

2019-nCoV Literature Situation Report (Lit Rep)

June 3, 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

- **Today, researchers at the University of Minnesota published results from the first randomized clinical trial of hydroxychloroquine as post-exposure prophylaxis (PEP) for COVID-19. The study found no differences between hydroxychloroquine and placebo in preventing SARS-CoV-2 infection.**
- **The Lancet and the New England Journal of Medicine both issued ‘Expressions of Concern’ regarding the validity of data used in two articles regarding the use of hydroxychloroquine or chloroquine for the treatment of COVID-19. The original articles were published by authors associated with a company called Surgisphere Corporation.**
- **An estimated 33% of healthcare workers at a New York City hospital tested positive for SARS-CoV-2 IgG antibodies. Most of the healthcare workers who tested positive were working in the weeks preceding immunological testing.**
- **An estimated 31% of nursing homes in the US had at least one documented COVID-19 case. Nursing homes that were large, urban, and had a higher proportion of black residents had a higher probability of reporting a COVID-19 case.**

Transmission

- *[pre-print, not peer reviewed]* Using genomic surveillance and phylogenetic methods, Giandhari et al. found evidence of multiple international introductions and high rates of SARS-CoV-2 transmission in Western and Eastern Cape regions of South Africa. They also found evidence for a localized outbreak in a hospital in Durban, potentially explaining the initially high death rates reported in that province. This study highlights the potential role for genomics in the surveillance of SARS-CoV-2 transmission.

Giandhari et al. (May 30, 2020). Early Transmission of SARS-CoV-2 in South Africa: An Epidemiological and Phylogenetic Report. Preprint downloaded June 3 from <https://doi.org/10.1101/2020.05.29.20116376>

Geographic Spread

- Abrams et al. found that 2,949 (31%) of 9,395 nursing homes located in 30 states had at least one documented COVID-19 case. Nursing homes that were large, urban, and had a higher proportion of Black residents had a higher probability of reporting a COVID-19 case.

Abrams et al. (June 2, 2020). Characteristics of U.S. Nursing Homes with COVID-19 Cases. Journal of the American Geriatrics Society. <https://doi.org/10.1111/jgs.16661>

Testing and Treatment

- A placebo-controlled randomized trial of hydroxychloroquine as post-exposure prophylaxis (PEP) for SARS-CoV-2 found no evidence of efficacy. Among 821 asymptomatic participants, 88% reported a high-risk exposure to a confirmed COVID-19 case. There was no difference in SARS-CoV-2 acquisition between participants receiving hydroxychloroquine (12%) and those receiving placebo (14%).
- No serious adverse reactions were reported, although side effects were more common with hydroxychloroquine than with placebo (40% vs. 17%).

Boulware et al. (June 3, 2020) A Randomized Trial of Hydroxychloroquine as Postexposure Prophylaxis for Covid-19. The New England Journal of Medicine.

<https://doi.org/10.1056/NEJMoa2016638>

- The Lancet and the New England Journal of Medicine have both issued Expressions of Concern about the validity of the data used for two articles regarding the use of hydroxychloroquine or chloroquine for the treatment of COVID-19 published by authors associated with a company called Surgisphere Corporation. These articles both utilized retrospective data from an international database that included electronic health records from 169 hospitals on three continents.

Editors. (June 3, 2020). Expression of Concern: Hydroxychloroquine or Chloroquine with or without a Macrolide for Treatment of COVID-19: A Multinational Registry Analysis. The Lancet.

[https://doi.org/10.1016/S0140-6736\(20\)31290-3](https://doi.org/10.1016/S0140-6736(20)31290-3)

Rubin. (June 2, 2020). Expression of Concern: Mehra MR et Al. Cardiovascular Disease, Drug Therapy, and Mortality in Covid-19. N Engl J Med. DOI: 10.1056/NEJMoa2007621. The New England Journal of Medicine. <https://doi.org/10.1056/NEJMe2020822>

- Carmo et al. found that most patients continue to test positive for SARS-CoV-2 for over two weeks. The minimum time from first positive to first negative SARS-CoV-2 RT-PCR test result was 7 days, while some patients continued to test positive for 51 days following their first positive test result.
- Viral RNA persistence was not associated with severity of disease, but may be associated with a weaker immune response.

Carmo et al. (June 2, 2020). Clearance and Persistence of SARS-CoV-2 RNA in COVID-19 Patients. Journal of Medical Virology. <https://doi.org/10.1002/jmv.26103>

- *[pre-print, not peer reviewed]* Collier et al. evaluated a point of care (POC) nucleic acid amplification test (NAAT) (called the SAMBA II) for SARS-CoV-2. The sensitivity and specificity of SAMBA II were 96.9% and 99.1%, respectively, and the median time to test result was 2.6 hours. The authors also compared hospital outcomes associated with implementation of POC testing within a large teaching hospital, compared to the standard RT-PCR tests for SARS-CoV-2. Implementation of the SAMBA II POC tests was associated with faster time to triage from the ED, release of isolation rooms, and avoidance of hospital bay closures.

