



## 2019-nCoV Literature Situation Report (Lit Rep)

December 3, 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

- **The Advisory Committee on Immunization Practices recommends that health care personnel and residents of long-term care facilities be offered COVID-19 vaccination in the initial phase of the US vaccination program.** [More](#)
- **Surveys from across 13 countries indicate an increase in the proportion of people who plan to refuse COVID-19 vaccination from 12% in March-May to 20% in June-October.** [More](#)
- **The risk stratification based on questionnaire when pooling samples for PCR testing for SARS-CoV-2 increased lab efficiency by 91% relative to single PCR testing, compared to a 71% increase for randomly pooled samples.** [More](#)

### Non-Pharmaceutical Interventions

- A pediatric hospital in South Auckland, New Zealand observed a dramatic decrease in cases of influenza and respiratory syncytial virus after COVID-19 lockdown measures were implemented in March 2020, compared to prior seasons. Additionally, case reductions were sustained after gradual reopening beginning in April 2020. While annual hospitalizations for lower respiratory tract infections ranged from 1,486 to 2,046 during 2015-2019, only 268 admissions were reported in 2020, despite similar rates of clinician-directed PCR tests.

*Trenholme et al. (Dec 2, 2021). COVID-19 and Infant Hospitalizations for Seasonal Respiratory Virus Infections, New Zealand, 2020. Emerging Infectious Diseases.*

<https://doi.org/10.3201/eid2702.204041>

### Testing and Treatment

- A prospective study of pooled saliva specimens for RT-PCR testing for SARS-CoV-2 yielded lower sensitivity compared to nasopharyngeal (NP) or mid-turbinate (MT) swabs, but adequate detection in samples with high viral loads. Saliva specimens had 81.8% positive agreement with NP swabs, which rose to 90.0% positive agreement among samples with moderate to high viral load (Ct ≤34) in an analysis comparing 459 paired NP and MT swabs from 449 symptomatic individuals.

*Barat et al. (Dec 1, 2020). Pooled Saliva Specimens for SARS-CoV-2 Testing. Journal of Clinical Microbiology.* <https://doi.org/10.1128/JCM.02486-20>

- Questionnaire-based risk stratification could further enhance the efficiency of pooling strategies for SARS-CoV-2 lab testing. Schneitler et al. pooled samples using responses to a short questionnaire about clinical symptoms, travel history, and contact with people with confirmed COVID-19. In a



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sample (n=25,978) with overall SARS-CoV-2 prevalence of 0.9%, randomly pooled samples had higher pool positivity and individual SARS-CoV-2 prevalence than questionnaire-based pooled samples (14.6% vs 1.2% and 3.4% vs 0.1%, respectively). An individual participant result needed an average of 0.27 PCR tests with random pooling compared to 0.09 tests with questionnaire-based pooling, translating to a lab capacity increase of 73% for random pooling and 91% for questionnaire-based pooling, compared to single PCR testing.

*Schneitler et al. (Nov 18, 2020). Simple Questionnaires to Improve Pooling Strategies for SARS-CoV-2 Laboratory Testing. Annals of Global Health. <https://doi.org/10.5334/aogh.3126>*

- A study across 173 countries and territories representing 99% of global COVID-19 cases concluded that among COVID-19 interventions, PCR testing had the greatest association with reducing the average reproduction number ( $R_0$ ). Though testing intensity showed the largest variation among all interventions, a ten-fold increase in the ratio of tests to new cases reduced the  $R_0$  by 9% across a range of testing levels. Other interventions such as school closures and face mask use were associated with reduced  $R_0$ , but were not statistically significant. [EDITORIAL NOTE: Time-series analyses such as this have limited ability to attribute effects to a specific intervention when multiple interventions occur simultaneously. Other interventions that may be strongly correlated with testing intensity may be more difficult to measure. The impact attributed to testing may be due to a combination of interventions.]

*Rannan-Eliya et al. (Dec 2, 2020). Increased Intensity Of PCR Testing Reduced COVID-19 Transmission Within Countries During The First Pandemic Wave. Health Affairs. <https://doi.org/10.1377/hlthaff.2020.01409>*

## Vaccines and Immunity

- Interim guidance from The Advisory Committee on Immunization Practices (ACIP) recommends that both 1) health care personnel and 2) residents of long-term care facilities (LTCF) be offered a COVID-19 vaccine in the initial phase of the vaccination program. As of December 1, approximately 245,000 COVID-19 cases and 858 COVID-19-associated deaths had been reported among U.S. health care personnel, and as of November 15, approximately 500,000 COVID-19 cases and 70,000 associated deaths had been reported among residents of skilled nursing facilities, a subset of LTCFs.

