

2019-nCoV Literature Situation Report (Lit Rep)

April 21, 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

- **Twenty-two possible breakthrough SARS-CoV-2 infections (infection ≥ 14 days after the second vaccine dose) were identified among skilled nursing facility staff and residents in the Chicago area. Most infections were asymptomatic. Two vaccinated residents were hospitalized, one resident died due to multiple concurrent infections, and no facility-associated secondary transmission occurred. [More](#)**
- **Robust immune responses were observed among children and adolescents who had mild or asymptomatic SARS-CoV-2 infection at 2- and 4-months follow-up, and antibody responses were similar or superior to those observed among adults with mild symptomatic illness. [More](#)**

Transmission

- Unvaccinated residents and healthcare personnel (HCP) at a Kentucky skilled nursing facility had a 3 and 4.1-fold higher risk of infection compared to residents and HCP who were vaccinated with the Pfizer-BioNTech mRNA vaccine, respectively, during a SARS-CoV-2 outbreak identified on March 1, 2021. This outbreak was with a newly-introduced variant to the region called “R.1”, which is characterized by E484K and other mutations within the spike protein that have been identified in other variants of concern. 26 residents and 20 HCP tested positive, including 18 residents and four HCP who had received their second vaccine dose >14 days before the outbreak began. Vaccination was 86.5% protective against symptomatic illness among residents and 87.1% protective among HCP.

Cavanaugh et al. (Apr 21, 2021). COVID-19 Outbreak Associated with a SARS-CoV-2 R.1 Lineage Variant in a Skilled Nursing Facility After Vaccination Program — Kentucky, March 2021.

MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm7017e2>

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* Children and adolescents with mild or asymptomatic SARS-CoV-2 infection (n = 69) had robust IgM, IgA, and IgG antibody responses to a range of antigens at the time of infection, and at 2- and 4- month follow-up. Neutralizing activity was still detectable 4 months after infection in 94% of participants, and antibody responses were similar or superior to those observed among 24 adults with mild symptomatic illness.

Garrido et al. (Apr 20, 2021). *Asymptomatic or Mild Symptomatic SARS-CoV-2 Infection Elicits Durable Neutralizing Antibody Responses in Children and Adolescents*. Pre-print downloaded Apr 21 from <https://doi.org/10.1101/2021.04.17.21255663>

- [Pre-print, not peer-reviewed] A real-world study of the safety and immunogenicity of one dose of the Covishield (Oxford-AstraZeneca) vaccine among healthcare workers in India (n = 1,638) found that 79.0% were seropositive 2 weeks after the 1st dose, an increase from the 48.2% who were seropositive at baseline. Among those with prior infection, 98.2% were seropositive. No serious adverse events were reported. [Editorial Note: Covishield is the trade name of the Oxford-Astrazeneca ChadOx1 vaccine AZD1222 that is manufactured in India].

Kataria et al. (Apr 20, 2021). *A Real World Evaluation of the Safety and Immunogenicity of the Covishield Vaccine ChAdOx1 NCoV- 19 Corona Virus Vaccine (Recombinant) in Health Care Workers (HCW) in National Capital Region (NCR) of India A Preliminary Report*. Pre-print downloaded Apr 21 from <https://doi.org/10.1101/2021.04.14.21255452>

- Two months after the initiation of the SARS-CoV-2 vaccination (Pfizer-BioNTech) campaign in Israel, there were declines in the number of cases (by 77%), percentage of positive tests (by 45%), number of hospitalizations (by 68%), and number of severe hospitalizations (by 67%) compared to peak values. The authors suggest that these results are likely driven by the vaccination program since declines were greater in individuals over 60 (who were prioritized to receive the vaccine earlier), and the declines in the clinical measures occurred only after >50% of the population in a given age group had been vaccinated or recovered. In addition, the authors note that there was not a similar decline in number of cases and hospitalizations among older adults during the previous lockdown (September 18 – October 18, 2020).

