>20I/S01Y.V1</td>
<td>United Kingdom</td>
<td>~50% increased transmission&lt;sup&gt;5&lt;/sup&gt; Likely increased severity based on hospitalizations and case fatality rates&lt;sup&gt;6&lt;/sup&gt; Minimal impact on neutralization by EUA monoclonal antibody therapeutics&lt;sup&gt;7,14&lt;/sup&gt; Minimal impact on neutralization by convalescent and post-vaccination sera&lt;sup&gt;8,9,10,11,12,13,19&lt;/sup&gt;</td>
</tr>
<tr>
<td>P.1</td>
<td>K417N/T E484K N501Y D614G</td>
<td>20J/S01Y.V3</td>
<td>Japan/Brazil</td>
<td>Moderate impact on neutralization by EUA monoclonal antibody therapeutics&lt;sup&gt;7,14&lt;/sup&gt; Reduced neutralization by convalescent and post-vaccination sera&lt;sup&gt;15&lt;/sup&gt;</td>
</tr>
<tr>
<td>B.1.351</td>
<td>K417N E484K N501Y D614G</td>
<td>20H/S01.V2</td>
<td>South Africa</td>
<td>~50% increased transmission&lt;sup&gt;16&lt;/sup&gt; Moderate impact on neutralization by EUA monoclonal antibody therapeutics&lt;sup&gt;7,14&lt;/sup&gt; Moderate reduction on neutralization by convalescent and post-vaccination sera&lt;sup&gt;8,12,16,19,20&lt;/sup&gt;</td>
</tr>
<tr>
<td>B.1.427</td>
<td>L452R D614G</td>
<td>20C/S:452R</td>
<td>US-California</td>
<td>~20% increased transmissibility&lt;sup&gt;21&lt;/sup&gt; Significant impact on neutralization by some, but not all, EUA therapeutics&lt;sup&gt;21&lt;/sup&gt; Moderate reduction in neutralization using convalescent and post-vaccination sera&lt;sup&gt;21&lt;/sup&gt;</td>
</tr>
<tr>
<td>B.1.429</td>
<td>S13I W152C L452R D614G</td>
<td>20C/S:452R</td>
<td>US-California</td>
<td>~20% increased transmissibility&lt;sup&gt;21&lt;/sup&gt; Significant impact on neutralization by some, but not all, EUA therapeutics&lt;sup&gt;21&lt;/sup&gt; Moderate reduction in neutralization using convalescent and post-vaccination sera&lt;sup&gt;21&lt;/sup&gt;</td>
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</table>
National SARS-CoV-2 Variant Proportions

Four weeks ending February 27, 2021

- Representative specimens from NS3 and CDC contracts
- >25,000 sequences total for specimens collected December 27, 2020 to February 27, 2021
- B.1.1.7, B.1.427, and B.1.429 VOCs are increasing nationally
- B.1.351 and P.1 VOCs remain well below 0.5%.
State-level SARS-CoV-2 Variant Proportions

- Expect these data will change
- Table on new [Variant Proportions in the U.S.](https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-proportions.html) page
  - CDC sequence data: NS3 and contract laboratories
  - Four weeks ending February 13, 2021
- VOC proportion estimates shown for states meeting threshold of 300 sequences from specimens collected during timeframe
  - 19 states
  - B.1.1.7, B.1.351, P.1, B.1.427, B.1.429
- USG chose to use a threshold of 20% prevalence of L452R to guide distribution of bamlanivimab
  - This action will only affect the states of California, Arizona and Nevada at this time
- Currently, CDC is **not** requesting that B.1.427/B.1.429 variants be reported
  - If that guidance changes, CDC will notify jurisdictions and partners
- **B.1.427/B.1.429 Proportions**
  - Arizona: 25.2%
  - California: 52.4%
  - Nevada: 41.3%

[https://www.phe.gov/emergency/events/COVID19/investigation-MCM/Bamlanivimab/Pages/default.aspx](https://www.phe.gov/emergency/events/COVID19/investigation-MCM/Bamlanivimab/Pages/default.aspx)


**FDA authorizes revisions to fact sheets to address SARS-CoV-2 variants for monoclonal antibody products under emergency use authorization | FDA**
COVID detect:
Longitudinal comparison of multimodal CoV test results with live virus shedding

Chris Brooke
Dept. of Microbiology
Carl R. Woese Institute for Genomic Biology

Becky Smith
Dept. of Pathobiology
Carl R. Woese Institute for Genomic Biology
Primary study objectives:

(1) Quantitatively compare the performance of different diagnostic testing methods over the course of acute SARS-CoV-2 infection

(2) Generate a high-resolution description of acute infection dynamics

High-Frequency Testing with Low Analytic Sensitivity versus Low-Frequency Testing with High Analytic Sensitivity.

The SHIELD CoV screening program at UIUC

All students/faculty/staff on campus are screened at least 2X weekly using our in-house saliva->qPCR assay
Enrollment/cohort characteristics

Study participant pool:

1) Individuals within 24 hrs of their first positive CoV test (*isolation*; 116 enrolled)

1) Individuals within 5 days of exposure to a known positive (*quarantine*; 33 enrolled, 3 infected)

**Tests:**

1) Saliva RTqPCR, 2) nasal RTqPCR, 3) Quidel SARS Sofia FIA, 4) nasal viral infectivity, 5) symptom reporting
Longitudinal quantification of viral dynamics

Positive antigen test  Viral culture  Nasal qPCR  Saliva qPCR

Days since peak in Nasal Ct value

Cn (Ct) value

Days of culture positivity

-3 0 3 6 9 12

2 3 4 5
Comparison of test sensitivities

Days Since First Viral Culture

Antigen
Nasal RTqPCR
Saliva RTqPCR

Status Sensitivity

pre-positive
positive
post-positive
Comparison of test sensitivities

Detection before or while viral culture positive:

Detection of infection at any stage:
Conclusions

- RTqPCR is more sensitive than Quidel assay prior to and following the period of viral culture positivity.

- All test modalities compared peaked in sensitivity during the period of viral culture positivity.

- Screening at least twice a week by antigen or RTqPCR test will give sensitivity of ~95% or greater for detecting infection.

- High frequency testing is especially important for identifying infected individuals prior to or during infectious period.
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- Todd Young

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- Xochitl Butler
- Noah Peyser

**Quidel:**
- Ron Lollar

**COVID detect study team**
CMS Update

Monique Spruill

Centers for Medicare and Medicaid Services (CMS)
• **CLIA Laboratory Guidance During COVID-19 Memo and FAQs**

• **FAQs Only**
FDA Update

Tim Stenzel
U.S. Food and Drug Administration (FDA)
COVID-19 Emergency Use Authorization (EUA) Information for Medical Devices
https://www.fda.gov/medical-devices/emergency-situations-medical-devices/emergency-use-authorizations

COVID-19 In Vitro Diagnostic EUAs

COVID-19 Frequently Asked Questions

COVID-19 Updates

FDA Townhall Meetings

Independent Evaluations of COVID-19 Serological Tests
https://open.fda.gov/apis/device/covid19serology/
COVID-19 Diagnostic Development
CDRH-EUA-Templates@fda.hhs.gov

Spot Shortages of Testing Supplies: 24-Hour Support Available
1. Call 1-888-INFO-FDA (1-888-463-6332)
2. Then press star (*)

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Thank You For Your Time!

Photo submitted by the Microbiology Laboratory at The University of Pittsburgh Medical Center