

2019-nCoV Literature Situation Report (Lit Rep)

November 19, 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

- **A randomized controlled trial in Denmark did not demonstrate effectiveness of adding a mask recommendation to other public health measures in reducing SARS-CoV-2 infection among participants instructed to wear masks (OR = 0.82, 95% CI 0.54-1.23), and did not investigate the broader community benefits from mask wearing. [More](#)**
- **Hospitalized COVID-19 patients exhibiting high viral loads upon admission had a 4.2-fold increase in 30-day mortality. [More](#)**
- **As of October 15, 2020, the COVID-19 fatality rate among residents of assisted living facilities across 39 states was 21%, compared to 3% of the general population. The range of facilities reporting at least one case varied across states, with Washington reporting 51%. [More](#)**

Non-Pharmaceutical Interventions

- An individually randomized controlled trial in Denmark from April to May 2020 (n=4,862) found that among participants spending at least 3 hours outside of home per day without occupational mask use and already practicing physical distancing, the intervention to recommend wearing a surgical mask when outside of home did not significantly reduce SARS-CoV-2 infection among mask wearers (OR = 0.82, 95% CI 0.54-1.23). Infection occurred in 42 participants recommended to wear masks (1.8%), compared to 53 participants in the control arm (2.1%). Accounting for loss to follow-up (19%) and mask use non-adherence (7%) yielded similar results.
- Key study limitations include 46% who reported adherence to wearing the mask as recommended and 47% who reported wearing the mask predominantly as recommended. The authors note that study findings are in the context of implementation of other public health measures, including social distancing, limiting contacts, and restaurant closures – including part of the trial occurring during lockdown. [EDITORIAL NOTE: This trial evaluated only the outcome of infections among people instructed to wear a mask, and not the effect of wearing masks on decreasing transmission to other people.]

Bundgaard et al. (Nov 18, 2020). Effectiveness of Adding a Mask Recommendation to Other Public Health Measures to Prevent SARS-CoV-2 Infection in Danish Mask Wearers. Annals of Internal Medicine. <https://doi.org/10.7326/M20-6817>

Transmission

- Serologic and phylogenetic investigation of three mink farms in Denmark indicate rapid SARS-CoV-2 transmission among mink, as well as human-to-mink and mink-to-human transmission. Samples

from 30 mink on 3 farms indicate that seroprevalence ranged from 66% to >95%, with one mink farm jumping from 3% to >95% within 8 days. Sequencing of SARS-CoV-2 samples from each mink farm suggests a human index case in one mink farm, followed by mink-to-human transmission, which spread to mink in other farms via human-to-human transmission.

Hammer et al. (Feb 18, 2021). SARS-CoV-2 Transmission between Mink (Neovison vison) and Humans, Denmark. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2702.203794>

- *[Pre-print, not peer reviewed]* An outbreak investigation in a group of schools in Italy from September to October 2020 detected an overall attack rate of 3.9%; 10 student and 2 teacher primary cases infected 39 secondary cases among 994 students included in the investigation. The attack rate in secondary schools was 6.6%, with the largest cluster of 22 secondary cases occurring in a middle school. Meanwhile, the attack rate in primary schools was 0.4%, with no secondary transmission occurring in early childhood educational settings.
Larosa et al. (Nov 18, 2020). Secondary Transmission of COVID-19 in Preschool and School Settings after Their Reopening in Northern Italy a Population-Based Study. Pre-print downloaded Nov 19 from <https://doi.org/10.1101/2020.11.17.20229583>
- *[Pre-print, not peer reviewed]* Analysis of epidemic characteristics during and after lockdowns from Rhode Island, Massachusetts, and Pennsylvania - states that successfully reopened in May 2020 without subsequent summer waves - showed changes in age-dependent mixing patterns. Using several daily data streams and mobility data, population-average mixing rates dropped by >50% during lockdown. However, elderly individuals were less able to reduce contacts during lockdown than younger individuals, which potentially led to concentrated outbreaks among elderly congregate settings.
Wikle et al. (Nov 18, 2020). SARS-CoV-2 Epidemic after Social and Economic Reopening in Three US States Reveals Shifts in Age Structure and Clinical Characteristics. Pre-print downloaded Nov 19 from <https://doi.org/10.1101/2020.11.17.20232918>
- Analysis using data from a public health surveillance database including residents of the Winnipeg Health Region of Canada estimated a household secondary attack rate of 14.7%. Out of 279 contacts from 102 primary cases in unique households, 41 contacts from 25 households became secondary cases within 14 days of exposure to the primary case.
Wilkinson et al. (Nov 17, 2020). Secondary Attack Rate of COVID-19 in Household Contacts in the Winnipeg Health Region, Canada. Canadian Journal of Public Health. <https://doi.org/10.17269/s41997-020-00451-x>

