



2019-nCoV Literature

Situation Report (Lit

Rep)

February 22, 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

- **In US-based clinical COVID-19 vaccine trials (n = 219,555 participants), participants who were Black or African American (10.6%), American Indian or Alaska Native (0.4%), Hispanic or Latino (11.6%), or older than 65 (12.1%) were underrepresented, while women (56.0%) were overrepresented, compared to the distribution of the US population. [More](#)**
- **An investigation of SARS-CoV-2 transmission in a Georgia school district identified nine clusters of COVID-19 cases (13 educators, 32 students), two of which involved probable educator-to-educator transmission that was followed by educator-to-student transmission in classrooms. Five transmission clusters involved inadequate mask use by students. [More](#)**
- **A longitudinal cohort study of adults with laboratory-confirmed SARS-CoV-2 infection in Washington State found that persistent symptoms were common, reported by over 25% of patients and increasing with age, up to 9 months after infection. The most common persistent symptoms were fatigue and loss of sense of smell or taste (14% for both). [More](#)**

### Non-Pharmaceutical Interventions

- *[Pre-print, not peer-reviewed]* A study evaluating 15 reusable cloth masks (including face masks, neck gaiters, and bandanas), medical masks, and N95 filtering facepiece respirators as source control devices for aerosols produced during simulated coughing and exhalation found that the source control collection efficiencies for cloth masks ranged from 17 to 71% for coughing and 35 to 66% for exhalation, and filtration efficiencies ranged from 1.4% to 98%.  
*Lindsley et al. (Feb 19, 2021). A Comparison of Performance Metrics for Cloth Face Masks as Source Control Devices for Simulated Cough and Exhalation Aerosols. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.16.21251850>*

### Transmission

- An investigation of SARS-CoV-2 transmission in a school district in Georgia between December 1, 2020–January 22, 2021 identified nine clusters of COVID-19 cases involving 13 educators and 32 students at six of eight elementary schools. Two clusters involved probable educator-to-educator transmission that was followed by educator-to-student transmission in classrooms, resulting in approximately one half (15 of 31) of school-associated cases. Sixty-nine household members of persons with school-associated cases were tested, and 18 (26%) received positive results. All nine



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transmission clusters involved less than ideal physical distancing, and five involved inadequate mask use by students.

Gold et al. (Feb 22, 2021). *Clusters of SARS-CoV-2 Infection Among Elementary School Educators and Students in One School District — Georgia, December 2020–January 2021*. *MMWR. Morbidity and Mortality Weekly Report*. <https://doi.org/10.15585/mmwr.mm7008e4>

- A study examining the effect of social distancing on changes in visits to urban hotspot points of interest (POIs) in US cities from January to May 2020 found that one group of cities, including San Francisco, Seattle, and Chicago, there was a substantial decrease in hotspot POI visitors, while in another group, including Austin, Houston and San Diego, the visitors to hotspots did not greatly decrease. The proportion of visitors to some POIs (such as restaurants) remained stable during the social distancing period, while other POIs (such as grocery stores) had an increased proportion of visitors.

Li et al. (Jan 27, 2021). *Disparate Patterns of Movements and Visits to Points of Interest Located in Urban Hotspots across US Metropolitan Cities during COVID-19*. *Royal Society Open Science*. <https://doi.org/10.1098/rsos.201209>

- [Pre-print, not peer-reviewed] A study of COVID-19 in high school athletes in Wisconsin in September 2020 showed that 207 schools that reinitiated sports reported 270 COVID-19 cases among 30,074 players, for case and incidence rates of 809 cases per 100,000 players and 32.6 cases per 100,000 player-days, respectively. 115 (55%) cases were attributed to household contact, and 85 (41%) to contact outside sport or school. No difference in incidence rates between team and individual sports (IRR = 1.03) or between non-contact and contact sports (IRR = 0.53) were detected. 84% of schools required face masks while playing. For sports with >50 participating schools, there were no significant association between face mask use and COVID-19 incidence in cross-country running (IRR = 0.71), football (IRR = 1.6), boys' soccer (IRR = 2.3), or girls' volleyball (IRR = 1.4).

