



2019-nCoV Literature Situation Report (Lit Rep)

August 27, 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

- **N95 masks and similar KF94 masks worn by coughing patients with SARS-CoV-2 infection blocked the spread of viral RNA to surrounding surfaces considerably better than surgical masks.** [More](#)
- **Ocular symptoms were reported by 23% of children with COVID-19 in Wuhan, China, and in some cases were the first symptoms experienced.** [More](#)
- **A Cochrane review of four rapid molecular assays and five point-of-care antigen tests found that the rapid molecular assays had a mean sensitivity of 95% and specificity of 99%, while the rapid antigen tests had a mean sensitivity of 56% and specificity of 99%.** [More](#)
- **A modeling study found that a cyclical schedule of periods without restrictions followed by at least 10 days of lockdown in each cycle can help control SARS-CoV-2 transmission.** [More](#)

Transmission

- Kim et al. detected SARS-CoV-2 RNA by PCR on petri dishes placed in front of patients with SARS-CoV-2 infection in 3/7 patients who coughed while wearing a surgical mask, but in 0/7 petri dishes from similar experiments with the same patients wearing N95 masks and similar KF94 masks. Additionally, researchers detected viral RNA in swabs from both the inner and outer surfaces of the surgical masks, but only in the inner surfaces of the N95 and K94 masks. These findings support a conclusion that N95 and KF94 masks effectively block SARS-CoV-2 viral particles from patients who are coughing, and that surgical masks are less effective.

Kim et al. (Aug 26, 2020). Effectiveness of Surgical, KF94, and N95 Respirator Masks in Blocking SARS-CoV-2: A Controlled Comparison in 7 Patients. Infectious Diseases.

<https://doi.org/10.1080/23744235.2020.1810858>

Testing and Treatment

- A Cochrane review of rapid tests for SARS-CoV-2 infection (18 cohorts, 3,198 samples) evaluated the diagnostic accuracy of five point-of-care antigen tests and four rapid molecular assays. They report the average sensitivity of antigen tests was 56% (95%CI 30-80%) and specificity was 99% (98-100%) based on five studies with 943 samples. The average sensitivity of rapid molecular assays was 95% (87-98%) and specificity was 99% (97-99%) based on 11 studies with 2,255 samples. However, they judged patient selection to be at high risk of bias in half of the studies due to over-sampling of patients with confirmed COVID-19.

Dinnes et al. (Aug 26, 2020). Rapid, Point-of-Care Antigen and Molecular-Based Tests for Diagnosis of SARS-CoV-2 Infection. The Cochrane Database of Systematic Reviews.

<https://doi.org/10.1002/14651858.CD013705>



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Clinical Characteristics and Health Care Setting

- Ocular manifestations were observed in 49 of 216 (23%) pediatric patients with laboratory-confirmed COVID-19 in Wuhan, China (median age 7, IQR 3-12), of whom 9 had ocular complaints as the initial manifestations of COVID-19. These included conjunctival discharge (55%), eye rubbing (39%), and conjunctival congestion (10%). Ocular symptoms were more common in children with systemic symptoms (29% vs. 14%, $p=0.008$) or with cough (32% vs. 18%, $p=0.02$). Ocular symptoms were typically mild and children recovered or improved.

Ma et al. (Aug 26, 2020). Ocular Manifestations and Clinical Characteristics of Children With Laboratory-Confirmed COVID-19 in Wuhan, China. JAMA Ophthalmology.

<https://doi.org/10.1001/jamaophthalmol.2020.3690>

- A systematic review of 14 studies involving 105 neonates born to mothers with COVID-19 found that most had favorable outcomes. Overall, 25 infants (24%) were delivered preterm, 10 (11%) were small for gestational age (SGA), and 28 (27%) had COVID-19 symptoms. Among 91 neonates who were tested for SARS-CoV-2, 8 (9%) were positive. COVID-19 symptoms after birth were more common among those who tested SARS-CoV-2 positive (5/8, 63%) compared to those who were negative (17/83, 21%). There were no significant differences in SGA, preterm delivery, duration between maternal symptom onset and delivery, or perinatal complication based on SARS-CoV-2 test results.

