



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

July 8, 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

- **Following the re-opening of nightclubs in South Korea, 246 COVID-19 cases were linked to a single outbreak in a nightclub in Seoul during a week-long holiday. This suggests that superspreading events related to nightclubs have the potential to spark a resurgence of cases.** [More](#)
- **In a comparison of commercial SARS-CoV-2 serological assays, the Wantai ELISA had the best overall performance, with a specificity of 99% and sensitivities of 99% for IgG and 90% for IgM antibodies.** [More](#)
- **Universal screening of pregnant patients admitted for delivery in New York City hospitals over 28 days during the period of peak cases in the city found that 10% of patients were SARS-CoV-2 positive, and that these patients were more likely to experience Cesarean delivery and post-partum complications. None of the delivered infants were positive for SARS-CoV-2.** [More](#)
- **Modeling suggests that pre-symptomatic cases account for 47-48% of SARS-CoV-2 transmissions and asymptomatic cases account for 3-7% of transmissions. These findings suggest that isolation of all symptomatic cases is not sufficient to achieve epidemic control.** [More](#)
- **Modeling suggests that universal use of face masks could halt a post-lockdown resurgence of COVID-19 cases, assuming a 50% reduction in transmission associated with face mask use and 75% compliance.** [More](#)

### Transmission

- As of May 25, 246 COVID-19 cases have been linked to an outbreak at a nightclub in Seoul, South Korea. Nightclubs in South Korea that had been closed previously as part of the social distancing policy re-opened on April 30, ahead of the April 30–May 5 Golden Week holiday. Through large scale contact tracing, Kang et al. tested 41,612 nightclub visitors and their contacts, of whom 0.6% were positive: 96 (39%) of SARS-CoV-2 positive persons were primary cases and 150 (61%) were secondary contacts. This suggests that superspreading events related to nightclubs have the potential to spark a resurgence of cases in South Korea.

*Kang et al. (July 7, 2020). Coronavirus Disease Exposure and Spread from Nightclubs, South Korea. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2610.202573>*

- In a study of health care workers and their family members in Italy, 5% (2/38) of health care workers and 32% (26/81) of their family members tested positive for SARS-CoV-2 antibodies. In two families, healthcare workers were the people who tested negative. The authors suggest that family members had a higher exposure to SARS-CoV-2 infection via the general population, compared to health care



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workers, and that health care workers may not have been a main source of SARS-CoV-2 for their families.

*Dioscoridi and Carrisi. (July 2020). Covid-19 Exposure Risk for Family Members of Healthcare Workers: An Observational Study. International Journal of Infectious Diseases.*

<https://doi.org/10.1016/j.ijid.2020.06.106>

## Testing and Treatment

- In a comparison of eight SARS-CoV-2 serological assays, GeurtsvanKessel et. al found that the Wantai ELISA for detecting total Ig and IgM antibodies (Beijing Wantai Biological Pharmacy Enterprise Co., Ltd., China) had the best overall performance. The Wantai ELISA had a specificity of 99% and sensitivities of 99% for IgG and 90% IgM antibodies, and was able to detect functional antibodies in different stages and severity of disease. [EDITORIAL NOTE: Assessment of sensitivity was based on samples confirmed to have SARS-CoV-2 antibodies by PRNT50. Therefore these should be considered estimates of the analytic sensitivity rather than the clinical sensitivity]

*GeurtsvanKessel et al. (July 4, 2020). An Evaluation of COVID-19 Serological Assays Informs Future Diagnostics and Exposure Assessment. Nature Communications.*

<https://doi.org/10.1038/s41467-020-17317-y>

- Pezzi et al. evaluated a duo SARS-CoV-2 RT-qPCR assay. Compared to monoplex RT-qPCR assays, dual-target assays may be less likely to have false-negative results caused by polymorphisms or point mutations. Based on 69 nasopharyngeal samples, the dual assay performed equal to or better than mono-target assays in terms of sensitivity, specificity, linearity, and signal intensity.

