

2019-nCoV Literature Situation Report (Lit Rep)

September 4, 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

- **Patients who had a likely vitamin D deficiency were more likely to test positive for COVID-19 than those with sufficient vitamin D levels.** [More](#)
- **Critically ill patients with COVID-19 had circulating cytokine levels that were lower compared to patients with bacterial sepsis and similar to other critically ill patients, suggesting that a cytokine storm may not be characteristic of COVID-19.** [More](#)
- **There was nearly perfect agreement in SARS-CoV-2 RT-PCR test results between paired samples from enhanced saliva specimens and nasopharyngeal swabs, although saliva samples had lower mean viral loads.** [More](#)
- **HIV and tuberculosis were associated with greater risk of COVID-19 death in a population study in South Africa.** [More](#)

Non-Pharmaceutical Interventions

- *[Pre-print, not peer reviewed]* Twenty-one different types of decontamination or reprocessing methods for N95 masks have been evaluated, the most common of which is ultraviolet irradiation. Other techniques found by this systematic review include moist and dry heat and exposure to chemicals, such as ethylene oxide and hydrogen peroxide.
Paul et al. (Sept 3, 2020). Exploring Options for Reprocessing of N95 Filtering Facepiece Respirators (N95-FFRs) amidst COVID-19 Pandemic a Systematic Review. Pre-print downloaded Sep 4 from <https://doi.org/10.1101/2020.09.01.20179879>

Testing and Treatment

- New prescriptions for hydroxychloroquine and chloroquine in the US by medical professionals in specialties that do not routinely use these medications (<2% of prescriptions in 2019) rose from 1,143 in February 2020 to 75,596 in March 2020, an 80-fold increase from March 2019. These medications were reported to have benefits for prevention and treatment of COVID-19 in the early months of the pandemic, but are not currently recommended by federal guidelines.
Bull-Otterson et al. (Sept 4, 2020). Hydroxychloroquine and Chloroquine Prescribing Patterns by Provider Specialty Following Initial Reports of Potential Benefit for COVID-19 Treatment — United States, January–June 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6935a4>
- A meta-analysis of 12 observational and 3 randomized trials found that the efficacy of chloroquine and hydroxychloroquine was inconsistent across the studies. There was no significant reduction in

mortality with hydroxychloroquine use (RR=0.98, 95% CI: 0.66-1.46), and there was a higher risk of ECG abnormalities /arrhythmia associated with hydroxychloroquine/chloroquine use (RR=1.46, 95% CI: 1.04-2.06).

Elavarasi et al. (Sept 3, 2020). Chloroquine and Hydroxychloroquine for the Treatment of COVID-19: A Systematic Review and Meta-Analysis. Journal of General Internal Medicine.

<https://doi.org/10.1007/s11606-020-06146-w>

- There was very high agreement in SARS-CoV-2 RT-PCR testing results between enhanced saliva specimens (i.e. strong sniff, elicited cough, and a collection of saliva/secretions) and nasopharyngeal swabs collected from 224 patients suspected of having COVID-19. The positive agreement was 100% and the negative agreement was 99.4%.

- Saliva samples had a lower mean viral load compared with nasopharyngeal swabs.

Procop et al. (Sept 3, 2020). A Direct Comparison of Enhanced Saliva to Nasopharyngeal Swab for the Detection of SARS-CoV-2 in Symptomatic Patients. Journal of Clinical Microbiology.

<https://doi.org/10.1128/JCM.01946-20>

Clinical Characteristics and Health Care Setting

- Cytokine levels among patients critically ill with COVID-19 were lower or not significantly different from levels among patients with other critical illnesses, including bacterial septic shock, out-of-hospital cardiac arrest, and multiple traumas. In particular, levels of all 3 cytokines tested (tumor necrosis factor, IL-6, and IL-8) were significantly lower in patients with COVID-19 than in patients with septic shock with ARDS.

- These preliminary findings suggest that severe COVID-19 may not be characterized by a cytokine storm, and question the potential benefit of anti-cytokine therapies to COVID-19 patients.

Kox et al. (Sept 3, 2020). Cytokine Levels in Critically Ill Patients With COVID-19 and Other Conditions. JAMA. <https://doi.org/10.1001/jama.2020.17052>

- Patients classified as having a likely deficient vitamin D level were more likely to test positive for COVID-19 than patients with sufficient vitamin D levels (RR=1.77, 95%CI: 1.12-2.81). [EDITORIAL NOTE: A summary of a pre-print version of this manuscript appeared in the Lit Rep on May 13]

Meltzer et al. (Sept 3, 2020). Association of Vitamin D Status and Other Clinical Characteristics With COVID-19 Test Results. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2020.19722>

- HIV and tuberculosis were each associated with increased risk of COVID-19 mortality in a population cohort study in South Africa (n=3,460,932) that included 625 deaths due to COVID-19. In models adjusted for age, sex, and comorbidities, the HIV-associated risk was 2.1 (95% CI 1.7-2.7), compared to 2.7 (95% CI 1.8-4.0) for current tuberculosis and 1.5 (95% CI 1.2-1.9) for prior tuberculosis. The models adjusted for location of residence, but did not have data available to adjust for other measures of socioeconomic status that may be associated with HIV and TB.