Chi et al. (Aug 14, 2020). Clinical Features of Neonates Born to Mothers with Coronavirus Disease-2019: A Systematic Review of 105 Neonates. Journal of Microbiology, Immunology, and Infection.

<https://doi.org/10.1016/j.jmii.2020.07.024>

- During March 17–April 16, 2020, 307 COVID-19 cases were reported among residents and staff members in 7 nursing homes in West Virginia, 4 of which had outbreaks involving 20–40 residents. In response, the governor ordered universal testing among all 123 nursing homes in the state (April 21–May 8), which resulted in the identification of 42 COVID-19 incident cases in 28 (23%) nursing homes, none of which had previously experienced an outbreak. The 42 cases occurred in 11/8,911 residents (0.1%) and 31/13,687 staff members (0.2%).

McBee et al. (Aug 28, 2020). Notes from the Field: Universal Statewide Laboratory Testing for SARS-CoV-2 in Nursing Homes — West Virginia, April 21–May 8, 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6934a4>

Mental Health and Personal Impact

- A survey of adults enrolled in health-related research ($n=250$; >50% enrolled in a behavioral weight loss intervention) found that participants with moderate anxiety/depression and severe distress related to COVID-19 were more likely to report decreased desire to participate in research. Among 147 participants (59%) engaged in behavioral interventions, those who perceived COVID-19 as a moderate/severe threat, experienced moderate/severe depression, or PTSD symptomatology were more likely to report COVID-19 affected their adherence to behavioral recommendations.

Cardel et al. (Aug 26, 2020). COVID-19 Impacts Mental Health Outcomes and Ability/Desire to Participate in Research Among Current Research Participants. Obesity.

<https://pubmed.ncbi.nlm.nih.gov/32845582>

- Based on a web-based survey of 204 pediatric patients with type 1 diabetes, a majority of children and adolescents living with type 1 diabetes were able to comply with the landmarks of the

management of diabetes (i.e., healthy and balanced diet, regular physical activity and careful glucose monitoring) during quarantine. Younger children (age ≤ 12 years) were more likely than older children (>12 years old) to adhere to intensive in glucose monitoring (39% vs. 28%) and to report being influenced by the quarantine in terms of their approach to disease management (87% vs. 80%). The authors conclude that while quarantine was a stressful psychological condition, most children and adolescents with type 1 diabetes developed high levels of resilience and coping skills through appropriate technology use.

Passanisi et al. (July 31, 2020). Quarantine Due to the COVID-19 Pandemic From the Perspective of Pediatric Patients With Type 1 Diabetes: A Web-Based Survey. Frontiers in Pediatrics. <https://doi.org/10.3389/fped.2020.00491>

- A survey of 872 undergraduates from 10 universities in Shanxi, China found that most students were well informed about COVID-19 and exhibited positive attitudes and practices during the outbreak in February. The authors attribute this to effective health education that was delivered through massive public education campaigns.

Peng et al. (Aug 26, 2020). A Cross-Sectional Survey of Knowledge, Attitude and Practice Associated with COVID-19 among Undergraduate Students in China. BMC Public Health. <https://doi.org/10.1186/s12889-020-09392-z>

- Women living in low socioeconomic status in New York City showed an improvement in mood in following the implementation of social restrictions in response to the COVID-19 pandemic. Of 488 women who attended their first prenatal appointment between February 3 and June 12, 2020 at the Mount Sinai Hospital in New York, an improvement in prenatal mood was observed following social restrictions (May 4–June 12) compared to before imposing social restrictions (February 2–March 11).

