



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

May 14, 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

- **State-wide school closures are associated with fewer COVID-19 cases and deaths per capita. State-wide deaths due to COVID-19 were estimated to be 12% higher for each additional day that schools remained open.**
- **The median duration of SARS-CoV-2 viral RNA shedding was estimated to be 19 days from symptom onset (range 3-44 days). The duration of viral shedding following fever resolution was estimated to be 7 days, although some patients (10%) achieved fever resolution after testing negative for viral RNA.**
- **There is an outbreak of a pediatric multisystem inflammatory syndrome, which resembles Kawasaki disease, among 17 children at a university hospital in Paris, France that may be related to SARS-CoV-2. The incidence of the disease is 13-fold higher than the baseline rate. 82% of the patients have evidence of recent SARS-CoV-2 infection.**

### Non-Pharmaceutical Interventions

- This ecological study found that earlier state-wide school closure was associated with fewer COVID-19 cases and deaths per capita. The authors estimate that state-wide cases were 2.7% higher and deaths were 12% higher for each addition day that schools remained open.  
*Rauscher. (May 13, 2020). Lower State COVID-19 Deaths and Cases with Earlier School Closure in the U.S. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.09.20096594>*
- D'Souza et al. reviewed the medical content of the 113 most-widely viewed YouTube videos on COVID-19. They found 70% of videos were useful and 9% were misleading. Of the videos classified as useful, 72% were posted by news agencies and 22% were posted by individuals. Of the misleading videos, 60% were posted by individuals and 40% were posted by news agencies. Useful videos were more likely to present information on prevalence, medical outcomes or prognosis.
- The World Health Organization contributed one useful video and none of the videos were posted by the Center for Disease Control. These findings highlight the need for increased information disseminate from reputable sources on YouTube and other social media platforms.  
*D'Souza et al. (May 12, 2020). YouTube as a Source of Medical Information on the Novel Coronavirus 2019 Disease (COVID-19) Pandemic. Global Public Health. <https://doi.org/10.1080/17441692.2020.1761426>*

## Transmission

- Among 410 COVID-19 patients admitted to three hospitals in Wuhan, China, the authors estimate the median duration of viral RNA shedding (from symptom onset to rRT-PCR conversion) to be 19 days (IQR 16-23 days; range 3-44 days). Most patients (96%) tested negative for SARS-CoV-2 RNA within 30 days after symptom onset. The median duration from fever resolution to rRT-PCR conversion was 7 days (IQR 4-10), although 10% of patients achieved fever resolution after testing negative for viral RNA.
- Patients with coronary heart disease had a longer duration of viral RNA shedding (21 vs 19 days) and patients with albumin  $\geq 35$ g/L had a shorter duration of shedding (18 vs 20 days). Patients who initiated antiviral therapy within 7 days of symptom onset had a shorter duration of viral RNA shedding (18 vs 21 days).

*Fu et al. (May 12, 2020). Risk Factors for Viral RNA Shedding in COVID-19 Patients. The European Respiratory Journal. <https://doi.org/10.1183/13993003.01190-2020>*

## Geographic Spread

- Based on phylogenetic analysis of 2,599 global SARS-CoV-2 viral RNA sequences, the dominant strains circulating in North America are most closely related to those that predominate in Europe.
- A genome wide association study identified two mutations that predominate in North American samples. The authors hypothesize these mutations may be associated with increased transmissibility and that the mutations may have first emerged in Europe. These mutations result in two missense mutations (i.e. a single base pair mutation that causes the substitution of a different amino acid) in the ORF1ab and ORF3a proteins, and may be targets for novel diagnostic and drug technologies.

*Ou et al. (May 14, 2020). Tracing Two Causative SNPs Reveals SARS-CoV-2 Transmission in North America Population. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.12.092056>*

- Mazzoli et al. found that between-region mobility explained the high heterogeneity in incidence between otherwise similar geographic regions of Spain that implemented uniform mobility control measures.
- Their findings suggest that “multi-seeding,” which occurs when multiple infected individuals arrive in a susceptible population, likely played an important role in the spreading of SARS-CoV-2 from the initial outbreak in Madrid to other regions of Spain.

