

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 qualitative study of COVID-19 vaccine trial perceptions among people from ethnic minority groups and vulnerable communities in the UK found that while many people believed that clinical research was necessary, most interviewees expressed extreme discomfort with the idea of attending a hospital for a vaccine trial. [More](#)**
- **Among women with COVID-19, pregnant women were at higher risk than nonpregnant women for admission to the ICU, invasive ventilation, and mortality. [More](#)**
- **Short-term recurrence of positive SARS-CoV-2 RNA was not likely to be a relapse of COVID-19 among patients who re-tested positive for SARS-CoV-2 RNA after being discharged from the hospital. [More](#)**

Non-Pharmaceutical Interventions

- An investigation of filtration performance of different filtering facepiece respirators (FFRs) found high disparities between FFRs purchased by healthcare establishments. NIOSH-approved certification offered good efficiency compared to non NIOSH-approved FFRs. Furthermore, inspecting FFRs visually was not helpful in determining if the product was counterfeit or had defects. *Brochot et al. (Oct 30, 2020). How Effective Is the Filtration of 'KN95' Filtering Facepiece Respirators During the COVID-19 Pandemic? Annals of Work Exposures and Health. <https://doi.org/10.1093/annweh/wxaa101>*

Transmission

- *[Pre-print, not peer-reviewed]* Genomic sequencing indicated very close similarity between SARS-CoV-2 viruses isolated from two individuals who had separate exposures to the White House but did not share any other known exposures, indicating the White House events and/or personnel were the most likely source of both infections. While the authors conclude the White House was the most likely source for both infections, they could not rule out the possibility that the viral lineage may have been circulating more broadly in the Washington, DC area and that both individuals independently acquired infections from other sources. *Bedford et al. (Nov 1, 2020). Viral Genome Sequencing Places White House COVID-19 Outbreak into Phylogenetic Context. Pre-print downloaded Nov 2 from <https://doi.org/10.1101/2020.10.31.20223925>*

- A study using differential equations to describe the evolution of respiratory droplets, using SARS-CoV-2 as an example, found that there is no apparent size boundary between expelled particles that fall to the ground quickly versus those that can remain airborne. The simulation showed that after ten seconds of a cough, 5.1% of virus-containing particles were below the 5µm threshold used to designate classification of “airborne”, and 59.5% of these virus-containing particles were able to remain airborne. Masking, however, can effectively block around 94% of the viruses that may otherwise remain airborne after 10 seconds. The authors challenge the dichotomy of using aerosols and droplets to separate the modes of disease transmission.

Wang et al. (Oct 30, 2020). Modeling the Load of SARS-CoV-2 Virus in Human Expelled Particles during Coughing and Speaking. PLOS ONE. <https://doi.org/10.1371/journal.pone.0241539>

- *[Pre-print, not peer-reviewed]* A longitudinal study that sampled high-touch non-porous surfaces in Massachusetts during an outbreak of COVID-19 from April to June found the estimated risk of infection from touching a contaminated surface was less than 5 in 10,000, suggesting fomites play a minimal role in community spread. Overall, 29 (8.3%) of 348 surface swab samples were positive for SARS-CoV-2, including crosswalk buttons, trash can handles, and door handles of essential business entrances. The weekly percentage of positive samples (33 unique surfaces per week) best predicted variation in city-level COVID-19 cases using a 7-day lead time. The authors suggest that environmental surveillance of high-touch surfaces could be useful to warn of COVID-19 case trends.

Harvey et al. (Nov 1, 2020). Longitudinal Monitoring of SARS-CoV-2 RNA on High-Touch Surfaces in a Community Setting. MedRxiv. <https://doi.org/10.1101/2020.10.27.20220905>

Testing and Treatment

- Residual SARS-CoV-2 RNA load was not substantially associated with ongoing virus replication in a prospective, multicenter observational study of residual RNA load. Nasal swab samples were collected from patients (n = 387) who clinically recovered from COVID-19. The median quantification cycle (Cq) was 37.0, and overall, 2.3% of RT-PCR positive samples with low or very low RNA levels were able to transmit infection in cell monolayers. The authors argue that their results raise questions about the clinical importance of highly sensitive RT-PCR methods, as positive RNA tests may not indicate that patients are still contagious.

Piralla et al. (Oct 2020). Residual SARS-CoV-2 RNA in Nasal Swabs of Convalescent COVID-19: Is Prolonged Quarantine Always Justified? International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.10.072>

- A cross-sectional study in a university setting in England indicated that universal, repeated self-testing for COVID-19 using PCR was both acceptable, and could be feasible. Staff and student participants (n = 1053) were given four PCR swabs to self-administer over 2 weeks. 76% participants provided at least one swab, among whom 86% provided all four. Of those who submitted at least one swab, none had a positive test (6 participants with one inconclusive result). Mean acceptability score was 4.5/5 (5 was most positive) among the 57% of participants who responded to a post-testing survey.

