

2019-nCoV Literature Situation Report (Lit Rep)

March 12, 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

- **Based on a press release from the manufacturer, the Novavax vaccine had an efficacy of 96.4% against mild, moderate and severe disease caused by the original COVID-19 strain in a Phase 3 trial in UK, and was 100% protective against hospitalization and death. [More](#)**
- **Schools that used physical distancing of at least 3 feet had an equivalent incidence of SARS-CoV-2 in students and staff compared to schools that used a wider 6 foot physical distancing in a context where other mitigation measures were implemented. Findings were based on a retrospective cohort study among 251 school districts with any in-person learning in Massachusetts during the Fall 2020 academic period. [More](#)**
- **The risk of asymptomatic SARS-CoV-2 infection was significantly lower among patients who had received at least 1 dose of an mRNA COVID-19 vaccine compared to unvaccinated patients, based on a study of asymptomatic adults in the US undergoing a pre-procedural SARS-CoV-2 molecular screening test. [More](#)**

Non-Pharmaceutical Interventions

- Sealing facemasks with adhesive tape strips improved the proportion of masks that had an airtight fit among mask users (n=6,003), based on a study conducted in Beijing, Yunnan, Shanxi and Jiangsu provinces (China). Participants were convenience sampled at public locations and administered a qualitative fit test to ensure proper fit and airtightness. The first qualitative fit test identified leakage in 46% of participants, with the highest failure positivity occurring at train stations (49%). Mask type was associated with fit test failure, with N95 or KN95 respirators and surgical masks having reduced odds of failure compared to disposable medical masks. Duration of facemask use was also associated with fit test failure. When applying an adhesive tape seal to the upper face mask border for the participants with initial failure (n=2754), 70% improved in a second qualitative fit test.
Pan et al. (Mar 2021). Assessment of Use and Fit of Face Masks Among Individuals in Public During the COVID-19 Pandemic in China. JAMA Network Open.
<https://doi.org/10.1001/jamanetworkopen.2021.2574>
- Increasing physical distancing requirements in schools from ≥ 3 feet to ≥ 6 feet was not associated with a reduction in SARS-CoV-2 cases among students or staff if other mitigation measures were implemented, based on a retrospective cohort study of students (n=537,336) and staff (n=99,390) among 251 school districts with any in-person learning in Massachusetts during the Fall 2020 academic period. 96% of school districts implemented a ≥ 3 feet distancing policy, 64% of districts

reported limiting on-campus enrollment, and all districts adopted universal masking for both students in grade 2 and above and for school staff. After adjusting for race/ethnicity and socioeconomic status, there was no difference in the incidence rates between schools with a ≥ 3 feet vs ≥ 6 feet distancing policy among students (aIRR=0.761) and staff (aIRR=0.902). Incidence rates in both students and staff were strongly correlated with community incidence and positive cases in schools, particularly among school staff.

van den Berg et al. (Mar 10, 2021). Effectiveness of Three versus Six Feet of Physical Distancing for Controlling Spread of COVID-19 among Primary and Secondary Students and Staff: A Retrospective, State-Wide Cohort Study. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciab230>

Transmission

- The risk of asymptomatic SARS-CoV-2 infection was significantly lower among patients who had received at least 1 dose of an mRNA COVID-19 vaccine compared to unvaccinated patients, based on a retrospective cohort study of asymptomatic adult patients (n=39,156) across multiple US states undergoing a pre-procedural SARS-CoV-2 molecular screening test. SARS-CoV-2 was detected in 3% of unvaccinated patients, compared to 1% of participants who had received at least dose prior to screening. After adjusting for age, sex, race/ethnicity and location, the risk for a positive test was significantly lower for patients who had received their first dose >10 days earlier (aRR= 0.49) and those who had received their second dose >0 days (aRR=0.27) compared to unvaccinated patients.

Tande et al. (Mar 10, 2021). Impact of the COVID-19 Vaccine on Asymptomatic Infection Among Patients Undergoing Pre-Procedural COVID-19 Molecular Screening. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciab229>

Vaccines and Immunity

- *[Press release, not peer-reviewed]* A Phase 3 trial of the Novavax vaccine (NVX-CoV2373) in the UK indicated an efficacy of 96.4% against mild, moderate and severe disease caused by the original COVID-19 strain. The company also announced final results of its Phase 2b trial conducted in South Africa, with an efficacy of 55.4% among HIV-negative trial participants in a region where the vast majority of strains are B.1.351 variants. Across both trials, NVX-CoV2373 demonstrated 100% protection against severe disease, including all hospitalization and death.

