Welcome & Introduction
Dana Wollins, DrPH, MGC
Vice President, Clinical Affairs & Guidelines
IDSA

- 70th in a series of weekly calls, initiated by CDC as a forum for information sharing among frontline clinicians caring for patients with COVID-19

- The views and opinions expressed here are those of the presenters and do not necessarily reflect the official policy or position of the CDC or IDSA. Involvement of CDC and IDSA should not be viewed as endorsement of any entity or individual involved.

- This webinar is being recorded and can be found online at www.idsocity.org/cliniciancalls.
TODAY’S CALL:

Update on Variants & Immunity

**CDC Update on SARS-CoV-2 Surveillance**
David E. Wentworth, PhD
Lead, Surveillance & Emerging Variants Team, Laboratory and Testing Task Force, CDC COVID-19 Emergency Response
Chief, Virology Surveillance and Diagnosis Branch
Centers for Disease Control and Prevention

**Delta Variant Update**
Jonathan Z. Li, MD
Associate Professor of Medicine, Division of Infectious Diseases
Brigham and Women’s Hospital, Harvard Medical School

**The Latest on Vaccines & Immunity**
Varun Phadke, MD
Assistant Professor of Medicine, Division of Infectious Diseases
Emory University School of Medicine

**Covid-19 Serology Tests – What Can They Tell about Immunity and Protection**
Timothy T. Stenzel, MD, PhD
Director, OHT7: Office of In Vitro Diagnostics and Radiological Health, Office of Product Evaluation and Quality, Center for Devices and Radiological Health
U.S. Food and Drug Administration
Question?
Use the “Q&A” Button

Comment?
Use the “Chat” Button
CDC Update on SARS-CoV-2 Surveillance

David E. Wentworth, PhD
Surveillance and Emerging Variants Team
Laboratory and Testing Task Force
CDC COVID-19 Emergency Response

Chief, Virology Surveillance and Diagnosis Branch
Influenza Division, NCIRD, CDC
CDC/IDSA clinician webinar, July 17, 2021

cdc.gov/coronavirus
National SARS-CoV-2 Genomic Surveillance

In the United States, CDC tracks and analyzes emerging SARS-CoV-2 variants through genomic surveillance

- Leading the National SARS-CoV-2 Strain Surveillance (NS3) system
- Partnering with commercial diagnostic laboratories
- Partnering with universities
- Supporting state, territorial, local and tribal health departments
- Leading the SARS-CoV-2 Sequencing for Public Health Emergencies Response, Epidemiology, and Surveillance (SPHERES) Consortium


National Nowcast Estimates SARS-CoV-2 Lineages

- **B.1.617.2 (Delta)**
  - Prediction increased
  - ~31% (6/19) to 58% (7/3)

- **B.1.1.7 (Alpha)** continues to decline
  - ~43% (6/19) to 25% (7/3)

- **P.1 (Gamma)** decreased
  - 10% (6/19) to 8% (7/3)

