

2019-nCoV Literature Situation Report (Lit Rep)

March 25, 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

- **Only 1% of over 14,000 nursing home residents in the UK who have received the first dose of either the Pfizer-BioNTech or Oxford-AstraZeneca vaccines reported a positive SARS-CoV-2 PCR test in an observational study from December 2020 to March 2021. 90% of infections occurred within 28 days of the first dose. [More](#)**
- **Weekly incidence of COVID-19 among healthcare workers in a two-campus medical center in Jerusalem steadily declined after commencement of two-dose vaccinations with the Pfizer-BioNTech vaccine in December 2020. Decline in incidence occurred despite a surge of the B.1.1.7 variant (up to 80% of cases) within the community. [More](#)**

Non-Pharmaceutical Interventions

- *[Pre-print, not peer-reviewed]* Mandatory in-person instruction without universal mask mandates may contribute to increased community transmission of SARS-CoV-2, according to a comparative case study that examined weekly incidence among children ages 0-19 years in Canada's three largest cities from August 2020 to January 2021. The highest incidence among children ages 0-19 years by the end of the study period was observed in Montreal, where mask mandates were delayed as late as January 2021 in elementary schools. Trends show that incidence among adults 30-49 years old were preceded by increases among school-aged children, suggesting in-person schooling may have contributed to community transmission. In contrast, no such patterns exist in Toronto and Calgary, where mask mandates were implemented at the beginning of the school year. *[EDITORIAL NOTE: Uncontrolled ecological comparisons such as this are limited in their ability to attribute differences in incidence between cities to a specific policy.]*
Bignami et al. (Mar 23, 2021). In-Person Schooling and COVID-19 Transmission in Canada's Three Largest Cities. Pre-print downloaded Mar 25 from <https://doi.org/10.1101/2021.03.21.21254064>
- A transmission model suggests that hourly cleaning and disinfection alone could interrupt fomite transmission of SARS-CoV-2 in some office settings, but would not be sufficient for child daycares and schools and should be combined with measures to reduce viral shedding such as mask wearing. Model estimates show that sustained transmission may be possible based on frequency of fomite touching and fraction of surfaces susceptible to contamination, with R_0 being as high as 25 in high-risk settings such as child daycares. Handwashing interventions had minimal impact on model results.

Kraay et al. (Apr 2021). Risk for Fomite-Mediated Transmission of SARS-CoV-2 in Child Daycares, Schools, Nursing Homes, and Offices. *Emerging Infectious Diseases*.

<https://doi.org/10.3201/eid2704.203631>

Geographic Spread

- *[Pre-print, not peer-reviewed]* A novel SARS-CoV-2 variant (assigned name B.1.1.220) was detected by ongoing surveillance in samples collected in early February in four patients in upstate New York. B.1.1.220 was characterized with the E484K substitution in the spike protein, also present in the B.1.351 variant that was first described in South Africa and the P.1 variant that was first described in Brazil, along with four other amino acid substitutions. A search of online databases identified 12 other B.1.1.220 samples, all of which were detected in New York since December 2020.

Lesho et al. (Mar 23, 2021). *Emergence of the E484K Mutation in SARS-CoV-2 Lineage B.1.1.220 in Upstate New York*. Pre-print downloaded Mar 25 from

<https://doi.org/10.1101/2021.03.11.21253231>

Testing and Treatment

- *[Pre-print, not peer-reviewed]* Genomic analysis of wastewater samples from New York City obtained from January to March 2021 found that the SARS-CoV-2 mutations occurring at the highest frequencies were associated with known variants of concern. Mutations occurring at high frequencies include L452R, present in the CAL.20C variant first described in California, E484K, present in the B.1.351 and P.1 variants first described in South Africa and Brazil, and N50Y1 present in the B.1.1.7 variant first described in the UK as well as the B.1.351 and P.1 variants.

Smyth et al. (Mar 23, 2021). *Detection of Mutations Associated with Variants of Concern Via High Throughput Sequencing of SARS-CoV-2 Isolated from NYC Wastewater*. Pre-print downloaded Mar 25 from

<https://doi.org/10.1101/2021.03.21.21253978>

- *[Pre-print, not peer-reviewed]* Neutralizing activity elicited by prior SARS-CoV-2 infection, mRNA vaccines (Pfizer-BioNTech and Moderna), or the Regeneron monoclonal antibody cocktail (REGN10933 and REGN10987) were similar against the B.1.526 variant with the S477N mutation compared to the widely circulating strain with the D614G mutation. In contrast, similar to other E484K harboring variants, the B.1.526 variant with the E484K mutation reduced neutralizing titers of sera from convalescent and vaccinated individuals by nearly 4-fold. REGN10933 alone had a 12-fold reduction in neutralizing activity, but the combined Regeneron cocktail was able to neutralize the B.1.526 E484K variant. Both versions of the B.1.526 variant (S477N mutation and E484K mutation) were first identified in New York City in November 2020, and rapidly spread to account for 12% of detected genomes by mid-February 2021.

