



2019-nCoV Literature Situation Report (Lit Rep)

June 30, 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

- **Only 27% of Colorado residents who tested positive for SARS-CoV-2 prior to the March 26 stay-at-home order reported a known contact with a confirmed COVID-19 case, another 30% had contact with a person with fever or respiratory symptoms, and the remaining 43% reported no known contacts. The most common potential exposures were gatherings of >10 people, domestic travel, working in or visiting a health care setting, and using public transportation. [More](#)**
- **Another survey of people with SARS-CoV-2 across the US found that only 46% reported known contact with a COVID-19 case, most commonly a family member (45%) or work colleague (34%). Among individuals who were employed, only 17% were able to telework. [More](#)**
- **Between March 15-May 20, 2020, 186 cases of multisystem inflammatory syndrome in children were identified in pediatric health centers across the US. Most children were positive for SARS-CoV-2 (70%) and were previously healthy (73%). SARS-CoV-2 associated multisystem inflammatory syndrome led to serious and life-threatening illness (>80% children) and death (2%). [More](#)**
- **A modeling study found that the use of fever clinics—telephone-based triage systems combined with drive-through RT-PCR testing—was the scenario with the most effective surveillance approach for detecting resurgence of SAR-CoV-2. [More](#)**

Non-Pharmaceutical Interventions

- Autoclave sterilization and a 70% ethanol treatment of surgical masks and N95 respirators are commonly utilized by hospitals during the COVID-19 pandemic to conserve supplies. However, Grinshpun et al. found that these methods compromise the efficiency, filter breathability, and, in some cases, cause physical damage to these masks. The authors conclude that decontamination and re-use of surgical and N95 masks in hospitals using these approaches may need to be re-evaluated.
Grinshpun et al. (June 22, 2020). Autoclave Sterilization and Ethanol Treatment of Re-Used Surgical Masks and N95 Respirators during COVID-19: Impact on Their Performance and Integrity. The Journal of Hospital Infection. <https://doi.org/10.1016/j.jhin.2020.06.030>
- *[pre-print, not peer-reviewed]* Workplace screening of asymptomatic employees in Europe and the US identified otherwise undetected cases in the workplace. Environmental testing showed that locations with SARS-CoV-2 contaminated surfaces were 10 times more likely to have employees who were RT-PCR positive than locations with no or very few positive surfaces.
- Nine workplace locations in Europe and the United States participated in a two-week environmental monitoring program for the detection SARS-CoV-2. During this period employees were tested for

SARS-CoV-2 alongside testing of high-frequency-touch point environmental surfaces. Three locations had one or more employees test positive for SARS-CoV-2, none of whom were symptomatic at the time of testing. Break room chairs, workbenches, and door handles were the most frequently contaminated surfaces.

Marshall et al. (June 29, 2020). Sentinel Coronavirus Environmental Monitoring Can Contribute to Detecting Asymptomatic SARS-CoV-2 Virus Spreaders and Can Verify Effectiveness of Workplace COVID-19 Controls. Pre-print downloaded June 30 from <https://doi.org/10.1101/2020.06.24.20131185>

Transmission

- Marshall et. al. assessed COVID-19 exposures among a random sample of Colorado residents who had tested positive to SARS-CoV-2 in the 18-day period preceding Colorado's stay-at-home-order on March 26. Only 27% (99/364) reported known contact with a laboratory confirmed COVID-19 case, 47% of which occurred at work and 24% within their household.
- Among the remaining 73% (265/364) who did not have known contact with a laboratory confirmed COVID-19 case, only 30% reported contact with a person who had fever or respiratory symptoms. The most commonly reported potential exposures were gatherings of >10 people (44%), domestic travel (29%), working in a health care setting (28%), visiting a health care setting (23%), and using public transportation (22%).

Marshall et al. (June 30, 2020). Exposures Before Issuance of Stay-at-Home Orders Among Persons with Laboratory-Confirmed COVID-19 — Colorado, March 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6926e4>

- Tenforde et al. conducted telephone interviews with a random sample of 350 adults with a positive SARS-CoV-2 RT-PCR test result in outpatient and inpatient settings at 11 academic medical centers in 9 states. Only 46% reported known contact with a COVID-19 case, most commonly a family member (45%) or work colleague (34%). Among individuals who were employed, only 17% (35/209) were able to telework and 25% (53/209) reported working in healthcare.

Tenforde et al. (June 30, 2020). Characteristics of Adult Outpatients and Inpatients with COVID-19 — 11 Academic Medical Centers, United States, March–May 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6926e3>

- Guo et al. assessed the presence of viral RNA in semen of 23 patients during the acute and recovery phases of SARS-CoV-2 infection. All patients tested negative for SARS-CoV-2 RNA in semen specimens, suggesting that sexual transmission through semen is unlikely to be a common mode of transmission.

*Guo et al. (June 29, 2020). Absence of SARS-CoV-2 in Semen of a COVID-19 Patient Cohort. *Andrology*. <https://doi.org/10.1111/andr.12848>*

Testing and Treatment

- *[pre-print, not peer-reviewed]* Kushemererwa et al. evaluated 13 rapid-diagnostic IgG/IgM antibody tests for SARS-CoV-2 to inform the development of a diagnostic algorithm for use in settings where PCR-based diagnostics are not available. PCR-positive samples used for the evaluation were collected 0-28 days after the patient was confirmed positive. They evaluated 78 possible combinations of 2 assays to be used in parallel.