Collier et al. (June 2, 2020). Rapid Point of Care Nucleic Acid Testing for SARS-CoV-2 in Hospitalised Patients a Clinical Trial and Implementation Study. Preprint downloaded June 3 from <https://doi.org/10.1101/2020.05.31.20114520>

- *[pre-print, not peer reviewed]* Wei et al. report on a novel method for nucleic acid amplification testing (NAAT) for point-of-care SARS-CoV-2 diagnostic testing [Loop-mediated isothermal amplification (LAMP)]. This assay can be run directly on transport media following a nasopharyngeal swab without requiring an RNA extraction step prior to amplification of the viral RNA, and provides

results in 30 minutes. The authors reported a sensitivity of 85% and specificity of 100% based on 10 positive and 10 negative samples.

Wei et al. (June 2, 2020). Direct Diagnostic Testing of SARS-CoV-2 without the Need for Prior RNA Extraction. Preprint downloaded June 3 from <https://doi.org/10.1101/2020.05.28.20115220>

Clinical Characteristics and Health Care Setting

- Huang and Pranata conducted a meta-analysis of lymphocyte count and severity of COVID-19 disease. Results from 24 studies suggest that patients with poor clinical outcomes have a lower lymphocyte count (mean difference - 361.06 μ L) compared to those with good outcomes. This finding persisted in subgroup analysis, which revealed lower lymphocyte counts in patients who died, experienced acute respiratory distress syndrome, and were admitted to ICU. Lymphopenia was significantly associated with severe COVID-19 (OR 3.70, 95%CI: 2.44, 5.63)

Huang and Pranata. (May 24, 2020). Lymphopenia in Severe Coronavirus Disease-2019 (COVID-19): Systematic Review and Meta-Analysis. Journal of Intensive Care.

<https://doi.org/10.1186/s40560-020-00453-4>

- It has been hypothesized that ACE-inhibitors and angiotensin-2 blockers, medications commonly prescribed to patients with hypertension or diabetes, could increase the risk of severe COVID-19 infection by increasing the number of ACE2 receptors that SARS-CoV-2 uses for cell entry. However, Bean et al. found no evidence for increased risk of ICU admission or death associated with these medications in a cohort of 1,200 hospitalized COVID-19 patients.

Bean et al. (June 2, 2020). ACE-Inhibitors and Angiotensin-2 Receptor Blockers Are Not Associated with Severe SARS-COVID19 Infection in a Multi-Site UK Acute Hospital Trust.

European Journal of Heart Failure. <https://doi.org/10.1002/ejhf.1924>

- [*pre-print, not peer reviewed*] Mansour et al. found that 33% of 285 healthcare workers at a tertiary academic hospital in New York City tested positive for SARS-CoV-2 IgG antibodies. These findings highlight that inpatient and ambulatory frontline staff had high levels of exposure to SARS-CoV-2, most of whom were working in the weeks preceding immunological testing.

Mansour et al. (June 2, 2020). Prevalence of SARS-CoV-2 Antibodies Among Healthcare Workers at a Tertiary Academic Hospital in New York City. Preprint downloaded June 3 from

<https://doi.org/10.1101/2020.05.27.20090811>

Mental Health and Personal Impact

- In a systematic review of the mental health consequences of the SARS-CoV-2 pandemic, Vindegaard and Benros found only 2 studies that evaluated patients with confirmed COVID-19 infection. These studies reported a high level of post-traumatic stress symptoms (96%) and depressive symptoms among COVID-19 patients.
- The remaining 41 studies focused on the indirect effects of the pandemic on healthcare workers, the general public, and on those with existing mental health diagnoses. In the general public, women, individuals with poor self-rated health status, and those with relatives with COVID-19 were more likely to self-report anxiety, depression symptoms, or low psychological well-being.

Vindegaard and Benros. (May 30, 2020). COVID-19 Pandemic and Mental Health Consequences: Systematic Review of the Current Evidence. Brain, Behavior, and Immunity.

<https://doi.org/10.1016/j.bbi.2020.05.048>

Public Health Policy and Practice

- *[pre-print, not peer reviewed]* Samuel et al. used Twitter data to analyze public sentiment to identify dominant opinions associated with the push to 'reopen' the economy following COVID-19 stay-at-home orders. Between April 30 and May 8, 2020, Twitter users showed more positive than negative sentiment support for reopening the US economy. This research provides some indication that emotional volatility (presence of extreme fear, confusion, trust, and anticipation) is associated with the COVID-19 pandemic and the socioeconomic consequences of the lockdown.

Samuel et al. (June 2, 2020). Feeling Positive About Reopening? New Normal Scenarios from COVID-19 Reopen Sentiment Analytics. Preprint downloaded June 3 from

<https://doi.org/10.1101/2020.06.01.20119362>

Other Resources and Commentaries

- [Current Perspective of Antiviral Strategies against COVID-19](#) – ACS Infectious Diseases (June 2)
- [The Collision of COVID-19 and the U.S. Health System](#) – Annals of Internal Medicine (June 2)
- [Remdesivir: A Review of Its Discovery and Development Leading to Emergency Use Authorization for Treatment of COVID-19](#) – ACS Central Science (May 4)
- [Research during SARS-CoV-2 Pandemic: To “Preprint” or Not to “Preprint”, That Is the Question](#) – Medicina Clinica (May 8)
- [Positive Public Health Ethics: Toward Flourishing and Resilient Communities and Individuals](#) – The American Journal of Bioethics (June 2)
- [The Potential Insights of Traditional Chinese Medicine on Treatment of COVID-19](#) – Chinese Medicine (May 24)
- [Covid-19: Doctors Need Proper Mental Health Support](#) – BMJ (June 1)

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