



2019-nCoV Literature Situation Report (Lit Rep)

February 12, 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

- **The CDC released new guidelines for reopening K-12 schools for in-person learning, noting that evidence suggests that many K-12 schools that have strictly implemented mitigation strategies have been able to open safely for in-person instruction and remain open.** [More](#)
- **The rate of SARS-CoV-2 was twice as high among lower-secondary school teachers in Sweden who taught in schools that remained open (7.4 cases per 1,000) compared to upper-secondary teachers who taught in schools that closed during the initial phase of the COVID-19 pandemic. By contrast, primary school teachers in schools that remained open had lower rates of SARS-CoV-2 (3.8 to 4.8 cases per 1,000). Masks were rarely used in schools and exposed individuals were only quarantined if they developed symptoms.** [More](#)
- **The AstraZeneca-Oxford SARS-CoV-2 vaccine was not effective in preventing mild or moderate COVID-19 in a randomized trial conducted in South Africa where 39 of 42 COVID-19 cases were with the B.1.351 variant. The study was unable to assess protection against severe COVID-19 since no severe cases occurred in the vaccine or placebo groups.** [More](#)
- **Among hospitalized people with COVID-19, an observational study found that initiation of prophylactic anticoagulation in the first 24 hours after hospitalization was associated with a 27% lower risk of 30-day mortality and no increased risk of serious bleeding events.** [More](#)

Non-Pharmaceutical Interventions

- The CDC released new guidelines for reopening K-12 schools for in-person learning, noting that evidence suggests that many K-12 schools that have strictly implemented mitigation strategies have been able to open safely for in-person instruction and remain open.
- In addition to recommending specific disease prevention measures, the guidelines include the following statements: (1) K-12 schools should be the last settings to close after all other mitigation measures in the community have been employed, and the first to reopen when they can do so safely. Schools should be prioritized for reopening and remaining open for in-person instruction over nonessential businesses and activities. (2) In-person instruction should be prioritized over extracurricular activities including sports and school events. (3) Lower incidence of COVID-19 among younger children compared to teenagers suggests that younger students are likely to have less risk of in-school transmission due to in-person learning than older students. (4) Families of students who are at increased risk of severe illness should be given the option of virtual instruction regardless of



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the mode of learning offered. (5) Schools are encouraged to use cohorting or podding of students. (6) Schools that serve populations at risk for learning loss during virtual instruction should be prioritized for reopening. (7) When implementing phased mitigation in hybrid learning modes, schools should consider prioritizing in-person instruction for students with disabilities who may require special education and related services directly provided in school environments.

CDC. (Feb 12, 2021). *Operational Strategy for K-12 Schools through Phased Mitigation Executive Summary*. <https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/schools-childcare/K-12-Operational-Strategy-2021-2-12.pdf>

Transmission

- Sweden kept schools open for in-person instruction for younger students (primary and lower-secondary) while closing schools for older students (upper-secondary), allowing for an evaluation of school closures on SARS-CoV-2 transmission. The rate of SARS-CoV-2 infection among lower-secondary teachers (who taught children age 14 to 16 in person) was twice as high (7.4 cases per 1,000) as the rate among upper-secondary teachers (who taught children age 16 to 19 online) (4.7 per 1,000; OR=2). In contrast, primary school teachers had a lower rate of SARS-CoV-2 infection (3.8 to 4.8 cases per 1,000 for lower and upper primary school, respectively).
- Partners of lower-secondary teachers were more likely to develop COVID-19 than partners of upper-secondary teachers (OR=1.3). Parents of children attending school in-person were also more likely to test positive (OR=1.17) than parents of children whose schools remained closed to in-person instruction.
- Measures to limit transmission in schools that were open were minimal, with no quarantine of those exposed unless they showed symptoms of infection, no reductions in class-size, and face masks rarely used.

