



2019-nCoV Literature Situation Report (Lit Rep)

March 17, 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

- **Two doses of the Oxford-AstraZeneca (ChAdOx1 nCoV-19) vaccine did not show protection against mild-to-moderate COVID-19 due to infection with the B.1.351 variant in a randomized trial in South Africa. The trial population did not experience enough severe disease for an analysis of vaccine efficacy against severe disease.** [More](#)
- **The emergence of the B.1.1.7 variant in the UK was associated with a 55% higher risk of death compared to previous strains.** [More](#)
- **A SARS-CoV-2 testing program at the University of Washington identified SARS-CoV-2 outbreaks linked to fraternities and sororities without evidence of spread to the surrounding community.** [More](#)
- **The incidence of COVID-19 was low in students and staff in primary schools in the UK following partial and full reopening during the summer term and through December 2020, with only 6% of students and 5% of staff seroconverting during the surveillance period.** [More](#)

Non-Pharmaceutical Interventions

- *[Pre-print, not peer-reviewed]* A study of the genomic epidemiology of travel-associated SARS-CoV-2 determined that 51% of imported cases in England were related to travel to one of three countries: Greece (21%), Croatia (16%), and Spain (14%). 4,207 cases were of travel-associated SARS-CoV-2 were identified by contact tracing and defined as those that had travelled within 2 days of symptom onset. Cases had an overall median of 3 close contacts, and the median number of close contacts was largest for those aged 16-20. Implementation of travel reductions was associated with a 40% lower rate of contacts, and fewer genomically-linked cases were identified for index cases who traveled to countries for which there were travel restrictions compared to those for which there were none (RR = 0.17).

Aggarwal et al. (Mar 17, 2021). An Integrated Analysis of Contact Tracing and Genomics to Assess the Efficacy of Travel Restrictions on SARS-CoV-2 Introduction and Transmission in England from June to September 2020. Pre-print downloaded Mar 17 from <https://doi.org/10.1101/2021.03.15.21253590>

Transmission

- Results from the COVID-19 surveillance in School KIDSs (sKIDS) study of primary school children in England indicated that SARS-CoV-2 infection rates in primary schools were low following partial and full reopening. During the summer half-term (that began in June 2020), weekly infection rates were



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4.1 per 100,000 students and 12.5 per 100,000 staff. Seropositivity for antibodies against SARS-CoV-2 was not associated with school attendance during lockdown or staff contact with students. At the end of the summer term, five participants (four students, one staff member) seroconverted (out of approximately 12,000 participants). By December, 55 (5%) of 1,085 participants who were seronegative at recruitment had seroconverted, including 19 (6%) of 340 students and 36 (5%) of 745 staff members.

Ladhani et al. (Mar 17, 2021). SARS-CoV-2 Infection and Transmission in Primary Schools in England in June-December, 2020 (SKIDs): An Active, Prospective Surveillance Study. The Lancet Child & Adolescent Health. [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(21\)00061-4/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(21)00061-4/fulltext)

- *[Pre-print, not peer-reviewed]* A SARS-CoV-2 testing program at the University of Washington found that SARS-CoV-2 spread through school-based outbreaks without evidence of spread to the surrounding community. The testing program, which prioritized individuals with symptoms and high-risk exposure, identified 236 cases out of 16,476 tests conducted in the fall of 2020. Affiliation with a university fraternity or sorority was the strongest risk factor associated with testing positive. 52 out of 59 viral genomes sequenced from students affiliated with the fraternity/sorority community were genetically identical to at least one other genome detected, compared to 11 out of 29 genomes from non-fraternity/sorority-affiliated students and employees. Most (75%) cases reported at least one of the following: experiencing SARS-CoV-2 symptoms (61%), exposure to a case (35%), or engaging in high-risk behaviors (22%).

Weil et al. (Mar 17, 2021). SARS-CoV-2 Epidemiology on a Public University Campus in Washington State. Pre-print downloaded Mar 17 from <https://doi.org/10.1101/2021.03.15.21253227>

- The proportion of SARS-CoV-2-positive samples that had an S gene target failure (suggestive of the B.1.1.7 strain) rose dramatically in late 2020 in the UK. The number and proportion of samples with S gene target failure increased from 12% to 60% between November 16 and December 13. By December 7, in South East England 57% of samples from adults under the age of 65 and 76% of those obtained from those over age 65 had S gene target failure. Sequencing data were only available from two samples with S gene target failure from long-term care facilities, both of which were found to be B.1.1.7.

Krutikov et al. (Mar 16, 2021). Spread of a Variant SARS-CoV-2 in Long-Term Care Facilities in England. New England Journal of Medicine. <https://doi.org/10.1056/NEJMc2035906>

Testing and Treatment

- Evaluation of the Roche SD Biosensor rapid antigen test for SARS-CoV-2 among asymptomatic outpatients demonstrated that test sensitivity was 84.9% and specificity was 99.5%. Around 98% of samples with a cycle threshold (Ct) below 30 (indicating higher viral load) were detected. Test sensitivity was higher (95.8%) among people who sought care within 7 days of experiencing symptoms.