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**NOWCAST U.S. 7/3/2021**

<table>
<thead>
<tr>
<th>Lineage</th>
<th>Type</th>
<th>%Total</th>
<th>95%PI</th>
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<tbody>
<tr>
<td>Most common lineages #</td>
<td></td>
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<tr>
<td>B.1.617.2</td>
<td>Delta VOC</td>
<td>57.6%</td>
<td>52.7-62.8%</td>
</tr>
<tr>
<td>B.1.1.7</td>
<td>Alpha VOC</td>
<td>24.9%</td>
<td>20.5-29.4%</td>
</tr>
<tr>
<td>P.1</td>
<td>Gamma VOC</td>
<td>7.7%</td>
<td>5.1-10.6%</td>
</tr>
<tr>
<td>B.1.526</td>
<td>Iota VOI</td>
<td>2.4%</td>
<td>1.0-4.1%</td>
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<tr>
<td>B.1.1.519</td>
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<td>0.1%</td>
<td>0.0-0.3%</td>
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<tr>
<td><strong>Additional VOI/VOC lineages #</strong></td>
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<tr>
<td>B.1.351</td>
<td>Beta VOI</td>
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<td>0.0-0.5%</td>
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<tr>
<td>B.1.525</td>
<td>Eta VOI</td>
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<td>0.0-0.3%</td>
</tr>
<tr>
<td>B.1.429</td>
<td>Epsilon VOI</td>
<td>0.0%</td>
<td>0.0-0.3%</td>
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<tr>
<td>B.1.427</td>
<td>Epsilon VOI</td>
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<td>0.0-0.3%</td>
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<tr>
<td>B.1.617.1</td>
<td>Kappa VOI</td>
<td>0.0%</td>
<td>0.0-0.3%</td>
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<tr>
<td>P.2</td>
<td>Zeta VOI</td>
<td>0.0%</td>
<td>0.0-0.3%</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Other</td>
<td>5.7%</td>
<td>3.0-8.9%</td>
</tr>
</tbody>
</table>

* Other represents >200 additional lineages, which are each circulating at <1% of total viruses
** These data include Nowcast estimates, which are modeled projections that may differ from weighted estimates generated at later dates
# Sublineages of P.1 (P.1.1, P.1.2) and B.1.351 (B.1.351.1, B.1.351.2, B.1.351.3) are aggregated with the parental lineage. AY.1 and AY.2 are aggregated with B.1.617.2

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https://covid.cdc.gov/covid-data-tracker/#variant-proportions
Regional Nowcast Prevalence of SARS-CoV-2 Variants

- **B.1.617.2 (Delta)**
  - >38% in all regions
  - >50% in Regions 2, 6-9
  - 87% in Region 7
  - 79% in Region 8

- **B.1.1.7 (Alpha)**
  - <50% in all regions
  - <25% in Regions 2, 6-9

https://covid.cdc.gov/covid-data-tracker/#variant-proportions
HHS Region 9 Nowcast Estimated SARS-CoV-2 Variant Proportions

- **B.1.617.2 (Delta)**
  Predicted to be higher than national average
  - ~63% (Nat. ~58%)

- **B.1.1.7 (Alpha)** continues to decline and lower than national average
  - ~19% (Nat. ~25%)

- **P.1 (Gamma)** similar to national average
  - ~9%

https://covid.cdc.gov/covid-data-tracker/#variant-proportions
Summary

- Evolution of SCoV-2 variants is expected
- B.1.617.2 (Delta) is primarily displacing the B.1.1.7 (Alpha) as the dominant variant
- Proportions vary regionally
- Vaccination reduces cases

The Delta Variant

Jonathan Li, MD, MMSc
Associate Professor of Medicine
Brigham and Women’s Hospital
Harvard Medical School
Overview

• Mutations in the Delta variant
• Transmissibility of the Delta variant: how much and why?
• Does the Delta variant cause more severe disease?
• Impact of Delta variant on monoclonal antibody treatments
• Impact of Delta variant on vaccine efficacy
Rise of Delta (B.1.617.2) Variant in India

![Graph showing the rise of Delta variant](Image)

**Outbreak.info**
Delta now Dominant in the United States
Key mutations in variants of concern

Alpha

Beta

Gamma

Delta

Stanford Coronavirus Antiviral & Resistance Database
Higher secondary attack rates with Delta vs Alpha variants

Public Health England
Higher viral shedding early in disease course by the Delta variant

Viral infection and transmission in a large well-traced outbreak caused by the Delta SARS-CoV-2 variant

“viral loads in the Delta variant infections...were 1260 times higher than the 19A/19B strains infections...on the day when viruses were first detected”

Li, medRxiv 2021
Does the Delta variant cause more severe disease?

