



2019-nCoV Literature Situation Report (Lit Rep)

May 28, 2021

The scientific literature on COVID-19 is rapidly evolving and these articles were selected for review based on their relevance to Washington State decision making around COVID-19 response efforts. Included in these Lit Reps are some manuscripts that have been made available online as pre-prints but have not yet undergone peer review. Please be aware of this when reviewing articles included in the Lit Reps.

Key Takeaways

- **COVID-19 mRNA vaccines were 60% effective against symptomatic SARS-CoV-2 infection 14-20 days after the first dose and 91% effective ≥ 7 days after the second dose in a test-negative study among symptomatic adults in Ontario, Canada between December 2020 to April 2021 (n=324,033), with even higher effectiveness against severe outcomes. Vaccine effectiveness remained high against variants of concern. [More](#)**
- **Children diagnosed with pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (n=46) had a low frequency of organ-specific sequelae at 6 months of follow-up. Echocardiograms were normal in 96% of patients, and gastrointestinal symptoms were only present in 13% of patients at 6 months among those with baseline symptoms. [More](#)**
- **Adults in Switzerland who were seropositive for SARS-CoV-2 IgG antibodies were less likely to test positive (1%) for SARS-CoV-2 than propensity-score-matched seronegative adults (16%) in the 8 months following antibody measurements, suggesting that seropositivity was associated with a 94% reduction in risk of retesting positive. [More](#)**

Vaccines and Immunity

- As of May 1, 2021, vaccination coverage was lower among US adults living in counties with higher social vulnerability (social and structural factors associated with adverse health outcomes) and with higher percentages of households with children, single parents, and persons with disabilities. By May 1, vaccination coverage was lower among adults living in counties with the highest quartile of social vulnerability index (SVI, Q4 coverage = 49% vs Q1=59%). Vaccination coverage disparities were largest for two SVI themes: socioeconomic status (Q4 = 44 % vs Q1 = 61%) and household composition and disability (Q4 = 42% vs Q1 = 60%). During December 14, 2020-May 1, 2021, disparities in vaccination coverage by SVI increased, especially in suburban and nonmetropolitan counties. The authors suggest that expanding public health messaging targeted to local populations and increasing vaccination access could help increase vaccination coverage in areas with high social vulnerability.

Barry et al. (May 28, 2021). Patterns in COVID-19 Vaccination Coverage, by Social Vulnerability and Urbanicity — United States, December 14, 2020–May 1, 2021. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm7022e1>



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- *[Pre-print, not peer-reviewed]* COVID-19 mRNA vaccines (Pfizer-BioNTech and Moderna) were 60% effective against symptomatic SARS-CoV-2 infection 14-20 days after the first dose and 91% effective ≥ 7 days after the second dose in a test-negative study among symptomatic adults in Ontario, Canada between December 2020 and April 2021 (n=324,033). Vaccine effectiveness against severe outcomes was 62% 14-20 days after the first dose and 98% ≥ 7 days after the second dose. First-dose vaccine effectiveness estimates were lower among adults aged ≥ 70 years, but comparable to younger individuals after the second dose. Two-dose vaccine effectiveness remained high against B.1.351 and P.1 variants with the E484K mutation. Chung et al. (May 28, 2021). *Effectiveness of BNT162b2 and MRNA-1273 COVID-19 Vaccines against Symptomatic SARS-CoV-2 Infection and Severe COVID-19 Outcomes in Ontario Canada*. Pre-print downloaded May 28 from <https://doi.org/10.1101/2021.05.24.21257744>
- Genomic and phylogenetic analyses of SARS-CoV-2 genomes with the E484K mutation sequenced from samples in Brazil in 2020 showed that over 40% of sequenced genomes had this mutation by October 2020 across three distinct lineages (P.1, P.2, and N.9) in four different regions. Modeling of a random set of sequenced genomes suggests that the mutation is under positive selection in lineages in Brazil. Ferrareze et al. (May 25, 2021). *E484K as an Innovative Phylogenetic Event for Viral Evolution: Genomic Analysis of the E484K Spike Mutation in SARS-CoV-2 Lineages from Brazil*. *Infection, Genetics and Evolution*. <https://doi.org/10.1016/j.meegid.2021.104941>
- Swiss adults who were seropositive for SARS-CoV-2 IgG antibodies were less likely to have a SARS-CoV-2 PCR positive test than propensity-score-matched seronegative adults in the 8 months following antibody measurements. Of the 498 seropositive individuals, only 5 (1%) retested positive (likely indicative of reinfection) after a mean follow-up of 36 weeks. In contrast, 154 of 996 (16%) matched seronegative individuals tested positive during a similar mean follow-up of 35 weeks. These findings suggest that seropositivity is associated with a 94% reduction in risk of retesting positive. The authors note that while testing rates were similar between seropositive and seronegative individuals, risk of detection may be underestimated among seropositive individuals if individuals with reinfection are less likely to be symptomatic. *[EDITORIAL NOTE: This manuscript was summarized as a pre-print on March 22, 2020.]* Leidi et al. (May 27, 2021). *Risk of Reinfection after Seroconversion to SARS-CoV-2: A Population-Based Propensity-Score Matched Cohort Study*. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciab495>
- Residual clinical samples collected from 766 Seattle-area adults during October 2019 to April 2020 showed that anti-SARS-CoV-2 antibodies were not detected until mid-March 2020. Estimated antibody prevalence from March 5-April 1, 2020 was 1.2%, which was 11 times greater than the number of confirmed cases in King County, which includes Seattle, as of April 1. The authors note, however, that participant sampling in the study may not be representative of the general population. *[EDITORIAL NOTE: This manuscript was summarized as a pre-print on December 8, 2020.]*