*Pezzi et al. (June 25, 2020). Development and Evaluation of a Duo SARS-CoV-2 RT-QPCR Assay Combining Two Assays Approved by the World Health Organization Targeting the Envelope and the RNA-Dependant RNA Polymerase (RdRp) Coding Regions. Viruses.*

<https://doi.org/10.3390/v12060686>

- Sun et al. conducted a meta-analysis of convalescent plasma treatment for non-SARS-CoV-2 viruses. Across 40 studies of patients infected with SARS-CoV, influenza, or Ebola virus, convalescent plasma was associated with a reduction in mortality, had a low incidence of adverse events, promoted the production of antibodies, reduced viral load, and shortened the disease course. Among 15 controlled studies, mortality was significantly lower among those treated with convalescent plasma than controls (pooled OR=0.31; 95% CI: 0.19-0.52).

*Sun et al. (July 4, 2020). Potential Effective Treatment for COVID-19: Systematic Review and Meta-Analysis of the Severe Infectious Disease with Convalescent Plasma Therapy. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.06.107>*

## Clinical Characteristics and Health Care Setting

- All pregnant patients who were admitted for delivery at three New York City hospitals were screened for SARS-CoV-2 using RT-PCR testing of nasopharyngeal specimens (first 28 days of universal screening that started on March 22, 2020). Of 675 people admitted for delivery, 10% were positive for SARS-CoV-2, among whom most (79%) were asymptomatic.
- Cesarean delivery and post-partum complications were more common among SARS-CoV-2 positive patients (45% vs 31% and 13% vs 5%, respectively). Placental pathology revealed a higher frequency of fetal vascular malperfusion in patients with vs. without SARS-CoV-2 (48% vs. 11%). None of the delivered infants were positive for SARS-CoV-2.

Prabhu et al. (July 7, 2020). *Pregnancy and Postpartum Outcomes in a Universally Tested Population for SARS-CoV-2 in New York City: A Prospective Cohort Study*. *BJOG International Journal of Obstetrics and Gynaecology*. <https://doi.org/10.1111/1471-0528.16403>

- In a UK cohort of biobank participants, 549 were hospitalized for COVID-19. Black (OR 3.7; 95% CI: 2.5-5.3) and Asian (OR 2.2; 95% CI: 1.5-3.2) participants had a significantly higher risk of COVID-19 hospitalization relative to white participants. These disparities persisted, even after adjusting for socioeconomic deprivation, household income, and cardiorespiratory comorbidities.

Patel et al. (July 6, 2020). *Race, Socioeconomic Deprivation, and Hospitalization for COVID-19 in English Participants of a National Biobank*. *International Journal for Equity in Health*.

<https://doi.org/10.1186/s12939-020-01227-y>

- Zhou et al. collected air and surface samples from seven clinical areas occupied by COVID-19 patients, as well as one public area of a London hospital. Overall, viral RNA was detected on 52% (114/218) of surfaces and 39% (14/31) of air samples, but no virus was cultured. Viral RNA was more likely to be found in areas immediately occupied by COVID-19 patients than in other areas (64% vs. 45%). These findings suggest there is a high risk of environmental contamination with viral RNA within health care settings, though the implications for infectious virus are less clear.

Zhou et al. (July 8, 2020). *Investigating SARS-CoV-2 Surface and Air Contamination in an Acute Healthcare Setting during the Peak of the COVID-19 Pandemic in London*. *Clinical Infectious Diseases*.

<https://doi.org/10.1093/cid/ciaa905>

## Mental Health and Personal Impact

- [Preprint, not peer-reviewed] Using data from the UK Household Longitudinal Study, a representative sample of the UK population, Chandola et al. found an increase in common mental disorders during COVID-19 lockdown in April-May 2020, compared to prior years (2017-2019). Negative mental health outcomes were associated with feelings of loneliness, increasing domestic work demands (e.g. childcare and home-schooling), working from home, and the receipt of care from outside the home.

Chandola et al. (July 7, 2020). *The Mental Health Impact of COVID-19 and Pandemic Related Stressors among Adults in the UK*. Pre-print downloaded July 8 from

<https://doi.org/10.1101/2020.07.05.20146738>

## Modeling and Prediction

- [Preprint, not peer-reviewed] Ngonghala et al. assessed if the universal use of face masks could halt a post-lockdown resurgence of COVID-19 cases for the entire U.S., as well as within the states of Arizona, Florida, and New York. Assuming that face masks reduce the probability of transmission by 50%, the authors found that 75% compliance with universal masking laws would prevent a second wave of infections.