Sasser et al. (Feb 20, 2021). *Reported COVID-19 Incidence in Wisconsin High School Athletes During Fall 2020*. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.18.21251986>

- [Pre-print, not peer-reviewed] A systematic review and pooled analysis of SARS-CoV-2 shedding dynamics in the upper (URT) and lower (LRT) respiratory tracts found that severe COVID-19 in adults was characterized by high, persistent shedding of SARS-CoV-2 virus in the LRT. In the URT, adults with severe COVID-19 had higher respiratory viral loads 1 day post-symptom onset than adults or children with non-severe illness. Between 1-10 days post-symptom onset, SARS-CoV-2 clearance from the URT was similar among adults with severe illness compared to adults and children with non-severe illnesses. In the LRT, adults with severe COVID-19 showed higher respiratory viral loads post-symptom onset than adults with non-severe COVID-19.

Chen et al. (Feb 19, 2021). *SARS-CoV-2 Shedding Dynamics Across the Respiratory Tract Sex and Disease Severity for Adult and Pediatric COVID-19*. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.17.21251926>

## Testing and Treatment

- [Pre-print, not peer-reviewed] A study testing the ability of therapeutic monoclonal antibodies REGN10933 and REGN10987 to neutralize SARS-CoV-2 variants B.1.1.7, B.1.351, mink cluster 5, and COH.20G/677H found that REGN10987 maintained most neutralization activity against viruses with B.1.1.7, B.1.351 and mink cluster 5 spike proteins. REGN10933 was not effective against B.1.351, which may be due to the K417N and E484K mutations in the receptor binding domain, while failure of REGN10933 to neutralize mink cluster 5 spike protein is due to the Y453F mutation. The combination of REGN10933 and REGN10987 was 9.1-fold less potent against B.1.351 and 16.2-fold less potent against mink cluster 5.

Tada et al. (Feb 19, 2021). Decreased Neutralization of SARS-CoV-2 Global Variants by Therapeutic Anti-Spike Protein Monoclonal Antibodies. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.18.431897>

## Vaccines and Immunity

- A cross-sectional study of 230 US-based clinical COVID-19 vaccine trials (n = 219,555 participants) found that, compared with the US population, Black or African American (11%), American Indian or Alaska Native (0.4%), Hispanic or Latino (121.6%), and older (age 65+, 12%) individuals were underrepresented, while women (56%) were overrepresented, in trials. Black or African American participants (10%) and Hispanic or Latino participants (23%) were also underrepresented in pediatric trials. Among trials reporting race/ethnicity, 65 (49%) did not include American Indian or Alaska Native participants and 81 (60%) did not include Hawaiian or Pacific Islander participants.

Flores et al. (Feb 19, 2021). Assessment of the Inclusion of Racial/Ethnic Minority, Female, and Older Individuals in Vaccine Clinical Trials. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.37640>

- [Pre-print, not peer-reviewed] An analysis of over 300,000 RT-PCR samples collected in Israel between December 6<sup>th</sup>, 2020 and February 10<sup>th</sup>, 2021 in the general community and nursing homes found that the B.1.1.7 variant outcompeted the wildtype SARS-CoV-2 strain, representing 90% of positive tests. The variant was 45% more transmissible than wildtype. In addition, the transmission of B.1.1.7 in the population of adults over age 60 declined significantly after January 14, 2021, by which point half of people in this age group had received the first vaccine dose.

Munitz et al. (Feb 19, 2021). The Rise of SARS-CoV-2 Variant B.1.1.7 in Israel Intensifies the Role of Surveillance and Vaccination in Elderly. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.16.21251819>

- [Pre-print, not peer-reviewed] A systematic review and meta-analysis of convalescent plasma (CP) treatment indicated that CP had no effect on mortality (RR = 1.02), and that evidence was insufficient to recommend the use of CP in the treatment of moderate or severe COVID-19. The analysis identified 10 randomized controlled trials involving 11,854 patients in which convalescent plasma was compared with standard of care or other treatments. The results of five RCTs did not show significant differences in the effect on mortality or the need for invasive mechanical ventilation.