Rossmann et al. (Apr 19, 2021). *COVID-19 Dynamics after a National Immunization Program in Israel*. *Nature Medicine*. <https://doi.org/10.1038/s41591-021-01337-2>

- Twenty-two possible breakthrough SARS-CoV-2 infections (infection ≥ 14 days after the second vaccine dose) were identified among skilled nursing facility staff (n = 10) and residents (n = 12) across 15 facilities in the Chicago, IL area. Among these cases, 14 (64%) were asymptomatic, two residents were hospitalized, and one resident died due to multiple concurrent infections (Group B streptococcal bacteremia and *Pseudomonas* urinary tract infection). No facility-associated secondary transmission occurred. PCR cycle threshold values from seven patients with breakthrough infections were above 28, suggesting low viral loads.

Teran et al. (Apr 21, 2021). *Postvaccination SARS-CoV-2 Infections Among Skilled Nursing Facility Residents and Staff Members — Chicago, Illinois, December 2020–March 2021*. *MMWR. Morbidity and Mortality Weekly Report*. <https://doi.org/10.15585/mmwr.mm7017e1>

- [Pre-print, not peer-reviewed] In a cohort study in Italy, the adjusted odds ratio for developing symptomatic SARS-CoV-2 infection with SARS-CoV-2 IgG antibodies was 0.05 in the six months following antibody measurement when compared to individuals who were seronegative. The cumulative incidence of laboratory-confirmed, symptomatic infections among IgG-negative and IgG positive cohorts was 2.7% in seronegative individuals and 0.14% in seropositive individuals, respectively.

Manica et al. (Apr 20, 2021). *The Risk of Symptomatic Reinfection during the Second COVID-19 Wave in Individuals Previously Exposed to SARS-CoV-2*. Pre-print downloaded Apr 21 from <https://doi.org/10.1101/2021.04.14.21255502>

Clinical Characteristics and Health Care Setting

- *[Pre-print, not peer-reviewed]* In a prospective cohort of symptomatic outpatients undergoing SARS-CoV-2 PCR testing in Switzerland (n= 507), 53% of patients with SARS-CoV-2 infection reported persistent symptoms between 3 and 10 months after diagnosis compared to 37% of patients who tested negative. About 20% of patients who tested positive consulted a physician for persistent symptoms, and the most common symptoms were fatigue (32%), smell or taste disorder (22%), dyspnea (16%), headache (12%), memory impairment 135 (11%), hair loss (10%), and sleep disorder (10%). Among patients who tested positive for SARS-CoV-2, female sex (aOR = 1.7) and overweight/obesity (aOR = 1.7) predicted persistent symptoms.

Desgranges et al. (Apr 20, 2021). Post-COVID-19 Syndrome in Outpatients a Cohort Study. Pre-print downloaded Apr 21 from <https://doi.org/10.1101/2021.04.19.21255742>

- A multicenter cohort study across Europe conducted among children ≤ 18 years diagnosed with SARS-CoV-2 infection at a tertiary care hospital found that significant risk factors for ICU admission were age < 1 month (OR = 5.1), male sex (OR = 2.1), pre-existing medical conditions (OR = 3.3), and presence of lower respiratory tract infection signs or symptoms at presentation (OR = 10.5). 582 children with positive PCR results between April 1 and April 24, 2020 were included in the analysis. Most children were either asymptomatic (36%) or had mild disease (58%). 145 children (25%) had pre-existing medical conditions, and 363 (62%) were admitted to the hospital. 48 (8%) individuals required ICU admission, 25 (4%) machines to support respiration (mechanical ventilation), 19 (3%) medications to support blood pressure (inotropic or vasopressor support), and one required extracorporeal membrane oxygenation (an advanced form of cardiovascular life support). Four children died (case fatality 0.7%).

Say et al. (Apr 21, 2021). Post-Acute COVID-19 Outcomes in Children with Mild and Asymptomatic Disease. The Lancet Child & Adolescent Health. [https://doi.org/10.1016/S2352-4642\(21\)00124-3](https://doi.org/10.1016/S2352-4642(21)00124-3)

- Only 27.9% (22 of 79) pregnant individuals with COVID admitted to two New York City hospitals had symptoms consistent with COVID between March 22 and April 18, 2020. Patients with COVID-19 were slightly less likely to have a vaginal delivery (55.2 vs. 51.9%) and had a longer postpartum length of stay with cesarean delivery (2.00 vs. 2.67 days). COVID-19 was associated with higher risk for diagnoses of chorioamnionitis, pneumonia, and fevers without a focal diagnosis.