Boulle et al. (2020). Risk Factors for COVID-19 Death in a Population Cohort Study from the Western Cape Province, South Africa. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciaa1198>

- The level of SARS-CoV-2 neutralizing antibodies was highly correlated (r=0.82) with the concentration of IgG antibodies in the sera of 51 hospitalized COVID-19 patients. However, the level

of neutralizing antibody responses was not associated with disease severity or inflammatory biomarkers.

Gozalbo-Rovira et al. (Sept 1, 2020). SARS-CoV-2 Antibodies, Serum Inflammatory Biomarkers and Clinical Severity of Hospitalized COVID-19 Patients. Journal of Clinical Virology.

<https://doi.org/10.1016/j.jcv.2020.104611>

Mental Health and Personal Impact

- 51% of healthcare professionals from 60 countries reported burnout during the COVID-19 pandemic. The cross-sectional study (n=2,707) also found burnout was associated with work impacting household activities, feeling pushed beyond training, exposure to COVID-19 patients, and making life prioritizing decisions due to supply shortages. Adequate PPE was associated with lower risk of burnout. Burnout was also higher in high-income countries compared to low-income countries.

[EDITORIAL NOTE: A summary of a pre-print version of this manuscript appeared in the Lit Rep on May 22]

Morgantini et al. (Sept 3, 2020). Factors Contributing to Healthcare Professional Burnout during the COVID-19 Pandemic: A Rapid Turnaround Global Survey. PLOS ONE.

<https://doi.org/10.1371/journal.pone.0238217>

Public Health Policy and Practice

- *[Pre-print, not peer reviewed]* Compared with white patients, minority race/ethnicity was found to be associated with hospital admission for Hispanic (OR: 3.8, 95% CI: 2.72-5.30), Asian (OR: 2.39, 95% CI: 1.74-3.29, and Black (OR: 1.50, 95% CI: 1.15-1.94) patients. Within each racial/ethnic group, quintiles of neighborhood-level deprivation were not associated with hospitalization. The analysis was based on 5,577 COVID-19 patients from 12 hospitals and 60 clinics in the US.
- Non-English speaking (OR: 1.91, 95% CI: 1.51-2.43) significantly increased odds of hospital admission across and within minority groups.

Ingraham et al. (Sept 3, 2020). Racial/Ethnic Disparities in Hospital Admissions from COVID-19 and Determining the Impact of Neighborhood Deprivation and Primary Language. Pre-print downloaded Sep 4 from <https://doi.org/10.1101/2020.09.02.20185983>

Other Resources and Commentaries

- [COVID-19 — New Insights on a Rapidly Changing Epidemic](#) – JAMA (Feb 28)
- [Reopening Schools during COVID-19](#) – Science (Sept 4)
- [COVID-19 and mRNA Vaccines—First Large Test for a New Approach](#) – JAMA (Sept 3)
- [Possibility for Reverse Zoonotic Transmission of SARS-CoV-2 to Free-Ranging Wildlife: A Case Study of Bats](#) – PLOS Pathogens (Sept 3)
- [Machine Learning Reveals That Prolonged Exposure to Air Pollution Is Associated with SARS-CoV-2 Mortality and Infectivity in Italy](#) – Environmental Pollution (Aug 21)
- [Peer Support Intervention as a Tool to Address College Students' Mental Health amidst the COVID-19 Pandemic](#) – International Journal of Social Psychiatry (Sept 3)
- [Social Intervention by the Numbers: Evidence Behind the Specific Public Health Guidelines in the COVID-19 Pandemic](#) – Population Health Management (Sept 2)
- [Profiling and Characterization of SARS-CoV-2 Mutants' Infectivity and Antigenicity](#) – Signal Transduction and Targeted Therapy (Dec 3)
- [Questions Concerning the Proximal Origin of SARS-CoV-2](#) – Journal of Medical Virology (Sept 3)

- [“I Am Terrified of Something Happening to Me” The Lived Experience of People with Obesity during the COVID-19 Pandemic](#) – Clinical Obesity (Sept 4)
- [Infographic. Clinical Recommendations for Return to Play during the COVID-19 Pandemic](#) – British Journal of Sports Medicine (Sept 3)
- [The Estimation of Diagnostic Accuracy of Tests for COVID-19: A Scoping Review](#) – Journal of Infection (Aug 31)
- [Are We Underestimating Seroprevalence of SARS-CoV-2?](#) – BMJ (Sept 3)
- [Ad26 Vaccine Protects against SARS-CoV-2 Severe Clinical Disease in Hamsters](#) – Nature Medicine (Sept 3)

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