Gillam et al. (Oct 30, 2020). Norwich COVID-19 Testing Initiative Pilot: Evaluating the Feasibility of Asymptomatic Testing on a University Campus. Journal of Public Health. <https://doi.org/10.1093/pubmed/fdaa194>

Vaccines and Immunity

- A retrospective study of patients who tested positive for SARS-CoV-2 RNA after being discharged from the hospital found that short-term recurrence of positive SARS-CoV-2 RNA was common (15%), and not associated with new symptoms. Risk of onward transmission among those with recurrence was low. Of 1282 discharged patients, almost 15% retested positive during 28-day follow-up, which prompted re-hospitalization. Patients with a recurrent positive test tended to be younger (34 vs. 45 years) and had a higher proportion of moderate symptoms during their first hospitalization than those who continued to test negative. All patients hospitalized twice had normal blood results and showed no new signs of COVID-19; none of their close contacts developed COVID-19.

Chen et al. (Oct 1, 2020). Epidemiological and Clinical Findings of Short-Term Recurrence of Severe Acute Respiratory Syndrome Coronavirus 2 Ribonucleic Acid Polymerase Chain Reaction Positivity in 1282 Discharged Coronavirus Disease 2019 Cases: A Multicenter, Retrospective, Observational Study. Open Forum Infectious Diseases. <https://doi.org/10.1093/ofid/ofaa432>

- A qualitative study investigating the perceptions of vaccine trials among people from ethnic minority and vulnerable communities in the UK found that while there was overall agreement that clinical research was necessary, most interviewees expressed extreme discomfort with the idea of attending a hospital for a vaccine trial. Participants highlighted concerns about fear of contracting COVID-19, lack of support if problems arose, and language barriers. Participants also reported suspicion of hidden agendas behind vaccines and expressed the need for transparency and vaccine information that was culturally appropriate.

Ekezie et al. (Oct 30, 2020). The Views of Ethnic Minority and Vulnerable Communities towards Participation in COVID-19 Vaccine Trials. Journal of Public Health. <https://doi.org/10.1093/pubmed/fdaa196>

Clinical Characteristics and Health Care Setting

- A study that used results from the Institute of Health Metrics and Evaluation model to estimate the number of hospitalized and ICU patients per physician expected at the peak of the pandemic in each state found that while most states should have sufficient physician capacity to handle the surge, some states in the Midwest will experience high ratios that may adversely impact patient outcomes. The median number of hospitalized patients per physician ranged from 13 to 18 (patient to physician ratios above 15:1 have been associated with poor outcomes). Ratios decreased if the physician pool was broadened to include physicians without recent experience treating hospitalized patients.

Bhatla and Ryskina. (Dec 2020). Hospital and ICU Patient Volume per Physician at Peak of COVID Pandemic: State-Level Estimates. Healthcare. <https://doi.org/10.1016/j.hjdsi.2020.100489>

- Among infants born to mothers with laboratory-confirmed SARS-CoV-2 infection (n=3,912), 12.9% of live births were preterm (<37 weeks), higher than the reported 10.2% in the general population in 2019. Perinatal infection was infrequent and occurred primarily among infants whose mother had SARS-CoV-2 infection identified within 1 week of delivery. The authors note that since most maternal infections occurred in the third trimester, more research is needed to assess effects of infections in early pregnancy, as well the longer-term outcomes of exposed infants. The data come from 16 health jurisdictions reporting to SET-NET.

Woodworth et al. (2020). Birth and Infant Outcomes Following Laboratory-Confirmed SARS-CoV-2 Infection in Pregnancy — SET-NET, 16 Jurisdictions, March 29 – October 14, 2020. MMWR. <http://dx.doi.org/10.15585/mmwr.mm6944e2>

- Pregnant women with COVID-19 in the US were significantly more likely than nonpregnant women to be admitted to the ICU (aRR = 3.0), receive invasive mechanical ventilation (aRR = 2.9), and to die (aRR = 1.7) after adjusting for age, race/ethnicity, and underlying medical conditions. Although the absolute risks for severe outcomes were low, pregnant women had higher risks of severe COVID-19–associated illness.

Zambrano et al. (Nov 2, 2020). Update: Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–Oct 3, 2020. *MMWR*. <http://dx.doi.org/10.15585/mmwr.mm6944e3>

Modeling and Prediction

- A study from France modeling the effectiveness of public health measures to slow the spread of SARS-CoV-2 (aside from strict lockdown) found that mask mandates and restricting access to public places such as bars reduced the number of new cases per day by 75% and delayed a peak in infections by about 2 months. However, these measures did not prevent ICUs from becoming full.
Dimeglio et al. (Oct 2020). Quantifying the Impact of Public Health Protection Measures on the Spread of SARS-CoV-2. Journal of Infection. <https://doi.org/10.1016/j.jinf.2020.10.026>
- *[Pre-print, not peer-reviewed]* Evictions led to significant increases in SARS-CoV-2 infections in a model simulating changes in housing patterns during the COVID-19 pandemic. In the model scenario for Philadelphia, a city with historically high eviction rates, the increase was especially pronounced as it considered a heterogenous city with frequent contacts between residents. The model indicated that evictions lead to significant increases in infections for the broader population, not only among those who were evicted or who received families who had been evicted into their homes, across a variety of scenarios.

