



## 2019-nCoV Literature Situation Report (Lit Rep)

May 27, 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

- **Breakthrough SARS-CoV-2 infections at least 14 days following the first dose of the Oxford-AstraZeneca or Pfizer-BioNTech vaccines were 3-fold more common among those with frailty among adults aged  $\geq 60$  years, based on findings from a study that matched infected and non-infected vaccinated individuals in the UK. Vaccinated individuals who developed infection reported fewer symptoms and had 64% lower risk of hospitalization than matched non-vaccinated individuals. [More](#)**
- **Two inactivated SARS-CoV-2 vaccines had efficacy  $>70\%$  in preventing symptomatic COVID-19 14 days after the second dose in an interim analysis of a phase 3 trial among adults aged  $\geq 18$  years without known prior infection in the United Arab Emirates and Bahrain (n=38,206). Adverse reactions 7 days after each dose occurred in 42%-47% of participants, while serious adverse events occurred in  $\leq 0.6\%$  in all 3 groups. [More](#)**
- **A randomized trial of the Pfizer-BioNTech vaccine (BNT162b2) among adolescents ages 12-15 reported vaccine efficacy of 100% (95% CI 75-100%) against COVID-19 for the 2-dose vaccine series. There were no vaccine-related serious adverse events and few overall adverse events. [More](#)**

### Non-Pharmaceutical Interventions

- The serial interval for COVID-19 (the interval between successive cases in a chain of transmission) ranged from 1 to 10 days in a systematic review and meta-analysis of 56 studies including 129 estimates. A separate systematic review and meta-analysis of 18 studies found that the case isolation delay interval (delay between a case diagnosis and isolation) ranged from 1 to 13 days. In studies conducted in mainland China, pooled mean serial interval and case isolation delay intervals were longer before the epidemic peak (6.2 and 6.0 days) compared to after the peak (4.9 and 2.4 days).  
*Ali et al. (May 26, 2021). Serial Intervals and Case Isolation Delays for COVID-19: A Systematic Review and Meta-Analysis. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab491>*
- State-level emergency declarations early in the COVID-19 pandemic (early March 2020) were associated with a 10% reduction in time spent away from places of residence, according to an analysis of anonymized mobility data from opted-in Google users aggregated at the county level. Subsequent implementation of physical distancing policies and shelter-in-place mandates

resulted in additional 25% and 29% reductions in mobility, respectively. Decreases in mobility were associated with reductions in COVID-19 case growth 2-4 weeks later.

Wellenius et al. (May 25, 2021). *Impacts of Social Distancing Policies on Mobility and COVID-19 Case Growth in the US*. *Nature Communications*. <https://doi.org/10.1038/s41467-021-23404-5>

## Geographic Spread

- [Pre-print, not peer-reviewed] Genomic surveillance detected a potential new variant emerging in West Bengal, India from an analysis of over 2,000 sequenced samples collected from January to March 2021. The new variant, identified in 70 of 412 sequences submitted from West Bengal, is characterized by 11 mutations including V1230L and P681H, also found in the B.1.1.7 variant. 16 of the 70 sequences possessed the E484K mutation, also found in the B.1.351 and P.1 variants.

Sarkar et al. (May 26, 2021). *Emergence of a New SARS-CoV-2 Variant from GR Clade with a Novel S Glycoprotein Mutation V1230L in West Bengal India*. Pre-print downloaded May 27 from <https://doi.org/10.1101/2021.05.24.21257705>

## Vaccines and Immunity

- The efficacy in preventing symptomatic COVID-19 14 days after the second dose for two inactivated SARS-CoV-2 vaccines (derived from strains WIV04 and HB02) was 73% (95% CI, 58%-82%) and 78% (95% CI, 65%-86%), respectively, in an interim analysis of a randomized, placebo-controlled phase 3 trial among adults aged  $\geq 18$  years without known prior infection in the United Arab Emirates and Bahrain (n=38,206). During a median follow-up of 77 days, symptomatic COVID-19 was identified in 26 participants in the WIV04 group (n=12,743), 21 in the HB02 group (n=12,726), and 95 in the control group (n=12,737). The country of origin of the participants included the UAE (24%), India (14%), Bangladesh (10%), China (10%), Pakistan (9%), Bahrain (7%), Egypt (5%), the Philippines (4%), Nepal (2%), and Syria (2%). Adverse reactions 7 days after each dose occurred in 42%-47% of participants, while serious adverse events occurred in  $\leq 0.6\%$  in all 3 groups.