Vlachos et al. (Mar 2, 2021). *The Effects of School Closures on SARS-CoV-2 among Parents and Teachers*. *Proceedings of the National Academy of Sciences*. <https://doi.org/10.1073/pnas.2020834118>

Geographic Spread

- [pre-print; not peer-reviewed] SARS-CoV-2 RNA was found in pooled nasopharyngeal specimens collected from 3,040 people in New York City in the week ending January 25, 2020, suggesting that the virus was present in the city a month before the first officially documented case. The authors were also able to reconstruct phylogenetic relationships between seven complete genomes found in samples banked in February and March 2020, finding four distinct lineages of the virus, which suggests multiple independent introductions of SARS-CoV-2 into the city.

Hernandez et al. (Feb 11, 2021). *Before the Surge Molecular Evidence of SARS-CoV-2 in New York City Prior to the First Report*. Pre-print downloaded Feb 12 from <https://doi.org/10.1101/2021.02.08.21251303>

Testing and Treatment

- [pre-print; not peer-reviewed] Preliminary results from the RECOVERY trial, a randomized trial conducted among people hospitalized with COVID-19 in Britain, suggest that patients assigned to the interleukin (IL)-6 antibody tocilizumab group were more likely to be discharged from the hospital alive within 28 days than those receiving usual care (54% vs. 47%). Patients in the tocilizumab group were also less likely to require invasive mechanical ventilation or to die than those on usual care (33% vs. 38%).

Horby et al. (Jan 11, 2021). *Tocilizumab in Patients Admitted to Hospital with COVID-19 (RECOVERY): Preliminary Results of a Randomised, Controlled, Open-Label, Platform Trial*. Pre-

- Rauch et al. concluded that CRISPR-based methods appear to offer reliable SARS-CoV-2 screening based on testing 1,808 asymptomatic college students with both RT-qPCR and CRISPR-based assays. Of the nine samples that tested positive by RT-PCR, eight were also positive by CRISPR-based assays, which are cheaper to run and use lab-generated or off-the-shelf reagents, potentially alleviating supply chain constraints.
- The researchers also found that the viral loads detected in the asymptomatic cases resembled those seen in clinical samples, highlighting the potential for asymptomatic viral transmission.
Rauch et al. (Feb 11, 2021). Comparison of Severe Acute Respiratory Syndrome Coronavirus 2 Screening Using Reverse Transcriptase-Quantitative Polymerase Chain Reaction or CRISPR-Based Assays in Asymptomatic College Students. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.37129>
- Among 4,297 patients admitted to hospitals with lab-confirmed SARS-CoV-2 infection and no history of using anticoagulation medications, initiation of prophylactic anticoagulation in the first 24 hours after hospitalization was associated with a 27% lower risk of 30-day mortality and no increased risk of serious bleeding events. The cumulative incidence of mortality at 30 days was 14% among those who received prophylactic anticoagulation and 19% among those who did not. The anticoagulants included warfarin, intravenous heparin, low molecular weight heparin, and direct oral anticoagulants. The observational study used a propensity model to try to balance the comorbidities and other characteristics in the treated and untreated groups.
Rentsch et al. (Feb 11, 2021). Early Initiation of Prophylactic Anticoagulation for Prevention of Coronavirus Disease 2019 Mortality in Patients Admitted to Hospital in the United States: Cohort Study. BMJ. <https://doi.org/10.1136/bmj.n311>
- Results of a randomized trial among 214 patients with lab-confirmed COVID-19 suggest that high-dose zinc, high-dose ascorbic acid (vitamin C), and a combination of the two do not significantly change the duration of symptoms. Patients who received usual care without supplementation achieved a 50% reduction in symptoms at a mean of 6.7 days compared with 5.5 days for the ascorbic acid group, 5.9 days for the zinc gluconate group, and 5.5 days for the group receiving both. There was no significant difference in secondary outcomes among the treatment groups.
Thomas et al. (Feb 12, 2021). Effect of High-Dose Zinc and Ascorbic Acid Supplementation vs Usual Care on Symptom Length and Reduction Among Ambulatory Patients With SARS-CoV-2 Infection: The COVID A to Z Randomized Clinical Trial. JAMA Network Open. <https://pubmed.ncbi.nlm.nih.gov/33576820/>
- The diagnostic accuracy of 16 antibody assays was assessed with 150 samples from people with asymptomatic, mild, or moderate COVID-19. Although confidence intervals overlapped for several assays, sensitivities in descending order were: Wantai/ELISA total-Ab (97%), CUH-NOVO/in-house ELISA total-Ab (96%), Ortho/Vitros total-Ab (95%), YHLO/iFlash-IgG (94%), Ortho/Vitros-IgG (93%), Siemens/Atellica total-Ab (93%), Roche/Elecsys total-Ab (93%), Abbott/Architect-IgG (90%), Abbott/Alinity-IgG (median 88%), Diasorin/LiaisonXL-IgG (median 85%), Siemens/Vista total-Ab (81%), Euroimmun/ELISA-IgG (78%), and Snibe/Maglumi-IgG (median 78%). The proportion of seropositivity increased with time from symptom onset and with symptom severity.
Harritshøj et al. (Feb 11, 2021). Comparison of Sixteen Serological SARS-CoV-2 Immunoassays in Sixteen Clinical Laboratories. Journal of Clinical Microbiology. <https://doi.org/10.1128/JCM.02596-20>