Novavax. (Mar 11, 2021). Novavax Confirms High Levels of Efficacy Against Original and Variant COVID-19 Strains in United Kingdom and South Africa Trials. Downloaded Mar 11 from

[https://ir.novavax.com/news-releases/news-release-details/novavax-confirms-high-levels-
efficacy-against-original-and](https://ir.novavax.com/news-releases/news-release-details/novavax-confirms-high-levels-efficacy-against-original-and)

- *[Pre-print, not peer-reviewed]* An investigation of the Oxford-AstraZeneca (ChAdOx1 nCoV-19; AZD1222) vaccine efficacy against SARS-CoV-2 variants of concern B.1.1.7 and B.1.351 in Syrian hamsters showed a 9.5-fold reduction of virus neutralizing antibody titer in vaccinated hamster sera against B.1.351 compared to B.1.1.7. Vaccinated hamsters challenged with B.1.1.7 or B.1.351 did not lose weight compared to control animals.
- Histopathological evaluation showed extensive pulmonary pathology caused by B.1.1.7 or B.1.351 replication in the control animals, but none in the vaccinated animals. No infectious virus and minimal to no viral subgenomic RNA (sgRNA) was detected in lungs of vaccinated animals.

Fisher et al. (Mar 11, 2021). ChAdOx1 nCoV-19 (AZD1222) protects against SARS-CoV-2 B.1.351 and B.1.1.7. Pre-print downloaded Mar 12 from

<https://doi.org/10.1101/2021.03.11.435000>

- Among healthcare-workers (HCWs) (n=118) who had a previous SARS-CoV-2 infection, 92% were still positive for anti-spike (S) antibodies compared to only 18% for IgG anti-nucleocapsid (N) antibodies after 7-10 months. At 1-3 months, 98% of HCWs were positive for anti-S antibodies compared to 85.6% anti-N antibodies. The mean half-life for anti-S antibodies was 19 days compared to 76.4 days for anti-N antibodies. The majority of participants had experienced mild COVID-19 disease; 6 participants had been briefly hospitalized. These findings could have implications for the estimated duration of the antibody response after vaccination.

Van Elslande et al. (Mar 8, 2021). Estimated Half-Life of SARS-CoV-2 Anti-Spike Antibodies More than Double the Half-Life of Anti-Nucleocapsid Antibodies in Healthcare Workers. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab219>

Clinical Characteristics and Health Care Setting

- A systematic review and meta-analysis found that the average time between the onset of COVID-19 symptoms in an index case and the onset of symptoms in a secondary case (serial interval) was 5.2 days and the average time from infection until symptom onset (incubation period) was 6.5 days.

Alene et al. (Mar 11, 2021). Serial interval and incubation period of COVID-19: a systematic review and meta-analysis. BMC Infectious Diseases. <https://doi.org/10.1186/s12879-021-05950-x>

- Receipt of the 13-valent pneumococcal conjugate vaccine (PCV13) was associated with lower incidence of any COVID-19 diagnosis, COVID-19 hospitalization, and fatal COVID-19 hospitalization after accounting for potential sources of confounding, according to a cohort study of 531,033 US adults aged ≥65 years.

Lewnard et al. (Mar 9, 2021). Prevention of COVID-19 among older adults receiving pneumococcal conjugate vaccine suggests interactions between Streptococcus pneumoniae and SARS-CoV-2 in the respiratory tract. The Journal of Infectious Diseases. <https://doi.org/10.1093/infdis/jiab128>

- Among patients with COVID-19 who were receiving mechanical ventilation (n=396), patients with COVID-19 associated pulmonary aspergillosis (CAPA) had higher odds of worse disease outcome, required longer time to improvement and had an increased hazard of advancing disease severity compared to those without CAPA. Although there were no differences in mortality, patients with CAPA required significantly longer median duration of any oxygen therapy (40.7 vs 16.7 days), ventilator support (36.6 vs 8.9 days) and hospital length of stay (41.1 vs 18.5 days). CAPA patients had significantly slower recovery (aOR=1.09), and progression from intubation to receipt of other advanced life support was 1.8 times faster (aHR=1.8) compared to controls.
- Patients with CAPA had a lower median BMI, more underlying pulmonary vascular disorders, liver disease, coagulopathy, solid tumors and multiple myeloma. COVID-19 disease severity was similar at baseline.

Permpalung et al. (Mar 9, 2021). COVID-19 Associated Pulmonary Aspergillosis in Mechanically Ventilated Patients. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab223>

Mental Health and Personal Impact

- Analysis of an online survey (n=672 participants) across multiple US states found that participants living in counties with high COVID-19 death rates (>17 deaths per 100,000) had a higher risk

perception compared to participants living in counties with a low county death rates (≤ 5 deaths per 100,000). No difference was observed in overall COVID-19 risk perception between counties with moderate and low death rates. After adjusting for potential confounders, increased COVID-19 risk perception was associated with increased time spent at home (OR=1.12).