Geographic Spread

- Analysis of county-level predictors over 16 time points in New York State showed that as COVID-19 incidence peaked in March and declined through June 2020, areas with the highest infection growth rates shifted from the New York metropolitan areas toward the western and northern areas. Counties with higher proportions of people age 45+ years, people living alone in residential houses, and crowded residential houses were associated with growing incidence.
Xiao. (Nov 19, 2020). Predicting Spatial and Temporal Responses to Non-Pharmaceutical Interventions on COVID-19 Growth Rates across 58 Counties in New York State: A Prospective Event-Based Modeling Study on County-Level Sociological Predictors. JMIR Public Health and Surveillance. <https://doi.org/10.2196/22578>

Vaccines and Immunity

- [Pre-print, not peer reviewed] In a systematic review and meta-analysis of 338 seroprevalence studies representing 50 countries and 2.3 million participants, global SARS-CoV-2 seroprevalence in the general population was low (median 3.2%, IQR 1.0-6.4%) through August 2020, suggesting that most of the population still remains susceptible to infection. Seroprevalence was higher among Black and Asian people than white people. Older age (65 years or older) and being a health worker were associated with higher seroprevalence. National seroprevalence estimates were 11.9 times higher than corresponding SARS-CoV-2 cumulative incidence.

Bobrovitz et al. (Nov 18, 2020). Global Seroprevalence of SARS-CoV-2 Antibodies a Systematic Review and Meta-Analysis. Pre-print downloaded Nov 19 from <https://doi.org/10.1101/2020.11.17.20233460>

- A study evaluating novel ELISA-based assays to detect SARS-CoV-2 antibodies (including antibody sandwich ELISA and three isotype-specific assays) found that among convalescent patients (n=350), IgM, IgA, and IgG antibody responses against the receptor-binding domain significantly correlated with disease severity.

Hansen et al. (Nov 18, 2020). SARS-CoV-2 Antibody Responses Are Correlated to Disease Severity in COVID-19 Convalescent Individuals. The Journal of Immunology. <https://doi.org/10.4049/jimmunol.2000898>

Clinical Characteristics and Health Care Setting

- In a retrospective study of 181 patients admitted to UW Medicine hospitals, patients with a high SARS-CoV-2 viral load (Cycle threshold < 22) upon hospital admission had a 4.2-fold increase in odds of 30-day mortality. Meanwhile, those who were IgG seropositive had non-significantly lower odds of mortality (OR 0.43, 95% CI: 0.15-1.26). The authors suggest both virologic and serologic testing could serve as biomarkers for disease course.

Bryan et al. (Nov 3, 2020). SARS-CoV-2 Viral Load on Admission Is Associated with 30-Day Mortality. Open Forum Infectious Diseases. <https://doi.org/10.1093/ofid/ofaa535>

- Out of 100 air samples collected over 2 months in acute care hospital rooms hosting COVID-19 patients, 11 samples were confirmed positive via PCR and 0 samples were infectious via viral cultures. No correlation between patient clinical characteristics (e.g., length of hospital stay) and detection of airborne viral RNA was observed.

Dumont-Leblond et al. (Nov 18, 2020). Low Incidence of Airborne SARS-CoV-2 in Acute Care Hospital Rooms with Optimized Ventilation. Emerging Microbes & Infections. <https://doi.org/10.1080/22221751.2020.1850184>

Public Health Policy and Practice

- Analysis of nationwide transit demand data from a widely used navigation app show that approximately half of transit systems experienced declines in demand before local community spread of COVID-19, but few transit systems reached their minimal demand before community spread was sustained. Communities with greater proportions of essential workers and African Americans or Hispanics tended to maintain higher levels of minimal demand.

