

Rep)

January 20, 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

- **The SARS-CoV-2 501Y.V2 lineage, first identified in South Africa, was found to largely escape neutralization from both monoclonal antibodies and convalescent polyclonal sera capable of neutralizing existing parent lineages.** [More](#)
- **Periods of increased ICU demand at US Veterans Affairs hospitals were associated with increased COVID-19 mortality.** [More](#)
- **High levels of antibody titers were observed 8 weeks after the second dose of vaccine injection among 20 volunteers who received either the Moderna (mRNA-1273) or Pfizer-BioNTech (BNT162b2) vaccines. Activity of the vaccine-induced antibodies against SARS-CoV-2 variants (E484K, N501Y, or the K417N:E484K:N501Y combination) was reduced by a small but significant margin (approximately 1-3 fold reduction in neutralization).** [More](#)
- **A randomized trial found no significant effect of discontinuing use of angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) on COVID-19 progression or death among patients hospitalized with mild to moderate COVID-19 who were taking these medications before hospital admission (n=659).** [More](#)

Transmission

- A cross-sectional survey study (n =378,207 participants) of mask-wearing and physical distancing in the US found that a 10% increase in self-reported mask-wearing was associated with an increased odds of transmission control at the community level (OR=3.53). Communities with high reported mask-wearing and physical distancing had the highest predicted probability of transmission control. Segmented regression analysis of reported mask-wearing showed no statistically significant change after mandates were introduced, but the upward trend in reported mask-wearing persisted.

Rader et al. (Jan 20, 2021). Mask-Wearing and Control of SARS-CoV-2 Transmission in the USA: A Cross-Sectional Study. The Lancet Digital Health. [https://doi.org/10.1016/S2589-7500\(20\)30293-4](https://doi.org/10.1016/S2589-7500(20)30293-4)

Testing and Treatment

- A randomized trial (n=659) of patients hospitalized with mild to moderate COVID-19 who were taking angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin II receptor blockers (ARBs) before hospital admission found no significant difference between the mean number of days alive and out of the hospital for those assigned to discontinue vs. continue these medications (21.9 vs. 22.9 days). There also was no statistically significant difference in death (OR=0.97), cardiovascular death (OR=1.95) or COVID-19 progression (OR=1.30).

Lopes et al. (Jan 19, 2021). Effect of Discontinuing vs Continuing Angiotensin-Converting Enzyme Inhibitors and Angiotensin II Receptor Blockers on Days Alive and Out of the Hospital in Patients Admitted With COVID-19. JAMA. <https://doi.org/10.1001/jama.2020.25864>

Vaccines and Immunity

- [Pre-print, not peer-reviewed] Among 20 volunteers who received either the Moderna (mRNA-1273) or Pfizer-BioNTech (BNT162b2) vaccines, high levels of antibody titers were observed 8 weeks after the second vaccine injection, with neutralizing activity and relative numbers of receptor binding domain (RBD)-specific memory B cells equivalent to those of individuals who recovered from natural infection. Activity against SARS-CoV-2 variants encoding E484K (first identified in South Africa) or N501Y (UK) or the K417N:E484K:N501Y combination was reduced by a small but significant margin. Neutralization by 14 of the 17 most potent monoclonal antibodies (mAbs) was reduced or abolished by these mutations. The authors suggest that monoclonal antibodies in clinical use should be tested against newly arising variants, and that mRNA vaccines may need to be updated periodically.
Wang et al. (Jan 19, 2021). MRNA Vaccine-Elicited Antibodies to SARS-CoV-2 and Circulating Variants. BioRxiv. <https://doi.org/10.1101/2021.01.15.426911>
- [Pre-print, not peer-reviewed] The spike protein mutations in the 501Y.V2 lineage first identified in South Africa conferred neutralization escape from multiple classes of SARS-CoV-2 monoclonal antibodies, including two major classes targeting an immunodominant, highly antigenic site in the receptor binding domain of the spike protein. This lineage also showed substantial or complete escape from neutralizing antibodies in COVID-19 convalescent plasma and nearly half of samples assessed (21 of 44, 48%) had no detectable neutralization activity. However, polyclonal antibodies in convalescent plasma obtained after recovery from SARS-CoV-2 infection retained high levels of binding antibodies to the 501Y.V2 receptor binding domain.
Wibmer et al. (Jan 19, 2021). SARS-CoV-2 501Y.V2 Escapes Neutralization by South African COVID-19 Donor Plasma. BioRxiv. <https://doi.org/10.1101/2021.01.18.427166>
- [Pre-print, not peer-reviewed] A study comparing two SARS-CoV-2 non-replicating laboratory-produced pseudoviruses bearing either the spike proteins of the Wuhan reference strain or the B.1.1.7 variant strain concluded that it was unlikely that the new variant would escape immune effectors induced by the Pfizer/BioNTech vaccine (BNT162b2). No biologically significant difference in neutralization activity against the two pseudoviruses was observed among sera from 16 participants from the previously-reported German phase 1/2 trial.
Muik et al. (Jan 19, 2021). Neutralization of SARS-CoV-2 Lineage B.1.1.7 Pseudovirus by BNT162b2 Vaccine-Elicited Human Sera. BioRxiv. <https://doi.org/10.1101/2021.01.18.426984>
- Prior history of SARS-CoV-2 infection was associated with an 83% lower risk of infection in a large, multicenter, prospective cohort study (SIREN) of healthcare workers in England, with median protective effect observed five months following primary infection. The incidence between June 18-November 9, 2020 was 3.3 reinfections per 100,000 person days in the previously-infected cohort, compared with 22.4 new PCR confirmed infections per 100,000 person days in the uninfected cohort.
Hall et al. (Jan 15, 2021). Do Antibody Positive Healthcare Workers Have Lower SARS-CoV-2 Infection Rates than Antibody Negative Healthcare Workers Large Multi-Centre Prospective Cohort Study (the SIREN Study) England June to November 2020. MedRxiv. <https://doi.org/10.1101/2021.01.13.21249642>

