



2019-nCoV Literature Situation Report (Lit Rep)

March 15, 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 longitudinal cohort study of healthcare workers in England showed that both natural infection and vaccination with either the Pfizer/BioNTech or Oxford/AstraZeneca vaccine provided more than 85% protection against symptomatic and asymptomatic SARS-CoV-2 infection, including with the B.1.1.7 variant.** [More](#)
- 📄 **Among more than 3,900 people with prior COVID-19 surveyed between May 2020 and January 2021, more than half (51.4%) met criteria for moderate or greater symptoms of major depression. Symptoms of depression were less likely among older people, women, and those with less-severe COVID-19.** [More](#)
- 📄 **Compared to seasonal influenza patients treated in the hospital, patients with COVID-19 tended to be younger, had fewer comorbidities at baseline, had a longer duration of hospitalization, more frequently needed oxygen therapy and invasive ventilation, and were more frequently admitted to the ICU.** [More](#)
- 📄 **Partial vaccination with the Pfizer-BioNTech COVID-19 vaccine (>14 days after dose 1 through 7 days after dose 2) was 63% effective against SARS-CoV-2 infection among residents of two skilled nursing facilities in Connecticut that experienced outbreaks from December 2020 – February 2021.** [More](#)

Non-Pharmaceutical Interventions

- *[Pre-print, not peer-reviewed]* A survey of summer day camp directors (n = 23) in the metropolitan New York area conducted in September 2020 regarding their camps' COVID-19 policies during the summer of 2020 found that common infection prevention policies included COVID-19 screening at entry, placing camp attendees in cohorts, maximizing outdoor activities, mandating mask use when indoors, and frequent hand sanitizing. Out of 8,480 children and 3,698 staff, six staff and one camper tested positive for COVID-19. There was no secondary transmission within camps, and infection rates were lower in camps than in the counties where the camps were located.

Nachman et al. (Mar 12, 2021). Day Camp in the Time of COVID-19: What Went Right? Pre-print downloaded Mar 15 from <https://doi.org/10.1101/2021.03.11.21253309>



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Transmission

- A study of SARS-CoV-2 transmission among children and staff in summer schools in Spain during July 2020 found that the transmission rate under strict prevention measures was lower in school-like facilities than the general population. The authors compared transmission rates using a normalized effective reproduction number that accounted for the time spent in each setting. Over 2,000 participants received repeated screening, with 30 children and 9 adults identified as primary cases; 12 of their 253 close contacts (4.7%) were positive. Prevention measures included forming bubble groups, frequent handwashing, wearing facemasks, and participating in mostly outdoor activities.
Jordan et al. (Mar 12, 2021). Transmission of SARS-CoV-2 Infection among Children in Summer Schools Applying Stringent Control Measures in Barcelona, Spain. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab227>
- A study of SARS-CoV-2 household transmission in Spain found that while viral transmission was common among household members (62.3%), among the 1,040 children under age 16 included in the study, more than 70% (756) of cases were acquired from an adult, whereas only 7.7% (80) were index cases. Almost half (47.2%) were asymptomatic, 10.8% had comorbidities, 2.6% required hospitalization, and no deaths were reported. The secondary attack rate was significantly lower in households with COVID-19 pediatric index cases during the school period relative to summer ($p=0.02$), and when compared to households with adult index cases ($p=0.006$). [EDITORIAL NOTE: Directionality of transmission was uncertain in 28% of index cases and both household member and child were assigned as index cases. In addition, this analysis did not appear to fully incorporate shared exposure to a non-household source of infection.]
Soriano-Arandes et al. (Mar 12, 2021). Household SARS-CoV-2 Transmission and Children: A Network Prospective Study. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab228>
- [Pre-print, not peer-reviewed] During the first lockdown in the UK, essential healthcare workers had 4.5 times as many contacts as non-essential workers (IRR = 4.4), while essential workers in other sectors like teaching and the police force had nearly three times as many contacts (IRR = 2.8), according to a study of participants in a longitudinal birth cohort ($n = 6,807$). The number of individuals in a household increased essential social contacts by 40%. There was an average 59% reduction in the daily number of contacts for individuals who reported self-isolating compared to those who did not (from 4.1 to 1.7).
Thomas et al. (Mar 13, 2021). Limits of Lockdown Characterising Essential Contacts during Strict Physical Distancing. Pre-print downloaded Mar 15 from <https://doi.org/10.1101/2021.03.12.21253484>
- A follow-up study analyzing data from 20,280 COVID-19 patients from multiple centers in Wuhan, China who received a positive PCR result between December 2019 and August 2020 found that 2,466 (12.2%) patients tested positive again (2,238 of were asymptomatic) after being discharged from the hospital. None of the 4,079 close contacts of patients who tested positive again had a positive PCR test. The authors suggest this may provide evidence that these individuals who tested positive again were not infectious at the time of testing.
Wu et al. (Mar 15, 2021). A Follow-up Study Shows That Recovered Patients with Re-Positive PCR Test in Wuhan May Not Be Infectious. BMC Medicine. <https://doi.org/10.1186/s12916-021-01954-1>