**THE LANCET**

SARS-CoV-2 Delta VOC in Scotland: demographics, risk of hospital admission, and vaccine effectiveness

On May 19, 2021, the Delta Variant of Concern (VOC), formerly known as the Indian VOC or B.1.617.2, became the dominant strain of SARS-CoV-2 in Scotland. The Alpha VOC (formerly known as the Kent VOC, B.1.1.7, or S gene negative) had been the dominant strain previously, but it has rapidly been replaced (appendix p 1).

Samples were analysed using ThermoFisher’s TaqPath RT-PCR, which tests for the presence of three target genes from SARS-CoV-2. 5 gene-negative samples had a deletion in S gene of B.1.17 (Alpha/VOC) at position 69-70, with allele threshold Ct values less than 30 for at least one of the OR and N genes. 5 gene-positive samples had Ct values less than 30 for the S gene and valid Ct values for the other two genes. In contrast, a weak 5 gene-positive sample had a Ct of 30 or less for S. Sequencing data from Scotland has found that for April 1 to May 28, 2021, the latest date until which data were available, 97% of S gene positive cases sequenced in Scotland were the Delta variant and that 99% of Delta variants were 5 gene positive.

COVID-19 hospital admissions in 5 gene-positive cases. We also employed a test-negative design to estimate vaccine effectiveness against risk of SARS-CoV-2 infection. This analysis was based upon all individuals who have a PCR test for SARS-CoV-2 in the study period, and it compares the proportions positive among individuals vaccinated at the time of the swab test with those unvaccinated when they are tested, adjusting for demographic and temporal covariates. Building on methods that have previously been described in detail, we defined a COVID-19 hospital admission as being within 14 days of testing positive for SARS-CoV-2. Individuals who tested positive within 2 days after a hospital admission were also included. Individuals tested during a hospital stay from day 3 onwards were excluded. Hospital-acquired COVID-19 infections were excluded.

Our analysis covered the period from April 1 to June 6, 2021, for the demographic distribution of cases. By April 1, 2021, 44.7% of the population in Scotland had received one dose of the COVID-19 vaccine, and 7.6% had received two doses. Among people aged 65 years or older, the percentages were 51.3% and 15.9%, respectively. By the end of the study period (ie, June 6, 2021), 59.4% had received one dose and 39.4% two doses; the corresponding proportions were 59.7% inverse deprivation gradient with 5 gene positive cases disproportionately seen in the most socioeconomically affluent quintile. Most cases (7%) had no underlying relevant comorbidities. 70% of 5 gene-positive cases had not had any COVID-19 vaccination doses, compared to 75% of 5 gene-negative cases.

The Cox regression analysis for time to hospital admission found that 5 gene-positive cases were associated with an increased risk of COVID-19 hospital admission: hazard ratio (HR) 1.85 (95% CI 1.39–2.47) when compared to 5 gene-negative cases, after adjusting for age, sex, deprivation, temporal trend, and comorbidities. A greater number of COVID-19 relevant comorbidities increased the risk of COVID-19 hospital admission (appendix p 3.). Overall, a strong vaccine effect did not clearly manifest until at least 28 days after the first vaccine dose (HR 0.32, 95% CI 0.22–0.44; appendix p 3). Among 5 gene-negative cases, the effect of vaccination (at least 28 days after first or second dose) was to reduce the risk of hospital admission (HR 0.28, 95% CI 0.18–0.43) compared to unvaccinated. The corresponding hazard ratio for risk of hospital admission for 5 gene-positive cases was 0.38 (95% CI 0.26–0.58), with an interaction test p value of 0.19, suggesting that there was no evidence of a differential vaccine effect on

Delta “cases were associated with an increased risk of COVID-19 hospital admission: hazard ratio (HR) 1.85 (95% CI 1.39–2.47)”
Hospitalization/death rates have remained low in England
## Predicted activity of variants vs monoclonal antibodies