Liu et al. (Nov 18, 2020). The Impacts of COVID-19 Pandemic on Public Transit Demand in the United States. PLOS ONE. <https://doi.org/10.1371/journal.pone.0242476>

- *[Pre-print, not peer reviewed]* A prospective cohort study of Qatari professional football (soccer) players, staff, and officials (n=1337) during a truncated football season with a tailored infection control program identified 85 cases (36 players) with SARS-CoV-2 infection. Incidence of symptomatic COVID-19 was similar to the general population. Infection control measures included regular PCR testing every 3-5 days, serology testing every 4 weeks, and a signed pledge to adhere to home quarantine and to limit social contacts. More than half of the people who developed infections were asymptomatic, and contact tracing identified social contacts and family as the most common infection sources.

Schumacher et al. (Nov 18, 2020). Resuming Professional Football during the Covid-19 Pandemic in a Country with High Infection Rates: A Prospective Cohort Study. Pre-print downloaded Nov 19 from <https://doi.org/10.1101/2020.11.17.20233023>

- Approximately 203,792 COVID-19 cases were diagnosed and reported among New York City residents between February and June 2020. The crude fatality rate was 9.2% among all cases and 26.6% among hospitalized cases. Among confirmed cases 75 years or older, the fatality rate was 38.3%. After adjusting for age, COVID-19 incidence, and hospitalization rates, mortality was highest among Black/African American and Hispanic/Latino people and people living in neighborhoods with high poverty.

Thompson et al. (Nov 20, 2020). COVID-19 Outbreak — New York City, February 29–June 1, 2020. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm6946a2>

- Based on data from health departments in 39 U.S. states, 6,440 (22%) of assisted living facilities (ALFs) reported at least one case of COVID-19 among staff or residents by October 15, 2020. 21% of ALF residents with COVID-19 died, compared to 3% among the general public: 5,469 COVID-19 deaths were reported in residents and 46 in staff members. The range of ALFs reporting COVID-19 cases varied considerably between states, with 1% of ALFs in Iowa and 93% of ALFs in Connecticut reporting at least one case. In Washington State, 274 (51%) of ALFs reported at least one case.

Yi et al. (Nov 20, 2020). Characterization of COVID-19 in Assisted Living Facilities — 39 States, October 2020. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm6946a3>

Other Resources and Commentaries

- [Monocyte CD169 Expression as a Biomarker in the Early Diagnosis of COVID-19](#) – The Journal of Infectious Diseases (Nov 18)
- [Public Perceptions of Non-Adherence to COVID-19 Measures by Self and Others in the United Kingdom](#) – MedRxiv (Nov 18)
- [Pre-Symptomatic Detection of COVID-19 from Smartwatch Data](#) – Nature Biomedical Engineering (Nov 18)
- [SARS-CoV-2 Antibody Testing: Important but Imperfect](#) – Clinical Infectious Diseases (Nov 18)
- [A Proposed Framework and Timeline of the Spectrum of Disease Due to SARS-CoV-2 Infection](#) – JAMA (Nov 18)
- [Audio Interview: Covid-19 in Europe and New Information on Vaccines](#) – New England Journal of Medicine (Nov 19)
- [The Role of Masks in Mitigating the SARS-CoV-2 Pandemic: Another Piece of the Puzzle](#) – Annals of Internal Medicine (Nov 18)

- [Engineered Antibodies to Combat Viral Threats](#) – Nature (Nov 18)
- [Complications in Patients With COVID-19](#) – JAMA Cardiology (Nov 18)
- [Rapid Response to an Outbreak in Qingdao, China](#) – New England Journal of Medicine (Nov 18)
- [COVID-19 Stats: COVID-19 Incidence, by Urban-Rural Classification — United States, January 22–October 31, 2020](#) – MMWR. Morbidity and Mortality Weekly Report (Nov 20)

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