*Dooling et al. (Dec 3, 2020). The Advisory Committee on Immunization Practices' Interim Recommendation for Allocating Initial Supplies of COVID-19 Vaccine — United States, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6949e1>*

- Exposure to SARS-CoV-2 could induce virus-specific T-cell responses without inducing virus-specific antibody responses. In a study including 11 SARS-CoV-2 serodiscordant couples staying in the same household in which 1 of the 2 partners had lab-confirmed and mild symptomatic COVID-19, the index partners who were initially infected displayed SARS-CoV-2-specific antibody and T-cell responses up to 102 days after symptom onset. However, among their respective partners, none developed antibodies but 4 out of the 6 who developed COVID-19 symptoms displayed positive T-cell responses. The authors conclude that these T-cell responses provide evidence that transient or anatomically contained SARS-CoV-2 infection may have occurred and that T-cell responses could be more sensitive indicators of SARS-CoV-2 exposure than antibodies.

*Gallais et al. (Nov 30, 2021). Intrafamilial Exposure to SARS-CoV-2 Associated with Cellular Immune Response without Seroconversion, France. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2701.203611>*

- Using machine learning predictions and clinical data from convalescent COVID-19 patients, Liu et al. developed a vaccine design that would incorporate enough pathogen components to elicit an immune response across a diverse population of people. The study also indicates that current vaccine candidates, which are largely based only on the SARS-CoV-2 spike protein and receptor binding domain (RBD), may have gaps in their effectiveness to elicit an immune response that depend on a person's genetic ancestry.

*Liu et al. (Nov 27, 2020). Predicted Cellular Immunity Population Coverage Gaps for SARS-CoV-2 Subunit Vaccines and Their Augmentation by Compact Peptide Sets. Cell Systems.*

<https://doi.org/10.1016/j.cels.2020.11.010>

- *[Pre-print, not peer reviewed]* A systematic review and meta-analysis of 28 nationally representative samples from 13 countries (n=58,656) found that although a majority of people intend to be vaccinated for COVID-19, an increasing percentage of people are intending to refuse vaccination. Estimates of people intending to refuse vaccination rose from 12% in March-May to 20% in June-October. Being female, younger, having lower income or education level, and belonging to an ethnic minority group were consistently associated with being less likely to intend to vaccinate.

*Robinson et al. (Dec 3, 2020). International Estimates of Intended Uptake and Refusal of COVID-19 Vaccines A Rapid Systematic Review and Meta-Analysis of Large Nationally Representative Samples. Pre-print downloaded Dec 3 from <https://doi.org/10.1101/2020.12.01.20241729>*

## Modeling and Prediction

- *[Pre-print, not peer reviewed]* A simulation study of classroom based on longitudinal survey data collected from four European countries (n=507 classrooms, 12,291 students) found that while establishing student cohorts that minimize out-of-school contact between different cohorts would be most effective in preventing spread of SARS-CoV-2, cohorting by approximation of social networks also performed well. Network-based cohorting outperformed dividing classrooms by gender. For all cohorting strategies, schedules with alternating weeks of instruction were most effective.

*Kaiser et al. (Dec 2, 2020). Social Network-Based Strategies for Classroom Size Reduction Can Help Limit Outbreaks of SARS-CoV-2 in High Schools. A Simulation Study in Classrooms of Four European Countries. Pre-print downloaded Dec 3 from*

<https://doi.org/10.1101/2020.11.30.20241166>

- Weitz et al. show that compared to more established models that predict a symmetric peak in COVID-19 cases and deaths, accounting for awareness-driven behavior in models better fit with the asymmetrical peaks observed in actual COVID-19 fatality data, which typically show a plateau after a peak. The authors suggest that their model highlights the potential role of behavior fatigue in complying with interventions.

*Weitz et al. (Dec 1, 2020). Awareness-Driven Behavior Changes Can Shift the Shape of Epidemics Away from Peaks and toward Plateaus, Shoulders, and Oscillations. Proceedings of the National Academy of Sciences. <https://doi.org/10.1073/pnas.2009911117>*

## Public Health Policy and Practice

- An Arkansas Department of Health report from June 2020 reported that Marshallese and Hispanic or Latino (Hispanic) persons in Benton and Washington counties accounted for 64% of COVID-19 cases and 57% of associated deaths despite representing approximately 19% of the population. Focus group discussions and key-informant interviews revealed lack of relevant health communications,

limited coordination between stakeholders, mistrust of the medical system, financial need to work, and household density as drivers of disparities.

