



2019-nCoV Literature Situation Report (Lit Rep)

June 8, 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

- **A statewide survey of opioid treatment programs (OPTs) in Connecticut found no increases in methadone-involved fatalities relative to other opioid-involved fatalities, despite dramatic changes in practices during the COVID-19 pandemic, including increases in the proportion of patients who received take-home doses. [More](#)**
- **The risk of COVID-19 incidence, emergency department (ED) visits, hospitalizations, and deaths of adults aged ≥ 65 years relative to adults aged 18-49 years declined by 40%-65% during a 2-week period in April 2021 compared to a pre-vaccination period in November to December 2020. The authors conclude that the decline in rate ratios are likely due to higher vaccination coverage (≥ 1 dose) in adults aged ≥ 65 years compared to adults aged 18-49 years since December 2020 when vaccination in the US began (82% vs 42% as of May 1, 2021). [More](#)**
- **An increase in COVID-19 cases coincided with decreases in weekly reporting of other infectious diseases, according to an analysis of CDC data. The authors note that they could not differentiate between true declines in disease cases versus a decline in reporting. [More](#)**

Non-Pharmaceutical Interventions

- A systematic review of 11 studies found that portable HEPA purifiers were able to significantly reduce airborne SARS-CoV-2-surrogate particles. Experimental parameters varied considerably, including room sizes varying from 14.75 to 108 m³, and surrogate particle size from 0.012um to <1mm. Overall, HEPA filter-based personal air cleaners were overall the most efficient in removing surrogate particles compared to other filters, although one study concluded that efficient but non-HEPA filters can offer similar efficiency.

Liu et al. (June 8, 2021). Portable HEPA Purifiers to Eliminate Airborne SARS-CoV-2: A Systematic Review. Otolaryngology–Head and Neck Surgery. <https://doi.org/10.1177/01945998211022636>

Testing and Treatment

- A combination of two quantitative ELISA assays using SARS-CoV-2 nucleocapsid (N) and spike subunit 2 (S2) was able to detect at least 10% more true positive COVID-19 cases compared to a commercially available antibody test (Abbott) when tested against a panel of 42 SARS-CoV-2 positive serum samples and 37 negative control samples. Analysis of assay results showed that S2-specific antibody activity specific was weaker and also declined more rapidly.



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Verissimo et al. (June 8, 2021). Improved Diagnosis of SARS-CoV-2 by Using Nucleoprotein and Spike Protein Fragment 2 in Quantitative Dual ELISA Tests. *Epidemiology and Infection*.

<https://doi.org/10.1017/S0950268821001308>

- Two groups of single-domain antibodies, known as nanobodies, isolated from llamas and genetically engineered mice was identified to possess anti-SARS-CoV-2 receptor binding domain (RBD) neutralizing activity. The first group is able to bind to a region in the RBD largely preserved across SARS-CoV-2 mutations but rarely targeted by human antibodies, while the second group demonstrated high neutralizing activity against variants of concern when expressed as homotrimers. Xu et al. (June 7, 2021). Nanobodies from Camelid Mice and Llamas Neutralize SARS-CoV-2 Variants. *Nature*. <https://doi.org/10.1038/s41586-021-03676-z>

Vaccines and Immunity

- The risk of any SARS-CoV-2 infection was reduced by 51% between 13 to 24 days after the first dose of the Pfizer-BioNTech vaccine when compared to a period of 1 to 12 days after vaccination, according to a comparative effectiveness study in Israel (n=503,875). The weighted daily incidence of SARS-CoV-2 infection decreased from 43.4 infections per 100,000 in days 1 through 12 to 21.1 infections per 100,000 in days 13 to 24, with similar decreases across age and sex subgroups. Overall single-dose vaccine effectiveness against symptomatic COVID-19 was 54.4%.

Chodick et al. (June 7, 2021). Assessment of Effectiveness of 1 Dose of BNT162b2 Vaccine for SARS-CoV-2 Infection 13 to 24 Days After Immunization. *JAMA Network Open*.

<https://doi.org/10.1001/jamanetworkopen.2021.15985>

- The rate ratios for COVID-19 incidence, emergency department (ED) visits, hospitalizations, and deaths comparing adults aged ≥ 65 years (≥ 70 years for hospitalizations) to adults aged 18-49 years during a 2-week period in April 2021 declined by 40%, 59%, and 65%, respectively compared to a pre-vaccination period in November to December 2020. The authors conclude that the differential declines in COVID-19 outcomes are likely due to higher COVID-19 vaccination coverage among older adults. Since the COVID-19 vaccine administration began in December 2020, the proportion of persons aged ≥ 65 years receiving at least 1 dose was 25% in February 2021, 40% in March, and 82% by beginning of May compared to 7%, 10%, and 42%, among persons aged 18-49 years by the same dates, respectively. As of May 1, 2021, 69% of persons aged ≥ 65 years and 26% of persons 18-49 years were fully vaccinated.

