

2019-nCoV Literature Situation Report (Lit Rep)

March 31, 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

- **In a press release, Pfizer reported that the Pfizer-BioNTech vaccine conferred 100% efficacy against COVID-19 in adolescents age 12-15 with no previous history of SARS-CoV-2 infection. The vaccine also elicited a strong neutralizing antibody response one month after the second dose, and side effects were similar to those observed among participants aged 16-25 in previous trials. [More](#)**
- **Post-hoc analysis of the Oxford-AstraZeneca vaccine indicated that clinical vaccine efficacy against symptomatic PCR-confirmed infection was 70.4% for the B.1.1.7 variant and 81.5% for non-B.1.1.7 lineages (not including the B.1.351 variant) in persons ≥18 years of age. Neutralization activity via vaccine-induced antibodies *in vitro* was also approximately 9-fold lower against the B.1.1.7 variant. [More](#)**
- **Among individuals who tested positive for SARS-CoV-2 after receiving the first dose of the Pfizer-BioNTech vaccination, viral load was substantially lower (2.8- to 4.5-fold lower) in those who became infected 12-37 days after the first dose compared to individuals who had not been vaccinated. [More](#)**

Transmission

- *[Pre-print, not peer-reviewed]* Within households in Norway, the secondary attack rate of the SARS-CoV-2 B.1.1.7 lineage was 60% higher than that of other variants. The study used contact tracing data from 415 index cases and 2,718 of their close contacts from January 4 to February 28, 2021 to estimate transmissibility and found an absolute increase in the reproduction number of 0.19 compared to other variants.

Lindstrøm et al. (Mar 30, 2021). Increased Transmissibility of the B.1.1.7 SARS-CoV-2 Variant Evidence from Contact Tracing Data in Oslo January to February 2021. Pre-print downloaded Mar 31 from <https://doi.org/10.1101/2021.03.29.21254122>

Testing and Treatment

- A novel diagnostic platform called Loop-Mediated Isothermal Amplification with Nanopore Sequence (LamPORE) performed similarly to RT-PCR for detection of SARS-CoV-2 in nasopharyngeal samples collected at two hospitals in the United Kingdom. The diagnostic method can process up to 92 samples simultaneously and allow for analysis of thousands of pooled samples per day. In the study, LamPORE had a diagnostic sensitivity of 99.1% and a specificity of 99.6%. The majority of SARS-CoV-2 samples used in the study were collected from persons with symptomatic infection, and

the authors suggest that LamPORE may have a lower sensitivity in persons with asymptomatic infection who may have a lower viral load.

Peto et al. (Mar 2021). Diagnosis of SARS-CoV-2 Infection with LamPORE, a High-Throughput Platform Combining Loop-Mediated Isothermal Amplification and Nanopore Sequencing. Journal of Clinical Microbiology. <https://doi.org/10.1128/JCM.03271-20>

- A study of red cell agglutination tests (haemagglutination tests, or HAT) demonstrated the ability to detect antibodies to the SARS-CoV-2 receptor binding domain with a sensitivity of 90% and a specificity of 99% in blood samples taken from individuals with a PCR-confirmed SARS-CoV-2 infection ≥ 28 days prior. The authors note that the HAT test for antibody detection confers several benefits that may make it suitable for a point-of-care test in low-resource settings, including its low cost, no need for specialized equipment, short development time, and the ability to read by eye.

Townsend et al. (Dec 29, 2021). A Haemagglutination Test for Rapid Detection of Antibodies to SARS-CoV-2. Nature Communications. <https://doi.org/10.1038/s41467-021-22045-y>

Vaccines and Immunity

- *[Press release, not peer-reviewed]* According to a press release from Pfizer, the Pfizer-BioNTech vaccine showed 100% efficacy against COVID-19 among adolescents (n=2,260) aged 12 to 15 years old in the US without prior history of infection. 18 cases of COVID-19 were observed in the placebo group, and none in the vaccinated group. The vaccine also elicited a strong neutralizing antibody response (geometric mean titers 1,239.5) one month after the second dose, and side effects were similar to those observed among participants aged 16-25 in previous trials. The press release notes that the companies plan to submit these data to the FDA and request an amendment to the Emergency Use Authorization to expand eligibility to adolescents aged 12-15.

