

## 2019-nCoV Literature Situation Report (Lit Rep)

April 19, 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

- 🔗 **Few kidney transplant recipients (n = 51/136) who had been fully vaccinated with the Pfizer-BioNTech vaccine developed an antibody response to the SARS-CoV-2 spike protein, suggesting that this population may remain at risk of infection despite vaccination. [More](#)**
- 🔗 **Among patients with chronic lymphocytic leukemia who received two doses of the Pfizer-BioNTech vaccine, the antibody response rate was 39.5% at a median of 15 days after the second dose. [More](#)**
- 🔗 **Nursing homes that had earlier vaccine clinics (December 18, 2020, and January 2, 2021) had 5.2 fewer infections per 100 at-risk residents and 5 fewer hospitalizations and/or deaths per 100 infected residents over 5 weeks than expected based on data from matched facilities with later clinics (January 3 and January 18, 2020). [More](#)**
- ☐ **A study of household SARS-CoV-2 transmission in Denmark showed that index cases infected with B.1.1.7 were 1.5-1.7 times more likely to transmit than cases infected with other lineages. [More](#)**

### Transmission

- A study of SARS-CoV-2 transmission in a Georgia public school district found that indoor sports may pose a high infection risk in school settings. From December 1, 2020 to January 22, 2021, 85 SARS-CoV-2 index cases and 1,119 contacts were identified by school and public health officials, with 59 contacts testing positive. Among 55 contacts who tested positive with available symptom data, 31 (56%) were asymptomatic. The highest secondary attack rates occurred in indoor, high-contact sports settings (24%), staff meetings/lunches (18%), and elementary school classrooms (10%). The secondary attack rate was also higher for staff (13%) versus student index cases (6%) and for symptomatic (11%) versus asymptomatic index cases (3%).  
*Gettings et al. (Apr 17, 2021). SARS-CoV-2 Transmission in a Georgia School District — United States, December 2020–January 2021. Clinical Infectious Diseases.*  
<https://doi.org/10.1093/cid/ciab332>
- *[Pre-print, not peer-reviewed]* Among Danish households in which an index case was infected with the SARS-CoV-2 B.1.1.7 lineage, the attack rate was 38%, compared to 27% in households with an index case infected with other lineages. A study of 5,241 households with index cases (n = 808 B.1.1.7 and n = 4,433 other lineages) conducted between January 11 and February 7, 2021 found that index cases infected with B.1.1.7 were also 1.5-1.7 times more likely to transmit than

cases infected with other lineages; higher transmissibility was multiplicative across age groups and viral load.

*Lynge et al. (Apr 19, 2021). Increased Transmissibility of SARS-CoV-2 Lineage B.1.1.7 by Age and Viral Load Evidence from Danish Households. Pre-print downloaded Apr 19 from <https://doi.org/10.1101/2021.04.16.21255459>*

## Testing and Treatment

- *[Pre-print, not peer-reviewed]* Patients with moderate COVID-19 (n=40) randomized to treatment with the novel anti-inflammatory medication PNB001 had lower clinical severity scores assessed by the 8-point WHO Ordinal Scale for COVID-19 at day 14 than patients who received standard of care alone (score 0.2 vs. 1.1, p<0.05). The multicenter randomized trial did not detect a difference in the other primary endpoint of mortality, with 1 death in the PNB001 group and 2 deaths in the standard of care group. Three severe adverse events occurred, though none were found to be related to the study medication.

*Lattman et al. (Apr 16, 2021). Randomized Comparative Clinical Trial to Evaluate Efficacy and Safety of PNB001 in Moderate COVID-19 Patients. Pre-print downloaded Apr 19 from <https://doi.org/10.1101/2021.04.16.21255256>*

- Convalescent plasma (CP) treatment did not predict survival in a longitudinal analysis of plasma samples from hospitalized patients with COVID-19 (n = 16) treated with either CP or standard of care. Among 8 patients who died, marked declines in neutralization titers were observed prior to death, which CP treatment did not reverse. Irrespective of CP treatment, higher antibody affinity to the SARS-CoV-2 prefusion spike was associated with survival, while sustained elevated IgA response was associated with mortality. The authors suggest that more severely-ill patients may be less likely to benefit from CP treatment.

