



2019-nCoV Literature Situation Report (Lit Rep)

May 7, 2021

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

- **A prospective cohort study of SpaceX employees (N=4,111) found a 91% lower odds of SARS-CoV-2 reinfection over 6 months of follow-up among participants with detectable SARS-CoV-2 antibodies at baseline, potentially indicating that previous infection provides at least 6 months of protection from SARS-CoV-2 reinfection for most individuals. [More](#)**
- **A study of humoral immune responses in 229 patients with asymptomatic, mild, moderate, and severe COVID-19 found that persons with delayed neutralizing antibody generation had a higher risk of mortality compared to survivors. [More](#)**
- **Preliminary results from a clinical trial (N=80) of a modified Moderna mRNA COVID-19 vaccine administered as a booster 6 months after the two-dose vaccine series induced increases in antibody neutralization titers to the wild type and variant strains B.1.351 and P.1. [More](#)**

Testing and Treatment

- A large, retrospective study (N=47,000) comparing unobserved self-collected anterior nasal swabs and healthcare provider-collected nasopharyngeal swabs found that cycle threshold values for detection of human RNase P (RP), an indicator of sample adequacy for RT-PCR testing, were not significantly different. However, cycle thresholds for detection of SARS-CoV-2 were significantly higher for self-collected than provider-collected swabs, particularly among persons with asymptomatic infection. These results suggest that patient self-collection can provide adequate samples for SARS-CoV-2 testing with low risk of false-negative results.

Kagan et al. (Apr 1, 2021). Performance of Unobserved Self-Collected Nasal Swabs for Detection of SARS-CoV-2 by RT-PCR Utilizing a Remote Specimen Collection Strategy. Open Forum Infectious Diseases. <https://doi.org/10.1093/ofid/ofab039>

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* A prospective cohort study of SpaceX employees (N=4,111) found a 91% lower odds of SARS-CoV-2 reinfection over 6 months of follow-up among participants with detectable SARS-CoV-2 antibodies at baseline. The study authors adjusted for underlying health conditions and increased risk of exposure as potential confounders. The results suggest that

previous infection may provide at least 6 months of protection from SARS-CoV-2 reinfection for most individuals.

Finch et al. (May 6, 2021). SARS-CoV-2 Infection and Reinfection in a Seroepidemiological Workplace Cohort in the United States. Pre-print downloaded May 7 from <https://doi.org/10.1101/2021.05.04.21256609>

- A study of humoral immune responses among 229 patients with asymptomatic, mild, moderate, and severe COVID-19 found that persons with delayed neutralizing antibody generation had a higher risk of mortality compared to survivors. Investigators collected multiple serum samples from patients during the course of their illness and examined SARS-CoV-2 neutralizing antibodies and IgG levels. Although nearly all persons (85%) displayed some level of SARS-CoV-2 neutralization, development of neutralizing antibodies within 14 days of symptom onset was associated with improved disease trajectory. The authors note that antibody therapy may be most effective when administered as early as possible after symptom onset.

Lucas et al. (May 5, 2021). Delayed Production of Neutralizing Antibodies Correlates with Fatal COVID-19. Nature Medicine. <https://doi.org/10.1038/s41591-021-01355-0>

- A study of kidney transplant recipients who received the Pfizer-BioNTech vaccine (N=308) found that only 36% tested positive for anti-SARS-CoV-2 antibodies 2-4 weeks after receiving the second dose. Factors associated with antibody detection included younger age, higher renal function, and reduced immunosuppression. The authors note that although correlation between antibody levels and protection has not been proven, detection of antibodies is much higher in non-immunocompromised persons after receipt of the vaccine. These results may indicate a need for additional booster doses, modified vaccine dosing, or mixing vaccine types to improve immune response to vaccinations in transplant recipients.

