

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

May 14, 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

- **An *in vitro* study of serum neutralization after two doses of the Pfizer-BioNTech vaccine found that variants B.1.526, B.1.429, and B.1.1.7+E484K remained susceptible to vaccine-elicited neutralizing antibodies, indicating that the E484K mutation, also found in the B.1.351 and B.1.526 lineages, may not compromise the neutralization of vaccine-induced antibodies.** [More](#)
- **A retrospective review of a large US commercial medical claims database found that pediatric primary care visits were 60% lower between March 25 and April 21, 2020 compared to the same period in 2019. Problem focused visits (in contrast to routine preventative visits), primarily for respiratory and gastrointestinal infections, were 63% lower. While rates of preventive and vaccination visits in October 2020 exceeded those in 2019, a cumulative deficit of vaccination visits remained, indicating lower vaccination rates among children and potentially higher risk for vaccine-preventable diseases.** [More](#)
- **A randomized trial conducted among adults in the UK found that providing vaccine information focused on personal benefits reduced COVID-19 vaccine hesitancy among those who were strongly hesitant to a greater degree than providing information about collective benefit.** [More](#)

### Testing and Treatment

- An evaluation of the rapid Quidel Sofia 2 SARS Antigen FIA test in patients hospitalized with COVID-19 at a large, tertiary medical center in Los Angeles found a lower sensitivity in symptomatic (72%) and asymptomatic (61%) patients compared to RT-PCR. Specificity of the Antigen test was >98% in both symptomatic and asymptomatic patients. The authors suggest that persons with symptoms consistent with COVID-19 who test negative with a rapid antigen test should also receive confirmatory RT-PCR testing to reduce the risk of a false negative test result and prevent delays in diagnosis, isolation, and treatment of infected individuals.

*Brihn et al. (May 14, 2021). Diagnostic Performance of an Antigen Test with RT-PCR for the Detection of SARS-CoV-2 in a Hospital Setting — Los Angeles County, California, June–August 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7019a3>*

- A community-based SARS-CoV-2 testing (CBT) program in Chicago found that persons tested at CBT sites (N=250,000) were more likely to have SARS-CoV-2 infection compared to persons tested in other settings. Persons who were tested at the CBT sites were also more likely to be <40 years of age, Hispanic, and live in economically marginalized zip codes. The CBT program included both fixed and mobile testing sites. Mobile sites were deployed to zip codes with the highest 7-day average

percentage of positive test results. The authors emphasize that these results demonstrate the capacity of CBTs to more effectively reach marginalized communities disproportionately affected by COVID-19.

*English et al. (May 14, 2021). Community-Based Testing for SARS-CoV-2 — Chicago, Illinois, May–November 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7019a4>*

- A randomized, blinded, placebo-controlled trial of ivermectin combined with doxycycline for patients with mild-to-moderate COVID-19 symptoms (N=400) found that treated patients had a shorter median time to recovery (7 vs. 9 days) and were more likely to be SARS-CoV-2 negative by RT-PCR at two weeks follow-up. However, the investigators note that the majority of study participants were <40 years of age, and that in subgroup analysis patients with severe disease did not differ in their disease response to treatment compared to placebo.

*Mahmud et al. (May 2021). Ivermectin in Combination with Doxycycline for Treating COVID-19 Symptoms: A Randomized Trial. The Journal of International Medical Research.*

<https://doi.org/10.1177/03000605211013550>

- A retrospective analysis of patients with COVID-19 (N=1,401) found that patients treated with IFN- $\alpha$ -2b aerosol inhalation in combination with standard treatment had a 61% lower risk of ICU admission, mechanical ventilation, and death, even after adjusting for comorbidities, baseline disease severity, and antiviral use. A subgroup analysis found that delayed IFN treatment was associated with an increased probability of these events, which the authors suggest may indicate that the treatment is most effective when given early in the course of illness. The authors also caution that randomized trials are needed to confirm that effectiveness of IFN therapy.

*Yu et al. (May 2021). Interferon- $\alpha$ -2b Aerosol Inhalation Is Associated with Improved Clinical Outcomes in Patients with Coronavirus Disease-2019. British Journal of Clinical Pharmacology.*

<https://doi.org/10.1111/bcp.14898>

## Vaccines and Immunity

- A single-blind, parallel-group, randomized trial of UK adults (N=15,014) found that among strongly vaccine hesitant persons, providing information about the personal benefits of the COVID-19 vaccine reduced hesitancy more than providing information about collective benefits. However, the study showed no difference between the messaging strategies among people who were more mildly hesitant about vaccination, or those already willing to be vaccinated. Persons who were strongly hesitant to vaccination cited concerns about the speed of vaccine development and were less likely to cite the collective benefit of being vaccinated.

