CDC Update on Activities for SARS-CoV-2 Variant Surveillance

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**presenting for**

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CDC COVID-19 Emergency Response

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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 (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

SARS-CoV-2 Variants of Concern | CDC
# 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>
</table>
| B.1.1.7              | Spike: Δ69/70, Δ144Y, (E484K*), (S494P*), N501Y, A570D, D614G, P681H | 20I/501Y.V1 | United Kingdom | ~50% increased transmission  
• Likely increased severity based on hospitalizations and case fatality rates  
• Minimal impact on neutralization by EUA monoclonal antibody therapeutics  
• Minimal impact on neutralization by convalescent and post-vaccination sera |
| P.1                  | Spike: K417N/T, E484K, N501Y, D614G | 20J/501Y.V3 | Japan/Brazil | Moderate impact on neutralization by EUA monoclonal antibody therapeutics  
Reduced neutralization by convalescent and post-vaccination sera |
Moderate impact on neutralization by EUA monoclonal antibody therapeutics  
Moderate reduction on neutralization by convalescent and post-vaccination sera |
| B.1.427              | Spike: L452R, D614G | 20C/S:452R | US-California | ~20% increased transmissibility  
Significant impact on neutralization by some, but not all, EUA therapeutics  
Moderate reduction in neutralization using convalescent and post-vaccination sera |
Significant impact on neutralization by some, but not all, EUA therapeutics  
Moderate reduction in neutralization using convalescent and post-vaccination sera |

SARS-CoV-2 Variants of Concern | CDC  
National SARS-CoV-2 Variant Proportions

- Representative specimens from NS3 and CDC contracts
- >25,000 sequences; specimens collected 12/27/20 to 2/27/21
- 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**
- **Variant Proportions in the U.S. | CDC 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 **not** requesting B.1.427/429 variants be reported

- **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

FDA authorizes revisions to fact sheets to address SARS-CoV-2 variants for monoclonal antibody products under emergency use authorization | FDA
CMS CLIA SARS-CoV-2 Testing FAQ

- Issued March 10, 2021; modified March 19
- Enforcement discretion for public health reporting of variants
- CLIA SARS-CoV-2 Variant Testing Frequently Asked Question - Updated 03.19.2021 (cms.gov)
- More guidance expected per CMS
For more information, contact CDC
1-800-CDC-INFO (232-4636)

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.
# Variants of Interest

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</tr>
</thead>
<tbody>
<tr>
<td><strong>B.1.526</strong></td>
<td>Spike: (L5F*), T95I, D253G, (S477N*), (E484K*), D614G, (A701V*) ORF1a: L3201P, T265I, Δ3675/3677 ORF1b: P314L, Q1011H ORF3a: P42L, Q57H ORF8: T11I S'UTR: R81C</td>
<td>20C</td>
<td>New York/November 2020</td>
<td>• Potential reduction in neutralization by monoclonal antibody treatments • Potential reduction in neutralization by convalescent and post-vaccination sera</td>
</tr>
</tbody>
</table>

[SARS-CoV-2 Variants of Concern | CDC](https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/variant-surveillance/variant-info.html)