McCulloch et al. (May 27, 2021). Seroprevalence of SARS-CoV-2 Antibodies in Seattle, Washington: October 2019–April 2020. PLOS ONE.
<https://doi.org/10.1371/journal.pone.0252235>

- [Pre-print, not peer-reviewed] The SARS-CoV-2 B.1.617.2 variant of concern, first described in India, was experimentally shown to completely escape neutralizing activity from the monoclonal antibody (mAb) bamlanivimab (made by Eli Lilly), while neutralizing activity of etesivimab (also Eli Lilly), casirivimab and imdevimab (Regeneron) were preserved. Neutralizing activity of sera from 56 individuals recovered from critical, severe, and mild-to-moderate COVID-19 were decreased 4-6 fold against B.1.617.2 compared to the D614G and B.1.1.7 variants. Neutralizing activity of sera from individuals without prior infection who were fully vaccinated with the Pfizer-BioNTech vaccine (n=16) showed 3- fold reduction against B.1.617.2 compared to the B.1.1.7 variant.

Planas et al. (May 27, 2021). Reduced Sensitivity of Infectious SARS-CoV-2 Variant B.1.617.2 to Monoclonal Antibodies and Sera from Convalescent and Vaccinated Individuals. Pre-print downloaded May 28 from <https://doi.org/10.1101/2021.05.26.445838>

- [Pre-print, not peer-reviewed] Anti-SARS-CoV-2 spike antibodies were detected in 80% of chronic hemodialysis patients (n=66) 28 days after a single dose of the Pfizer-BioNTech vaccine in a cohort study in Toronto, Canada. However, only 23% mounted a robust response defined by exceeding the median level of anti-spike antibodies observed in serum of healthy convalescent controls (n=35). Anti-spike antibodies were detected in 96% of patients receiving two doses (n=76), but only 72% mounted a robust response. Similar patterns were observed for detectable anti-receptor binding domain (RBD) antibodies.

Yau et al. (May 27, 2021). The Humoral Response to the BNT162b2 Vaccine in Hemodialysis Patients. Pre-print downloaded May 28 from <https://doi.org/10.1101/2021.05.24.21257425>

Clinical Characteristics and Health Care Setting

- Clinical or subclinical myocarditis associated with SARS-CoV-2 infection was detected in 2.3% of US college athletes with COVID-19 undergoing comprehensive cardiovascular testing from March to December 2020 (n=1597). Only 5 athletes (0.31%) would have been detected based on cardiac symptoms alone, while cardiac magnetic resonance imaging for all athletes yielded a 7.4-fold increase in detection of both clinical and subclinical myocarditis. Prevalence across the 13 participating universities varied from 0%-7.6%, with varying testing protocols closely tied to detection of myocarditis.

Daniels et al. (May 27, 2021). Prevalence of Clinical and Subclinical Myocarditis in Competitive Athletes With Recent SARS-CoV-2 Infection. JAMA Cardiology.

<https://doi.org/10.1001/jamacardio.2021.2065>

- COVID-19 case fatality rates were higher among people with intellectual development disabilities (IDD) compared to rates for their respective jurisdiction, both among individuals living in congregate settings (2-5 times higher) and those receiving 24/7 nursing services (3-9 times higher) in an analysis of publicly reported data in 11 US states from March to April 2021. By contrast, results were not consistently different for people with IDD living in their own family home.

