



2019-nCoV Literature Situation Report (Lit Rep)

June 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

- **Stay-at-home orders were associated with decreases in reports of robberies and traffic stops and increases in domestic violence calls in Los Angeles and Indianapolis.**
- **The addition of high-dose intravenous anakinra [an interleukin (IL)-1 receptor blocker] to standard of care for patients with severe COVID-19 was associated with a higher probability of survival.**
- **SARS-CoV-2 seropositivity was 3-4% among health care workers and their relatives in Wuhan, China and lower among health care workers and patients in other cities in Hubei province further from Wuhan.**
- **Specificity was found to be high for three commercial SARS-CoV-2 antibody tests, but still insufficient to yield a high positive predictive value in low seroprevalence settings.**

Non-Pharmaceutical Interventions

- After stay-at-home orders were implemented, police calls-for-service for burglary and robbery decreased in Los Angeles, CA and calls for domestic violence and vehicle theft increased. A similar pattern was observed in Indianapolis, IN for robbery and domestic violence calls. Traffic stops were also markedly decreased in both cities.
Mohler et al. (May 2020). Impact of Social Distancing during COVID-19 Pandemic on Crime in Los Angeles and Indianapolis. Journal of Criminal Justice.
<https://doi.org/10.1016/j.jcrimjus.2020.101692>
- Wilson et al. found that mask use reduced mean infection risk by 44-99% for short exposures and 24-94% for long exposures using a probabilistic model with exposure scenarios that represented a healthcare setting. Of non-traditional materials that could be used for masks, vacuum cleaner bags were the most effective, and scarves were the least effective.
Wilson et al. (June 2, 2020). COVID-19 and Non-Traditional Mask Use: How Do Various Materials Compare in Reducing the Infection Risk for Mask Wearers? The Journal of Hospital Infection.
<https://doi.org/10.1016/j.jhin.2020.05.036>

Transmission

- Seroprevalence of antibodies against SARS-CoV-2 was 4% among healthcare workers and 3% among their families in the city of Wuhan, China between March 9 and April 10. In other cities in Hubei province, seropositivity was lower in cities that were further from Wuhan. While seropositivity was



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highest for IgG, some individuals were positive only for IgM, underscoring that testing for both antibody types may be necessary in seroprevalence studies.

Xu et al. (June 5, 2020). Seroprevalence of Immunoglobulin M and G Antibodies against SARS-CoV-2 in China. Nature Medicine. <https://doi.org/10.1038/s41591-020-0949-6>

Testing and Treatment

- Cavalli et al. observed that patients (n=29) who received a high-dose of intravenous anakinra (an interleukin (IL)-1 receptor blocker) had a higher probability of survival at 21 days among a cohort of patients with COVID-19 who had moderate-to-severe ARDS and hyperinflammation and who were managed with non-invasive ventilation outside of the ICU. Treated patients were compared to patients who received standard-of-care at the time (hydroxychloroquine and lopinavir/ritonavir). Probability of bacteremia was nearly equivalent in the two groups. Low-dose subcutaneous anakinra had no appreciable effects on clinical status or biomarkers.

Cavalli et al. (June 2020). Interleukin-1 Blockade with High-Dose Anakinra in Patients with COVID-19, Acute Respiratory Distress Syndrome, and Hyperinflammation: A Retrospective Cohort Study. The Lancet Rheumatology. [https://doi.org/10.1016/S2665-9913\(20\)30127-2](https://doi.org/10.1016/S2665-9913(20)30127-2)

- *[pre-print, not peer reviewed]* Comparison of the Abbott, Roche, and DiaSorin antibody assays found high specificity for all three (ranging from 98.3% to 99.2%). However, when seroprevalence is low, even these high specificities can result in very low positive predictive values (32.6% to 77.6% at 1% prevalence). Sensitivity was found to be lower than reported by the manufacturers (ranging from 83.1% to 89.2%) and the Roche and DiaSorin tests were most likely to disagree with each other.

Perkmann et al. (June 5, 2020). Side by Side Comparison of Three Fully Automated SARS-CoV-2 Antibody Assays with a Focus on Specificity. Pre-print downloaded June 8 from <https://doi.org/10.1101/2020.06.04.20117911>

- Chan et al. found that SARS-CoV-2 mutations in current binding sites for PCR tests may compromise their sensitivity and identified the nsp1 gene as a novel target. An RT-PCR assay developed using this target had a sensitivity of 93.1% and a specificity of 100%.

Chan et al. (June 2020). Identification of Nsp1 Gene as the Target of SARS-CoV-2 Real-Time RT-PCR Using Nanopore Whole Genome Sequencing. Journal of Medical Virology. <https://doi.org/10.1002/jmv.26140>

- Tuaille et al. evaluated six point-of-care (POC) and three ELISA tests to determine their sensitivity and specificity for the detection of SARS-CoV-2 antibodies between 1 day and >15 days after onset of symptoms. Most tests detected antibodies in at least 50% of samples by day 7 and nearly all tests were positive for >80% of samples after 15 days, although none of the tests were positive for 100% of the samples. Three assays had a specificity of less than 90%.