Testing and Treatment

- *[Pre-print, not peer-reviewed]* A research team in Washington State described detection of the first cases of the B.1.1.7 SARS-CoV-2 variant in the state using a novel droplet reverse transcriptase digital-PCR (RT-ddPCR) assay that detects four mutations associated with the B.1.1.7 lineage. All four targets were detected in two specimens, and follow-up sequencing revealed 10 mutations in the S gene and phylogenetic clustering within the B.1.1.7 lineage. The authors suggest that RT-ddPCR may support efficient surveillance of SARS-CoV-2 strains.

Perchetti et al. (Mar 12, 2021). Specific Allelic Discrimination of N501Y and Other SARS-CoV-2 Mutations by DdPCR Detects B.1.1.7 Lineage in Washington State. Pre-print downloaded Mar 15 from <https://doi.org/10.1101/2021.03.10.21253321>

Vaccines and Immunity

- Partial vaccination with the Pfizer-BioNTech COVID-19 vaccine (from >14 days after dose 1 through 7 days after dose 2) was found to be to 63% effective against SARS-CoV-2 infection among residents of two skilled nursing facilities in Connecticut that experienced outbreaks from December 2020 – February 2021. Vaccine efficacy was similar (60%) when residents with prior SARS-CoV-2 infection were excluded. The retrospective cohort study determined that 97 cases of SARS-CoV-2 infection occurred during the outbreaks, including 40 (41%) at facility A and 57 (59%) at facility B. By the end of the study, most residents (304, 66%) received 2 vaccine doses, 72 (16%) received only 1 dose, and 87 (19%) were not vaccinated.

Britton et al. (Mar 15, 2021). Effectiveness of the Pfizer-BioNTech COVID-19 Vaccine Among Residents of Two Skilled Nursing Facilities Experiencing COVID-19 Outbreaks — Connecticut, December 2020–February 2021. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm7011e3>

- *[Pre-print, not peer-reviewed]* A study assessing variability in vaccine priority groups between state and federal guidance found that while state plans largely prioritized healthcare workers and residents of long-term care facilities (consistent with federal guidelines), essential workers were often excluded from state priority plans. Of 37 states that included frontline essential workers, 12 assigned them to a lower priority than recommended by federal guidance. Almost all states prioritized individuals ages 65-74 years, and most assigned them to a higher position than recommended in federal guidance. Some groups not considered high priority in federal guidelines, such as people living in congregate settings or with disabilities, were highly prioritized by 38 states.

Jain et al. (Mar 12, 2021). A Rapid Review of COVID-19 Vaccine Prioritization in the U.S. Alignment between Federal Guidance and State Practice. Pre-print downloaded Mar 15 from <https://doi.org/10.1101/2021.03.11.21253411>

- SARS-CoV-2 infection was associated with age-dependent reductions in CD8+ T cell count in a retrospective study of 447 individuals stratified by five age-group cohorts spanning ages 2 to 79. CD4+ T cell, B cell, and natural killer cell counts did not differ between age strata. Plasma C-reactive protein concentrations increased with age.

Jin et al. (Mar 10, 2021). Age Cohorts Stratified According to Age-Distributions of COVID-19 Morbidity Statistics Identify Uniquely Age-Dependent CD3 + CD8 + T-Cell Lymphocytopenia in COVID-19 Patients without Comorbidities on Admission. Aging. <https://doi.org/10.18632/aging.202691>

- Vaccination data reported to CDC indicate that among people who received the first dose of either the Moderna or Pfizer/BioNTech vaccines as of February 14, 2021, and for whom enough time had elapsed to receive the second dose, 88.0% had completed the series and 8.6% had not received the second dose. Among all people who received 2 doses, 95.6% received the second dose within the recommended time interval (Pfizer-BioNTech 1-25 days and Moderna 24-32 days since the first dose). The percentage of people who missed the second dose varied by geographic area (range = 0.0%–9.1%).