*Mazzoli et al. (May 13, 2020). Effects of Mobility and Multi-Seeding on the Propagation of the COVID-19 in Spain. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.09.20096339>*

## Testing and Treatment

- Joyner et al. evaluated the safety of transfusing ABO-compatible human COVID-19 convalescent plasma among 5,000 hospitalized adults with severe COVID-19 disease. Only 36 (<1%) serious adverse events were reported in the first four hours after transfusion, only 2 of which were judged by the treating physician to be related to the convalescent plasma transfusion. Although this study lacked a control group, these findings suggest that transfusion of convalescent plasma is safe in hospitalized patients with severe COVID-19 disease.

*Joyner et al. (May 14, 2020). Early Safety Indicators of COVID-19 Convalescent Plasma in 5000 Patients. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.12.20099879>*

- A comparison study found that the Abbot ID NOW COVID-19 assay missed one-third of the samples that tested positive by Cepheid Xpert Xpress when using NP swabs in VTM and missed over 48% when using dry nasal swabs.
- While the Abbot ID NOW COVID-19 platform offers faster turn-around time compared to RT-PCR platforms, it may have poor sensitivity, resulting in a high false negative rate.

*Basu. (2020). Performance of the Rapid Nucleic Acid Amplification by Abbott ID NOW COVID-19 in Nasopharyngeal Swabs Transported in Viral Media and Dry Nasal Swabs in a New York City Academic Institution. Pre-print downloaded May 13 from <https://doi.org/10.1101/2020.05.11.089896>*

- COVID-19 clinical manifestations are similar to septic, thoracic, or gastrointestinal post-surgical complications. Moliere and Veillon recommend that patients who develop acute post-operative symptoms should receive chest computed tomography (CT) scans. Among 46 post-operative patients with acute symptoms, they found that 17% (n=8) were diagnosed with COVID-19 via chest CT scan (confirmed by PCR an average 1.2 days later). Among these patients, 5 required mechanical ventilation and 2 died.
- These findings suggest that COVID-19 is associated with significant morbidity and mortality among post-operative patients.

*Moliere and Veillon. (May 13, 2020). COVID-19 in Post-Operative Patients: Imaging Findings. Surgical Infections. <https://doi.org/10.1089/sur.2020.169>*

### Clinical Characteristics and Health Care Setting

- There is an outbreak of a pediatric multisystem inflammatory syndrome, which resembles Kawasaki disease, among children in Paris, France that may be related to SARS-CoV-2. A total of 17 children were admitted to a university hospital in Paris with symptoms similar to Kawasaki disease over an 11-day period (April 27 to May 7, 2020). This is compared to a mean of 1.0 case per 2-week period over the control period (2018-2019). Most children (82%, 14/17) had evidence of recent SARS-CoV-2 infection.

*Toubiana et al. (May 14, 2020). Outbreak of Kawasaki Disease in Children during COVID-19 Pandemic a Prospective Observational Study in Paris France. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.10.20097394>*

- Oberstar et al. report on the development of an affordable and scalable device that can contain droplets and aerosol particles for potentially use by healthcare providers treating COVID-19 patients. The BADGER (Box for Aerosol and Droplet Guarding and Evacuation in Respiratory Infection) creates a semi-sealed environment and has multiple hand-ports for healthcare providers to perform essential tasks on a patient's airway and head. Quantitative aerosol testing shows >90% containment of sub-micrometer aerosolized particles.

*Oberstar et al. (May 13, 2020). A Novel Box for Aerosol and Droplet Guarding and Evacuation in Respiratory Infection (BADGER) A Potential Mitigating Strategy for the COVID-19 Pandemic and Future Outbreaks. Pre-print downloaded May 14 from <https://doi.org/10.1101/2020.05.09.20096032>*

## Other Resources and Commentaries

- [Transmission of SARS-CoV-2 in Domestic Cats](#) – The New England Journal of Medicine (May 13)
- [Low-Income Children and Coronavirus Disease 2019 \(COVID-19\) in the US](#) – JAMA Pediatrics (May 13)
- [Commentary: COVID in Care Homes-Challenges and Dilemmas in Healthcare Delivery](#) – Age and Ageing (May 13)
- [Covid-19 and Mobile Phone Hygiene in Healthcare Settings](#) – BMJ Global Health (Apr 4)
- [Characterization of SARS-CoV-2 Viral Diversity within and across Hosts](#) – Pre-print available on Biorxiv (May 13)

*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 Incidence Management Team*