



2019-nCoV Literature Situation Report (Lit Rep) March 30, 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

- **93% of the largest 50 private and 50 public US institutions of higher education offered some in-person teaching for the Fall 2020 semester, 71% of which offered a hybrid reopening structure (≥25% students on campus). Nearly all institutions employing mitigation strategies adopted masking and physical distancing mandates, and over half reduced the density of on-campus housing and classroom density. Over half required entry testing for SARS-CoV-2, and 32% required testing at regular intervals. [More](#)**
- **There was preliminary evidence of possible vaccination-induced herd immunity based on the strong association between increases in the proportion of the community aged 16-50 years who had receive the first dose of the Pfizer-BioNTech vaccine in Israel and decreases in the SARS-CoV-2 positivity rate among a bystander unvaccinated cohort of people under 16 years old (January to March 2021). The authors caution that these findings could also be a result of increased acquired immunity from prior infection or compliance to public policy guidelines. [More](#)**

Non-Pharmaceutical Interventions

- 93% of the 50 largest public and 50 largest private US institutions of higher education offered some in-person teaching for the Fall 2020 semester, according to a landscape analysis of the COVID-19 response strategies. Among those offering some in-person teaching, 71% offered a hybrid reopening structure (≥25% students on campus). Among the 93 of institutions that employed mitigation strategies, 100% adopted masking and 98% adopted physical distancing mandates. Other strategies included reducing the density of on-campus housing (58%) and reducing classroom density (61%). 57% required entry testing for SARS-CoV-2 upon arrival to campus, 32% required testing at regular intervals for students, and 61% had institution-based contact tracing strategies. More private than public institutions implemented intercollegiate athletics bans, behavioral compacts, and suspension clauses for noncompliance.

Freeman et al. (Apr 1, 2021). COVID-19 Response Strategies at Large Institutes of Higher Education in the United States: A Landscape Analysis, Fall 2020. Journal of Adolescent Health.
<https://doi.org/10.1016/j.jadohealth.2021.01.016>

Transmission

- Onboard quarantine measures to reduce the risk of a SARS-CoV-2 outbreak among crew members of the cruise ship MS Artania led to no symptomatic infections among crew members after completion of quarantine, despite an attack rate of 6% (30 of 503) before quarantine and 5% (21 of 441) during



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quarantine on board. The outbreak occurred in late-March 2020 in Western Australia. Operational aspects of the quarantine included disinfection, crew segregation, infection zones, and daily health checks to monitor crew well-being. Surveillance measures during quarantine involved telephone correspondence, face-to-face visits, and routine testing.

Codreanu et al. (Mar 24, 2021). Successful Control of an Onboard COVID-19 Outbreak Using the Cruise Ship as a Quarantine Facility, Western Australia. Emerging Infectious Diseases.

<https://doi.org/10.3201/eid2705.204142>

Geographic Spread

- *[Pre-print, not peer-reviewed]* A novel mutation (T478K) located on the SARS-CoV-2 spike protein was identified in an analysis of over 820,000 genomic sequences deposited on the global genome database GISAID up to March 26, 2021. Since its identification in the beginning of 2021, T478K is present in almost 2% of all sequenced genomes. Among the detected 4,214 distinct cases, 86% are associated with the B.1.1.222 variant first described in Mexico, and the mutation is present in 65% of B.1.1.222 cases in GISAID. Among the cases, 29% (1,203) originated from Mexico (constituting 38% of all sequenced genomes from Mexico) and 60% (2,536) originated from the US (constituting 1.3% of all sequenced genomes from the US).

Giacomo et al. (Mar 29, 2021). Preliminary Report on SARS-CoV-2 Spike Mutation T478K. Pre-print downloaded Mar 30 from <https://doi.org/10.1101/2021.03.28.437369>

Testing and Treatment

- A novel testing algorithm combining RT-PCR and antigen rapid diagnostic testing developed in Cameroon had 94% sensitivity and 91% specificity for detection of symptomatic SARS-CoV-2 infection within 7 days of symptom onset and outperformed PCR testing alone (75% sensitivity and 99% specificity). The algorithm was designed based on retrospectively performing 1000 simulation runs on empirical testing data from 1,195 participants. The algorithm also outperforms the sensitivity of PCR testing alone to identify asymptomatic infections (34% vs 30%) by incorporating rapid antibody diagnostic testing in the screening process.