*Freeman et al. (May 2021). Effects of Different Types of Written Vaccination Information on COVID-19 Vaccine Hesitancy in the UK (OCEANS-III): A Single-Blind, Parallel-Group, Randomised Controlled Trial. The Lancet Public Health. [https://doi.org/10.1016/S2468-2667\(21\)00096-7](https://doi.org/10.1016/S2468-2667(21)00096-7)*

- A study of persons with immune-mediated inflammatory diseases (IMID) (N=120) found that 15% failed to produce detectable SARS-CoV-2 antibodies 23-46 days after one dose of the Pfizer-BioNTech or Astra-Zeneca vaccines. In contrast, nearly 100% of persons without IMID who receive one dose of either vaccine have been shown to produce antibodies within this time frame. Persons taking immunomodulating medications had a non-significantly lower odds of detectable antibody response (OR=0.31). All persons with previous confirmed SARS-CoV-2 infection produced antibodies. The authors suggest that further studies are needed to examine antibody titers in the population following two doses and to establish titer levels that correspond to protection against COVID-19.

Al-Janabi et al. (May 2021). Antibody Responses to Single-Dose SARS-CoV-2 Vaccination in Patients Receiving Immunomodulators for Immune-Mediated Inflammatory Disease. *The British Journal of Dermatology*. <https://doi.org/10.1111/bjd.20479>

- A small (N=46) study of pregnant and lactating persons found that mRNA vaccines produced binding, neutralizing, and functional non-neutralizing antibody responses as well as CD4 and CD8 T-cell responses. Additionally, binding and neutralizing antibodies were also detectable in cord blood, suggesting placental transfer of maternal antibodies and conferral of immunity to infants. Post-vaccination *in vitro* challenge with variants B.1.1.7 and B.1.351 demonstrated reduced serum neutralizing antibody titers; however, T-cell responses were preserved against both variants. The authors suggest further studies are needed to confirm these results given the small sample size.

Collier et al. (May 13, 2021). Immunogenicity of COVID-19 mRNA Vaccines in Pregnant and Lactating Women. *JAMA*. <https://doi.org/10.1001/jama.2021.7563>

- An *in vitro* study of serum neutralization after two doses of Pfizer-BioNTech vaccine found that variants B.1.526, B.1.429, and B.1.1.7+E484K remained susceptible to vaccine-elicited neutralizing antibodies at a level equivalent to the neutralization of wild-type USA-WA1/2020 strain. The authors suggest that these results indicate the additional E484K mutation, also found in the B.1.351 and B.1.526 lineages, causes little compromise to neutralization of vaccine-induced antibodies and confirm the importance of mass immunization as a central strategy to control the COVID-19 pandemic.

Liu et al. (May 12, 2021). BNT162b2-Elicited Neutralization against New SARS-CoV-2 Spike Variants. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMc2106083>

- [Pre-print, not peer-reviewed] A national online survey of US parents (N=2,074) conducted in March 2021 found that 49% planned to vaccinate their children for COVID-19 when available, while 26% of respondents said they would “definitely not” vaccinate their children. The most common concerns cited about vaccines were safety, effectiveness, and a perceived lack of need. Female parents, parents with lower educational attainment, and parents with lower income were less likely to report willingness to vaccinate their children. Additionally, respondents who had not been vaccinated and expressed personal vaccine hesitancy were significantly less likely to plan to vaccinate their children. The authors note that the proportion of respondents who had already been vaccinated or planned to be vaccinated was somewhat lower (50%) than among the general population, which may have influenced the study results and could suggest that increasing adult vaccination could increase vaccination uptake among children.

Teasdale et al. (May 13, 2021). Plans to Vaccinate Children for COVID-19 a Survey of US Parents. Pre-print downloaded May 14 from <https://doi.org/10.1101/2021.05.12.21256874>

### Clinical Characteristics and Health Care Setting

- A study of persons receiving onsite hemodialysis and health care worker controls (N=210) found that a single dose of the Pfizer-BioNTech vaccine failed to elicit detectable IgG antibodies in 57% of hemodialysis patients and 5% of health care workers without previous SARS-CoV-2 infection at 4 weeks following vaccination. Among hemodialysis patients with previous SARS-CoV-2 infection, median antibody levels were similar to those of health care workers 3 weeks post-vaccination. However, T-cell response was not assessed in this study. The authors suggest that persons receiving hemodialysis be prioritized for a second dose of the Pfizer-BioNTech at the recommended 3-week

dosing interval, and highlight the importance of rigorous infection control procedures in dialysis centers.

*Goupil et al. (May 12, 2021). Short-Term Antibody Response Afer 1 Dose of BNT162b2 Vaccine in Patients Receiving Hemodialysis. Canadian Medical Association Journal.*

<https://doi.org/10.1503/cmaj.210673>

- A survival analysis of UK cancer patients (N=4,606) found that those with a SARS-CoV-2 diagnosis between March-October 2020 had a higher risk of death compared to patients without SARS-CoV-2. The risk of death within 21 days post SARS-CoV-2 detection was over 10-fold higher than among those without SARS-CoV-2 infection in patients with melanoma, hematological malignancies, uterine cancer, and kidney cancer. In all cases, fatality rates were higher in older patients. The authors suggest that these results highlight the importance of screening and early treatment of COVID-19 among cancer patients, and the prioritization of cancer patients for COVID-19 vaccination.