*Tang et al. (Apr 2021). Impact of Convalescent Plasma Therapy on SARS CoV-2 Antibody Profile in COVID-19 Patients. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab317>*

## Vaccines and Immunity

- Few kidney transplant recipients (51/136, 38.5%) who had been fully vaccinated with the Pfizer-BioNTech vaccine developed a positive response to the SARS-CoV-2 spike protein, suggesting that this population may remain at risk of infection despite vaccination. Compared to controls, mean IgG anti-spike levels were lower (31.05 vs 200.5 AU/mL). Older age (OR = 1.7), use of high dose corticosteroids in the last 12 months (OR = 1.3), and a treatment regimen that included mycophenolate (OR = 1.5) were associated with negative serology.

*Grupper et al. (Apr 18, 2021). Reduced Humoral Response to MRNA SARS-Cov-2 BNT162b2 Vaccine in Kidney Transplant Recipients without Prior Exposure to the Virus. American Journal of Transplantation. <https://doi.org/10.1111/ajt.16615>*

- Responses from focus groups of skilled nursing facility staff (n = 58) conducted between December 17-23, 2020 indicated that to improve their confidence in the vaccine, staff preferred to see local community members or someone like themselves receive the COVID-19, rather than public figures. Among staff who were hesitant to be vaccinated, reasons for hesitancy include beliefs that the vaccine was developed too quickly and without sufficient testing, personal fears about pre-existing medical conditions, and more general distrust of the government.

Harrison et al. (Mar 2021). "Somebody Like Me": Understanding COVID-19 Vaccine Hesitancy Among Staff in Skilled Nursing Facilities. *Journal of the American Medical Directors Association*. <https://doi.org/10.1016/j.jamda.2021.03.012>

- Among patients with chronic lymphocytic leukemia (CLL, n = 169) who received two doses of the Pfizer-BioNTech vaccine, the antibody response rate was 39.5% as measured by the Elecsys Anti-SARS-CoV-2 assay at a median of 15 days after the second dose. Compared to age- and sex-matched controls, the response rate among patients with CLL was significantly reduced (aOR =0.01). The response rate was highest in patients who were in remission after treatment (79.2%), followed by 55.2% in treatment-naïve and 16% in patients undergoing treatment at the time of vaccination. In patients treated with either Bruton tyrosine kinase inhibitors or venetoclax with or without anti-CD20 antibody, response rates were low (16.0% and 13.6%, respectively).

Herishanu et al. (Apr 2021). Efficacy of the BNT162b2 MRNA COVID-19 Vaccine in Patients with Chronic Lymphocytic Leukemia. *Blood*. <https://doi.org/10.1182/blood.2021011568>

- A study comparing SARS-CoV-2 infections and hospitalizations in nursing homes (n = 280) that had early vaccine clinics (between December 18, 2020, and January 2, 2021) and later vaccine clinics (between January 3 and January 18, 2021) found that one week following the clinics, nursing homes with earlier clinics had 2.5 fewer incident SARS-CoV-2 infections per 100 at-risk residents than expected based on matched facilities with later clinics. Matched-pair analyses also indicated that over 5 weeks, earlier vaccinated facilities had 5.2 fewer infections per 100 at-risk residents and 5 fewer hospitalizations and/or deaths per 100 infected residents.

Mor et al. (Apr 16, 2021). Short-term Impact of Nursing Home SARS-CoV-2 Vaccinations on New Infections, Hospitalizations, and Deaths. *Journal of the American Geriatrics Society*. <https://doi.org/10.1111/jgs.17176>

- [Pre-print, not peer-reviewed] An assessment of humoral and T cell responses against a wild type SARS-CoV-2 strain, variants of concern (B.1.1.7, B.1.351, and P.1), and endemic human coronaviruses (hCoV) induced after the Pfizer-BioNTech vaccine found that IgG against the receptor-binding domain of the SARS-CoV-2 S protein was readily detectable at day 14, but inhibition of SARS-CoV-2 S-driven host cell entry was weak and particularly low for the B.1.351 variant. After one vaccine dose, frequencies of SARS-CoV-2 specific T cells were low in many vaccine recipients and influenced by immunity against endemic hCoV. The second vaccination significantly boosted T cell frequencies reactive for the wild type SARS-CoV-2 strain, as well as B.1.1.7 and B.1.351 variants.

