



2019-nCoV Literature Situation Report (Lit Rep)

June 9, 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

- **The average time to transition from RT-PCR positive to negative for patients and healthcare workers at a US academic medical center was 24 days after symptom onset.**
- **Non-steroidal anti-inflammatory drugs used to treat COVID-19 patients were not found to be associated with relevant COVID-19 clinical outcomes.**
- **Self-collected saliva samples and clinician-administered nasopharyngeal swabs had comparable performance for detection of SARS-CoV-2 by RT-qPCR.**
- **Among 382 young adult service members aboard the USS Theodore Roosevelt, 60% had reactive antibodies against SARS-CoV-2, of whom 59% had neutralizing antibodies, and 20% of those with current or past infection were asymptomatic.**

Non-Pharmaceutical Interventions

- Flaxman et al. studied the impact of major non-pharmacological interventions across 11 European countries and estimated that recent interventions have been sufficient to achieve epidemic control and drive the reproduction number (R_t) from an initial average of 3.8 across all 11 countries to an average of 0.66. Lockdown measures had a large impact on transmission with an estimated 81% reduction.
- They estimate that between 12 and 15 million individuals in the 11 countries (3% - 4% of the population) were infected with SARS-CoV-2 by May 4th, 2020.

Flaxman et al. (June 8, 2020). Estimating the Effects of Non-Pharmaceutical Interventions on COVID-19 in Europe. Nature. <https://doi.org/10.1038/s41586-020-2405-7>

Transmission

- In a homeless shelter system in Hamilton, Canada, Bodkin et al. tested 104 residents and 141 staff for COVID-19 by RT-PCR and found 1% of residents and 5% of staff had prevalent SARS-CoV-2 infection. They found 1 case of secondary spread. The investigators suggest that shelter restructuring, isolating confirmed cases and those awaiting test results, and providing rapid test results may have helped to preventing an outbreak.

Bodkin et al. (June 8, 2020). Pandemic Planning in Homeless Shelters: A Pilot Study of a COVID-19 Testing and Support Program to Mitigate the Risk of COVID-19 Outbreaks in Congregate Settings. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa743>



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- An observational analysis of 150 patients and health care workers at a US academic medical center revealed that the average time to transition from testing positive for SARS-CoV-2 by RT-PCR to testing negative was 24 days after symptom onset, and 10% of participants remained positive at 33 days after symptom onset.
- The authors suggest that the CDC guideline of excluding healthcare workers from the workforce and keeping patients on contact precautions until at least 3 days after symptomatic recovery or at least 7 days since initial onset may not be sufficient if extended viral shedding is associated with continued infectiousness.

Gombar et al. (May 30, 2020). Persistent Detection of SARS-CoV-2 RNA in Patients and Healthcare Workers with COVID-19. Journal of Clinical Virology.

<https://doi.org/10.1016/j.jcv.2020.104477>

- Among a convenience sample of 382 service members aboard the USS Theodore Roosevelt, 60% had reactive antibodies to SARS-CoV-2, 59% of whom had neutralizing antibodies. In several participants, neutralizing antibodies were still detectable >40 days after symptom onset. Of those with previous or current SARS-CoV-2 infection, 20% were asymptomatic. Service members who reported taking preventive measures, such as wearing face coverings and observing social distancing, had lower risk of infection.

Payne et al. (June 9, 2020). SARS-CoV-2 Infections and Serologic Responses from a Sample of U.S. Navy Service Members — USS Theodore Roosevelt, April 2020 Daniel. MMWR. Morbidity and Mortality Weekly Report.

<http://dx.doi.org/10.15585/mmwr.mm6923e4>

Testing and Treatment

- *[pre-print, not peer reviewed]* A population-based cohort study conducted in Denmark matched COVID-19 patients who were prescribed non-steroidal anti-inflammatory drugs (NSAIDs) (n=248) with non-treated individuals with COVID-19 (n=8,988) (matched on age, sex, relevant comorbidities, and prescription fills) and found that use of NSAIDs was not associated with 30-day mortality, hospitalization, ICU-admission, or mechanical ventilation.

Lund et al. (June 9, 2020). Adverse Outcomes and Mortality in Users of Non-Steroidal Anti-Inflammatory Drugs Tested Positive for SARS-CoV-2 A Danish Nationwide Cohort Study. Preprint downloaded June 9 from <https://doi.org/10.1101/2020.06.08.20115683>

- *[pre-print, not peer reviewed]* Miller et al. found comparable performance of self-collected saliva samples and clinician-administered nasopharyngeal swabs using RT-qPCR to detect SARS-CoV-2. The authors report 97.1% positive agreement and 96.5-98.2% negative agreement.

Miller et al. (June 9, 2020). Validation of a Self-Administrable Saliva-Based RT-QPCR Test Detecting SARS-CoV-2. Preprint downloaded June 9 from

<https://doi.org/10.1101/2020.06.05.20122721>

- *[pre-print, not peer reviewed]* Nimer et al. report a how-to guide for building a robust COVID-19 testing program at a university-based health system, based on the University of Miami Health system. Investigators highlight the role of accessible diagnostics as key to the program's success, which was made possible by developing in-house testing capabilities and establishing durable employee and patient testing algorithms.