Elharake et al. (Mar 10, 2021). The Association of COVID-19 Risk Perception, County Death Rates, and Voluntary Health Behaviors among U.S. Adult Population. The Journal of Infectious Diseases. <https://doi.org/10.1093/infdis/jiab131>

Public Health Policy and Practice

- A qualitative study among Latinx adults who survived COVID-19 about their experiences before, during, and after hospitalization identified multiple themes with public health implications. Common themes identified were the prevalence of COVID-19 misinformation, COVID-19 as compounding socioeconomic disadvantages and a reluctance to seek medical care. Participants risked infection because of the need to work and hesitated to seek hospital care because of immigration and economic concerns.

Cervantes et al. (Mar 11, 2021). Experiences of Latinx Individuals Hospitalized for COVID-19 A Qualitative Study. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2021.0684>

- A total of 3,843 deaths due to opioid overdose were identified in an analysis of data from Cook County, Illinois between January 2018 and October 2020, with the weekly count of deaths ranging from 12 to 52 deaths per week. Despite a stable weekly mean of 22.6 deaths per week prior to December 2019, mean weekly deaths increased to 35.1 per week beginning in December 2019, followed by a more pronounced increase to 43.4 weekly deaths during the stay-at-home order. Following lifting of the stay-at-home order, mean weekly deaths declined to 31.2 deaths per week. Despite a decline in weekly death rate following the period after the order was limited, death rates remain elevated above pre-2020 levels, which the authors conclude may indicate an upward trend.

Mason et al. (Mar 12, 2021). Notes from the Field: Opioid Overdose Deaths Before, During, and After an 11-Week COVID-19 Stay-at-Home Order — Cook County, Illinois, January 1, 2018–October 6, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7010a3>

- SARS-CoV-2 testing rates (4%) and positivity rates (12%) among Black veterans and Hispanic veterans (5% and 12%, respectively) were higher compared to white veterans (3% and 6%) according to a retrospective cohort study of all US veterans who were active users of the Veterans Health Administration (VHA) services. 252,702 veterans were tested (3%) for SARS-CoV-2 from February to July 2020, with an overall positivity rate of 8%. Among veterans with a positive test result, 24% of had an incident hospitalization due to COVID-19, with hospitalization rates highest in Black veterans (29%). No significant differences by race and ethnicity were observed in odds of ICU admission or in-hospital death after controlling for demographics and comorbidities. Results for other reported race/ethnicity groups were described, but statistical comparison focused on Black, Hispanic and white veterans.

Razjouyan et al. (Mar 2021). Differences in COVID-19-Related Testing and Healthcare Utilization by Race and Ethnicity in the Veterans Health Administration. Journal of Racial and Ethnic Health Disparities. <https://doi.org/10.1007/s40615-021-00982-0>

Other Resources and Commentaries

- [A three-tiered approach to address barriers to COVID-19 vaccine delivery in the Black community](#) – The Lancet Global Health (Mar 10)

- [Impact of COVID-19 on Healthcare-Associated Infections: An Update and Perspective](#) – Cambridge University Press (Mar 12)
- [Higher viral load drives infrequent SARS-CoV-2 transmission between asymptomatic residence hall roommates](#) – MedRxiv (Mar 12)
- [Experimental re-infected cats do not transmit SARS-CoV-2](#) – Emerging Microbes & Infections (Mar 11)
- [Sex differences in the evolution of neutralizing antibodies to SARS-CoV-2](#) – The Journal of Infectious Diseases (Mar 7)
- [Antimicrobial susceptibility patterns of respiratory Gram-negative bacterial isolates from COVID-19 patients in Switzerland](#) – MedRxiv (Mar 12)
- [Interventions for treatment of COVID-19: Second edition of a living systematic review with meta-analyses and trial sequential analyses \(The LIVING Project\)](#) – PlosOne (Mar 10)
- [COVID-19 Mortality Rates Among Nursing Home Residents Declined From March To November 2020](#) – Health Affairs (Mar 11)
- [COVID-19 serosurveys for public health decision making](#) – The Lancet Global Health (Mar 8)
- [Why Asian Countries are Controlling the Pandemic Better Than the United States and Western Europe](#) – International Journal of Health Services (Mar 11)
- [Listening to Latinx Patient Perspectives on COVID-19 to Inform Future Prevention Efforts](#) – JAMA Network Open (Mar 11)
- [Are some COVID vaccines better than others? Interpreting and comparing estimates of efficacy in trials of COVID-19 vaccines](#) – Clinical Infectious Diseases (Mar 6)

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