<table>
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<th></th>
<th>Bamlanivimab/ Etesevimab</th>
<th>Casirivimab/ Imdevimab</th>
<th>Sotrovimab</th>
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<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Beta</strong></td>
<td>X</td>
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<td>✓</td>
</tr>
<tr>
<td>(B.1.351)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gamma</strong></td>
<td>X</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(P.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Delta</strong></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(B.1.617.2)</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Vaccines Maintain Robust Protection vs Delta

Public Health England
Bernal, medRxiv 2021; Stowe 2021
The Latest on Vaccines & Immunity to SARS-CoV-2

Varun Phadke, MD
Assistant Professor of Medicine
Division of Infectious Diseases
Emory University School of Medicine
Disclosures

• I am Associate Editor of the Vaccines & Immunity section of the IDSA COVID-19 Real-Time Learning Network
Objectives

• Describe evidence for **natural immunity** following SARS-CoV-2 infection

• Discuss available evidence **comparing natural and vaccine-induced immunity** to SARS-CoV-2
Objectives

• Describe evidence for **natural immunity** following SARS-CoV-2 infection

• Discuss available evidence **comparing natural and vaccine-induced immunity to SARS-CoV-2**
Natural Immunity to SARS-CoV-2

*Immune Responses*

- Immune responses to SARS-CoV-2 following natural infection can persist for months (maximum follow-up time is \(\sim 11\) months)\(^1\)-\(^3\)

- Magnitude/longevity of immune responses correlate with severity of initial SARS-CoV-2 infection\(^3\)

- Neutralizing antibody responses in previously infected individuals against novel VOC vary by disease severity\(^4\)

\(^1\)Science. 2021 Feb 5;371(6529):eabf4063
\(^3\)https://www.medrxiv.org/content/10.1101/2021.04.19.21255739v2
\(^4\)https://www.medrxiv.org/content/10.1101/2021.05.26.21257441v1
Natural Immunity to SARS-CoV-2

Observational Studies

• Prior infection with SARS-CoV-2 (assessed by antibody or PCR test result) associated with a decreased risk of subsequent infection in multiple countries
  • USA
  • UK
  • Denmark
  • Italy
  • France
  • Switzerland
  • Qatar

>80% protective effect across studies
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Location</th>
<th>Prior Infection?</th>
<th>Time Period of Prior Infection</th>
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<td>USA</td>
<td>PCR</td>
<td>March-August 2020</td>
<td>June 2020-February 2021</td>
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<tr>
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<td>May-November 2020</td>
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<td>June-December 2020</td>
<td>June 2020-January 2021</td>
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<td>June-July 2020</td>
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<td>April 2020-January 2021</td>
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<td>PCR</td>
<td>February-August 2020</td>
<td>April-August 2020</td>
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<td>Bertollini/2021</td>
<td>Qatar</td>
<td>PCR</td>
<td>Before November 2020</td>
<td>February-April 2021</td>
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<tr>
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</table>
Assessment of protection against reinfection with SARS-CoV-2 among 4 million PCR-tested individuals in Denmark in 2020: a population-level observational study

Christian Holm Hansen*, Daniela Michlmayr*, Sophie Madeleine Gubbels, Kåre Mølbak, Steen Etheberg

Figure 2: Weekly incidence of PCR-confirmed SARS-CoV-2 (A) and test rate (B) in Denmark over 2020. Data are presented per 100,000 population between Feb 3 (week 6) and Dec 31 (week 51), 2020.