Iglói et al. (Mar 16, 2021). Clinical Evaluation of Roche SD Biosensor Rapid Antigen Test for SARS-CoV-2 in Municipal Health Service Testing Site, the Netherlands. Emerging Infectious Diseases. https://wwwnc.cdc.gov/eid/article/27/5/20-4688_article

- Performance of the nasopharyngeal Panbio COVID-19 antigen (Ag) test was highly dependent on the cycle threshold (Ct) value. The Panbio test showed high sensitivity among older, symptomatic

patients with a cycle threshold (Ct) value below 30 (indicating higher viral load). The positive percent agreement (PPA) relative to RT-PCR of 94% for Ct at ≤ 25 and 80% for Ct ≤ 30 . Among patients who were symptomatic, the PPA was 95% for Ct ≤ 25 , 85% for Ct ≤ 30 , and 89% for symptoms of fever, cough, and malaise. In asymptomatic patients, the PPA was 86% for Ct ≤ 25 .

Masiá et al. (Feb 2, 2021). Nasopharyngeal Panbio COVID-19 Antigen Performed at Point-of-Care Has a High Sensitivity in Symptomatic and Asymptomatic Patients With Higher Risk for Transmission and Older Age. Open Forum Infectious Diseases.

<https://doi.org/10.1093/ofid/ofab059>

- Among health care workers in the UK, Abbott and Roche antibody assays showed low sensitivity for detecting individuals with previous PCR-confirmed infection. In a cohort study conducted at 2 medical centers in the UK, the Abbott antibody assay had a sensitivity (proportion with a positive antibody test result in those with previous PCR-confirmed infection) of 40% and the Roche assay had a sensitivity of 81%. Antibody seroprevalence was 8% in the cohort tested with the Abbott assay and 13% for the cohort tested with the Roche assay. Testing was conducted ~60-90 days after infection.

Robinson et al. (Mar 16, 2021). Real-World Experience of SARS-CoV-2 Antibody Assays in UK Healthcare Workers. Clinical Medicine. <https://doi.org/10.7861/clinmed.2020.1007>

Vaccines and Immunity

- Two doses of the Oxford-AstraZeneca (ChAdOx1 nCoV-19) vaccine did not show protection against mild-to-moderate COVID-19 among people infected with the B.1.351 variant in a multicenter randomized trial in South Africa. Mild-to-moderate COVID-19 developed in 23 of 717 placebo recipients (3.2%) and in 19 of 750 vaccine recipients (2.5%), for an efficacy of 21.9%. Among the 42 participants who developed COVID-19, 39 (92.9%) were infected with the B.1.351 variant. Vaccine efficacy against this variant, analyzed as a secondary end point, was 10.4%. The authors note that the demographic profile of enrolled participants contributed to the lack of severe COVID-19, and therefore trial results are inconclusive regarding the vaccine's potential to protect against severe disease. [EDITORIAL NOTE: A pre-print related to this manuscript was summarized on February 12, 2020]

Madhi et al. (Mar 16, 2021). Efficacy of the ChAdOx1 NCoV-19 Covid-19 Vaccine against the B.1.351 Variant. New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2102214>

- [Pre-print, not peer-reviewed] Effectiveness of the Pfizer-BioNTech vaccine gradually increased starting at 12 days after the first vaccine dose and then plateaued around 35 days, according to an analysis of electronic health records from 1.79 million individuals in Israel. This period of maximum effectiveness corresponds to a period 2-weeks after the scheduled administration of the second dose and resulted in 91.2% efficacy for prevention of all infections and 99.3% for prevention of symptomatic infections. Effectiveness declined with age and for patients with type 2 diabetes and effectiveness was the same for men and women.

Yelin et al. (Mar 17, 2021). Associations of the BNT162b2 COVID-19 Vaccine Effectiveness with Patient Age and Comorbidities. Pre-print downloaded Mar 17 from

<https://doi.org/10.1101/2021.03.16.21253686>

- Counties with high social vulnerability had lower first-dose vaccination coverage (14%) compared to those with low social vulnerability (16%) during the first 2.5 months of the SARS-CoV-2 vaccination program in the US (December 15, 2020 – March 1, 2021). Vaccination coverage was lower in low vulnerability counties compared to high vulnerability counties among those aged ≥ 65 years (2.3

percentage points lower), those living in multiunit housing (1.3 percentage points lower), and among households with no vehicle (0.7 percentage points lower).

Hughes et al. (Mar 17, 2021). County-Level COVID-19 Vaccination Coverage and Social Vulnerability — United States, December 14, 2020–March 1, 2021. MMWR.

