



2019-nCoV Literature Situation Report (Lit Rep) September 1, 2020

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 outbreak of SARS-CoV-2 in China was linked to riding on a bus without outdoor air recirculation.** [More](#)
- **A ward in a Dutch nursing home with a ventilation system that mostly recirculated indoor air experienced a SARS-CoV-2 outbreak in which 81% of residents and 50% of healthcare workers tested positive over 6 days, while other wards that were ventilated with outside air report no cases.** [More](#)
- **Modeling indicates that phased reopening of college campuses (one-third of student population returning to campus per month) coupled with pre-arrival testing could reduce daily peak infections compared to pre-arrival testing only or no intervention.** [More](#)

Transmission

- Inadequate ventilation may promote aerosol transmission, as suggested by an outbreak in one of the wards of a Dutch nursing home that was recently renovated with a ventilation system that only circulates outside air when the indoor CO₂ concentration is below a certain concentration. Over 6 days, this ward reported 17 (81%) residents and 17 (50%) mask-equipped healthcare workers were positive for COVID-19, while all 106 healthcare workers and 95 residents of the other 6 wards that were ventilated with outside air tested negative (compared to a national weekly prevalence of 0.8%).

de Man et al. (Aug 28, 2020). Outbreak of COVID-19 in a Nursing Home Associated with Aerosol Transmission as a Result of Inadequate Ventilation. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciaa1270>

- In a community outbreak involving two buses with indoor air recirculation on a 100-minute roundtrip to attend a worship event in Zhejiang province, passengers in the bus that had the index case had a 34% higher risk of getting COVID-19 compared to the other bus. Dividing seats on the exposed bus into high- and low-risk zones based on proximity from the index case, individuals in high-risk zones had moderately (but nonsignificantly) higher risk for COVID-19 compared with individuals in low-risk zones.

Shen et al. (Sept 1, 2020). Community Outbreak Investigation of SARS-CoV-2 Transmission Among Bus Riders in Eastern China. JAMA Internal Medicine.

<https://doi.org/10.1001/jamainternmed.2020.5225>



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Testing and Treatment

- RT-PCR results at first clinical presentation and follow-up serology results were found to differ in about 15% of patients suffering from nonsevere COVID-19 who had a positive test by RT-PCR and/or subsequent antibody testing. A study from Liechtenstein and Switzerland found that 12 (18%) out of 66 patients with an initial negative RT-PCR test had positive follow-up serology and 3 (4%) out of 85 initially positive RT-PCR patients had negative serology. Patients with a positive RT-PCR and negative serology tended to have longer disease duration of disease.

Baron et al. (Aug 31, 2020). Frequency of Serological Non-Responders and False-Negative RT-PCR Results in SARS-CoV-2 Testing: A Population-Based Study. Clinical Chemistry and Laboratory Medicine. <https://pubmed-ncbi-nlm-nih.gov.offcampus.lib.washington.edu/32866113>

- In determining the optimal sample pooling size for large-scale SARS-CoV-2 testing, Regen et al. found that sample pooling only marginally improves testing capacities in high prevalence settings (>10%) while potentially substantially reducing costs and saving labor in low prevalence settings. The investigators derived a simple-to-use formula for calculating the optimal pool size given a target prevalence.

Regen et al. (Aug 22, 2020). A Simple Approach to Optimum Pool Size for Pooled SARS-CoV-2 Testing. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.08.063>

Clinical Characteristics and Health Care Setting

- Results from an analysis of electronic health record data from a multi-state network of community health centers found that 2% of patients underwent SARS-CoV-2 testing, of whom 28% were positive. There was a higher SARS-CoV-2 testing rate among new patients compared to established patients. Additionally, speaking Spanish, being Hispanic, being uninsured, and speaking a language other than English or Spanish were associated with higher rates of positive test results, suggesting the need for targeted, language-concordant test strategies.

Heintzman et al. (Aug 31, 2020). SARS-CoV-2 Testing and Changes in Primary Care Services in a Multistate Network of Community Health Centers During the COVID-19 Pandemic. JAMA. <https://doi.org/10.1001/jama.2020.15891>

Mental Health and Personal Impact

- Enforced home confinement due to the COVID-19 pandemic has been linked to psychosocial strain on people worldwide, with participants of a 7-language online survey (n=1,047) reporting that home confinement has triggered large decreases in social activity through family (-58%), friend/neighbors (-44%), or entertainment (-47%), as well as a 31% decrease in life satisfaction. Conversely, participants report being 25% more socially connected through digital technologies.

Ammar et al. (Aug 27, 2020). COVID-19 Home Confinement Negatively Impacts Social Participation and Life Satisfaction: A Worldwide Multicenter Study. International Journal of Environmental Research and Public Health. <https://doi.org/10.3390/ijerph17176237>

Modeling and Prediction

- *[Pre-print, not peer reviewed]* A modeling study indicates that phased reopening of college campuses (one-third of student population returning to campus each month) coupled with pre-arrival SARS-CoV-2 testing would reduce peak of daily infections compared to pre-arrival testing without phased reopening or no intervention at all. Phased reopening with pre-arrival testing could

reduce the peak of daily infections by up to 18% under highly effective mitigation strategies ($R_t = 1.25$) and by up to 64% at higher R_t values.