Tortosa et al. (Feb 19, 2021). Use of Convalescent Plasma in Patients with Coronavirus Disease (Covid-19) Systematic Review and Meta-Analysis. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.14.20246454>

## Clinical Characteristics and Health Care Setting

- The SARS-CoV-2 infection rate among pregnant individuals in Washington State (13.9/1,000 deliveries) was 70% higher than the rate among similarly-aged adults, which was not completely explained by universal screening at delivery. 240 pregnant patients with PCR-confirmed SARS-CoV-2 infection were identified from March 1-June 3, 2020, and the proportion of cases in pregnancy among most ethnic minority groups was 2-4 fold higher than the distribution of women in Washington State who delivered live births in 2018. The proportion of infected pregnant patients receiving medical care in a non-English language was also higher than estimates of limited English proficiency in Washington State (30.4% versus 7.6%).

Lokken et al. (Feb 9, 2021). Higher SARS-CoV-2 Infection Rate in Pregnant Patients. American Journal of Obstetrics and Gynecology. <https://doi.org/10.1016/j.ajog.2021.02.011>

- A longitudinal prospective cohort study of adults with laboratory-confirmed SARS-CoV-2 infection in Washington State, and a concurrent cohort of healthy (control) patients, found that persistent

symptoms were reported up to 9 months after initial infection by 17 of 64 patients (27%) aged 18 to 39 years, 25 of 83 patients (30%) aged 40 to 64 years, and 13 of 30 patients (43%) aged 65 years and older. Overall, 49 of 150 outpatients (33%), 5 of 16 hospitalized patients (31%), and 1 of 21 control participants (5%) reported at least 1 persistent symptom. The most common persistent symptoms were fatigue (14%) and loss of sense of smell or taste (14%). A total of 51 outpatients and hospitalized patients (31%) reported worse health-related quality of life compared with baseline vs only 4 controls and asymptomatic patients (13%).

Logue et al. (Feb 19, 2021). *Sequelae in Adults at 6 Months After COVID-19 Infection*. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2021.0830>

- Findings from the PeARL multinational cohort indicate that during the COVID-19 pandemic, children with asthma experienced fewer upper respiratory tract infections (RTIs), episodes of fever, emergency visits, hospital admissions, and asthma attacks and hospitalizations due to asthma than in the preceding year. When compared to non-asthmatic controls, children with asthma were not at increased risk of lower RTIs, episodes of fever, emergency visits or hospitalizations during the pandemic. The authors suggest that reduced exposure to asthma triggers and increased treatment adherence may explain some of the reductions in adverse health outcomes observed in the first wave of the pandemic.

Papadopoulos et al. (Feb 20, 2021). *Childhood Asthma Outcomes during the COVID-19 Pandemic: Findings from the PeARL Multi-national Cohort*. Allergy. <https://doi.org/10.1111/all.14787>

- [Pre-print, not peer-reviewed] A longitudinal assessment of SARS-CoV-2 viral loads from a sample of 65 individuals compared the viral dynamics between individuals with the B.1.1.7 variant (n=7) and non-variant strains. Individuals with the B.1.1.7 variant had a mean duration of the proliferation phase (time from first detection to peak viral load) of 5.3 days, a mean duration of the clearance phase (time from peak viral load to lower limit of detection) of 8.0 days, and mean overall duration of infection of 13.3 days. For those infected with non-B.1.1.7 strains, the mean proliferation phase was 2.0 days, the mean clearance phase was 6.2 days, and the mean duration of infection was 8.2. The peak viral concentration was similar between strains. The study did not adjust for comorbidities or other factors that may influence viral dynamics.

Kissler et al. (Feb 19, 2021). *Densely Sampled Viral Trajectories Suggest Longer Duration of Acute Infection with B.1.1.7 Variant Relative to Non-B.1.1.7 SARS-CoV-2*. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.16.21251535>

- [Pre-print, not peer-reviewed] Findings from a cohort study among people tested for SARS-CoV-2 in community settings in the UK suggest the SARS-CoV-2 B.1.1.7 variant strain is associated with a higher risk of mortality. The hazard ratio for mortality was 1.7 for the variant strain compared to infection with previously circulating strains. This represents an increase in deaths from 1.8 to 3.1 in 1000 detected cases.