Zhou et al. (Mar 24, 2021). *B.1.526 SARS-CoV-2 Variants Identified in New York City Are Neutralized by Vaccine-Elicited and Therapeutic Monoclonal Antibodies*. Pre-print downloaded Mar 25 from

<https://doi.org/10.1101/2021.03.24.436620>

Vaccines and Immunity

- Weekly incidence of COVID-19 among healthcare workers (HCWs) in a two-campus medical center in Jerusalem steadily declined after commencement of two-dose vaccinations with the Pfizer-BioNTech vaccine in December 2020. Decline in incidence occurred despite a surge of the B.1.1.7 variant (up to 80% of cases) within the community.

Benenson et al. (Mar 23, 2021). BNT162b2 MRNA Covid-19 Vaccine Effectiveness among Health Care Workers. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMc2101951>

- Among healthcare workers who received a single dose of the Pfizer-BioNTech vaccine, those who had SARS-CoV-2 infection 30-60 days prior to vaccination (n=36) had significantly higher antibody levels and higher levels of antibodies with neutralizing characteristics at 3 weeks post-vaccination than individuals with no prior infection (n=152). After the first vaccine dose, both previously infected and uninfected individuals' antibody titers were enhanced to all proteins (S1, S2, RBD) with the exception of the nucleocapsid protein, which is not a vaccine antigen. [EDITORIAL NOTE: A pre-print version of this manuscript was summarized in this report on February 8, 2021.]

Bradley et al. (Mar 23, 2021). Antibody Responses after a Single Dose of SARS-CoV-2 mRNA Vaccine. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMc2102051>

- [Pre-print, not peer-reviewed] Only 1% of over 14,000 nursing home residents in the UK who have received the first dose of either the Pfizer-BioNTech or Oxford-AstraZeneca vaccines reported a positive SARS-CoV-2 PCR test in an observational study from December 2020 to March 2021. 90% of infections occurred within 28 days of the first dose. At 7 days post vaccination, those with prior infection had a 46% reduced hazard of a having a positive PCR. Those who received the Pfizer-BioNTech vaccine had a 3.8-fold higher hazard of having a positive test as compared to recipients of the Oxford-AstraZeneca vaccine. At 21 days post-vaccination, individuals with low or intermediate frailty (compared to high frailty) had 4.6- and 4.9-fold higher hazard of a positive PCR test, respectively.

Hollinghurst et al. (Mar 24, 2021). COVID-19 Infection Risk amongst 14104 Vaccinated Care Home Residents A National Observational Longitudinal Cohort Study in Wales United Kingdom December 2020 to March 2021. Pre-print downloaded Mar 25 from <https://doi.org/10.1101/2021.03.19.21253940>

- SARS-CoV-2 reinfection with a variant harboring the E484K mutation (occurring in the P.2 variant) was confirmed by genome sequencing in a case study in Brazil. The primary infection occurred in May 2020 by a widely circulating variant B.1.1.33 without the E484K mutation, while the reinfection occurred 147 days later in October 2020. Findings from this case study corroborate experimental studies suggesting that variants containing the E484K mutation have the potential to escape neutralizing antibodies.

Nonaka et al. (Feb 19, 2021). Genomic Evidence of SARS-CoV-2 Reinfection Involving E484K Spike Mutation, Brazil. *Emerging Infectious Diseases*. https://wwwnc.cdc.gov/eid/article/27/5/21-0191_article

Mental Health and Personal Impact

- SARS-CoV-2 infection, pre-pandemic psychosocial difficulties, and increased severity in psychiatric symptoms were identified as risk factors for suicidal ideation (SI) among a cohort of veterans with pre-existing psychiatric conditions (n=661). 19% of veterans screened positive for SI during the pandemic, and these veterans had lower income, were more likely to have had SARS-CoV-2 infection, and reported greater financial and social stresses associated with COVID-19. Higher reported pre-pandemic purpose in life and higher income were associated with a lower likelihood of SI during the pandemic.

Na et al. (Mar 16, 2021). Prevalence, Risk and Protective Factors Associated with Suicidal Ideation during the COVID-19 Pandemic in U.S. Military Veterans with Pre-Existing Psychiatric Conditions. *Journal of Psychiatric Research*. <https://doi.org/10.1016/j.jpsychires.2021.03.021>

Public Health Policy and Practice

- US county-level data show that during April 2020 11% of counties (n=3,142) reported high 2-week COVID-19 incidence (>100 new cases per 100,000 persons), which rose to 65% of counties in August, and 99% in December 2020. Counties whose percentages of racial and ethnic minority populations are larger than the respective national percentages were consistently overrepresented among high incidence counties in April (29% of counties with large percentages of Asian persons and 28% of counties with large percentages of Black persons) and in August (92% of counties with large percentages of Black persons and 75% of counties with large percentages of Hispanic persons).

Lee et al. (Mar 24, 2021). Counties with High COVID-19 Incidence and Relatively Large Racial and Ethnic Minority Populations — United States, April 1–December 22, 2020. *MMWR*.