Rennert et al. (Aug 31, 2020). The Urgent Need for Phased University Reopenings to Mitigate the Spread of COVID-19 and Conserve Institutional Resources A Modeling Study. Pre-print downloaded Sep 1 from <https://doi.org/10.1101/2020.08.25.20182030>

Public Health Policy and Practice

- During the initial phase of the COVID-19 pandemic in Texas (April to May 2020), 47% of families (n=200) receiving routine pediatric care at federally qualified health centers screened positive for food insecurity, with 94% indicating this had begun or worsened during the pandemic. Both Hispanic ethnicity ($p < 0.001$) and WIC participation ($p = 0.03$) were associated with greater levels of food insecurity.

Abrams et al. (June 22, 2020). High Level of Food Insecurity among Families with Children Seeking Routine Care at Federally Qualified Health Centers during the Coronavirus Disease 2019 Pandemic. The Journal of Pediatrics: X. <https://doi.org/10.1016/j.ympdx.2020.100044>

- While electronic health record data from a New York university healthcare system (n=140,184) showed that the proportion of Black patients using telemedicine for urgent care increased from 2019 to 2020, Black patients were less likely than white patients to accessing care through telemedicine. The increase in utilization of telemedicine among Black patients was predominantly among women age 20-45 years.

Chunara et al. (Aug 31, 2020). Telemedicine and Healthcare Disparities: A Cohort Study in a Large Healthcare System in New York City during COVID-19. Journal of the American Medical Informatics Association. <https://doi.org/10.1093/jamia/ocaa217>

- [Pre-print, not peer reviewed] A survey of Michigan Medicine biorepository participants (n=8,407, 133 COVID-19 cases) found that risk factors for COVID-19 included African American race (6% of African American participants reported COVID-19 vs 2% for White participants), younger age (51 years among participants reporting COVID-19 vs 59 among participants not reporting COVID-19), and being an essential employee (45% vs 19%). African American participants were more likely than White participants to report being an essential worker. Self-reported precautions taken to avoid COVID-19 did not differ significantly by race.

Wu et al. (Aug 31, 2020). Exposure and Risk Factors for COVID-19 and the Impact of Staying Home on Michigan Residents. Pre-print downloaded Sep 1 from <https://doi.org/10.1101/2020.08.25.20181800>

Other Resources and Commentaries

- [Testing for Responses to the Wrong SARS-CoV-2 Antigen?](#) – The Lancet (Aug 28)
- [Cell Phone Activity in Categories of Places and Associations With Growth in Cases of COVID-19 in the US](#) – JAMA Internal Medicine (Aug 31)
- [Emergency Use Authorizations During the COVID-19 Pandemic](#) – JAMA (Aug 31)
- [Reopening K-12 Schools in the Era of COVID-19: Review of State-Level Guidance Addressing Equity Concerns](#) – The Journal of Pediatrics (Aug 28)
- [School Closure in Response to Epidemic Outbreaks: Systems-Based Logic Model of Downstream Impacts](#) – F1000Research (May 12)

- [Comprehensive Evolution and Molecular Characteristics of a Large Number of SARS-CoV-2 Genomes Reveal Its Epidemic Trends](#) – International Journal of Infectious Diseases (Aug 23)
- [Beyond Six Feet A Guideline to Limit Indoor Airborne Transmission of COVID-19](#) – medRxiv (Sept 1)
- [A Rational-Choice Model of Covid-19 Transmission with Endogenous Quarantining and Two-Sided Prevention](#) – medRxiv (Sept 1)
- [Belief in COVID-19 Conspiracy Theories Reduces Social Distancing over Time](#) – Applied Psychology: Health and Well-Being (Aug 30)
- [COVID-19 Cases and Testing in 53 Prison Systems](#) – medRxiv (Aug 31)
- [Efficacy of Localized Lockdowns in the SARS-CoV-2 Pandemic](#) – medRxiv (Aug 31)
- [The Resilient Child: Sex-Steroid Hormones and COVID-19 Incidence in Pediatric Patients](#) – Journal of the Endocrine Society (Sept 1)
- [Encouraging Participation and Cooperation in Contact Tracing](#) – National Academies of Sciences, Engineering, and Medicine (Aug 25)
- [Implications of COVID-19 Control Measures for Diet and Physical Activity, and Lessons for Addressing Other Pandemics Facing Rapidly Urbanising Countries](#) – Global Health Action (Aug 31)
- [Update to Drugs, Devices, and the FDA](#) – JACC: Basic to Translational Science (Aug 24)
- [COVID-19 Drug Repurposing: A Review of Computational Screening Methods, Clinical Trials, and Protein Interaction Assays](#) – Medicinal Research Reviews (Aug 30)

Report prepared by the UW MetaCenter 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