Ngonghala et al. (July 7, 2020). *Could Masks Curtail the Post-Lockdown Resurgence of COVID-19 in the US*. Pre-print downloaded July 8 from <https://doi.org/10.1101/2020.07.05.20146951>

- Moghadas et al. used agentbased modeling to quantify the number of transmissions attributable to asymptomatic and pre-symptomatic SARS-CoV-3 infections. Empirical studies suggest that the proportion of asymptomatic cases range from 18 to 31%. At the lower end, when 18% of infections are asymptomatic, they estimated that pre-symptomatic cases account for 48% of transmissions and asymptomatic infections account for 3% of transmissions. These estimates change slightly if 31% of

infections are asymptomatic: pre-symptomatic and asymptomatic infections accounted for 47% 7% of transmissions, respectively. These finding suggest that isolation of all symptomatic cases is not sufficient to achieve epidemic control.

*Moghadas et al. (July 2020). The Implications of Silent Transmission for the Control of COVID-19 Outbreaks. PNAS. <https://doi.org/10.1073/pnas.2008373117>*

- *[Preprint, not peer-reviewed]* Rennert et al. evaluated the impact of pre-semester SARS-CoV-2 testing on reducing the incidence of cases in a university setting. Although they found that pre-semester testing would delay the onset of the epidemic peak from 17 to 40 days, it would not reduce the overall outbreak size without further prevention strategies.  
*Rennert et al. (July 7, 2020). Reopening Universities during the COVID-19 Pandemic: A Testing Strategy to Minimize Active Cases and Delay Outbreaks. Pre-print downloaded July 8 from <https://doi.org/10.1101/2020.07.06.20147272>*
- Sandmann et al. modeled the impact of various testing strategies on the risk of workplace transmission and absences for essential workers: (i) testing workers with SARS-CoV-2-like symptoms who self-isolated, (ii) testing asymptomatic workers in household quarantine, and (iii) universal testing. Universal testing of staff had the largest reduction per test in workplace transmission, while only testing asymptomatic workers in household quarantine has the largest reduction per test in absences.  
*Sandmann et al. (July 8, 2020). Optimising Benefits of Testing Key Workers for Infection with SARS-CoV-2: A Mathematical Modelling Analysis. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa901>*
- *[Preprint, not peer-reviewed]* Davis et al. estimated that there was widespread community transmission of SARS-CoV-2 in the United States by February, 2020. Their modeling suggests that international travel could have seeded outbreaks in West and East Coast metropolitan areas as early as December, 2019. However, for most states, domestic travel contributed to the largest proportion of imported infections.  
*Davis et al. (July 7, 2020). Estimating the Establishment of Local Transmission and the Cryptic Phase of the COVID-19 Pandemic in the USA. Pre-print downloaded July 8 from <https://doi.org/10.1101/2020.07.06.20140285>*

## Other Resources and Commentaries

- [Evidence for SARS-CoV-2 Infection of Animal Hosts](#) – Pathogens (June 30)
- [Flattening the Curve of New Publications on COVID-19](#) – Journal of Epidemiology and Community Health (July 6)
- [Medical Isolation and Solitary Confinement: Balancing Health and Humanity in US Jails and Prisons During COVID-19](#) – Journal of General Internal Medicine (July 6)
- [A Re-Analysis in Exploring the Association between Temperature and COVID-19 Transmissibility: An Ecological Study with 154 Chinese Cities](#) – The European Respiratory Journal (July 6)
- [A Call for a Gender-Responsive, Intersectional Approach to Address COVID-19](#) – Global Public Health (July 7)
- [United but Divided: Policy Responses and People's Perceptions in the EU during the COVID-19 Outbreak](#) – Health Policy (June 22)
- [Artificial Intelligence Driven Assessment of Routinely Collected Healthcare Data Is an Effective Screening Test for COVID-19 in Patients Presenting to Hospital](#) – medRxiv (July 8)

- [The Relative Power of Individual Distancing Efforts and Public Policies to Curb the COVID-19 Epidemics](#) – medRxiv (July 7)
- [A National Cross-Sectional Survey of Public Perceptions Knowledge and Behaviors during the COVID-19 Pandemic](#) – medRxiv (July 8)

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