<https://doi.org/10.15585/mmwr.mm7013e1>

- The age distribution of confirmed COVID-19 cases in Washington State shifted from older age groups to young adults and children between March and August 2020, according to a longitudinal cohort analysis. From March to April, there was a 10% decline in cases among those age 60 years and older and a 20% increase among those age 0-19 and 20-39 years. By August, cases among people under 40 comprised an average of 60% of total cases, with ages 0-19 accounting for 19% of cases and ages 20-39 accounting for 42% of cases. Test positivity during this time shifted towards younger age groups despite less testing in these age groups and expanded testing among older age groups. [EDITORIAL NOTE: A pre-print version of this manuscript was summarized in this report on November 17, 2020.]

Malmgren et al. (Mar 24, 2021). Continued Proportional Age Shift of Confirmed Positive COVID-19 Incidence over Time to Children and Young Adults: Washington State March—August 2020.

PLOS ONE. <https://doi.org/10.1371/journal.pone.0243042>

Other Resources and Commentaries

- [New SARS-CoV-2 Variants — Clinical, Public Health, and Vaccine Implications](#) – New England Journal of Medicine (Mar 24)
- [Magnitude of Asymptomatic COVID-19 Cases throughout the Course of Infection: A Systematic Review and Meta-Analysis](#) – PloS One (Mar 23)
- [Rapid Identification and Tracking of SARS-CoV-2 Variants of Concern](#) – The Lancet (Mar)
- [Covid-19: Variants and Vaccination](#) – BMJ (Mar 23)
- [Rapid, Point-of-Care Antigen and Molecular-Based Tests for Diagnosis of SARS-CoV-2 Infection](#) – The Cochrane Database of Systematic Reviews (Mar 24)
- [Risk for International Importations of Variant SARS-CoV-2 Originating in the United Kingdom](#) – Emerging Infectious Diseases (Mar 24)
- [Discrimination and Bias in State Triage Protocols Towards Populations with Intellectual Disabilities During the COVID-19 Pandemic](#) – Disaster Medicine and Public Health Preparedness (Mar 25)
- [The Coronavirus Pandemic 1 Year On—What Went Wrong](#) – JAMA (Mar 23)
- [Early Super-Spreader Events Are a Likely Determinant of Novel SARS-CoV-2 Variant Predominance](#) – MedRxiv (Mar 24)
- [Death by Hand Sanitizer: Syndemic Methanol Poisoning in the Age of COVID-19](#) – Clinical Toxicology (Mar 23)

- [Indigenous Peoples, Concentrated Disadvantage, and Income Inequality in New Mexico: A ZIP Code-Level Investigation of Spatially Varying Associations between Socioeconomic Disadvantages and Confirmed COVID-19 Cases](#) – Journal of Epidemiology and Community Health (Mar 23)
- [Safety Monitoring of COVID-19 Vaccines – Lessons Learned from the 1976 National Influenza Immunization Program about Detecting Rare Vaccine-Related Severe Adverse Events in Emergency Mass-Vaccination Programs](#) – Vaccine (Mar 20)
- [WHO International Standard for Anti-SARS-CoV-2 Immunoglobulin](#) – The Lancet (Mar 23)
- [Our Children Are Not “Behind” Due to the COVID -19 Pandemic, but Our Institutional Response Might Be](#) – Journal of School Health (Mar 22)
- [Trends in Health Care Worker Intentions to Receive a COVID-19 Vaccine and Reasons for Hesitancy](#) – JAMA Network Open (Mar 23)
- [Long COVID: Understanding the Neurological Effects](#) – The Lancet Neurology (Apr 1)
- [Stability of SARS-CoV-2 RNA in Nonsupplemented Saliva](#) – Emerging Infectious Diseases (Mar 18)
- [Incarcerated Individuals’ Experiences of COVID-19 in the United States](#) – International Journal of Prisoner Health (Mar 24)
- [Vaccination Strategies against COVID-19 and the Diffusion of Anti-Vaccination Views](#) – Scientific Reports (Mar 23)
- [Does a Public Health Crisis Justify More Research with Incarcerated People](#) – The Hastings Center Report (Mar 23)
- [HHS Expands Number of People Who Can Vaccinate Against COVID-19](#) – JAMA (Mar 23)
- [Another Explanation for Why Cloth Masks Reduce COVID-19 Severity](#) – JAMA (Mar 23)
- [College Students’ Experiences of Race-Related Bias or Hatred in Their Lifetimes and COVID-19 Era](#) – Journal of Public Health Management and Practice
- [Digital Tools for Mental Health in a Crisis](#) – The Lancet Digital Health (Apr 1)
- [Excess Mortality Associated With the COVID-19 Pandemic—Los Angeles County, March-September 2020](#) – Journal of Public Health Management and Practice
- [In-Person and Telehealth Ambulatory Contacts and Costs in a Large US Insured Cohort Before and During the COVID-19 Pandemic](#) – JAMA Network Open (Mar 23)
- [Early Evidence of the Effect of SARS-CoV-2 Vaccine at One Medical Center.](#) – New England Journal of Medicine (Mar 23)
- [Guidelines Should Not Pool Evidence from Uncomplicated and Severe COVID-19](#) – The Lancet (Mar 22)

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