Clinical Characteristics and Health Care Setting

- 22% of asymptomatic participants with positive SARS-CoV-2 nasopharyngeal swabs developed symptoms within 14 days, according to results from the Asymptomatic novel CORonavirus iNfection (ACORN). Symptoms developed in 19 out of 86 participants a median of 6 days after the initial

positive test result, the most frequently reported of which were fatigue or muscle aches (11%), headache (9%), fever (6%), and shortness of breath (6%). Of the 78 participants who submitted a nasopharyngeal swab for repeat RT-PCR testing, 17 (22%) remained positive at Day 14, and 4 continued to test positive at Day 28.

Meyers et al. (Jan 19, 2021). Follow-up of SARS-CoV-2 Positive Subgroup from the Asymptomatic Novel CORonavirus INfection (ACORN) Study. Journal of Medical Virology. <https://doi.org/10.1002/jmv.26810>

- Periods of increased ICU demand were associated with increased COVID-19 mortality in a cohort of 8,516 patients admitted to Veteran's hospitals. Compared to periods of low ICU demand (<25%), the adjusted hazard ratio for all-cause mortality was 0.99 for patients treated when COVID-19 ICU demand was 25%-50%, 1.19 when demand was 50%-75%, and 1.94 when demand was 75%-100%. Mortality varied over time, with higher percentages of patients dying in March 2020 (23%) and April (25%), compared to May (16%), June (14%), July (13%), and August (13%). No association between COVID-19 ICU demand and mortality was observed for patients with COVID-19 who were not in the ICU.

Bravata et al. (Jan 19, 2021). Association of Intensive Care Unit Patient Load and Demand With Mortality Rates in US Department of Veterans Affairs Hospitals During the COVID-19 Pandemic. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.34266>

Mental Health and Personal Impact

- US and Canadian participants who reported higher baseline (early in the COVID-19 pandemic) levels of personal threat to health and to the well-being of family members reported higher levels of depressive symptoms during subsequent surveys later in the pandemic, even after controlling for baseline depressive symptoms. Secondary stressors (social isolation, financial insecurity, occupational difficulty, and resource scarcity) were also all independently associated with depressive symptoms at follow-up.

Zheng et al. (Feb 2021). Psychological Distress in North America during COVID-19: The Role of Pandemic-Related Stressors. Social Science & Medicine. <https://doi.org/10.1016/j.socscimed.2021.113687>

Public Health Policy and Practice

- COVID-19 incidence among people detained by US Immigration and Customs Enforcement (ICE) was higher than the incidence in the US general population, with an overall incidence of 214 per 1,000 people (5,810 cases among 27,189 people), with 6 deaths reported. The incidence was higher than in the general population in the surrounding county in 20 of 28 facilities. The authors note that their analysis depended on ICE reporting, and true case numbers may have been higher.

Casanova et al. (Jan 19, 2021). Epidemiology of Coronavirus Disease 2019 in US Immigration and Customs Enforcement Detention Facilities. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.34409>

- A SARS-CoV-2 outbreak investigation in a large prison with a vulnerable population was quickly contained, with only 58 out of 1,156 residents (5%) and 129 out of 510 staff (25%) developing COVID-19 symptoms. 62% of symptomatic residents were 50 years or older, and frequently reported symptoms were cough with no fever (29%), followed by a cough and fever (16%). Wing I had the highest attack rate (13%). The multi-agency response to the outbreak consisted of placing vulnerable residents into protective isolation, isolating symptomatic and COVID-19 positive residents, distributing informational leaflets to residents, and implementing a one-time universal screening via a PCR test of all staff and residents.

Wilburn et al. (Jan 2021). COVID-19 within a Large Prison with High Number of Vulnerable Adults in the UK, March to June 2020: An Outbreak Investigation and Screening Event. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2021.01.027>

Other Resources and Commentaries

- [Moving Patient Care Forward in the Biden Era](#) – JAMA Internal Medicine (Jan 19 2021)
- [Intensive Care Unit Strain and Mortality Risk Among Critically Ill Patients With COVID-19—There Is No “Me” in COVID](#) – JAMA Network Open (Jan 19 2021)
- [Improved Serious Illness Communication May Help Mitigate Racial Disparities in Care Among Black Americans with COVID-19](#) – Journal of General Internal Medicine (Jan 19 2021)
- [Despite COVID-19’s Toll on People of Color, Many Don’t View Racism as a Factor in Health Outcomes](#) – JAMA Health Forum (Jan 19 2021)
- [A Tale of Two Crises: Addressing Covid-19 Vaccine Hesitancy as Promoting Racial Justice](#) – HEC Forum: An Interdisciplinary Journal on Hospitals' Ethical and Legal Issues (Jan 2021)
- [East Asian and the Pacific Surveillance of SARS-CoV-2 Wave Two: Longitudinal Trend Analysis](#) – Journal of Medical Internet Research (Jan 2021)

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