Al Kaabi et al. (May 26, 2021). *Effect of 2 Inactivated SARS-CoV-2 Vaccines on Symptomatic COVID-19 Infection in Adults*. *JAMA*. <https://doi.org/10.1001/jama.2021.8565>

- [Pre-print, not peer-reviewed] Breakthrough SARS-CoV-2 infections after at least 14 days following the first dose of the Oxford-AstraZeneca or Pfizer-BioNTech vaccines were less likely among those with healthier lifestyle factors. Findings were based on a case-control study of 2,394 individuals with a breakthrough infection matched 1:1 by age, sex, and other potential confounders to other vaccinated individuals in the UK. Individuals living in the most deprived areas had increased risk of breakthrough infection, as well as older adults aged  $\geq 60$  years. Frailty was associated with a 3-fold higher risk of breakthrough infection. In a separate analysis matching individuals with breakthrough infection to a control group of unvaccinated adults with infection, vaccinated individuals reported fewer symptoms and had 64% lower risk of hospitalization.

Antonelli et al. (May 26, 2021). *Post-Vaccination SARS-CoV-2 Infection Risk Factors and Illness Profile in a Prospective Observational Community-Based Case-Control Study*. Pre-print downloaded May 27 from <https://doi.org/10.1101/2021.05.24.21257738>

- [Pre-print, not peer-reviewed] Neutralizing activity of convalescent plasma collected from patients and healthcare workers infected during the first wave of the COVID-19 pandemic between July and September 2020 (n=61) was reduced by 2-fold against the B.1.1.7 variant and by 8-fold against the B.1.351 and P.1 variant compared to the parent B.1 strain. Neutralizing activity correlated with disease severity. Plasma collected from patients, who generally reported more severe disease courses, had 16-fold and 45-fold higher neutralizing levels against the B.1.1.7 variant and B.1.351 variant, respectively, compared to plasma from healthcare workers, who generally scored low on the WHO symptom severity score.

*Cantoni et al. (May 26, 2021). Standardised Quantitative Neutralisation Responses to SARS-CoV-2 Variants of Concern by Convalescent Anti-Sera from First Wave Infections of UK Health Care Workers and Patients. Pre-print downloaded May 27 from <https://doi.org/10.1101/2021.05.24.21257729>*

- Only 35 of 117 (30%) kidney transplant recipients without known prior SARS-CoV-2 infection had a detectable humoral immune response (anti-spike IgG and/or IgM antibodies) to the Moderna vaccine two weeks after the second dose, while 55% had a detectable cellular immune response. Development of both humoral and cellular immune responses was observed in 20% of patients. In total, only 65% presented with any immune response to vaccination. Baseline immunosuppression was associated with a lack of humoral response.

*Cucchiari et al. (May 26, 2021). Cellular and Humoral Response after mRNA-1273 SARS-CoV-2 Vaccine in Kidney Transplant Recipients. American Journal of Transplantation. <https://doi.org/10.1111/ajt.16701>*

- A randomized trial of the Pfizer-BioNTech vaccine (BNT162b2) among adolescents ages 12-15 reported vaccine efficacy of 100% (75.3-100%) against COVID-19 for the 2-dose vaccine series. There were 16 cases of COVID-19 among 1,129 placebo recipients and no COVID-19 cases among 1,131 vaccine recipients that occurred 7 or more days after the second dose among participants without evidence of prior SARS-CoV-2 infection. Slightly more BNT162b recipients than placebo recipients (3% vs. 2%) reported related adverse events. There were no vaccine-related serious adverse events. *Frenck et al. (May 27, 2021). Safety, Immunogenicity, and Efficacy of the BNT162b2 Covid-19 Vaccine in Adolescents. New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2107456>*

- A qualitative evaluation of each US state's department of health website content for vaccine eligibility and availability conducted in February 2021 found that of the 47 states providing eligibility information, 57% did not support eligibility verification, and 83% presented eligibility information at a post-high school reading level. Only half of all states provided web-based appointment scheduling, 92% of which required the user to search multiple vaccine locations individually for availability. Websites from 9 states (18%) were in English only, and 7 states (14%) did not support complete smartphone viewability. 30 states (60%) had no indicator of when information was last updated.

*Howe et al. (May 26, 2021). Accessibility and Usability of State Health Department COVID-19 Vaccine Websites. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2021.14861>*

## Clinical Characteristics and Health Care Setting

- In a cohort study of individuals aged <18 years who were hospitalized with COVID-19 (n=32), those diagnosed with multisystem inflammatory syndrome in children (MIS-C) (n=16) had

significantly higher levels of cytokine and chemokines, such as IL-6 and IL-8, and were more likely to have anti-SARS-CoV-2 antibody positivity (75% vs 44%) compared to those without MIS-C. MIS-C patients tended to be younger (median age 2.2 years vs 8.7 years), but nasopharyngeal viral load did not differ significantly between the two groups.