Rozen-Zvi et al. (May 2021). Antibody Response to mRNA SARS-CoV-2 Vaccine among Kidney Transplant Recipients – Prospective Cohort Study. Clinical Microbiology and Infection. <https://doi.org/10.1016/j.cmi.2021.04.028>

- *[Pre-print, not peer-reviewed]* Preliminary results from a clinical trial (N=80) of a modified Moderna mRNA COVID-19 vaccine administered as a booster 6 months after the two-dose vaccine series induced increases in antibody neutralization titers to the wild type and variant strains B.1.351 and P.1. The authors note that these results demonstrate the ability of a third vaccine dose to boost immunity to titers that may exceed peak titers following the primary two-dose vaccination series against both wild-type virus and variants.

Wu et al. (May 6, 2021). Preliminary Analysis of Safety and Immunogenicity of a SARS-CoV-2 Variant Vaccine Booster. Pre-print downloaded May 7 from <https://doi.org/10.1101/2021.05.05.21256716>

Clinical Characteristics and Health Care Setting

- A matched cohort study of US veterans (N=66,772) found that persons with rheumatoid arthritis had a higher risk of COVID-19 disease (HR=1.25) and COVID-19 associated hospitalization or death (HR=1.35) compared to age-, sex-, and Veterans Administration-site-matched persons without rheumatoid arthritis. Persons on immunosuppressant drugs (DMARDs and prednisone) had the

highest risk of COVID-19 and severe disease after controlling for demographics, other comorbidities, healthcare utilization, and county-level COVID-19 incidence. The authors suggest that persons with rheumatoid arthritis should be prioritized for COVID-19 prevention and management.

England et al. (May 5, 2021). Risk of COVID-19 in Rheumatoid Arthritis: A National Veterans Affairs Matched Cohort Study in At-Risk Individuals. Arthritis & Rheumatology.

<https://doi.org/10.1002/art.41800>

- A prospective cohort study of persons with autoimmune or inflammatory conditions (N=4,666) found that persons with diabetes (OR=1.7), cardiovascular disease (OR=1.7) and kidney disease (OR=1.8) and patients taking glucocorticoid drugs (OR=1.4) had higher risks of COVID-19. Interruptions to healthcare were common, and persons with changes in their ability to pay for healthcare costs and those who experienced a COVID-19-related change to employment were most vulnerable to care disruptions. The authors note that these results suggest that persons with autoimmune or inflammatory disorders may be particularly vulnerable to downstream effects of pandemic-related disruptions to healthcare access.

Fitzgerald et al. (May 6, 2021). Risk Factors For Infection And Health Impacts Of The Covid-19 Pandemic In People With Autoimmune Diseases. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciab407>

- A meta-analysis of 118 studies reporting the clinical features and outcomes of persons with SARS-CoV-2 infection found that up to 19% had co-infections (pathogens detected at the time of SARS-CoV-2 diagnosis) and 24% had superinfections (other pathogens detected during SARS-CoV-2 care). Persons with co- and super-infections had a higher risk of mortality (OR = 3.3) compared to persons with only SARS-CoV-2 infection. The most frequently detected pathogens among co-infected persons were influenza A and B, and respiratory syncytial virus. The authors suggest that testing and treatment for other pathogens may be necessary to improve outcomes in persons with COVID-19.

Musuuza et al. (May 6, 2021). Prevalence and Outcomes of Co-Infection and Superinfection with SARS-CoV-2 and Other Pathogens: A Systematic Review and Meta-Analysis. PLOS ONE.

<https://doi.org/10.1371/journal.pone.0251170>

Modeling and Prediction

- A modeling study of US population dynamics and COVID-19 vaccination scenarios demonstrated that every 1% increase in coverage could avert an average of 876,800 cases, depending on the number of people already vaccinated, with the greatest gains achieved when increasing vaccine coverage in the population from 0% to 50%. Additionally, the study demonstrated that increasing vaccination coverage may avert more cases compared to increasing vaccine efficacy. For example, increasing vaccination coverage from 50% to 70% would prevent 9.2 million cases at a vaccine efficacy of 70%, while increasing vaccine efficacy from 70% to 90% would prevent 7.1 million cases with 50% vaccination coverage. The authors note these results emphasize the need to reach high vaccination coverage levels as soon as possible before the fall/winter to prevent another surge in cases and deaths.