Table 2: Protection against reinfection with SARS-CoV-2 by sex, age group, and time since first infection, in the alternative cohort analysis

<table>
<thead>
<tr>
<th>Age group, years</th>
<th>Time in follow-up, months</th>
<th>Number of infections during follow-up</th>
<th>Infection rate*</th>
<th>Adjusted rate ratio (95% CI)†</th>
<th>Estimated protection (95% CI)</th>
<th>p value‡</th>
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<td>Overall</td>
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<td>Exposed individuals</td>
<td>Unexposed individuals</td>
<td>Exposed individuals</td>
<td>Unexposed individuals</td>
<td>0.212 (0.179-0.251)</td>
</tr>
<tr>
<td>Sex</td>
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<td>Exposed individuals</td>
<td>Unexposed individuals</td>
<td>Exposed individuals</td>
<td>Unexposed individuals</td>
<td>0.209 (0.167-0.261)</td>
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<tr>
<td>Female</td>
<td></td>
<td>78</td>
<td>30,225</td>
<td>5.68</td>
<td>30.87</td>
<td>0.216 (0.168-0.279)</td>
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<tr>
<td>Male</td>
<td></td>
<td>60</td>
<td>23,766</td>
<td>5.59</td>
<td>31.03</td>
<td>0.216 (0.168-0.279)</td>
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<td>Age group, years</td>
<td>0-34</td>
<td>49</td>
<td>26,829</td>
<td>5.92</td>
<td>38.13</td>
<td>0.173 (0.131-0.229)</td>
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<td>35-49</td>
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<td>32</td>
<td>12,071</td>
<td>5.16</td>
<td>31.92</td>
<td>0.199 (0.141-0.282)</td>
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<td>50-64</td>
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<td>26</td>
<td>10,111</td>
<td>4.25</td>
<td>27.42</td>
<td>0.187 (0.127-0.274)</td>
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<td>≥65</td>
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<td>31</td>
<td>4,980</td>
<td>8.01</td>
<td>16.92</td>
<td>0.529 (0.372-0.753)</td>
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<tr>
<td>Time in follow-up, months</td>
<td>3-6</td>
<td>84</td>
<td>37,357</td>
<td>5.57</td>
<td>27.28</td>
<td>0.207 (0.167-0.256)</td>
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<td>≥7</td>
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<td>54</td>
<td>16,634</td>
<td>2.66</td>
<td>14.48</td>
<td>0.223 (0.171-0.291)</td>
</tr>
<tr>
<td>Author/Year</td>
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Follow-up period in highlighted studies included time when VOC (mostly Alpha/B.1.1.7) had become predominant.
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There was no evidence that B.1.1.7 changed the extent of protection from any PCR positive infection in those who were seropositive
Natural Immunity to SARS-CoV-2

Observational Studies

• Prior infection with SARS-CoV-2 (assessed by antibody or PCR test result) associated with a decreased risk of subsequent infection in multiple countries

• Limitations
  • Ecological studies of reinfection have largely not stratified analyses by variables that may impact the magnitude/duration of immunity
  • Protective effect of prior infection against reinfection during periods of increased VOC circulation remains poorly characterized
Objectives

• Describe evidence for natural immunity following SARS-CoV-2 infection

• Discuss available evidence comparing natural and vaccine-induced immunity to SARS-CoV-2
Natural vs. Vaccine-Induced Immunity

Immune Responses

• mRNA-1273 vaccine-elicited antibodies bind more broadly across SARS-CoV-2 spike receptor binding domain (RBD) than convalescent sera\(^1\)
  - Neutralizing activity less susceptible to single RBD mutations

• Reduced \textit{but preserved} neutralizing antibody titers against Alpha/B.1.1.7 and Beta/B.1.351 in recipients of two doses of BNT162b2\(^2\)
  - 40% of HCWs with a history of mild COVID-19 had no neutralizing antibodies

• Similar neutralizing antibody titers against VOC (Alpha/B.1.1.7, Beta/B.1.351, Gamma/P.1) among BNT162b2 vaccinees and previously hospitalized COVID-19 patients\(^3\)
  - 39% of patients with mild COVID-19 had no neutralizing antibodies against B.1.351

\(^1\)Sci Transl Med. 2021 Jun 30;13(600):eabi9915
\(^2\)Clin Infect Dis. 2021 May 29:ciab492
\(^3\)https://www.medrxiv.org/content/10.1101/2021.05.26.21257441v1
Natural vs. Vaccine-Induced Immunity