Challen et al. (Feb 19, 2021). *Increased Hazard of Mortality in Cases Compatible with SARS-CoV-2 Variant of Concern 2020121 - a Matched Cohort Study*. Pre-print downloaded Feb 22 from <https://doi.org/10.1101/2021.02.09.21250937>

## Modeling and Prediction

- A study simulating aerosol dispersion in a B77-200 aircraft to estimate SARS-CoV-2 infection probability calculated that the MID-AFT (economy class) portion of the cabin exhibited the highest infection probability, with the average individual infection probability (without masks) for a 2-hour flight in this section varying from 0.1% for a 'Mild Scenario' to 2.5% for a 'Severe Scenario'. This implies that 1.9 of 75 passengers seated in this section are likely to be infected. For a 12-hour flight, the average infection probability varied from 0.8% to 10.8%. If all passengers wore masks throughout the longer flight, the average infection probability was reduced by approximately 73% for high-efficiency masks vs. 32% for low-efficiency masks.



## Other Resources and Commentaries

- [Early Rate Reductions of SARS-CoV-2 Infection and COVID-19 in BNT162b2 Vaccine Recipients](#) – The Lancet (Feb 18)
- [Follow-up Survey of US Adult Reports of Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic, September 2020](#) – JAMA Network Open (Feb 19)
- [Cohabitation COVID-19 Transmission Rates in a United States Suburban Community: A Retrospective Study of Familial Infections](#) – Public Health (Jan 16)
- [Actionable Lessons for the US COVID Vaccine Program](#) – Israel Journal of Health Policy Research (Feb 19)
- [Winning the Hearts and Minds of Young Adults in the COVID-19 Pandemic](#) – Journal of Adolescent Health (Feb 17)
- [Think of the Children: Evaluation of SARS-CoV-2 Rapid Antigen Test in Pediatric Population](#). – The Pediatric Infectious Disease Journal (Feb 17)
- [The Unexpected Dynamics of COVID-19 in Manaus Brazil Herd Immunity versus Interventions](#) – MedRxiv (Feb 19)
- [Covid-19: No Evidence That Vaccines Can Affect Fertility, Says New Guidance](#) – BMJ (Feb 19)
- [Comparative Analysis of Point-of-Care, High-Throughput and Laboratory-Developed SARS-CoV-2 Nucleic Acid Amplification Tests \(NATs\)](#) – Journal of Virological Methods (Feb 16)
- [Clarifying the Evidence on SARS-CoV-2 Antigen Rapid Tests in Public Health Responses to COVID-19](#) – The Lancet (Feb 17)
- [A Review of Persistent Post-COVID Syndrome \(PPCS\)](#) – Clinical Reviews in Allergy & Immunology (Feb 20)
- [COVID-19 and Contamination: Impact on Exposures to Alcohol-Based Hand Sanitizers Reported to Texas Poison Control Centers, 2020](#) – Clinical Toxicology (Feb 19)
- [Improving COVID-19 Vaccine Acceptance: Including Insights from Human Decision-Making under Conditions of Uncertainty and Human-Centered Design](#) – Vaccine (Feb 10)
- [ESC - a Comprehensive Resource for SARS-CoV-2 Immune Escape Variants](#) – BioRxiv (Feb 19)
- [Convalescent Plasma for Preventing Critical Illness in COVID-19 A Phase 2 Trial and Immune Profile](#) – MedRxiv (Feb 19)
- [SARS-CoV-2 Variant Evolution in the United States High Accumulation of Viral Mutations over Time Likely through Serial Founder Events and Mutational Bursts](#). – BioRxiv (Feb 19)
- [Introduction to the Special Issue on COVID-19: Economic and Financial Effects](#) – Journal of Economics and Business (Feb 15)

*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*