Boum et al. (Mar 25, 2021). Performance and Operational Feasibility of Antigen and Antibody Rapid Diagnostic Tests for COVID-19 in Symptomatic and Asymptomatic Patients in Cameroon: A Clinical, Prospective, Diagnostic Accuracy Study. The Lancet Infectious Diseases.

[https://doi.org/10.1016/S1473-3099\(21\)00132-8](https://doi.org/10.1016/S1473-3099(21)00132-8)

Vaccines and Immunity

- Five distinct patterns of SARS-CoV-2 neutralizing antibody dynamics were found in a longitudinal study of 164 SARS-CoV-2-infected patients in Singapore with follow-up of up to 180 days post-symptom onset. The different dynamics were defined by the trajectory by which antibody levels waned or evolved. Persistent dynamics, observed in the largest group of patients (32%), was characterized by minimal neutralizing antibody decay and associated with disease severity and inflammatory biomarkers. Delayed response dynamics, characterized by an unexpected increase of neutralizing titers at 90 or 180 days post-symptom onset, was observed in the smallest group (2%). Despite differing neutralizing antibody dynamics, T-cell responses were similar across groups.

Chia et al. (Mar 23, 2021). Dynamics of SARS-CoV-2 Neutralising Antibody Responses and Duration of Immunity: A Longitudinal Study. The Lancet Microbe.

[https://doi.org/10.1016/S2666-5247\(21\)00025-2](https://doi.org/10.1016/S2666-5247(21)00025-2)

- Black, Latinx, and Asian employees of three large medical centers in San Francisco had lower odds of reporting that they were likely to get vaccinated against COVID-19 compared to white employees in a cross-sectional study conducted from November 2020 to January 2021 (n=1,803). Compared to white respondents, Black, Asian and Latinx had 50%, 63%, and 72% lower odds for likeliness of vaccine uptake, respectively. Similarly, ethnic minorities in a general population cohort (n=3,161) residing in counties in the San Francisco Bay Area reported lower odds for likeliness of vaccine uptake compared to white respondents. While ratings of reasons to get vaccinated were similar across racial/ethnic groups, minorities were significantly more likely than white respondents to endorse reasons not to get vaccinated, such as less confidence in vaccine efficacy, less trust in vaccine manufacturers, and more worry that government process were rushed.

Grumbach et al. (Mar 30, 2021). Association of Race/Ethnicity With Likelihood of COVID-19 Vaccine Uptake Among Health Workers and the General Population in the San Francisco Bay Area. JAMA Internal Medicine. <https://doi.org/10.1001/jamainternmed.2021.1445>

- *[Pre-print, not peer-reviewed]* Increases in the proportion of individuals aged 16-50 years receiving the first dose of the Pfizer-BioNTech vaccine were followed by declines in the SARS-CoV-2 positivity rate among a bystander unvaccinated cohort of people under 16 years old in 223 geographically defined communities in Israel. The proportion of vaccinated individuals and SARS-CoV-2 positivity rate of the unvaccinated cohort was measured at three different intervals between January and March 2021, with a 35-day delay in between to allow for the immunization effects of the vaccine to take effect. A strong negative correlation was observed when comparing the change in proportions of individuals vaccinated to the change in positivity rate of the unvaccinated cohort. While communities included in the study had a low pre-vaccination community-level positivity rate (3.6%), the authors note that decline in the SARS-CoV-2 positivity rate among the bystander unvaccinated cohort could be affected by acquired immunity from prior infection, as well as individual behavior and public policy guidelines.

Milman et al. (Mar 29, 2021). SARS-CoV-2 Infection Risk among Unvaccinated Is Negatively Associated with Community-Level Vaccination Rates. Pre-print downloaded Mar 30 from <https://doi.org/10.1101/2021.03.26.21254394>

- *[Pre-print, not peer-reviewed]* The SARS-CoV-2 B.1.1.7 variant is associated with reduced CD8+ T cell activation due to at least two specific mutations in ORF1. The authors used algorithms to predict HLA-A2 binding epitopes in both the B.1.1.7 strain and the ancestral Wuhan strain and determined whether these epitopes could activate CD8+ T cells using an artificial antigen presentation system. Two mutations located in non-structural proteins of the B.1.1.7 variant (A1708D mutation in ORF1ab1707-1716 and I2230T mutation in ORF1ab2230-2238) were linked in the decreased activation of CD8+ T cells. The authors then constructed SARS-CoV-2 CD8+ tetramers based upon these predicted epitopes and used them to probe the CD8+ T cell memory from convalescent patients. They found that most CD8+ T cells from convalescent patients had an effector memory phenotype and furthermore there was substantially reduced recognition of the B.1.1.7 mutant epitopes.

