



2019-nCoV Literature Situation Report (Lit Rep)

June 9, 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

- **Elderly residents (n=71, median age 81 years) exhibited delayed and reduced humoral and cellular responses elicited by the Pfizer-BioNTech vaccine compared to a younger cohort of vaccinated healthcare workers (n=123, median age 34 years) in Germany. Neutralizing antibody responses did not reach $\geq 90\%$ until 4 weeks after the second dose in the older cohort compared to 3 weeks after the first dose in the younger cohort. [More](#)**
- **A SARS-CoV-2 outbreak in a long-term care facility in Germany with the B.1.1.7 strain (Alpha variant) resulted in a milder disease course, considerably shorter viral RNA shedding (7.5 vs 31 days), and lower peak viral load in vaccinated residents with breakthrough infection when compared to infected unvaccinated residents. [More](#)**
- **PCR cycle threshold (Ct) values, a proxy measurement for viral load, were not significantly different between SARS-CoV-2 index cases (n=195) with at least one confirmed infected contact and those with no contacts in an analysis of routine screening data from Tulane University between September and October 2020 (n=7,440 students), suggesting that viral load alone cannot predict transmission risk. [More](#)**

Transmission

- SARS-CoV-2 infection risk was associated with having frequented bars and restaurants (OR=1.95) or attending private gatherings (aOR=1.57), according to a multivariate analysis of an online survey administered in France to SARS-CoV-2-infected adults (n=3,426). Survey participants were matched to non-infected controls (n=1713) from October to November by age, sex, population density, and time period. Having one additional household member (aOR 1.16), having children attending day-care or school (aOR approximately 1.3), attending professional gatherings (aOR=1.15), or participating in indoor sports (aOR=1.36) were also significantly associated with higher risk of SARS-CoV-2 infection. By contrast, no increase in risk was associated with frequenting shops, cultural/religious gatherings, or transportation (except for carpooling). Teleworking was associated with a significantly lower risk of infection (aOR 0.65).
Galmiche et al. (June 7, 2021). Exposures Associated with SARS-CoV-2 Infection in France: A Nationwide Online Case-Control Study. The Lancet Regional Health – Europe.
<https://doi.org/10.1016/j.lanepe.2021.100148>

- PCR cycle threshold (Ct) values, a proxy measurement for viral load, were not significantly different between SARS-CoV-2-infected individuals with at least one confirmed infected contact (i.e., spreaders) (n=94) and infected individuals with no infected contacts (i.e., non-spreaders) (n=101) in a retrospective study of routine screening data from Tulane University obtained between September and October 2020 (n=7,440 students). The authors suggest that viral load alone cannot predict transmission risk. Mean Ct values were significantly lower among symptomatic spreaders than asymptomatic non-spreaders, suggesting that the presence of symptoms and high viral load could increase risk of transmission. The authors suggest that sensitive methods to detect asymptomatic persons with sufficient levels of virus to transmit are needed.

Tian et al. (June 5, 2021). *Ct Values Do Not Predict SARS-CoV-2 Transmissibility in College Students*. *The Journal of Molecular Diagnostics*. <https://doi.org/10.1016/j.jmoldx.2021.05.012>

Testing and Treatment

- The ICD-10 Diagnostic Code for COVID-19 (U07.1) had an overall sensitivity of 49% and specificity of 99% compared to the gold standard of a positive PCR test among 2,210 PCR-positive patients discharged between April and July 2020 across the Mass General Brigham health system in Boston, Massachusetts. Specificity was consistently high, but sensitivity varied and was lowest (28%) in July. Sensitivity was lower (14%) among those aged 0–17 years. The authors suggest that studies based solely on administrative databases may substantially undercount cases of COVID-19.

Bhatt et al. (June 7, 2021). *Accuracy of ICD-10 Diagnostic Codes to Identify COVID-19 Among Hospitalized Patients*. *Journal of General Internal Medicine*.
<https://doi.org/10.1007/s11606-021-06936-w>

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* The Pfizer-BioNTech vaccine elicited higher neutralizing and anti-SARS-CoV-2 antibody binding responses in individuals with prior infection (n=32) compared to those without prior infection (n=20). The second vaccine dose did not significantly increase neutralizing or binding antibody levels in individuals with prior infection, whereas the second dose was required to induce antibody responses in nearly half of infection-naïve individuals.

Forgacs et al. (May 31, 2021). *Functional Characterization of SARS-CoV-2 Vaccine Elicited Antibodies in Immunologically Nave and Pre-Immune Humans*. *Pre-print downloaded Jun 9 from* <https://doi.org/10.1101/2021.05.29.445137>

- *[Pre-print, not peer-reviewed]* In rural healthcare centers in South Dakota, a seroprevalence study revealed that prevalence of anti-SARS-CoV-2 antibodies in healthcare workers at each clinical site was higher than the reported cumulative incidence of COVID-19 in the general population of each respective county. The prevalence of anti-SARS-CoV-2 antibodies among healthcare workers employed at clinics in three rural counties in eastern South Dakota and western Minnesota rose from 0.3% (1 of 336 samples) between May and July 2020 to 15% (35 of 235 samples) between October and December 2020, suggesting that a significant proportion of healthcare workers remained susceptible to COVID-19. In the last round of samples tested, 8 of 35 seropositive individuals did not report a prior COVID-19 diagnosis.