*Li et al. (May 12, 2021). Comparison and Impact of COVID-19 for Patients with Cancer: A Survival Analysis of Fatality Rate Controlling for Age, Sex and Cancer Type. BMJ Health & Care Informatics.*

<https://doi.org/10.1136/bmjhci-2021-100341>

### Mental Health and Personal Impact

- *[Pre-print, not peer-reviewed]* Emotional and behavioral difficulties decreased at a slower rate during the COVID-19 pandemic among young children in the UK (N=708) in a longitudinal birth-cohort study. In pre-pandemic times, predicted trajectories of difficulties peaked at age 2 and declined over the rest of early childhood. During the pandemic, the rate of decline was slower in these children and resulted in significantly more difficulties present in older children. The authors note that emotional and behavioral difficulties in early childhood are associated with psychiatric disorders later in childhood and adolescence.

*Paul et al. (May 13, 2021). Trajectories of Child Emotional and Behavioural Difficulties before and during the COVID-19 Pandemic in a Longitudinal UK Cohort. Pre-print downloaded May 14 from*

<https://doi.org/10.1101/2021.05.11.21257040>

### Public Health Policy and Practice

- A retrospective review of a large US commercial medical claims database found that pediatric primary care visits were 60% lower between March 25 and April 21, 2020 compared to the same period in 2019, and problem-focused visits were 63% lower. Primary care visits and problem-focused visits remained 17% and 31% lower in October 2020 compared to October 2019. The reduction in problem-focused visits was mainly due to a reduction in visits for infectious diseases, including acute respiratory infections and gastroenteritis. The rates of preventive and vaccination visits in October 2020 exceeded those in 2019; however, a cumulative deficit of these visits remained, indicating lower vaccination rates among children and a higher risk for vaccine-preventable disease if this deficit is not addressed.

*Schweiberger et al. (May 2021). Trends in Pediatric Primary Care Visits during the COVID-19 Pandemic. Academic Pediatrics.* <https://doi.org/10.1016/j.acap.2021.04.031>

### Other Resources and Commentaries

- [Public health impact of delaying second dose of BNT162b2 or mRNA-1273 covid-19 vaccine: simulation agent based modeling study](#) – BMJ (May 12)

- [Low Incidence of COVID-19 Severe Complications in a Large Cohort of Children with Sickle Cell Disease: A Protective Role for Basal Interferon-1 Activation](#) – Haematologica (May 13)
- [How Covid-19 Revealed the Scandal of Medical Oxygen Supplies Worldwide](#) -- BMJ (May 12)
- [A Network Analysis of COVID-19 mRNA Vaccine Patents](#) – Nature Biotechnology (May 12)
- [Applying Prospective Genomic Surveillance to Support Investigation of Hospital-Onset COVID-19](#) – The Lancet Infectious Diseases (May)
- [Covid-19: Fever, Chills, and Aches More Common When AstraZeneca and Pfizer Vaccines Are Mixed, Early Data Show](#) – BMJ (May 12)
- [COVID-19 Vaccines in Patients With Cancer—A Welcome Addition, but There Is Need for Optimization](#) – JAMA Oncology (May 13)
- [Outbreak Investigation of Symptomatic SARS-COV-2 VOC 202012/01-Lineage B.1.1.7 Infection in Healthcare Workers, Italy](#) – Clinical Microbiology and Infection (May)
- [How the World Failed to Curb COVID](#) – Nature (May 12)
- [Old and New Coronaviruses in the Elderly](#) – Aging (May 12)
- [COVID-19 Pandemic and Uptake in Suicide Attempt Among Young People of Minority Population: A Case Series](#) – Journal of Medical Cases (Dec 2020)
- [How COVID Broke the Evidence Pipeline](#) – Nature (May 13)
- [An Italian Individual-Level Data Study Investigating on the Association between Air Pollution Exposure and Covid-19 Severity in Primary-Care Setting](#) – BMC Public Health (Dec 12)
- [Matched Emotional Supports in Health Care \(MESH\) Framework: A Stepped Care Model for Health Care Workers](#) – Families, Systems, & Health (May 13)
- [The Covid-19 Infodemic — Applying the Epidemiologic Model to Counter Misinformation](#) – New England Journal of Medicine (May 12)
- [COVID-19 Testing Turns to T Cells](#) – Nature Biotechnology (May 12)
- [Evidence-Based Medicine: How COVID Can Drive Positive Change](#) – Nature (May)

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