<https://doi.org/10.15585/mmwr.mm7012e1>

Clinical Characteristics and Health Care Setting

- A study of residents of nursing homes (NHs) in communities with high SARS-CoV-2 infection rates found that NHs with more COVID-19 cases have residents who were older and had higher activities of daily living scores. Additionally, higher incidence NHs had a lower proportion of white residents and a higher proportion of residents who were insured by Medicaid. High incidence NHs had lower occupancy rates and fewer direct care hours per patient per day.

Chen et al. (Mar 16, 2021). Nursing Home Characteristics Associated With Resident COVID-19 Morbidity in Communities With High Infection Rates. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2021.1555>

Modeling and Prediction

- A model developed for COVID mitigation upon the return of students to school at Emory University concluded that screening at least weekly would be required to ensure substantial case reductions. According to a “susceptible-exposed-infectious-recovered” (SEIR) model, monthly and weekly screening among the approximately 30,000 students could reduce SARS-CoV-2 cumulative incidence (CI) by 59% and 87%, respectively. Smaller reductions in CI were estimated among staff and faculty.

Lopman et al. (Mar 15, 2021). A Modeling Study to Inform Screening and Testing Interventions for the Control of SARS-CoV-2 on University Campuses. Scientific Reports.

<https://doi.org/10.1038/s41598-021-85252-z>

Public Health Policy and Practice

- The risk of for death associated with the presence of the B.1.1.7 variant was 55% higher than previous strains, according to an analysis from the UK. The authors used S gene target failure (SGTF) to define B.1.1.7 and performed analysis of SARS-CoV-2 community tests (n=2,245,263 positive results) and COVID-19 deaths (n=17,452) in England from September 1, 2020 to February 14, 2021. After adjusting for several factors including age, sex, and care home residence, the risk death associated with SGTF was 55% higher than for non-B.1.1.7 variants. When the authors corrected for SGTF misclassification or missingness, the estimated risk of death was 61% higher among those with B.1.1.7. [EDITORIAL NOTE: A pre-print related to this manuscript was summarized on February 4, 2020]

Davies et al. (Mar 15, 2021). Increased Mortality in Community-Tested Cases of SARS-CoV-2 Lineage B.1.1.7. Nature. <https://doi.org/10.1038/s41586-021-03426-1>

Other Resources and Commentaries

- [COVID-19 Vaccine Guidance for Patients with Cancer Participating in Oncology Clinical Trials](#) – Nature Reviews Clinical Oncology (Mar 15)
- [COVID-19 Vaccines Pricing Policy Options for Low-Income and Middle- Income Countries](#) – BMJ Global Health (Mar 16)
- [Tracking the Emergence of New SARS-CoV-2 Variants in South Africa](#) – Nature Medicine (Mar 15)

- [Hindsight Is 2020? Lessons in Global Health Governance One Year into the Pandemic](#) – Nature Medicine (Mar 15)
- [Correcting COVID-19 Vaccine Misinformation](#) – EClinicalMedicine (Mar)
- [Covid-19: WHO Says Rollout of AstraZeneca Vaccine Should Continue, as Europe Divides over Safety](#) – BMJ (Mar 16)
- [Surveillance of SARS-CoV-2 in Zimbabwe Shows Dominance of Variants of Concern](#) – The Lancet Microbe (Mar 10)
- [Breastfeeding and COVID-19 Vaccine: Yes We Can](#) – Journal of Human Lactation (Mar 16)
- [Developing Therapeutic Approaches for Twenty-First-Century Emerging Infectious Viral Diseases](#) – Nature Medicine (Mar 15)
- [Human Infection Challenge Experiments: Then and Now](#) – Ethics & Human Research (Mar 15)
- [Response to: COVID-19 Re-infection. Vaccinated Individuals as a Potential Source of Transmission](#) – European Journal of Clinical Investigation (Mar 16)
- [Countrywide Population Movement Monitoring Using Mobile Devices Generated \(Big\) Data during the COVID-19 Crisis](#) – Scientific Reports (Mar 15)
- [Establishment of Monoclonal Antibody Standards for Quantitative Serological Diagnosis of SARS-CoV-2 in Low-Incidence Settings](#) – Open Forum Infectious Diseases (Feb 2)
- [Tracing the Tracers – Exploring Essential Attributes to Assess Nationally Issued COVID-19 Contact Tracing Apps: An Open Source Intelligence Approach](#) – JMIR MHealth and UHealth (Mar 16)
- [2020 Revealed How Poorly the US Was Prepared for COVID-19—and Future Pandemics](#) – JAMA (Mar 16)
- [Prioritization of Pregnant Individuals in State Plans for COVID-19 Vaccination](#) – American Journal of Obstetrics and Gynecology (Mar 10)
- [Seroprevalence of SARS-CoV-2 Antibodies in the US Adult Asymptomatic Population as of September 30, 2020](#) – JAMA Network Open (Mar 16)

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