Kriss et al. (Mar 15, 2021). COVID-19 Vaccine Second-Dose Completion and Interval Between First and Second Doses Among Vaccinated Persons — United States, December 14, 2020–February 14, 2021. MMWR. Morbidity and Mortality Weekly Report.
<https://doi.org/10.15585/mmwr.mm7011e2>

- *[Pre-print, not peer-reviewed]* A longitudinal cohort study of healthcare workers (HCWs) in England showed that both natural infection and vaccination (two doses of Pfizer/BioNTech or Oxford/AstraZeneca vaccine) provided more than 85% protection against symptomatic and asymptomatic SARS-CoV-2 infection, including with the B.1.1.7 variant. No HCWs who had received both doses had symptomatic infection, and incidence was 98% lower among seropositive HCWs (aIRR = 0.02). Two vaccine doses or seropositivity reduced the incidence of any PCR-positive result with or without symptoms by 90% and 85%, respectively. Single-dose vaccination was slightly less effective and reduced the incidence of symptomatic infection by 67% and any PCR-positive result by 64%.

Lumley et al. (Mar 12, 2021). An Observational Cohort Study on the Incidence of SARS-CoV-2 Infection and B.1.1.7 Variant Infection in Healthcare Workers by Antibody and Vaccination Status. Pre-print downloaded Mar 15 from <https://doi.org/10.1101/2021.03.09.21253218>

Clinical Characteristics and Health Care Setting

- Compared to patients with seasonal influenza treated in hospital settings, patients with COVID-19 tended to be younger (median age 59 vs 66), had fewer comorbidities at baseline with a lower Charlson Comorbidity Index (mean 3.0 vs 4.0), had a longer duration of hospitalization (mean 25.9 vs 17.2 days), more frequently needed oxygen therapy (61% vs 40%) and invasive ventilation (31% vs 13%), and were more frequently admitted to the ICU (42% vs 20%). Among patients with compromised immune systems, those with COVID-19 had a higher hospital mortality compared to those with seasonal influenza (33% vs 12%).

Brehm et al. (Mar 11, 2021). Comparison of Clinical Characteristics and Disease Outcome of COVID-19 and Seasonal Influenza. Scientific Reports.
<https://doi.org/10.1038/s41598-021-85081-0>

Mental Health and Personal Impact

- Over 3,900 people with prior COVID-19 completed an internet survey between May 2020 and January 2021, with more than half (51.4%) meeting screening criteria for having moderate or greater symptoms of major depression. Depressive symptoms were less likely among older people (aOR by decade = 0.76), women (aOR = 0.72), and those with less severe COVID-19 (somewhat vs. not at all severe aOR = 2.59; very vs. not severe = 5.09). Headache was also associated with a greater likelihood of depressive symptoms (aOR = 1.33). The authors note depressive symptoms cannot be attributed to new onset of depression, but that there may be neuropsychiatric sequelae of COVID-19 infection.

Perlis et al. (Mar 12, 2021). Association of Acute Symptoms of COVID-19 and Symptoms of Depression in Adults. *JAMA Network Open*.

<https://doi.org/10.1001/jamanetworkopen.2021.3223>

Modeling and Prediction

- [Pre-print, not peer-reviewed] A transmission model suggested that non-pharmaceutical interventions (NPIs) may be safely relaxed in the US 2-9 months after the initial vaccine rollout, and that vaccinated individuals can begin to relax NPIs sooner than unvaccinated individuals, reducing deaths and peak health system burden. If a vaccination rate of 3 million doses/day were achieved, similar to the typical rollout speed of seasonal influenza vaccination, NPIs could begin to be safely relaxed in 2-3 months. With a vaccination rate of 1 million doses/day, a 6-9-month delay would be needed.