Neises et al. (June 8, 2021). Seroprevalence of SARS-CoV-2 Antibodies Among Rural Healthcare Workers. Pre-print downloaded Jun 9 from <https://doi.org/10.1101/2021.06.07.21258375>

- In a cohort of elderly residents of an assisted living facility in Germany (n=71, median age 81 years) vaccinated with the Pfizer-BioNTech vaccine only 46% (24 of 52) developed neutralizing antibodies 3 weeks after the first dose and 90% (63 of 70) 4 weeks after the second dose. In contrast, 91% (97 of 107) of vaccinated healthcare workers (n=123, median age 34 years) had neutralizing antibody 3 weeks after the first dose. Similarly, IgG responses against SARS-CoV-2 antigens and spike-specific T-cell responses were both delayed and reduced in the older cohort throughout the study.

Schwarz et al. (June 8, 2021). Delayed Antibody and T-Cell Response to BNT162b2 Vaccination in the Elderly, Germany. *Emerging Infectious Diseases*.

https://wwwnc.cdc.gov/eid/article/27/8/21-1145_article

- A SARS-CoV-2 outbreak in a long-term care facility in Germany resulted in a milder disease course, considerably shorter viral RNA shedding (7.5 vs 31 days), and lower peak viral load in vaccinated residents with breakthrough infection compared to unvaccinated residents. The outbreak involved a sequence-confirmed B.1.1.7 (Alpha) variant and resulted in 16 breakthrough infections in 20 residents who had received the second dose of the Pfizer-BioNTech vaccine within the prior 2 weeks and 4 infections in unvaccinated residents.

Tober-Lau et al. (June 8, 2021). Outbreak of SARS-CoV-2 B.1.1.7 Lineage after Vaccination in Long-Term Care Facility, Germany, February-March 2021. *Emerging Infectious Diseases*.

https://wwwnc.cdc.gov/eid/article/27/8/21-0887_article

Clinical Characteristics and Health Care Setting

- In adults with intellectual and developmental disabilities (IDD) receiving residential services in New York City (n=543), age and pre-existing conditions, such as chronic kidney disease, were associated with a COVID-19 diagnosis. These risk factors were similar to those reported in the general population. Diagnosis of Down syndrome was also associated with a COVID-19 diagnosis (OR=3), while heart disease was associated with COVID-19 mortality (OR=10).

Landes et al. (June 8, 2021). Risk Factors Associated With COVID-19 Outcomes Among People With Intellectual and Developmental Disabilities Receiving Residential Services. *JAMA Network Open*. <https://doi.org/10.1001/jamanetworkopen.2021.12862>

- Pediatric patients diagnosed with Multisystem Inflammatory Syndrome in Children (MIS-C) (n=19) had higher median concentrations of interferon-induced monokines (CXCL9) compared to patients with Kawasaki Disease (n=9), another hyperinflammatory syndrome, in a cohort study in Ohio.

Rodriguez-Smith et al. (June 9, 2021). Inflammatory Biomarkers in COVID-19-Associated Multisystem Inflammatory Syndrome in Children, Kawasaki Disease, and Macrophage Activation Syndrome: A Cohort Study. *The Lancet Rheumatology*.

[https://doi.org/10.1016/S2665-9913\(21\)00139-9](https://doi.org/10.1016/S2665-9913(21)00139-9)

Public Health Policy and Practice

- Counties (n=3,133) with a higher percentage of Black residents had 3 more SARS-CoV-2 infections per 1000 residents in July 2020, and 0.9 more infections per 1000 residents in December 2020, but only among counties with a high prevalence of food insecurity. A similar association between food insecurity and infection rates was observed among residents of other ethnic minorities. In contrast, a 1 standard deviation increase in the percentage of Hispanic residents in a county remained independently associated with increases in infection rates, from 2.9 more infections per 1000 residents in July 2020 to 5.6 more infections per 1000 residents in December 2020.

Kimani et al. (June 8, 2021). Associations of Race/Ethnicity and Food Insecurity With COVID-19 Infection Rates Across US Counties. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2021.12852>

Other Resources and Commentaries

- [“Nanotraps” Designed to Capture and Clear SARS-CoV-2](#) – JAMA (June 8)
- [Epidemiology, Not Geopolitics, Should Guide COVID-19 Vaccine Donations](#) – The Lancet (June 9)
- [The Israeli Study of Pfizer BNT162b2 Vaccine in Pregnancy: Considering Maternal and Neonatal Benefits](#) – Journal of Clinical Investigation (June 8)
- [Making the COVID-19 Pandemic a Driver for Digital Health: The Brazilian Strategies](#) – JMIR Public Health and Surveillance (Mar 9)
- [Excess Deaths from COVID-19 and Other Causes by Region, Neighbourhood Deprivation Level and Place of Death during the First 30 Weeks of the Pandemic in England and Wales: A Retrospective Registry Study](#) – The Lancet Regional Health – Europe (June 9)
- [Access to Harm Reduction Treatment Among Formerly Incarcerated Individuals During the COVID-19 Era](#) – Health Security (June 8)

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