Silverman et al. (Aug 25, 2020). Early Pregnancy Mood before and during COVID-19 Community Restrictions among Women of Low Socioeconomic Status in New York City: A Preliminary Study. Archives of Women's Mental Health. <https://doi.org/10.1007/s00737-020-01061-9>

Modeling and Prediction

- De-Leon and Pederiva present a kinetic Monte Carlo algorithm that shows that a cyclic schedule of no-restrictions/lockdowns that includes at least ten days of lockdown for each cycle can help control SARS-CoV-2 transmission. In particular, this model reduces the infection rate when accompanied by social distancing and complete isolation of symptomatic patients. The comparison between model prediction and active cases in Sweden (normalized) from the beginning of March shows the model's ability to predict the spread of the virus for different societies.

De-Leon and Pederiva. (Aug 20, 2020). Particle Modeling of the Spreading of Coronavirus Disease (COVID-19). Physics of Fluids. <https://doi.org/10.1063/5.0020565>

- How We Feel (<http://www.howwefeel.org>), a web and mobile application, collected 3.6 million longitudinal self-reported survey responses on health, behavior related to the COVID-19 pandemic, and demographics from over 500,000 users across all 50 US states and several US territories (83% female, 76% white) during April 2 – May 12, 2020.
- Among 3,829 users who used the app within ± 2 weeks of their reported PCR test results for SARS-CoV-2, Allen et al. evaluated a set of prediction models to distinguish positive and negative results. The best predictive model included common COVID-19 symptoms plus features observed in the

survey (AUC=0.92), followed by a model with the four most predictive features (AUC=0.87), and a symptoms-only model (AUC=0.76).

Allen et al. (Aug 26, 2020). Population-Scale Longitudinal Mapping of COVID-19 Symptoms, Behaviour and Testing. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-020-00944-2>

Other Resources and Commentaries

- [Why the United States Is Having a Coronavirus Data Crisis](#) – Nature (Aug 25)
- [Developing Safe and Effective Covid Vaccines — Operation Warp Speed’s Strategy and Approach](#) – New England Journal of Medicine (Aug 26)
- [Policy Lessons from Our Covid Experience](#) – New England Journal of Medicine (Aug 26)
- [Cities: build networks and share plans to emerge stronger from COVID-19](#) – Nature (Aug 27)
- [Central Nervous System Targets and Routes for SARS-CoV-2: Current Views and New Hypotheses](#) – ACS Chemical Neuroscience (Aug 26)
- [Surviving Multiple Pandemics—COVID-19 and Racism for African American Older Adults: A Call to Gerontological Nursing for Social Justice](#) – Journal of Gerontological Nursing (Sept 1)
- [High Incidence of False Positive Results in Patients with Other Acute Infections, Using the LIAISON® SARS-CoV-2 Commercial Chemiluminescent Micro-Particle Immunoassay for Detection of IgG Anti SARS-CoV-2 Antibodies](#) – Journal of Clinical Microbiology (Aug 26)
- [Treatment of COVID-19: Perspective on Convalescent Plasma Transfusion](#) – Frontiers in Medicine (July 28)
- [CKD Is a Key Risk Factor for COVID-19 Mortality](#) – Nature Reviews Nephrology (Aug 26)
- [Substance Use Disorders and COVID-19: Multi-Faceted Problems Which Require Multi-Pronged Solutions](#) – Frontiers in Psychiatry (July 21)
- [Mental Health Consequences of COVID-19: The next Global Pandemic](#) – Trends in Psychiatry and Psychotherapy (Aug 21)
- [A Review of the Dermatological Manifestations of Coronavirus Disease 2019 \(COVID-19\)](#) – Dermatology Research and Practice (Aug 11)
- [COVID-19 Lockdowns, Stimulus Packages, Travel Bans, and Stock Returns](#) – Finance Research Letters (Aug 20)
- [Food Safety During and After the Era of COVID-19 Pandemic](#) – Frontiers in Microbiology (Aug 4)
- [Single Virus Targeting Multiple Organs: What We Know and Where We Are Heading?](#) – Frontiers in Medicine (Aug 5)
- [The Role of Service Providers, Technology, and Mass Media When Home Isn’t Safe for Intimate Partner Violence Victims: Best Practices and Recommendations in the Era of COVID-19 and Beyond](#) – Archives of Sexual Behavior (Aug 25)

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