Pfizer Inc. (2021). Pfizer-BioNTech Announce Positive Topline Results of Pivotal COVID-19 Vaccine Study in Adolescents. <https://www.pfizer.com/news/press-release/press-release-detail/pfizer-biontech-announce-positive-topline-results-pivotal>

- Post-hoc analysis of the Oxford-AstraZeneca vaccine indicated that clinical vaccine efficacy against symptomatic, PCR-positive infection was 70.4% for the B.1.1.7 variant and 81.5% for non-B.1.1.7 lineages (not including the B.1.351 variant). Neutralization activity via vaccine-induced antibodies *in vitro* was also lower against the B.1.1.7 variant (geometric mean ratio 8.9). Participants 18 and older in efficacy cohorts (n=8534) were included in the analysis, and received either the COVID-19 vaccine or a control meningococcal conjugate vaccine. *[EDITORIAL NOTE: This paper was summarized as a pre-print on February 5, 2021]*

Emary et al. (Mar 30, 2021). Efficacy of ChAdOx1 NCoV-19 (AZD1222) Vaccine against SARS-CoV-2 Variant of Concern 202012/01 (B.1.1.7): An Exploratory Analysis of a Randomised Controlled Trial. The Lancet. [https://doi.org/10.1016/S0140-6736\(21\)00628-0](https://doi.org/10.1016/S0140-6736(21)00628-0)

- In a real-world analysis of data from individuals in Israel who tested positive for SARS-CoV-2 after receiving the first dose of the Pfizer-BioNTech vaccination (n=4,938), viral load was substantially lower (2.8 to 4.5-fold lower) for infections occurring 12-37 days after the first dose compared to individuals who had not been vaccinated. Cycle of threshold (Ct) values for the *E* gene, *RdRp* gene, *N* gene and the internal control were determined for each positive test. The authors suggest that reduced viral loads may affect viral shedding, contagiousness, and disease severity.

Levine-Tiefenbrun et al. (Mar 29, 2021). Initial Report of Decreased SARS-CoV-2 Viral Load after Inoculation with the BNT162b2 Vaccine. *Nature Medicine*. <https://doi.org/10.1038/s41591-021-01316-7>

Clinical Characteristics and Health Care Setting

- A study of COVID-19 in US Federal Prisons found that both the case rate and mortality was higher among inmates in these facilities compared to the general population. The crude case rate (11,710 per 100,000 population) was 5-times higher than that in the general population and the age- and sex-adjusted mortality rate for COVID-19 (77.4 per 100,000 population) was 2.5-times higher. The infection fatality ratio was equal to that of the US general population (0.7%). However, nearly 50% of inmates in federal prisons were tested, which likely resulted in a greater detection of asymptomatic infections. The authors speculate that the higher mortality rate may reflect higher rates of underlying health conditions among inmates.

Toblin and Hagan. (Feb 2021). COVID-19 Case and Mortality Rates in the Federal Bureau of Prisons. *American Journal of Preventive Medicine*. <https://doi.org/10.1016/j.amepre.2021.01.019>

Mental Health and Personal Impact

- A direct-to-patient telemedicine abortion service was found to be safe, effective, and acceptable according to a study in which participants were mailed mifepristone and misoprostol and received counselling and screening remotely. 1,390 packages were mailed between May 2016 and September 2020 and enrollment increased substantially with the onset of COVID-19. Although participants were required to receive a pre-abortion ultrasound or pelvic exam, in 52% (346/669) of abortions that occurred during the COVID-19 pandemic, sites determined that those participants should not get the test to protect their health. Use of urine pregnancy test to confirm abortion completion increased from 67% (144/214) in the six months before the pandemic to 90% (602/669) in the six months during the pandemic. Participants reported satisfaction with the service (99%, 1,013/1,022).

Chong et al. (Mar 2021). Expansion of a Direct-to-Patient Telemedicine Abortion Service in the United States and Experience during the COVID-19 Pandemic. *Contraception*. <https://doi.org/10.1016/j.contraception.2021.03.019>

- During the first 12 weeks of the COVID-19 pandemic in Washtenaw County, Michigan (on or after March 10, 2020), there were 40% fewer emergency department encounters than expected for suicide attempt and intentional self-harm compared to prior years. The study analyzed data from more than 3,000 individuals receiving emergency department care for suicide-related behavior from October 2015 through October 2020.

Bergmans and Larson. (Mar 29, 2021). Suicide Attempt and Intentional Self-Harm during the Earlier Phase of the COVID-19 Pandemic in Washtenaw County, Michigan. *Journal of Epidemiology and Community Health*. <https://doi.org/10.1136/jech-2020-215333>

Modeling and Prediction

- A model of SARS-CoV-2 transmission found that community spread may be highly influenced by transmission within “hot zones” characterized by high viral dose exposure, such as indoor settings with poor ventilation such as long-term care facilities, prisons, and food processing plants. The authors conclude that this may indicate that targeting interventions to prevent transmission in hot zones may suppress spread throughout the general population. They suggest that this may allow for fewer non-pharmaceutical interventions in the community at large.