Nimer et al. (June 8, 2020). A How-to-Guide to Building a Robust SARS-CoV-2 Testing Program at a University-Based Health System. Preprint downloaded June 9 from

<https://doi.org/10.1101/2020.06.03.20120832>

Mental Health and Personal Impact

- A retrospective multicenter study in 20 emergency departments in the Midwest found that suicidal ideation as a percentage of behavioral health visits decreased from 33% to 18%, but the actual suicide rate during the study period could not be ascertained. Alcohol encounters as a percentage of behavioral health visits increased from 28% to 33%.

Smalley et al. (May 18, 2020). The Impact of COVID-19 on Suicidal Ideation and Alcohol Presentations to Emergency Departments in a Large Healthcare System. The American Journal of Emergency Medicine. <https://doi.org/10.1016/j.ajem.2020.05.093>

Modeling and Prediction

- Given the disparity in predictions of various models pertaining to COVID-19 disease trajectories and intervention assessments, Shea et al. propose a systematic approach that employs expert elicitation methods and a decision-theoretic framework to minimize bias and account for within- and between-model uncertainty.

Shea et al. (May 8, 2020). Harnessing Multiple Models for Outbreak Management. Science. <https://doi.org/10.1126/science.abb9934>

Public Health Policy and Practice

- [pre-print, not peer reviewed] Using CDC data, Goldstein et al. found that age-and-place adjusted COVID-19 death rates are 80% higher for blacks and over 50% higher for Hispanics relative to whites on a national level. Wide variations in mortality disparities were observed on the state level.

Goldstein and Atherwood. (May 23, 2020). Improved Measurement of Racial/ethnic Disparities in COVID-19 Mortality in the United States. Preprint downloaded June 9 from <https://doi.org/10.1101/2020.05.21.20109116>

- A risk model developed using data from the Walgreens pharmacy electronic data warehouse (n=29,824,409) classified 27% of patients as high risk (score 8-10). Age accounted for 53% of a patient's total risk, followed by comorbidities (30%), inferred chronic obstructive pulmonary disease, hypertension, or diabetes (14%), and urban density classification (4%).

Smith-Ray et al. (June 8, 2020). United States Distribution of Patients at Risk for Complications Related to COVID-19. JMIR Public Health and Surveillance. <https://doi.org/10.2196/19606>

Other Resources and Commentaries

- [Acute Myocardial Injury in Patients Hospitalized with COVID-19 Infection: A Review](#) – Progress in Cardiovascular Diseases (June 6)
- [Electronic Health Record Documentation of Psychiatric Assessments in Massachusetts Emergency Department and Outpatient Settings During the Coronavirus Disease 2019 \(COVID-19\) Pandemic](#) – JAMA (June 8)
- [The Origin and Underlying Driving Forces of the SARS-CoV-2 Outbreak](#) – Journal of Biomedical Science (June 7)
- [Indigenous Populations: Left behind in the COVID-19 Response](#) – The Lancet (June 6)
- [The Laboratory Diagnosis of COVID-19-- Frequently-Asked Questions](#) – Clinical Infectious Diseases (June 8)
- [Effectiveness and Safety of Available Treatments for COVID-19 during Pregnancy: A Critical Review](#) – The Journal of Maternal-Fetal & Neonatal Medicine (June 7)

- [Brief Clinical Evaluation of Six High-Throughput SARS-CoV-2 IgG Antibody Assays](#) – Journal of Clinical Virology (June 1)
- [Lung Ventilation Function Characteristics of Survivors from Severe COVID-19: A Prospective Study](#) – Critical Care (June 6)
- [SARS-CoV-2–Related Inflammatory Multisystem Syndrome in Children](#) – JAMA (June 8)
- [Quantifying Additional COVID-19 Symptoms Will Save Lives](#) – The Lancet (June 4)
- [COVID-19 Vaccine Development Pipeline Gears Up](#) – The Lancet (June 6)
- [SARS-CoV-2 Infection in Pregnant Women: Are There Long-Term Effects in Offspring’s Brain Development?](#) – Minerva Ginecologica (June 5)
- [Relationship Between Blood Group and Risk of Infection and Death in COVID-19 a Live Meta-Analysis](#) – Medrxiv (June 8)
- [Talking to Children about Illness and Death of a Loved One during the COVID-19 Pandemic](#) – The Lancet (June 4)
- [Early Evidence of Pronounced Brain Involvement in Fatal COVID-19 Outcomes](#) – The Lancet (June 4)
- [Active Case Finding with Case Management: The Key to Tackling the COVID-19 Pandemic](#) – The Lancet (June 4)
- [Patients with COVID-19 and Neurological Manifestations Show Undetectable SARS-CoV-2 RNA Levels in the Cerebrospinal Fluid](#) – International Journal of Infectious Diseases (June 4)
- [Mitigating Coronavirus-Induced Acute Respiratory Distress Syndrome by Radiotherapy](#) – Iscience (May 30)

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