Tuaille et al. (June 2020). Detection of SARS-CoV-2 Antibodies Using Commercial Assays and Seroconversion Patterns in Hospitalized Patients. The Journal of Infection. <https://doi.org/10.1016/j.jinf.2020.05.077>

Clinical Characteristics and Health Care Setting

- A systematic review and meta-analysis found that the incidence of cardiovascular complications among patients with COVID-19 was highest for heart failure, myocardial injury, and cardiac arrhythmias. Incidence of myocardial injury was higher in older age groups and groups with a higher

prevalence of pre-existing hypertension, but did not differ substantially between those with and without pre-existing cardiovascular disease.

Kunutsor and Laukkanen. (June 3, 2020). Cardiovascular Complications in COVID-19: A Systematic Review and Meta-Analysis. The Journal of Infection.

<https://doi.org/10.1016/j.jinf.2020.05.068>

- Whittaker et al. compared the features of pediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 infection (PIMS-TS) to that of Kawasaki Disease (KD) and KD shock syndrome. Of 58 PIMS-TS patients, 78% had evidence of current or prior SARS-CoV-2 infection. Fifty percent developed shock, 22% met the definition for KD, and 14% developed coronary artery dilatation or aneurysm. Compared with other cases of KD and KD shock syndrome, PIMS-TS cases were older and had higher levels of inflammatory biomarkers.

Whittaker et al. (June 8, 2020). Clinical Characteristics of 58 Children With a Pediatric Inflammatory Multisystem Syndrome Temporally Associated With SARS-CoV-2. JAMA.

<https://doi.org/10.1001/jama.2020.10369>

- Severe adverse maternal outcomes occurred in 9/82 (11%) pregnant women who tested positive for SARS-CoV-2 in a Spanish cohort. Four of the 9 had mild COVID-19 symptoms and 5/9 had severe symptoms.
- Women who delivered by cesarean sections (necessitated by COVID-19 symptoms in 100% of those with severe symptoms and 10% of those with mild symptoms) were more likely to require ICU admission and experience clinical deterioration than those with vaginal delivery and their newborns were more likely to be admitted to the NICU; however this study did not include mother-infant dyads undergoing cesarean section in the absence of maternal COVID-19 infection. Five infants eventually tested positive for SARS-CoV-2 and two developed COVID-19 symptoms, which resolved after 48 hours.

Martínez-Perez et al. (June 8, 2020). Association Between Mode of Delivery Among Pregnant Women With COVID-19 and Maternal and Neonatal Outcomes in Spain. JAMA.

<https://doi.org/10.1001/jama.2020.10125>

Modeling and Prediction

- Davies et al. used a transmission model to estimate that without mitigation measures 23 million cases and 350,000 deaths due to COVID-19 would occur in the UK by December, 2021. School closures, physical distancing, shielding people aged 70 or older, and isolation of symptomatic cases, in combination, was projected to reduce cases and deaths, but repeated periods of phased lockdowns would need to be in place for a large proportion of the coming year to prevent healthcare demand from exceeding capacity.

Davies et al. (June 2020). Effects of Non-Pharmaceutical Interventions on COVID-19 Cases, Deaths, and Demand for Hospital Services in the UK: A Modelling Study. The Lancet Public Health.

[https://doi.org/10.1016/S2468-2667\(20\)30133-X](https://doi.org/10.1016/S2468-2667(20)30133-X)

Other Resources and Commentaries

- [Can the SARS-CoV-2 PCR Cycle Threshold Value and Time from Symptom Onset to Testing Predict Infectivity?](#) -- Clinical Infectious Diseases (June 6)
- [Social network-based distancing strategies to flatten the COVID 19 curve in a post-lockdown world](#) – pre-print (May 27)

- [US deportation policies in the time of COVID-19: a public health threat to the Americas](#) – Public Health (May 22)
- [Putting the Public Back in Public Health - Surveying Symptoms of Covid-19](#) – New England Journal of Medicine (June 5)
- [Implications of antibody-dependent enhancement of infection for SARS-CoV-2 countermeasures](#) – Nature Biotechnology (June 5)
- [Autoimmune and inflammatory diseases following COVID-19](#) – Nature Reviews Rheumatology (June 4)
- [Knowledge and Practices Regarding Safe Household Cleaning and Disinfection for COVID-19 Prevention — United States, May 2020](#) – MMWR (June 5)
- [COVID-19 Vaccines: Neutralizing Antibodies and the Alum Advantage](#) – Nature Reviews Immunology (June 4)
- [The online competition between pro- and anti-vaccination views](#) – Nature (May 13)
- [COVID-19 deaths in long term care facilities - a critical piece of the pandemic puzzle](#) – Journal of the American Geriatrics Society (June 5)
- [Simulated Assessment of Pharmacokinetically Guided Dosing for Investigational Treatments of Pediatric Patients With Coronavirus Disease 2019](#) – JAMA Pediatrics (June 5)
- [SARS-CoV-2–Related Inflammatory Multisystem Syndrome in Children](#) – JAMA (June 8)
- [Caring for Women Who Are Planning a Pregnancy, Pregnant, or Postpartum During the COVID-19 Pandemic](#) -- JAMA Insights (June 5)
- [Analysis of COVID-19 transmission: Low risk of presymptomatic spread?](#) – Archives of Pathology & Laboratory Medicine
- [Waiting for Certainty on Covid-19 Antibody Tests - At What Cost?](#) – New England Journal of Medicine (June 5)
- [False Negative Tests for SARS-CoV-2 Infection — Challenges and Implications](#) – New England Journal of Medicine (June 5)

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