Wodarz et al. (Mar 2021). *Role of High-Dose Exposure in Transmission Hot Zones as a Driver of SARS-CoV-2 Dynamics*. *Journal of the Royal Society, Interface*.

<https://doi.org/10.1098/rsif.2020.0916>

Public Health Policy and Practice

- Among 872 residents of homeless shelters in Toronto, Canada across 20 shelter locations, 504 unique individuals had a SARS-CoV-2 tests performed in outbreak settings (April 1 to July 31, 2020), of which 69 (14%) were positive. There was no association between SARS-CoV-2 positivity and medical history or symptoms. Those who tested positive for SARS-CoV-2 were significantly less likely than those who tested negative to have visited another shelter in the last 14 days (0% vs. 18%). The authors suggest that their findings support testing asymptomatic individuals in shelter settings when a positive case has been identified at the same shelter.

Kiran et al. (Jan 30, 2021). *Factors Associated with SARS-CoV-2 Positivity in 20 Homeless Shelters in Toronto, Canada, from April to July 2020: A Repeated Cross-Sectional Study*. *CMAJ Open*.

<https://doi.org/10.9778/cmajo.20200253>

Other Resources and Commentaries

- [SARS-CoV-2 Diagnostics: Towards a More Comprehensive Approach to Routine Patient Testing](#) – *Journal of Immunological Methods* (Mar)
- [Effect Estimates of COVID-19 Non-Pharmaceutical Interventions Are Non-Robust and Highly Model-Dependent](#) – *Journal of Clinical Epidemiology* (Mar)
- [Emergence and Outcome of the SARS-CoV-2 “Marseille-4” Variant](#) – *International Journal of Infectious Diseases* (Mar)
- [Addressing Contraceptive Needs Exacerbated by COVID-19: A Call for Increasing Choice and Access to Self-Managed Methods](#) – *Contraception* (Mar)
- [Evaluation of a ‘Drop Box’ Doorstep Assessment Service to Aid Remote Assessments for COVID-19 in General Practice](#) – *BMJ Open Quality* (Mar 29)
- [Misdiagnosis of Systemic Allergic Reactions to mRNA COVID-19 Vaccines](#) – *Annals of Allergy, Asthma & Immunology* (Mar)
- [Sexual Health \(Excluding Reproductive Health, Intimate Partner Violence and Gender-Based Violence\) and COVID-19: A Scoping Review](#) – *Sexually Transmitted Infections* (Mar 29)
- [Addressing Justified Vaccine Hesitancy in the Black Community](#) – *Journal of Racial and Ethnic Health Disparities* (Mar)
- [Determining the Acceptability of Testing Contacts of Confirmed COVID-19 Cases to Improve Secondary Case Ascertainment](#) – *Journal of Public Health (Oxford, England)* (Mar)
- [Rapid Detection of SARS-CoV-2 Variants of Concern, Including B.1.1.28/P.1, in British Columbia, Canada](#) – *Emerging Infectious Diseases* (Mar)
- [Shaping Public Opinion through the Lens of Agenda Setting in Rolling out COVID-19 Vaccination Program](#) – *Journal of Public Health (Oxford, England)* (Mar)
- [Implications of the School-Household Network Structure on SARS-CoV-2 Transmission under School Reopening Strategies in England](#) – *Nature Communications* (Mar)
- [Implications of a Highly Transmissible Variant of SARS-CoV-2 for Children](#) – *Archives of Disease in Childhood* (Mar 30)
- [The Potential of miRNA-Based Therapeutics in Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) Infection: A Review](#) – *Journal of Pharmaceutical Analysis* (Mar)
- [International Labour Trafficking: A Neglected Social Origin of COVID-19](#) – *The Lancet Regional Health - Western Pacific* (Mar)
- [Pandemic Moves and Countermoves: Vaccines and Viral Variants](#) – *The Lancet* (Mar 31)

- [Can Glucose-Lowering Drugs Affect the Prognosis of COVID-19 in Patients with Type 2 Diabetes?](#) – The Lancet Diabetes & Endocrinology (Mar 31)
- [Rising Syphilis Rates during the COVID-19 Pandemic](#) – Sexually Transmitted Diseases (Mar)
- [COVID-19 and Syndemic Challenges in “Battling the Big Three”: HIV, TB and Malaria](#) – International Journal of Infectious Diseases (Mar)
- [Performance of 30 Commercial SARS-CoV-2 Serology Assays in Testing Symptomatic COVID-19 Patients](#) – European Journal of Clinical Microbiology & Infectious Diseases (Mar 29)

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