- The individual sensitivities of the assays ranged from 18% to 74%. The two assays with the optimal combined performance (currently blinded) had a combined sensitivity to 90%. These findings suggest that parallel use of antibody assays may be useful for diagnosing SARS-CoV-2 in low resource settings. [EDITORIAL NOTE: The specificity of the combined test, assuming that a sample is judged positive if either test is positive, will be less than or equal to the specificity of the least specific of the two individual tests]

Kushemererwa et al. (June 29, 2020). Combination of Antibody Based Rapid Diagnostic Tests Used in an Algorithm May Improve Their Performance in SARS CoV-2 Diagnosis. Pre-print downloaded June 30 from <https://doi.org/10.1101/2020.06.26.20140806>

Clinical Characteristics and Health Care Setting

- Feldstein et al. identified 186 cases of multisystem inflammatory syndrome in children (MIS-C) between March 15-May 20, 2020 in pediatric health centers in 26 US states. Most children were positive for SARS-CoV-2 (n=131; 70%) and were previously healthy (n=135; 73%). SARS-CoV-2 associated MIS-C led to serious and life-threatening illness: 148 children (80%) received intensive care, 37 (20%) received mechanical ventilation, 90 (48%) received vasoactive support, and 4 (2%) died.

Feldstein et al. (June 29, 2020). Multisystem Inflammatory Syndrome in U.S. Children and Adolescents. The New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2021680>

- Landes et al. found that people with intellectual and developmental disabilities (IDD) living in residential group homes in New York State were at elevated risk of COVID-19. The case rate was 8% among people with IDD compared to 2% for the general population in New York State. The case fatality rate was 15.0% and 7.9%, respectively.

Landes et al. (June 24, 2020). COVID-19 Outcomes among People with Intellectual and Developmental Disability Living in Residential Group Homes in New York State. Disability and Health Journal. <https://doi.org/10.1016/j.dhjo.2020.100969>

Mental Health and Personal Impact

- In a survey of 178 pregnant women in Italy, Mappa et al. found that 47% feared that COVID-19 could induce fetal structural anomalies, 65% feared it could cause fetal growth restriction, and 51% feared it would cause preterm birth. In addition, 38% of women had elevated anxiety scores. Higher anxiety was associated with higher educational attainment.

Mappa et al. (June 29, 2020). Effects of Coronavirus 19 Pandemic on Maternal Anxiety during Pregnancy: A Prospective Observational Study. Journal of Perinatal Medicine.

<https://www.degruyter.com/view/journals/jpme/ahead-of-print/article-10.1515-jpm-2020-0182/article-10.1515-jpm-2020-0182.xml>

Modeling and Prediction

- [pre-print, not peer-reviewed] Liu et al. explored RT-PCR testing-based surveillance strategies for COVID-19 containment in Beijing, China. This study assumed that all healthcare workers, hospital patients, and community members with clinical illness would be captured either at fever clinics or in respiratory departments in hospitals. Fever clinics are telephone-based triage systems combined with drive-through testing that were originally established in China during the 2003 SARS epidemic.
- The authors found that fever clinics had the highest surveillance sensitivity. Their model suggests that with exclusively testing at fever clinics, at the time of the first positive RT-PCR surveillance test

result there would be only 598 undetected SARS-CoV-2 cases in the population. They also found that outbreak detection can occur earlier by including asymptomatic subgroups, such as younger adults in the community, as broader testing capacity becomes available.

Liu et al. (June 29, 2020). A Modelling Study for Designing a Multi-Layered Surveillance Approach to Detect the Potential Resurgence of SARS-CoV-2. Pre-print downloaded June 30 from <https://doi.org/10.1101/2020.06.27.20141440>

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Other Resources and Commentaries

- [Covid-19: Oxford Team Begins Vaccine Trials in Brazil and South Africa to Determine Efficacy.](#) – BMJ (June 29)
- [Covid-19: Remdesivir Is Recommended for Authorisation by European Medicines Agency.](#) – BMJ (June 29)
- [Child Poverty, Food Insecurity, and Respiratory Health during the COVID-19 Pandemic](#) – The Lancet Respiratory Medicine (June 29)
- [Racial Disparity of Coronavirus Disease 2019 \(COVID-19\) in African American Communities](#) – The Journal of Infectious Diseases (June 30)
- [Black Lives in a Pandemic: Implications of Systemic Injustice for End-of-Life Care](#) – The Hastings Center Report (June 29)
- [Rethinking “Elective” Procedures for Women’s Reproduction during Covid-19](#) – The Hastings Center Report (June 29)
- [Lack of Handwashing Access: A Widespread Deficiency in the Age of COVID-19](#) – Environmental Health Perspectives (June 29)
- [Safety Briefing and Visual Design Key to Protecting Health Care Workers during the COVID-19 Pandemic](#) – American Journal of Infection Control (June 26)
- [Data Presented by the UK Government as Lockdown Was Eased Shows the Transmission of COVID-19 Had Already Increased.](#) – Medrxiv (June 29)
- [Digital Approaches for Mental Health in the Age of Covid-19](#) – BMJ (June 29)
- [The Future of Bioethics: It Shouldn’t Take a Pandemic](#) – The Hastings Center Report (June 29)
- [Emerging Pharmaceutical Treatments of Novel COVID-19: A Review](#) – Cureus (May 24)
- [Repurposing of FDA-Approved Antivirals, Antibiotics, Anthelmintics, Antioxidants, and Cell Protectives against SARS-CoV-2 Papain-like Protease](#) – Journal of Biomolecular Structure & Dynamics (June 29)

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