Christie et al. (June 8, 2021). Decreases in COVID-19 Cases, Emergency Department Visits, Hospital Admissions, and Deaths Among Older Adults Following the Introduction of COVID-19 Vaccine — United States, September 6, 2020–May 1, 2021. *MMWR*.

<https://doi.org/10.15585/mmwr.mm7023e2>

- An online questionnaire among healthcare workers vaccinated with the Pfizer-BioNTech vaccine in Italy (n=3,078) found that participants with prior SARS-CoV-2 infection (n=396) had a 3-fold higher risk of moderate systemic symptoms (MSS) after the first dose, but had a 30% lower risk of symptoms after the second dose. MSS was defined as symptoms that either interfered with daily activities or resulted in time off work. MSS occurred more frequently following the second dose regardless of history of infection. No severe adverse events were reported.

d'Arminio Monforte et al. (May 30, 2021). Association between Previous Infection with SARS CoV-2 and the Risk of Self-Reported Symptoms after mRNA BNT162b2 Vaccination: Data from 3,078 Health Care Workers. EClinicalMedicine. <https://doi.org/10.1016/j.eclinm.2021.100914>

- *[Pre-print, not peer-reviewed]* Sera from individuals fully vaccinated with the inactivated virus SARS-CoV-2 vaccine Covaxin (n=17) showed a 3-fold reduction in neutralizing activity against the B.1.351 (Beta) and B.1.617.2 (Delta) variants of concern compared with the parent D614G variant. Similarly, sera from individuals recovered from COVID-19 showed a 3-fold and 5-fold reduction in neutralizing activity against the B.1.351 (Beta) and B.1.617.2 (Delta) variants, respectively.

Yadav et al. (June 7, 2021). Neutralization against B.1.351 and B.1.617.2 with Sera of COVID-19 Recovered Cases and Vaccinees of BBV152. Pre-print downloaded Jun 8 from <https://doi.org/10.1101/2021.06.05.447177>

Clinical Characteristics and Health Care Setting

- *[Pre-print, not peer-reviewed]* “Long COVID” patients with persistent symptoms (mean symptom duration 269 days) treated with histamine receptor antagonists (HRA) (n=25) reported an average reduction in symptom burden by 60%. 20% reported complete symptom resolution, 52% experienced some improvement, and 6 reported no change with a mean time to response of 30 days. By contrast, the 67% of untreated cohort (n=24) reported no change and 8% developed new additional symptoms. Long COVID patients had distinct T-cell profiles compared with 16 controls who recovered from COVID-19 but did not have long COVID, including reduced CD4+ and CD8+ effector memory cells. However, T-cell profiles did not predict responses to HRA.

Glynn et al. (June 7, 2021). Long-COVID Following Mild SARS CoV-2 Infection Characteristic T Cell Alterations and Response to Antihistamines. Pre-print downloaded Jun 8 from <https://doi.org/10.1101/2021.06.06.21258272>

- 29% of pediatric US COVID-19 patients aged ≤18 years (n=43,465) had at least one underlying medical condition, according to an analysis of data collected from more than 800 US hospitals from March 2020 to January 2021. The most common diagnosed conditions were asthma (10%), neurodevelopmental disorders (4%), anxiety and fear-related disorders (3%), depressive disorders (3%), and obesity (3%). Risk of COVID-19-related hospitalization (comparing children with mild disease versus hospitalized children) was highest among those with type 1 diabetes (RR=5) and obesity (RR=3). Once hospitalized, risk of severe COVID-19 (ICU admission, invasive mechanical ventilation, or death) was highest among those with type 1 diabetes (RR=2) and cardiac and circulatory congenital anomalies (RR=2). *[EDITORIAL NOTE: This study did not include children without COVID-19 or children with COVID-19 who were not hospitalized and therefore it is not possible to determine whether the distribution of underlying conditions in hospitalized children differed from these other groups.]*

Kompaniyets et al. (June 7, 2021). Underlying Medical Conditions Associated With Severe COVID-19 Illness Among Children. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2021.11182>

Mental Health and Personal Impact

- An estimated 60,791 fewer average monthly investigations of child abuse and neglect (CAN) were observed in New York City, New Jersey, Wisconsin and Florida after the pandemic began, according

to an analysis of administrative child welfare data in the 4 jurisdictions from January 2013 to December 2020. The corresponding potential lifetime economic impact was estimated to cost \$48.1 billion based upon prior estimates of children missed for prevention services per missed investigation.

