

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

August 25, 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

- **Analysis of 772 SARS-CoV-2 genomes from Massachusetts identified more than 80 distinct introductions into the Boston area and a superspreader event among a highly mobile population that contributed substantially to community transmission.** [More](#)
- **Compared to a commercial medical mask, 11 common household fabrics had substantial efficiency in blocking large high-velocity droplets, particularly double-layered fabrics, with up to >94% efficiency compared to medical masks.** [More](#)
- **A modeling study based on a K-12 school reopening in Indiana found that operating at reduced capacity with high face-mask adherence could result in a 12% increase in the number of infections, but that operating at full capacity with low face-mask adherence could result in 82-times more infections and 13-times more deaths compared to schools operated remotely.** [More](#)
- **Using weekly longitudinal survey results on face mask wearing, US states with higher levels of face mask wearing were more likely to have a SARS-CoV-2 reproductive number ( $R_t$ ) less than 1, which would lead to control of community transmission.** [More](#)

### Non-Pharmaceutical Interventions

- Ayden et al. compared the performance of 11 common household fabrics at blocking large, high-velocity droplets using a commercial medical mask as a benchmark and found that while most fabrics have substantial blocking efficiency, two layers of highly permeable fabric can achieve >94% efficiency compared to medical mask by reducing the velocity of transmitted droplets and subsequently trapping them.  
*Aydin et al. (Aug 11, 2020). Performance of Fabrics for Home-Made Masks against the Spread of COVID-19 through Droplets: A Quantitative Mechanistic Study. Extreme Mechanics Letters.*  
<https://doi.org/10.1016/j.eml.2020.100924>
- *[pre-print, not peer-reviewed]* Using weekly longitudinal survey results on face mask wearing, US states with higher levels of face mask wearing were more likely to have a SARS-CoV-2 effective reproductive number ( $R_t$ ) less than 1, which would lead to control of community transmission. A 10% increase in mask wearing was associated with a higher likelihood of a state having an  $R_t < 1$  (OR=3.5, 95%CI 2.0, 6.4). Rader et al. combined responses on likelihood to wear a face mask from serial cross-sectional surveys administered in June and July (n=378,207) with measures of the instantaneous SARS-CoV-2 reproduction rate ( $R_t$ ), social distancing proxies, respondent demographics and other potential confounders. Investigators also found an upward trend in mask

usage over time that varied by geography and demographics, with communities with the highest mask wearing and social distancing having the highest predicted probability of  $R_t < 1$ .

Rader et al. (Aug 25, 2020). *Mask Wearing and Control of SARS-CoV-2 Transmission in the United States*. Pre-print downloaded August 25 from <https://doi.org/10.1101/2020.08.23.20078964>

- After 56 consecutive days of no local transmission events of COVID-19 in Beijing, a new case was diagnosed on June 11, triggering an outbreak alert. The first 2 confirmed cases were found to have epidemiologic links to a local market, which was shut down on June 12. Among the 368 people who tested positive and were subsequently isolated and treated via contact tracing, 74% had epidemiologic links to the market.

Wu et al. (Aug 24, 2020). *Time Course of a Second Outbreak of COVID-19 in Beijing, China, June-July 2020*. JAMA. <https://doi.org/10.1001/jama.2020.15894>

## Transmission

- [pre-print, not peer-reviewed] Lemieux et al. conducted phylogenetic analyses on 772 complete SARS-CoV-2 genomes from the Boston area and found that, since the beginning of the epidemic, there were over 80 introductions into the Boston area, primarily from other parts of the United States and Europe. Investigators studied two distinct superspreading events captured in the data, finding differences in onward transmissions related to these events that the authors hypothesize are related to the mobility of the affected populations.