Landes et al. (May 14, 2021). COVID-19 Case-Fatality Disparities among People with Intellectual and Developmental Disabilities: Evidence from 12 US Jurisdictions. *Disability and Health Journal*. <https://doi.org/10.1016/j.dhjo.2021.101116>

- Organ-specific sequelae were uncommon at the 6-month follow-up in a cohort of children aged <18 years (median age 10.2 years) diagnosed with pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (n=46). Echocardiograms were normal in 96% of patients, and gastrointestinal symptoms were only present in 13% of patients at 6 months among those with baseline symptoms. Renal, hematological, and otolaryngologic findings largely resolved by 6 months. Systemic inflammation was resolved in all but one patient and no deaths were reported. Penner et al. (May 25, 2021). 6-Month Multidisciplinary Follow-up and Outcomes of Patients with Paediatric Inflammatory Multisystem Syndrome (PIMS-TS) at a UK Tertiary Paediatric Hospital: A Retrospective Cohort Study. *The Lancet Child & Adolescent Health*. [https://doi.org/10.1016/S2352-4642\(21\)00138-3](https://doi.org/10.1016/S2352-4642(21)00138-3)

Public Health Policy and Practice

- A rapid consultation produced by a panel of experts from the National Academies of Sciences, Engineering and Medicine identified 7 data types used as indicators for evaluating local course of COVID-19 and 5 criteria to assess the reliability and validity of each data type. The 7 data types include confirmed cases, hospitalizations, emergency department visits, confirmed COVID-19 deaths, excess deaths, positive test fraction, and prevalence surveys. The 5 criteria include representativeness, bias, sampling error, lag time, and spatial differences in measurement. The authors encourage policy makers to consider small case counts, systematic over- and under-estimation, disproportionate impact against certain populations, importance of qualitative data, and transparency while analyzing the different data types. National Academies Press. (May 28, 2021). *Evaluating Data Types: A Guide for Decision Makers Using Data to Understand the Extent and Spread of COVID-19*. National Academies Press. <https://doi.org/10.17226/25826>

Other Resources and Commentaries

- [Count the Cost of Disability Caused by COVID-19](#) – Nature (May)
- [Had COVID? You'll Probably Make Antibodies for a Lifetime](#) – Nature (May)
- [Cellular Disturbances in COVID-19](#) – Nature Immunology (June 26)
- [A Broader View of Risk to Health Care Workers: Perspectives on Supporting Vulnerable Health Care Professional Households During COVID-19](#) – Journal of the Association of American Medical Colleges (May)
- [Covid-19: Variants Are Spreading in Countries with Low Vaccination Rates](#) – BMJ (May)
- [COVID-19 IN CHILDREN: A NARRATIVE REVIEW](#) – Current Pediatric Reviews (May 26)
- [Notes from the Field: Impact of the COVID-19 Response on Scale-Up of HIV Viral Load Testing – PEPFAR-Supported Countries, January–June 2020](#) – MMWR. Morbidity and Mortality Weekly Report (May 28)
- [Covid-19: D/Deaf Healthcare Workers Faced “Widespread, Systemic Discrimination” during Pandemic, Study Finds](#) – BMJ (May 26)
- [Health Information Seeking on Social Media During the Covid-19 Pandemic: A Survey of American SNS Users \(Preprint\)](#) – Journal of Medical Internet Research (Apr 20)

- [Estimating the Wave 1 and Wave 2 Infection Fatality Rates from SARS-CoV-2 in India](#) – MedRxiv (May 27)
- [Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) Infection in Vaccinated and Unvaccinated Healthcare Personnel in a Veterans Affairs Healthcare System](#) – Infection Control & Hospital Epidemiology (May 27)
- [Audio Interview: Protecting the Immunosuppressed against Covid-19](#) – The New England Journal of Medicine (May)
- [Geographical and Temporal Distribution of SARS-CoV-2 Globally An Attempt to Correlate Case Fatality Rate with the Circulating Dominant SARS-CoV-2 Clades](#) – MedRxiv (May 27)
- [Severe Consequences of COVID-19 Infection among Vaccinated Kidney Transplant Recipients](#) – American Journal of Transplantation (May 27)
- [Return to Play for Athletes After COVID-19 Infection](#) – JAMA Cardiology (May 27)
- [A Systematic and Meta-Analysis Review on the Diagnostic Accuracy of Antibodies in the Serological Diagnosis of COVID-19](#) – Systematic Reviews (Dec 26)
- [Spatiotemporal Contact Density Explains the Disparity of COVID-19 Spread in Urban Neighborhoods](#) – Scientific Reports (May)

Report prepared by the UW Alliance for Pandemic Preparedness and Global Health Security and the START Center in collaboration with and on behalf of WA DOH COVID-19 Incident Management Team