*Center et al. (Dec 4, 2020). Multidisciplinary Community-Based Investigation of a COVID-19 Outbreak Among Marshallese and Hispanic/Latino Communities — Benton and Washington Counties, Arkansas, March–June 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6948a2>*

- Widespread SARS-CoV-2 testing in homeless shelters in Chicago during March to May 2020 showed higher prevalence among residents (30%; 431 of 1435) than among staff (15%; 41 of 282). Among residents, prevalence was higher among those sharing a room with more people, while current smoking was associated with lower prevalence. At the facility level, higher resident turnover was associated with higher prevalence, while an increase in the number of private bathrooms was associated with lower prevalence.

*Ghinai et al. (Oct 12, 2020). Risk Factors for Severe Acute Respiratory Syndrome Coronavirus 2 Infection in Homeless Shelters in Chicago, Illinois—March–May, 2020. Open Forum Infectious Diseases. <https://doi.org/10.1093/ofid/ofaa477>*

- During the first 7 months (March–October) of the COVID-19 epidemic in Denver, Colorado, a majority of adult COVID-19 cases (55%), hospitalizations (62%), and deaths (51%) were among Hispanic adults, despite Hispanic individuals representing only 25% of the population. Compared to symptomatic non-Hispanic adults, a higher proportion of symptomatic Hispanic adults reported working while ill, working in essential industries, living in households of 5 or more people, and delays in testing after symptom onset.

*Podewils et al. (Dec 4, 2020). Disproportionate Incidence of COVID-19 Infection, Hospitalizations, and Deaths Among Persons Identifying as Hispanic or Latino — Denver, Colorado March–October 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6948a3>*

- [Pre-print, not peer reviewed] Examining individual level-death certificate and surveillance data in Michigan from March to October 2020 shows that among 6,056 COVID-19 related deaths, Black individuals experienced 3.6-times the mortality rate compared to white individuals. Among those under 65 years old without comorbidities, Black individuals had a mortality rate 12.6-times that of white individuals. When stratified by age, sex, and comorbidities, Black individuals were at higher risk of COVID-19 mortality compared to their white peers in all strata.

*Parpia et al. (Dec 2, 2020). Racial Disparities in COVID-19 Mortality across Michigan United States. Pre-print downloaded Dec 3 from <https://doi.org/10.1101/2020.11.30.20241133>*

#### Other Resources and Commentaries

- [The COVID-19 Herd Immunity Threshold Is Not Low: A Re-Analysis of European Data from Spring of 2020](#) – MedRxiv (Dec 3)
- [SARS-CoV-2 Antibody Responses in Children with MIS-C and Mild and Severe COVID-19](#) – Journal of the Pediatric Infectious Diseases Society (Dec 2)
- [A Comprehensive Approach to Palliative Care during the Coronavirus Pandemic](#) – Journal of Palliative Medicine (Dec 1)
- [“When Will We Have a Vaccine?” — Understanding Questions and Answers about Covid-19 Vaccination](#) – New England Journal of Medicine (Dec 3)
- [A Multicenter, Randomized, Open-Label, Controlled Trial to Evaluate the Efficacy and Tolerability of Hydroxychloroquine and a Retrospective Study in Adult Patients with Mild to Moderate Coronavirus Disease 2019 \(COVID-19\)](#) – PLOS ONE (Dec 2)

- [Obesity Is Associated with Increased Severity of Disease in COVID-19 Pneumonia: A Systematic Review and Meta-Analysis](#) – European Journal of Medical Research (Dec 2)
- [Convalescent Plasma in COVID-19. Mortality-Safety First Results of the Prospective Multicenter FALP 001-2020 Trial](#) – MedRxiv (Dec 2)
- [No-Fault Compensation for Vaccine Injury — The Other Side of Equitable Access to Covid-19 Vaccines](#) – New England Journal of Medicine (Dec 3)
- [High Rate of Major Drug–Drug Interactions of Lopinavir–Ritonavir for COVID-19 Treatment](#) – Scientific Reports (Dec 1)
- [Covid-19: UK Approves Pfizer and BioNTech Vaccine with Rollout Due to Start next Week](#) – BMJ (Dec 2)

*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*