Observational Studies

• Few studies have directly compared the incidence of infection in seropositive and vaccinated individuals in the same population over the same follow-up period

• In three studies (2 published, 1 pre-print), the protective effect of prior infection was similar to 2 doses of a COVID-19 vaccine*1-3
  • Two studies of HCWs (USA and UK), one of returning air travelers (Qatar)

*mRNA-1273, BNT162b2, and ChAdOx1

1JAMA. 2021 Jul 13;326(2):185-188
3https://www.medrxiv.org/content/10.1101/2021.06.01.21258176v2
Percent protection from infection (vs. unvaccinated seronegative individuals)
Summary

• Immune responses to SARS-CoV-2 following natural infection can persist for at least 11 months
  • Magnitude/durability of this response may vary by age, disease severity, etc.

• Natural infection (as determined by a prior positive antibody or PCR-test result) can confer protection against SARS-CoV-2 infection
  • Most observational studies have not stratified analyses by key covariates
  • Protective effect of prior infection against VOC remains uncertain

• Comparative protective effect of natural infection and vaccination remains poorly characterized
  • vaccination appears to elicit higher quality antibody response
COVID-19 SEROLOGY TESTS — WHAT CAN THEY TELL ABOUT IMMUNITY AND PROTECTION

July 2021
Tim Stenzel, MD, PhD
Director
Office of In Vitro Diagnostics and Radiological Health
U.S. Food & Drug Administration
EUA LAW AND SEROLOGY INTENDED USE

• Federal Food, Drug, and Cosmetic Act section 564(b)(1)(C):
  • “...the known and potential benefits of the device when used for that purpose outweigh the known and potential risks of the device.”

• SARS-CoV-2 serology intended use statements:
  • “an aid in identifying individuals with an adaptive immune response to SARS-CoV-2, indicating recent or prior infection.”
COVID-19 SEROLOGY TESTS OVERVIEW

85 Serology tests including

• 11 Point-of-care
• 1 Neutralizing antibody test
• 1 Quantitative
• 16 Semi-quantitative
COVID-19 NEUTRALIZING ANTIBODY TESTS

• Currently authorized: [cPass SARS-CoV-2 Neutralization Antibody Detection Kit](#)

• Available template: [Template for Test Developers of Serology Tests that Detect or Correlate to Neutralizing Antibodies](#)
QUANTITATIVE SEROLOGY TESTS FOR COVID-19

• Currently authorized: One (Ortho-Clinical)
• Available template: not at this time, recommendations communicated upon request
• De novo/510(k): traceability to a national or international certified reference material (CRM)
• Calibrators
• Analytical sensitivity
  • Cutoff sensitivity study
  • Recovery Linearity
  • Regression analysis
ROLE AND TIMING OF VARIOUS ASSAYS

PCR or antigen

Antibody

Time (weeks)
ANTIBODY TESTS FOR OTHER VACCINES

WHERE DOES SARS-COV-2 FIT ON THIS SCALE?

HIV

Syphilis

Hepatitis C virus

? Tetanus ?

? Pertussis ?

? Influenza ?

Hepatitis A virus*

Hepatitis B virus*

Rubella*

* FDA has authorized vaccination and/or immunity claims. They are traceable to international standards, and sterilizing levels of antibodies are known in each case.
WHAT WE KNOW

COVID-19 illness or vaccination

Antibodies  ?  No illness
WHAT WE NEED

- Use of antibody tests that are traceable to a standardized reference material – FDA has authorized the first such test
  - Results need to be comparable for different tests

- Is there a correlation of antibodies to protection from infection?