Lemieux et al. (Aug 25, 2020). *Phylogenetic Analysis of SARS-CoV-2 in the Boston Area Highlights the Role of Recurrent Importation and Superspreading Events*. Pre-print downloaded August 25 from <https://doi.org/10.1101/2020.08.23.20178236>

- The prevalence of SARS-CoV-2 infection in asymptomatic children (n=33,041) from across the US who were tested for SARS-CoV-2 when presenting for surgical or medical care was strongly correlated with the prevalence of SARS-CoV-2 in the general population in the communities in which the children lived. The authors present a method to estimate the prevalence of SARS-CoV-2 among asymptomatic children using publicly available data from the Johns Hopkins University COVID-19 database.

Sola et al. (Aug 25, 2020). *Prevalence of SARS-CoV-2 Infection in Children Without Symptoms of Coronavirus Disease 2019*. JAMA Pediatrics. <https://doi.org/10.1001/jamapediatrics.2020.4095>

## Testing and Treatment

- Adamson et al. conducted a retrospective analysis of 10,165 SARS-CoV-2 test results from the UCLA Health System to determine the diagnostic yield of repeat testing and found that among 808 patients who did repeat testing following an initial negative test, only 2% subsequently tested positive. Investigators suggest certain clinical scenarios may benefit from repeat testing, such as in healthcare workers with ongoing exposures or hospitalized patients with high suspicion.

Adamson et al. (Aug 21, 2020). *Diagnostic Yield of Repeat Testing for SARS-CoV-2: Experience from a Large Health System in Los Angeles*. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.08.048>

- Blitz et al. conducted a retrospective cohort study evaluating women admitted for delivery at 4 hospitals in a New York health system between April 2-9 (n=382) and found a 19% prevalence of

COVID-19. Hispanic and non-Hispanic black women were found to be disproportionately affected, and asymptomatic carriers were common (70%) across all 4 sites.

*Blitz et al. (July 2, 2020). Universal Testing for Coronavirus Disease 2019 in Pregnant Women Admitted for Delivery: Prevalence of Peripartum Infection and Rate of Asymptomatic Carriers at Four New York Hospitals within an Integrated Healthcare System. American Journal of Obstetrics & Gynecology MFM. <https://doi.org/10.1016/j.ajogmf.2020.100169>*

### Clinical Characteristics and Health Care Setting

- A prospective, observational study of 108 non-hospitalized patients with COVID-19 found 69% reported at least one ocular symptom, the most common being burning sensations (n=39), excessive tearing (n=37), and redness (n=28).

*Rokohl et al. (Aug 20, 2020). More than Loss of Taste and Smell: Burning Watering Eyes in Coronavirus Disease 19 (COVID-19). Clinical Microbiology and Infection.*

<https://doi.org/10.1016/j.cmi.2020.08.018>

- Preliminary findings from a cohort study of 192 children (mean age 10.2 +/- 7 years) hospitalized with COVID-19 in Massachusetts show that among participants with acute SARS-CoV-2 infection (n=49) viral load in respiratory secretions in the first 2 days of symptoms was significantly higher compared to that of hospitalized adults with severe disease and more than 7 days of symptoms. There was substantial overlap in symptoms between children with SARS-CoV-2 infection, multi-system inflammatory syndrome, and SARS-CoV-2 suspected children who tested negative.

*Yonker et al. (Aug 18, 2020). Pediatric SARS-CoV-2: Clinical Presentation, Infectivity, and Immune Responses. The Journal of Pediatrics. <https://doi.org/10.1016/j.jpeds.2020.08.037>*

- Zhao et al. evaluated COVID-19 survivors (n=55) three months after hospital discharge, none of whom had required mechanical ventilation, and found pulmonary function abnormalities in 14 (25%) despite a lower prevalence of respiratory symptoms (shortness of breath with exertion 15%, cough, and sputum 2%). Thirty-nine participants (71%) had pulmonary abnormalities visible on high-resolution computed tomography. All participants had returned to their prior work at the time of follow-up.