Kraay et al. (Mar 13, 2021). Modeling the Use of SARS-CoV-2 Vaccination to Safely Relax

Non-Pharmaceutical Interventions. Pre-print downloaded Mar 15 from

<https://doi.org/10.1101/2021.03.12.21253481>

- An age-structured SARS-CoV-2 transmission model fitted to data from the COVID-19 pandemic in the Netherlands suggested that if methods to reduce the effective reproduction number (R_e) of non-school-based contacts with non-school-based measures are exhausted or undesired and R_e is still near 1, school-based prevention measures may be beneficial, particularly among older students. The authors provide examples from summer and autumn 2020 as evidence that keeping schools closed after summer of 2020 likely would not have prevented the fall wave of infections, but closing schools in November 2020 may have reduced R_e .

Rozhnova et al. (Dec 12, 2021). Model-Based Evaluation of School- and Non-School-Related Measures to Control the COVID-19 Pandemic. *Nature Communications*.

<https://doi.org/10.1038/s41467-021-21899-6>

Public Health Policy and Practice

- During the first wave of the COVID-19 pandemic (between March 2 and July 30, 2020) in England and Wales, there was an overall excess mortality of 57,860 deaths, of which 50,603 (87%) appeared to be directly related to COVID-19. In care homes or hospice facilities, 61% (15,623) of the 25,611 excess deaths were related to COVID-19. Among deaths that occurred at home, most deaths were due to cancer and cardiac disease (5,963 and 2,485, respectively). In hospitals, there were 16,174 fewer non-COVID-19 related deaths than expected, with 4,088 fewer deaths due to cancer and 1,398 fewer deaths due to cardiac disease than expected. The authors suggest that avoiding hospital care for non-COVID-19 conditions, redeployment of healthcare workers, and cancellation of procedures may explain some of these trends.

Wu et al. (Feb 16, 2021). Place and Underlying Cause of Death During the COVID-19 Pandemic:

Retrospective Cohort Study of 3.5 Million Deaths in England and Wales, 2014 to 2020. *Mayo*

Clinic Proceedings. <https://doi.org/10.1016/j.mayocp.2021.02.007>

Other Resources and Commentaries

- [Immunity to SARS-CoV-2 Variants of Concern](#) – Science (Mar 12)
- [Rapid, Bottom-Up Design of a Regional Learning Health System in Response to COVID-19](#) – Mayo Clinic Proceedings (Feb 16)

- [Children and Young People Remain at Low Risk of COVID-19 Mortality](#) – The Lancet Child & Adolescent Health (Mar 10)
- [Digital Warfare Against COVID-19: Global Use of Contact-Tracing Apps](#) – Asia Pacific Journal of Public Health (Mar 14)
- [School Reopening without Robust COVID-19 Mitigation Risks Accelerating the Pandemic](#) – The Lancet (Mar 10)
- [Pandemic Response Policies' Democratizing Effects on Online Learning](#) – Proceedings of the National Academy of Sciences (Mar 16)
- [Vaccine Efficacy Probable against COVID-19 Variants](#) – Science (Mar 12)
- [Capacity of Transportation and Spread of COVID-19—an Ironical Fact for Developed Countries](#) – Environmental Science and Pollution Research (Mar 13)
- [Engagement with Daily Testing Instead of Self-Isolating in Contacts of Confirmed Cases of SARS-CoV-2](#) – MedRxiv (Mar 13)
- [FDA Authorizes First Single-Shot COVID-19 Vaccine](#) – Nature Reviews Drug Discovery (Mar 11)
- [Vaccine Hesitancy and Anti-Vaccination in the Time of COVID-19: A Google Trends Analysis](#) – Vaccine (Mar 6)
- [Influenza Vaccination in the Time of COVID-19: A National U.S. Survey of Adults](#) – Vaccine (Mar 4)
- [Access to COVID-19 Vaccines: Looking beyond COVAX](#) – The Lancet (Mar 13)
- [Covid-19: European Countries Suspend Use of Oxford-AstraZeneca Vaccine after Reports of Blood Clots](#) – BMJ (Mar 11)
- [A Geography of Risk: Structural Racism and COVID-19 Mortality in the United States](#) – American Journal of Epidemiology (Mar 12)
- [A Potential SARS-CoV-2 Variant of Interest \(VOI\) Harboring Mutation E484K in the Spike Protein Was Identified within Lineage B.1.1.33 Circulating in Brazil](#) – BioRxiv (Mar 13)
- [Rapid Review of Social Contact Patterns during the COVID-19 Pandemic](#) – MedRxiv (Mar 13)

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