- What is that antibody concentration?
  - Longitudinal patient follow-up studies

- Serology test results may not tell an individual anything about protection from reinfection.
ONGOING STUDIES

- NCT04373148
- NCT04377724
- NCT04494893
- NCT04329546
- NCT04365166
- NCT04385108
- NCT04431414
- NCT04448145
- NCT04620798
- NCT04653844
- NCT04498286
- NCT04528901
- NCT04540484
- NCT04568044
- NCT04573348
Antibody testing is not currently recommended to assess immunity to COVID-19 after a COVID-19 vaccination. Outcome data needed in people who have received a COVID-19 vaccination. While a positive antibody test result can be used to identify antibodies that are part of the body’s immune response to SARS-CoV-2 infection, the correlate to a person’s level of immunity or protection from COVID-19 have not been established at this time.

Since vaccines induce antibodies to specific viral protein targets, post-vaccination antibody test results will be negative in persons without history of previous natural infection if the test used does not detect the antibodies induced by the vaccine. Currently authorized SARS-CoV-2 antibody test data have not been evaluated to assess the level of protection provided by an immune response to COVID-19 vaccination. Health care providers considering antibody testing in vaccinated patients should follow the Centers for Disease Control and Prevention’s guidelines for antibody testing.
FDA RESOURCES

▪ In Vitro Diagnostics EUAs
  (templates with validation recommendations and authorized tests)

▪ Coronavirus Disease 2019 (COVID-19) Emergency Use Authorizations for Medical Devices

▪ FAQs on Testing for SARS-CoV-2

▪ Serology/Antibody Tests: FAQs on Testing for SARS-CoV-2
Q&A and Discussion
Links and Resources

- Slide 1 - https://www.idsociety.org/cliniciancalls
- Slides 6, 7 & 8 - https://covid.cdc.gov/covid-data-tracker/#variant-proportions
  https://www.medrxiv.org/content/10.1101/2021.05.26.21257441v1
- Slide 36 - https://www.medrxiv.org/content/10.1101/2021.05.26.21257441v1
- Slide 37 - https://www.medrxiv.org/content/10.1101/2021.06.01.21258176v2
- Slide 55 - https://www.cdc.gov/cdc-info/
- Slide 56 – https://idweek.org/
An online community bringing together information and opportunities for discussion on latest research, guidelines, tools and resources from a variety of medical subspecialties around the world.

Specialty Society Collaborators

- American Academy of Family Physicians
- American Academy of Pediatrics
- American College of Emergency Physicians
- American College of Physicians
- American Geriatrics Society
- American Thoracic Society
- Pediatric Infectious Diseases Society
- Society for Critical Care Medicine
- Society for Healthcare Epidemiology of America
- Society of Hospital Medicine
- Society of Infectious Diseases Pharmacists

www.COVID19LearningNetwork.org
@RealTimeCOVID19
#RealTimeCOVID19
FOR WHOM?
- Clinicians who have questions about the clinical management of COVID-19

WHAT?
- Calls from clinicians will be triaged by CDC to a group of IDSA volunteer clinicians for peer-to-peer support

HOW?
- Clinicians may call the main CDC information line at 800-CDC-INFO (800-232-4636)
- To submit your question in writing, go to www.cdc.gov/cdc-info and click on Contact Form
Attend, Learn & Collaborate.

Advancing Science, Improving Care

Save the Date

Sept. 29 – Oct. 3, 2021

Important Dates:

• Registration is Open
• Abstract Submission Deadline – June 9
• Case Submission Deadline – June 9
Continue the conversation on Twitter

@RealTimeCOVID19
#RealTimeCOVID19

We want to hear from you!
Please complete the post-call survey.
Clinician calls are now twice a month:

**Updated Summer Schedule:**
- July 31
- August 14
- August 28

A recording of this call will be posted Monday at [www.id society.org/cliniciancalls](http://www.id society.org/cliniciancalls)

--- library of all past calls available ---

Contact Us:
Dana Wollins (dwollins@idsociety.org)
Deirdre Lewis (dlewis@idsociety.org)