Stankov et al. (Apr 16, 2021). Humoral and Cellular Immune Responses against SARS-CoV-2 Variants and Human Coronaviruses after Single BNT162b2 Vaccination. Pre-print downloaded Apr 19 from <https://doi.org/10.1101/2021.04.16.21255412>

## Clinical Characteristics and Health Care Setting

- A survey of US infectious disease physicians conducted between December 10, 2020 and January 2, 2021 found that 571 respondents (95%) reported that their facilities had a plan for determining which healthcare personnel (HCP) would be vaccinated first, with most prioritizing by unit (n = 226, 40%), job title or type of work (n = 182, 32%), or risk of severe illness due to age or comorbidities (n = 175, 31%). HCP who had COVID-19 in 2020 were least likely to be offered the vaccine in the initial rollout (n = 370, 61%), followed by HCP who had COVID-19 within the

last 90 days (n = 218, 36%), were pregnant/lactating (n = 224,37%), or had a history of anaphylaxis (n =147, 25%).

Beekmann et al. (Apr 19, 2021). COVID-19 Vaccination Preparedness Policies in U.S. Hospitals. *Infection Control & Hospital Epidemiology*. <https://doi.org/10.1017/ice.2021.181>

- False negative SARS-CoV-2 RT-PCR results, defined as an initial negative test followed by a positive test within seven days, were associated with loss of taste or smell (aOR = 8.4), having a SARS-CoV-2-positive contact (aOR = 10.5), and having an elevated lactate dehydrogenase level (aOR = 3.3) compared to true negative results. Among 1,009 SARS-CoV-2 test results included in the retrospective cohort study conducted between March 14 and April 30 2020, 4.0% were false negatives. Patients were included in the analysis if they had an initial negative SARS-CoV-2 RT-PCR test with at least one additional test obtained within the next seven days. Testing protocol at the study site mandated a follow-up test for all patients admitted with influenza-like illness in whom no alternative diagnosis was identified within 48 hours of hospital admission. MacKenzie et al. (Apr 2021). *Clinical Characteristics of False Negative SARS-CoV-2 Test Results Amongst Hospitalized Patients*. *Infection Control and Hospital Epidemiology*. <https://doi.org/10.1017/ice.2021.146>

## Other Resources and Commentaries

- [Indoor Air Changes and Potential Implications for SARS-CoV-2 Transmission](#) – JAMA (Apr 16)
- [Co-Infection in Critically Ill Patients with COVID-19: An Observational Cohort Study from England](#) – Journal of Medical Microbiology (Apr)
- [Nosocomial Infection Outbreak Due to SARS-COV-2 in a Hospital Unit of Particularly Vulnerable Patients](#) – International Journal of Medical Sciences (2021)
- [Extensive Activation, Tissue Trafficking, Turnover and Functional Impairment of NK Cells in COVID-19 Patients at Disease Onset Associates with Subsequent Disease Severity](#) – PLoS Pathogens (Apr)
- [SARS-CoV-2 Vaccine-Induced Immune Thrombotic Thrombocytopenia](#) – New England Journal of Medicine (Apr 16)
- [Ten Scientific Reasons in Support of Airborne Transmission of SARS-CoV-2](#) – The Lancet (Apr)
- [Prevalence and Transmission of SARS-CoV-2 in Childcare Facilities A Longitudinal Study](#) – MedRxiv (Apr 18)
- [Were Pregnant Women More Affected by COVID-19 in the Second Wave of the Pandemic](#) – The Lancet (Apr)
- [COVID Vaccines and Blood Clots: Five Key Questions](#) – Nature (Apr 16)
- [Immunogenicity of SARS-CoV-2 BNT162b2 Vaccine in Solid Organ Transplant Recipients](#) – American Journal of Transplantation (Apr)
- [Diagnostic Serial Interval as an Indicator for Effectiveness of Contact Tracing in the COVID-19 Pandemic - A Simulation Study](#) – International Journal of Infectious Diseases (Apr)
- [Fear of Adverse Effects and COVID-19 Vaccine Hesitancy](#) – JAMA Health Forum (Apr 16)
- [Utility of Viral Whole Genome Sequencing for Institutional Infection Surveillance during the SARS-CoV-2 Pandemic](#) – Infection Control and Hospital Epidemiology (Apr)
- [Fitted Filtration Efficiency of Double Masking During the COVID-19 Pandemic](#) – JAMA Internal Medicine (Apr 16)
- [Has Public Health Messaging during the COVID-19 Pandemic Reflected Local Risks to Health?: A Content Analysis of Tweeting Practices across Canadian Geographies](#) – Health & Place (Apr)

- [The Role of Digital Health Technologies in COVID-19 Surveillance and Recovery: A Specific Case of Long Haulers](#) – International Review of Psychiatry (Abingdon, England) (Apr)
- [Emergence and Rapid Transmission of SARS-CoV-2 B.1.1.7 in the United States](#) – Cell (Mar)

*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*