Bartsch et al. (May 6, 2021). Lives and Costs Saved by Expanding and Expediting COVID-19 Vaccination. The Journal of Infectious Diseases. <https://doi.org/10.1093/infdis/jiab233>

Public Health Policy and Practice

- A retrospective cohort study of non-COVID related emergency department visits among US adults found that visits for acute myocardial infarction (AMI), stroke, and sepsis declined precipitously during the early pandemic period and remained lower than pre-pandemic levels through the summer and fall, particularly among adults age ≥ 75 . In contrast, visits for hip fractures and falls did not significantly change between January 2019 and November 2020. The authors suggest this difference may be attributable to vague or atypical symptoms in AMI or stroke that were not recognized by older adults, coupled with isolation from family and friends who may have otherwise recognized changes in health status and assisted with accessing medical care. The authors note that these changes in care seeking may be one cause of excess non-COVID-19 mortality in older adults during the pandemic.

Janke et al. (May 6, 2021). Emergency Department Visits for Emergent Conditions Among Older Adults During the COVID -19 Pandemic. Journal of the American Geriatrics Society.

<https://doi.org/10.1111/jgs.17227>

- A retrospective study of emergency medical service activations between 2018 and 2020 found that while the number of activations decreased in 2020, increases in the proportion of activations for on-scene death (1.3% to 2.4%), cardiac arrest (1.3% to 2.2%), and opioid use/overdose (0.6 to 1.6%) were observed compared to 2018-2019. These frequencies subsequently declined but remained above pre-pandemic levels through the end of 2020. The authors suggest that these changes may be related to disruptions in access to healthcare, particularly for substance use disorders and mental health conditions.

Handberry et al. (May 2021). Changes in Emergency Medical Services before and during COVID-19 in the United States, January 2018-December 2020. Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America. <https://doi.org/10.1093/cid/ciab373>

- An internet survey of US adults with a history of tobacco and/or cannabis use (N=387) found that 26% were unwilling to receive a COVID-19 vaccine while another 25% were unsure about willingness to be vaccinated. Respondents who reported living with 5 or more other persons or by themselves, living in a suburban or rural area, and those who were not stressed about the COVID-19 pandemic were less likely to report being willing to receive a vaccine, while those who reported receiving an influenza vaccine every year were more likely to be willing to receive a COVID-19 vaccine. The use of cigarettes, e-cigarettes, cannabis, and heavy alcohol use were not associated with willingness to receive a vaccine.

Yang et al. (May 6, 2021). COVID-19 Vaccine Hesitancy and Its Determinants Among Adults with a History of Tobacco or Marijuana Use. Journal of Community Health.

<https://doi.org/10.1007/s10900-021-00993-2>

Other Resources and Commentaries

- [Eating Behaviour and Symptom Trajectories in Patients with a History of Binge Eating Disorder during COVID-19 Pandemic](#) -- European Eating Disorders Review (May 6)
- [Care for Incarcerated Patients Hospitalized with COVID-19](#) -- Journal of General Internal Medicine (May 5)

- [Prejudicial Beliefs and COVID-19 Disruptions among Sexual Minority Men Living with and Not Living with HIV in a High SARS-CoV-2 Prevalence Area](#) -- Translational Behavioral Medicine (May)
- [Which Influenza Viruses Will Emerge Following the SARS-CoV-2 Pandemic](#) -- Influenza and Other Respiratory Viruses (May 6)
- [A Crucial Role for Antimicrobial Stewardship in the Midst of COVID-19](#) -- Journal of Microbiology & Biology Education (2021)
- [Delayed Tuberculosis Diagnoses During the COVID-19 Pandemic in 2020 — King County, Washington](#) -- Clinical Infectious Diseases (May 6)
- [Adolescents and Opioid-Related Outcomes amidst the COVID-19 Pandemic](#) -- Journal of Addictive Diseases (May 6)
- [How We Approach Thrombosis Risk in Children with COVID-19 Infection and MIS-C](#) -- Pediatric Blood & Cancer (May)
- [Combination Therapy with Tocilizumab and Dexamethasone Cost-Effectively Reduces Coronavirus Disease 2019 Mortality](#) -- Clinical Infectious Diseases : An Official Publication of the Infectious Diseases Society of America (May)

Report prepared by the UW Alliance 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