Vaccines and Immunity

- A single dose of the Pfizer SARS-CoV-2 vaccine produced detectable anti-SARS-CoV-2 spike IgG antibodies 21 days after vaccination in 92% (n=475) of a cohort of healthcare workers in Israel, including in 92% (n=458) of people who had no history of COVID-19 infection. The 39 healthcare workers who did not respond to the first dose were older (mean age 57) than those who did (mean age 45). Among those with antibodies after vaccination, IgG titers decreased with increasing age, although the authors note that the decrease was small and of unclear clinical significance. In people with a history of COVID-19, the single vaccine dose was associated with IgG titres approximately one order of magnitude higher compared with vaccinated individuals with no prior history of COVID-19.
Abu Jabal et al. (Feb 11, 2021). Impact of Age, Ethnicity, Sex and Prior Infection Status on Immunogenicity Following a Single Dose of the BNT162b2 mRNA COVID-19 Vaccine: Real-World Evidence from Healthcare Workers, Israel, December 2020 to January 2021. Eurosurveillance. <https://doi.org/10.2807/1560-7917.ES.2021.26.6.2100096>
- *[pre-print; not peer-reviewed]* A randomized trial conducted in South Africa found the incidence of COVID-19 >14 days after the second dose of the AstraZeneca-Oxford SARS-CoV-2 vaccine was 93.6 per 1,000 person-years (23 cases among 717 participants) in the vaccine group and 73.1 per 1,000 person-years (19 cases among 750 participants) in the placebo group, yielding a vaccine efficacy of 22%. Of the COVID-19 cases, 39/42 (93%) were the B.1.351 variant, corresponding to a vaccine efficacy of 10% against this variant. Although the researchers conclude that the vaccine does not provide protection from mild to moderate infection caused by the B.1.351 variant, they were unable to make conclusions about protection from severe COVID-19 since no cases of severe disease or hospitalization were reported in either the vaccinated or placebo group.
- Analysis of serum samples collected from 25 vaccinated participants demonstrated that the vaccine did not induce neutralization activity against the B.1.351 variant.
Madhi et al. (2021). Safety and Efficacy of the ChAdOx1 NCoV-19 (AZD1222) Covid-19 Vaccine against the B.1.351 Variant in South Africa. Pre-print downloaded Feb 12 from <https://www.medrxiv.org/content/10.1101/2021.02.10.21251247v1>

Clinical Characteristics and Health Care Setting

- Among Veterans with confirmed cases of COVID-19, preexisting aspirin prescription was associated with a statistically and clinically significant decrease in overall mortality at 14-days (OR=0.38) and at 30-days (OR=0.38). Participants were matched on age, gender, and clinical characteristics for the analysis. The authors speculate that aspirin's systemic antithrombotic effects could disrupt the risk of thrombotic events related to COVID-19.
Osborne et al. (Feb 11, 2021). Association of Mortality and Aspirin Prescription for COVID-19 Patients at the Veterans Health Administration. PLOS ONE. <https://doi.org/10.1371/journal.pone.0246825>
- Evaluation for cardiac abnormalities was performed at 1 to 4 weeks after hospital discharge among 97 survivors of non-severe COVID-19 who had been hospitalized but did not require intensive care. The abnormalities identified included sinus bradycardia <50 beats per minute (7%), newly detected T-wave abnormality (8%), elevated troponin level (6%), newly detected atrial fibrillation (1%), and newly detected left ventricular systolic dysfunction with elevated NT-proBNP level (1%). *[EDITORIAL NOTE: The study also reports that >20% of participants had sinus bradycardia with a heart rate of 50-60 beats per minute, but the clinical significance of this finding was unclear.]*
Zhou et al. (Feb 11, 2021). Cardiovascular Sequelae in Uncomplicated COVID-19 Survivors. PLOS ONE. <https://doi.org/10.1371/journal.pone.0246732>