Sheen et al. (Nov 1, 2020). The Effect of Eviction Moratoriums on the Transmission of SARS-CoV-2. MedRxiv. <https://doi.org/10.1101/2020.10.27.20220897>

Public Health Policy and Practice

- A study in North Carolina that delivered voice messages and texts encouraging patients (n=48,063) to call the regional operational call center line found that the odds of calling the line were higher among people from minority racial or ethnic groups (vs. white people), and among those who were uninsured or used Medicaid (vs. private insurance). Calling the line was associated with higher odds of scheduling any health care appointment (OR= 4.1) and receiving a COVID-19 test (OR= 2.4). Overall, 95.4% of the total population received at least 1 message; successful delivery was lower among Black patients but higher among patients with moderate health-risk comorbidities.
Mayfield et al. (Oct 30, 2020). Development, Implementation, and Results from a COVID-19 Messaging Campaign to Promote Health Care Seeking Behaviors Among Community Clinic Patients. Journal of Community Health. <https://doi.org/10.1007/s10900-020-00939-0>
- A study of Twitter messages from multiple countries early in the SARS-CoV-2 pandemic identified a co-occurring “Infodemic”: the rapid and widespread dissemination of misinformation or content from unreliable sources. Analysis of more than 100 million tweets indicated that waves of misinformation preceded the rise of COVID-19 infections, but content quickly shifted towards more credible information as infections rose. Infodemic risk was correlated with news sources, but not country-level socioeconomic development. The authors suggest that the effectiveness of COVID-19 containment could depend on a switch in communication strategies and countering most active sources of unreliable news, especially in countries where infodemic risk is high.

Gallotti et al. (Oct 29, 2020). Assessing the Risks of 'Infodemics' in Response to COVID-19 Epidemics. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-020-00994-6>

- [Pre-print, not peer-reviewed] A study estimating the economic burden of deaths due to COVID-19 in Ohio using data from Public Health and the Social Security Administration found that there were 56,518 years of potential life lost, totaling an economic value of life lost of \$13.60 billion. The value of life year lost was similar by gender; deaths among people under age 60 contributed substantially to this loss. The authors note that these estimates may be used to assess the economic trade-offs associated with mitigation strategies in Ohio.

Mallow et al. (Oct 31, 2020). Estimates of the Value of Life Lost from COVID-19 in Ohio. *MedRxiv*. <https://doi.org/10.1101/2020.10.27.20220921>

Other Resources and Commentaries

- [Build back stronger universal health coverage systems after the COVID-19 pandemic: the need for better governance and linkage with universal social protection](#) – BMJ Global Health (Oct 2020)
- [Laboratory diagnosis of severe acute respiratory syndrome coronavirus 2](#) – Pathology (Oct 2020)
- [What defines an efficacious COVID-19 vaccine? A review of the challenges assessing the clinical efficacy of vaccines against SARS-CoV-2](#) – The Lancet Infectious Diseases (Oct 2020)
- [Opinion: For now, it's unethical to use human challenge studies for SARS-CoV-2 vaccine development](#) – Proceedings of the National Academy of Sciences of the United States of America (Oct 2020)
- [COVID-19 infection prevalence in pediatric population: Etiology, clinical presentation, and outcome](#) – Journal of Infection and Public Health (Oct 2020)
- [Who should be prioritised for COVID-19 vaccines?](#) – The Lancet (Oct 2020)
- [C\(t\) values from SARS-CoV-2 diagnostic PCR assays should not be used as direct estimates of viral load](#) – The Journal of Infection (Oct 2020)
- [Genomic surveillance of COVID-19 cases in Beijing](#) – Nature Communications (Oct 2020)
- [Influenza and COVID-19: What does co-existence mean?](#) – Influenza and Other Respiratory Viruses (Oct 2020)
- [More Than Inconvenienced: The Unique Needs of U.S. College Students During the COVID-19 Pandemic](#) – Health Education and Behavior (Oct 2020)
- [Asymptomatic health-care worker screening during the COVID-19 pandemic](#) – The Lancet (Oct 2020)
- [Expanding Access to COVID-19 Tests through US Postal Service Facilities](#) – Medical Decision Making (Oct 2020)
- [Considering Emotion in COVID-19 Vaccine Communication: Addressing Vaccine Hesitancy and Fostering Vaccine Confidence](#) – Health Communication (Oct 2020)
- [COVID-19 human challenge studies in the UK](#) – The Lancet Respiratory Medicine (Oct 2020)

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