*Akindele et al. (May 24, 2021). Distinct Cytokine and Chemokine Dysregulation in Hospitalized Children with Acute COVID-19 and Multisystem Inflammatory Syndrome with Similar Levels of Nasopharyngeal SARS-CoV-2 Shedding. The Journal of Infectious Diseases.*

<https://doi.org/10.1093/infdis/jiab285>

- In an analysis of plasma levels of interferons (IFNs) and cytokines among patients with SARS-CoV-2 infection and varying disease severity (n=67), type I IFN responses appeared to be transient among those with mild disease but prolonged among those admitted to the ICU. Plasma levels of type II IFNs were comparable among patients overall and induced early in disease course. Like type I IFNs, cytokine and chemokine levels correlated with disease severity and were highest in ICU patients.

*Kim et al. (May 24, 2021). Type I, II, and III Interferon Signatures Correspond to COVID-19 Disease Severity. The Journal of Infectious Diseases.* <https://doi.org/10.1093/infdis/jiab288>

- A systematic review of 45 studies including 9,751 participants with COVID-19 found the most frequent persistent symptoms ( $\geq 60$  days) included shortness of breath (median 36% of participants in 26 studies), fatigue (median 40% in 25 studies), and sleep disorder (median 30% in 8 studies). A median of 73% of participants in 16 studies of mostly hospitalized patients reported at least 1 persistent symptom. Two thirds of included studies reported mean or median age of <60 years. Significant variations in study design limited direct comparability and combinability.

*Nasserie et al. (May 26, 2021). Assessment of the Frequency and Variety of Persistent Symptoms Among Patients With COVID-19. JAMA Network Open.*

<https://doi.org/10.1001/jamanetworkopen.2021.11417>

- Bacterial identification within 48 hours after intubation in samples from patients with SARS-CoV-2 pneumonia (n=568) was associated with a 57% increase in risk for 28-day mortality in a multi-center cohort study in Europe. Compared to patients with influenza pneumonia (n=482), bacterial identification after intubation was less frequent in patients with SARS-CoV-2 pneumonia (10% vs 34%). However, no significant difference was observed in outcomes related to bacterial identification between the two study groups, suggesting that the impact of co-infection on mortality was similar. Bacterial identification was defined by a positive bacterial culture within 48 hours after intubation in endotracheal aspirates, bronchoalveolar lavage, blood cultures, or a positive pneumococcal or legionella urine antigen test.

*Rouze et al. (May 26, 2021). Early Bacterial Identification Among Intubated Patients with COVID-19 or Influenza Pneumonia: A European Multicenter Comparative Cohort Study. American Journal of Respiratory and Critical Care Medicine.* <https://doi.org/10.1164/rccm.202101-00300C>

## Public Health Policy and Practice

- Overdose-associated cardiac arrests requiring activation of emergency medical services (EMS) were 42% higher in 2020 compared to levels from 2018 and 2019 (60 vs 42 cardiac arrests per 100,000 EMS activations). The highest percentage increases were seen among Latinx and African

American individuals (50% increase) and among individuals living in more impoverished neighborhoods (46% increase). The authors predict approximately 90,632 overdose deaths may be eventually reported for 2020 by the CDC after observing that EMS records were highly correlated with CDC mortality figures reported with a 6- to 12-month lag time.

*Friedman et al. (May 26, 2021). Racial/Ethnic, Social, and Geographic Trends in Overdose-Associated Cardiac Arrests Observed by US Emergency Medical Services During the COVID-19 Pandemic. JAMA Psychiatry. <https://doi.org/10.1001/jamapsychiatry.2021.0967>*

## Other Resources and Commentaries

- [The National Collaborating Centre for Healthy Public Policy in Times of COVID-19: Building Skills to “Build Back Better”](#) – Canada Communicable Disease Report (May)
- [COVID-19 Risk in Youth Club Sports: A Nationwide Sample Representing over 200,000 Athletes](#) – Journal of Athletic Training (May 26)
- [Perceived COVID-19 Health Threat Increases Psychological Distress among Black Americans](#) – Ethnic and Racial Studies (2021)
- [It Is Time to Determine Tocilizumab Place in COVID-19](#) – Clinical Infectious Diseases (May 24)
- [Disparities in COVID-19 Outcomes for African Americans: More Studies Are Warranted](#) – Clinical Infectious Diseases (May)
- [COVID-19 in Amazonas, Brazil, Was Driven by the Persistence of Endemic Lineages and P.1 Emergence](#) – Nature Medicine (May)
- [What the Science Says about Lifting Mask Mandates](#) – Nature (May 27)
- [Longitudinal Immune Dynamics of Mild COVID-19 Define Signatures of Recovery and Persistence](#) – BioRxiv (May 26)
- [Vaccine Development Lessons between HIV and COVID-19](#) – The Lancet Infectious Diseases (June 1)
- [Incentives for Immunity — Strategies for Increasing Covid-19 Vaccine Uptake](#) – New England Journal of Medicine (May 26)
- [Rapid Disappearance of Influenza Following the Implementation of COVID-19 Mitigation Measures in Hamilton, Ontario](#) – Canada Communicable Disease Report (May 7)
- [A Patent Waiver on COVID Vaccines Is Right and Fair](#) – Nature (May 27)

*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*