Xiao et al. (Mar 29, 2021). SARS-CoV-2 Variant B.1.1.7 Caused HLA-A2+ CD8+ T Cell Epitope Mutations for Impaired Cellular Immune Response. Pre-print downloaded Mar 30 from <https://doi.org/10.1101/2021.03.28.437363>

- A previous confirmed seasonal coronavirus infection does not appear to provide protection against subsequent infection with SARS-CoV-2, according to analysis of a large database of respiratory

specimens in Sweden. The analysis is based on a database of >75,000 respiratory specimens collected from 2013-2020 and linked to 10,000 samples collected during the pandemic (February-November 2020). There was substantial overlap in the patient population between the two cohorts, allowing the authors to determine whether a previous PCR confirmed coronavirus infection was associated with a reduced likelihood of a subsequent SARS-CoV-2 infection. They found no relationship between a prior coronavirus infection and subsequent SARS-CoV-2 infection when compared to previous infection with the immunologically unrelated rhinovirus, including when restricting their analysis to either alpha or beta-coronaviruses. Additionally, they found no relationship with either viral load or hospitalization (although only 20 participants were hospitalized with COVID-19).

Ringlander et al. (Mar 29, 2021). Verified infections with endemic common cold coronaviruses do not entail significant protection against SARS-CoV-2. Journal of Infectious Disease.

<https://doi.org/10.1093/infdis/jiab089>

Public Health Policy and Practice

- Participants reported that their own adherence to COVID-19 guidelines was better than both their friends and the average citizen in an online survey from the UK, US, Germany, and Sweden (n=1,102) in April 2020. Participants reported higher self-compliance to guidelines such as handwashing, physical distancing, staying at home, and self-quarantining when sick. Though participants rated their close friends as adhering more strictly to guidelines than the average citizen, the observed better-than-average effect persisted as participants rated themselves more adherent than their close friends. These findings were consistent across the four countries.

Mojzisch et al. (Mar 29, 2021). People Perceive Themselves to Adhere More Strictly to COVID-19 Guidelines than Others. Psychology, Health & Medicine.

<https://doi.org/10.1080/13548506.2021.1906435>

Other Resources and Commentaries

- [Migration, Ethnicity, Racism and the COVID-19 Pandemic: A Conference Marking the Launch of a New Global Society](#) – Public Health in Practice (Feb 10)
- [Immigration Status as a Health Care Barrier in the USA during COVID-19](#) – Journal of Migration and Health (Mar 20)
- [Convalescent Plasma from People Vaccinated after COVID-19 Infection](#) – The Lancet Microbe (Mar 23)
- [Imported COVID-19: The Challenges of Emigration Screening](#) – Disaster Medicine and Public Health Preparedness (Mar 30)
- [COVID-19 Risk Assessment at the Opening Ceremony of the Tokyo 2020 Olympic Games](#) – Microbial Risk Analysis (Mar 21)
- [COVID-19 Insights Partnership: Leveraging Big Data from the Department of Veterans Affairs and Supercomputers at the Department of Energy under the Public Health Authority](#) – Journal of the American Medical Informatics Association (Mar 29)
- [The Spatial Landscape of Lung Pathology during COVID-19 Progression](#) – Nature (Mar 29)
- [Effectively Confronting the COVID-19 Pandemic: Critical Lessons From HIV Prevention, Care, and Treatment and Innovative Strategies to Conduct Community-Based and Community-Engaged Research Safely](#) – AIDS Education and Prevention (Dec 2020)
- [Verified Infections with Endemic Common Cold Coronaviruses Do Not Entail Significant Protection against SARS-CoV-2](#) – The Journal of Infectious Diseases (Mar 29)

- [COVID-19 and Treatment and Immunization of Children—The Time to Redefine Pediatric Age Groups Is Here](#) – Rambam Maimonides Medical Journal (Mar 25)
- [Privacy versus Public Health? A Reassessment of Centralised and Decentralised Digital Contact Tracing](#) – Science and Engineering Ethics (Mar 29)
- [Vaccines and Drugs under Clinical Trials for Prevention and Treatment of COVID-19](#) – VirusDisease (Mar 22)
- [Public Health Information on COVID-19 for International Travellers: Lessons Learned from a Mixed-Method Evaluation](#) – Public Health (Feb 10)

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