Sutton et al. (Apr 20, 2021). Clinical and Demographic Risk Factors for COVID-19 during Delivery Hospitalizations in New York City. American Journal of Perinatology.

<https://pubmed.ncbi.nlm.nih.gov/33878775/>

- Mortality risk among women veterans who tested positive for SARS-CoV-2 was 4 times that of women veterans who tested negative (HR = 3.8) but women who tested positive had lower risk of cardiovascular events (OR = 0.8) and developing new heart disease conditions within 60 days (OR = 0.7), according to a retrospective analysis of national VA registry data collected between February and August 2020. Older age, BMI > 30 , and prior cardiovascular disease and chronic obstructive pulmonary disease (COPD) conditions were associated with increased 60-day mortality. There was no significant difference in mortality, cardiovascular events, or onset of heart disease by race/ethnicity, despite a higher infection rate among women veterans from minority racial/ethnic groups.

Tsai et al. (Dec 19, 2021). COVID-19 Associated Mortality and Cardiovascular Disease Outcomes among US Women Veterans. *Scientific Reports*. <https://doi.org/10.1038/s41598-021-88111-z>

Public Health Policy and Practice

- The prevalence of SARS-CoV-2 vaccine hesitancy worldwide varied from 4.3% to 72% (mean 22.5%), according to an analysis of 35 studies with 76,471 healthcare workers. The main reasons survey participants gave for hesitancy were concerns about safety, efficacy, and potential side effects. Participants who were male, older, and held doctoral degrees were more likely to accept the vaccine. Factors such as higher perceived risk, working directly with patients, and prior history of influenza vaccination were also associated with willingness to take the vaccine.

Biswas et al. (Apr 20, 2021). The Nature and Extent of COVID-19 Vaccination Hesitancy in Healthcare Workers. *Journal of Community Health*. <https://doi.org/10.1007/s10900-021-00984-3>

Other Resources and Commentaries

- [Regulation of Provider Networks in Response to COVID-19](#) – The American Journal of Managed Care (Mar 19)
- [Mechanical Transmission of SARS-CoV-2 by House Flies](#) – Parasites & Vectors (Dec 20)
- [The Nature and Extent of COVID-19 Vaccination Hesitancy in Healthcare Workers](#) – Journal of Community Health (Apr 20)
- [Immunity after SARS-CoV-2 Infections](#) – Nature Immunology (Apr 19)
- [Molecular COVID-19 Test Gains First EAU for At-Home Use](#) – JAMA (Apr 20)
- [COVID-19 in Clinicians—More Cases in Women, More Deaths in Men](#) – JAMA (Apr 20)
- [Policies for Easing COVID-19 Pandemic Travel Restrictions](#) – MedRxiv (Apr 20)
- [Ultrapotent SARS-CoV-2 Neutralizing Antibodies with Protective Efficacy against Newly Emerged Mutational Variants](#) – BioRxiv (Apr 20)
- [Estimating the Effect of Mobility on SARS-CoV-2 Transmission during the First and Second Wave of the COVID-19 Epidemic in Switzerland a Population-Based Study](#) – MedRxiv (Apr 20)
- [The UPTAKE Study: Implications for the Future of COVID-19 Vaccination Trial Recruitment in UK and Beyond](#) – Trials (Dec 20)
- [Impact of Vaccination and Non-Pharmaceutical Interventions on SARS-CoV-2 Dynamics in Switzerland](#) – MedRxiv (Apr 20)
- [Neutralizing Monoclonal Antibodies for Treatment of COVID-19](#) – Nature Reviews Immunology (Apr 19)
- [Emergence of the SARS-CoV-2 B.1.1.7 Lineage and Its Characteristics at an Outpatient Testing Site in Berlin Germany January-March 2021](#) – MedRxiv (Apr 20)
- [Leave No One behind: Ensuring Access to COVID-19 Vaccines for Refugee and Displaced Populations](#) – Nature Medicine (Apr 19)
- [Revealing the Spatial Shifting Pattern of COVID-19 Pandemic in the United States](#) – Scientific Reports (Dec 19)

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