Nguyen. (May 28, 2021). Calculating the Impact of COVID-19 Pandemic on Child Abuse and Neglect in the U.S. Child Abuse & Neglect. <https://doi.org/10.1016/j.chiabu.2021.105136>

Modeling and Prediction

- A SARS-CoV-2 transmission model simulating an average US elementary and high school classroom found that over an 8-week quarter, asymptomatic weekly screening combined with an A/B schedule generally had the greatest reduction in in-school transmission. Vaccination of staff greatly reduced transmission, but only among staff. Reductions in transmissions varied depending on local SARS-CoV-2 incidence and uptake of mitigation measures. High schools had greater potential for larger outbreaks, and therefore required more intensive mitigation. *[EDITORIAL NOTE: This model did not include the potential for vaccination of students, including those 12 years and older who are currently eligible for vaccination in the US.]*

Bilinski et al. (June 8, 2021). Passing the Test: A Model-Based Analysis of Safe School-Reopening Strategies. Annals of Internal Medicine. <https://www.acpjournals.org/doi/10.7326/M21-0600>

Public Health Policy and Practice

- A statewide survey of opioid treatment programs (OPTs) in Connecticut found no increases in methadone-involved fatalities relative to other opioid-involved fatalities, despite dramatic changes in practices as a result of the COVID-19 pandemic. As a result of multiple programmatic changes, the percentage of patients receiving 28-day take-home doses for methadone treatment increased from 0.1% to 17% from July to August 2020, 14-day take-home doses increased from 14% to 27%, and the percent receiving one or no take-home doses decreased from 38% to 10%.

Brothers et al. (Apr 28, 2021). Changes in Methadone Program Practices and Fatal Methadone Overdose Rates in Connecticut during COVID-19. Journal of Substance Abuse Treatment. <https://doi.org/10.1016/j.jsat.2021.108449>

- Analysis of CDC surveillance data showed an increase in COVID-19 cases that coincided with a decrease in weekly reporting of other infectious diseases. Between 2019 and 2020, reporting of respiratory diseases declined by 51%, injection drug use-associated diseases by 47%, vector borne disease by 44%, and food/waterborne disease by 40%. Reporting of sexually transmitted diseases only declined by 10% but accounted for the largest proportion of the total difference among all reported cases (64%). Decreased reporting was observed in the majority of states (14% median decline among total cases). The authors note that they could not differentiate between a true decline in disease versus a decline in reported cases.

Crane et al. (June 7, 2021). Reporting of Infectious Diseases in the United States During the COVID-19 Pandemic. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab529>

Other Resources and Commentaries

- [Hospital-Onset COVID-19 Infection Surveillance Systems: A Systematic Review](#) – The Journal of Hospital Infection (June)

- [Spread of Misinformation About Face Masks and COVID-19 by Automated Software on Facebook](#) – JAMA Internal Medicine (June 7)
- [COVID-19 Vaccination Outcomes at a Pediatric Long-Term Care Facility](#) – Pediatric Infectious Disease Journal (July 18)
- [Health Disparities in Communities of Color During the COVID-19 Pandemic](#) – Health Equity (Dec 1, 2020)
- [The “Black Fungus” in India: The Emerging Syndemic of COVID-19-Associated Mucormycosis](#) – Annals of Internal Medicine (June)
- [Mandatory SARS-CoV-2 Vaccinations in K-12 Schools, Colleges/Universities, and Businesses](#) – JAMA (June 7)
- [The Conflict of Public Health Law and Civil Liberties The Role of Research Data and First Amendment Law](#) – The American Journal of Medicine (June)
- [Concepts and Terms for Addressing Disparities in Public Health Emergencies: Accounting for the COVID-19 Pandemic and the Social Determinants of Health in the United States](#) – Disaster Medicine and Public Health Preparedness (June)
- [The Importance of Pharmacy Partnerships in Effective COVID-19 Vaccine Distribution](#) – Disaster Medicine and Public Health Preparedness (June)
- [Overcoming COVID-19 Vaccination Resistance When Alternative Policies Affect the Dynamics of Conformism, Social Norms, and Crowding Out](#) – Proceedings of the National Academy of Sciences of the United States of America (June)
- [Are SARS-CoV-2 Human Challenge Trials Ethical](#) – JAMA Internal Medicine (June)
- [COVID-19 Vaccination of Health Care Personnel as a Condition of Employment](#) – JAMA (June 7)
- [COVID-19-Related Deaths And Excess Deaths Among Medicare Fee-For-Service Beneficiaries](#) – Health Affairs (Project Hope) (June)
- [The Impact of COVID-19 on Opioid Treatment Program \(OTP\) Services: Where Do We Go from Here](#) – Journal of Substance Abuse Treatment (Apr)
- [The Use of Statins Was Associated with Reduced COVID-19 Mortality: A Systematic Review and Meta-Analysis](#) – Annals of Medicine (Dec)

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