*Zhao et al. (July 15, 2020). Follow-up Study of the Pulmonary Function and Related Physiological Characteristics of COVID-19 Survivors Three Months after Recovery. EClinicalMedicine.*

<https://doi.org/10.1016/j.eclinm.2020.100463>

### Mental Health and Personal Impact

- Piquero et al. compared data from Dallas, Texas on domestic violence crimes for an 83-day period prior to the stay-at-home mandate to a 35-day period thereafter and found evidence suggesting a short-term increase in domestic violence incident reports during the first two weeks following the mandate.

*Piquero et al. (Aug 14, 2020). Staying Home, Staying Safe? A Short-Term Analysis of COVID-19 on Dallas Domestic Violence. American Journal of Criminal Justice. <https://doi.org/10.1007/s12103-020-09531-7>*

### Modeling and Prediction

- *[pre-print, not peer-reviewed]* Espana et al. conducted a modeling study with varying degrees of school operating capacity and face-mask adherence to estimate the impact of a K-12 school

reopening in Indiana on SARS-CoV-2 transmission. Their model indicated that, from August 24 to December 31, operating schools with high face-mask adherence would result in 3-times the number of infections compared to a scenario with schools operate remotely. Operating at reduced capacity with high face-mask adherence would result in a 12% increase in the number of infections. By contrast, reopening at full capacity with low face-mask adherence would result in 82-times more infections and 13-times more deaths.

*Espana et al. (Aug 25, 2020). Impacts of K-12 School Reopening on the COVID-19 Epidemic in Indiana USA. Pre-print downloaded August 25 from*

<https://doi.org/10.1101/2020.08.22.20179960>

## Public Health Policy and Practice

- The Kentucky Department for Public Health (KDPH) developed the Indicator Monitoring Report (IMR), which provides daily analysis of 5 key state-level indicators, including new cases, health care capacity data, and contact tracing capacity. IMR review by KDPH during May 19 - July 15 led to successful county-level hotspot identification and mitigation, suggesting that the IMR might be easily adopted by other state and local health departments to guide reopening.

*Varela et al. (Aug 25, 2020). Primary Indicators to Systematically Monitor COVID-19 Mitigation and Response — Kentucky, May 19–July 15, 2020. MMWR.*

<https://doi.org/10.15585/mmwr.mm6934e3>

## Other Resources and Commentaries

- [It's OK Not to Be OK: Shared Reflections from Two PhD Parents in a Time of Pandemic](#) – Gender, Work & Organization (June 23)
- [The Impact of Covid-19 on Community-Based Violence Interventions](#) – American Journal of Criminal Justice (June 19)
- [Court Operations during the COVID-19 Pandemic](#) – American Journal of Criminal Justice (July 12)
- [How Can Local Governments Address Pandemic Inequities?](#) – Public Administration Review (June 2)
- [When Stay-at-Home Orders Leave Victims Unsafe at Home: Exploring the Risk and Consequences of Intimate Partner Violence during the COVID-19 Pandemic](#) – American Journal of Criminal Justice (June 6)
- [Hesitant or Not A Global Survey of Potential Acceptance of a COVID-19 Vaccine](#) – MedRxiv (Aug 25)
- [Risk Factors for Detection of SARS-CoV-2 in Healthcare Workers during April 2020 in a UK Hospital Testing Programme](#) – EClinicalMedicine (Aug 17)
- [Optimising SARS-CoV-2 Pooled Testing for Low-Resource Settings](#) – The Lancet Microbe (June 8)
- [Stress and Burnout in Health Care Workers during COVID-19 Pandemic: Validation of a Questionnaire](#) – Journal of Public Health (June 6)
- [Stability and Neutralising Capacity of SARS-CoV-2-Specific Antibodies in Convalescent Plasma](#) – The Lancet Microbe (June 1)
- [Severe Refractory Kawasaki Disease in Seven Infants in the COVID-19 Era](#) – The Lancet Rheumatology (July 10)
- [Evaluation of Cough-Jet Effects on the Transport Characteristics of Respiratory-Induced Contaminants in Airline Passengers' Local Environments](#) – Building and Environment (Aug 16)

*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*