Mental Health and Personal Impact

- Analysis of data gathered during a telephone survey of Latinx families conducted in May 2020 suggested that urban families are experiencing more acute economic effects of the COVID-19 pandemic and are facing more overt racism compared to rural families. Rural workers reported fewer workplace protective measures to prevent SARS-CoV-2 transmission, in spite of industries like agriculture being labeled as essential. Parents in both groups reported significant concerns about their children's wellbeing and their financial stability.

Quandt et al. (Feb 8, 2021). COVID-19 Pandemic Among Immigrant Latinx Farmworker and Non-Farmworker Families: A Rural-Urban Comparison of Economic, Educational, Healthcare, and Immigration Concerns. New Solutions: A Journal of Environmental and Occupational Health Policy. <https://doi.org/10.1177/1048291121992468>

Other Resources and Commentaries

- [CovMT: An Interactive SARS-CoV-2 Mutation Tracker, with a Focus on Critical Variants](#) – The Lancet Infectious Diseases (Feb 8)
- [Home-Based Exercise Programmes Improve Physical Fitness of Healthy Older Adults: A PRISMA-Compliant Systematic Review and Meta-Analysis with Relevance for COVID-19](#) – Ageing Research Reviews (Feb 8)
- [Frequency of Routine Testing for Coronavirus Disease 2019 \(COVID-19\) in High-Risk Healthcare Environments to Reduce Outbreaks](#) – Clinical Infectious Diseases (Oct 26)
- [Covid-19: No Convincing Evidence for Increasing the Vaccine Dosing Interval](#) – BMJ (Feb 11)
- [Advisory Committee on Immunization Practices Recommended Immunization Schedule for Adults Aged 19 Years or Older — United States, 2021](#) – MMWR. Morbidity and Mortality Weekly Report (Feb 12)
- [Assessment of Outpatient Dispensing of Products Proposed for Treatment or Prevention of COVID-19 by US Retail Pharmacies During the Pandemic](#) – JAMA Internal Medicine (Feb 11)
- [SARS-CoV-2 Viral Variants—Tackling a Moving Target](#) – JAMA (Feb 11)
- [COVID-19 First Anniversary Review of Cases, Hospitalisation, and Mortality in the UK](#) – Expert Review of Respiratory Medicine (Feb 11)
- [Allergic Reactions and Anaphylaxis to LNP-Based COVID-19 Vaccines](#) – Molecular Therapy (Feb 4)
- [Antibody Responses to Endemic Coronaviruses Modulate COVID-19 Convalescent Plasma Functionality](#) – MedRxiv (Dec 18)
- [Synthetic Messenger RNA-Based Vaccines: From Scorn to Hype](#) – Viruses (Feb 9)
- [Maturation and Persistence of the Anti-SARS-CoV-2 Memory B Cell Response](#) – BioRxiv (Nov 17)
- [Low Zinc Levels at Admission Associates with Poor Clinical Outcomes in SARS-CoV-2 Infection](#) – Nutrients (Feb 9)
- [Covid-19: Arthritis Drug Tocilizumab Reduces Deaths in Hospitalised Patients, Study Shows](#) – BMJ (Feb 11)
- [Advisory Committee on Immunization Practices Recommended Immunization Schedule for Children and Adolescents Aged 18 Years or Younger — United States, 2021](#) – MMWR. Morbidity and Mortality Weekly Report (Feb 12)
- [Drug Repurposing for COVID-19 via Knowledge Graph Completion](#) – Journal of Biomedical Informatics (Feb 8)

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