



2019-nCoV Literature

Situation Report (Lit

Rep)

January 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

- **Sera from human subjects or non-human primates that received the mRNA-1273 (Moderna) vaccine showed no significant reduction in neutralization activity against the SARS-CoV-2 B.1.1.7 variant emerging from the UK, but reduced activity against the B.1.351 variant emerging from South Africa.** [More](#)
- **At least one third of SARS-CoV-2 infections were characterized as asymptomatic in a systematic review of cross-sectional and longitudinal observational studies and reports of mass screening for SARS-CoV-2.** [More](#)
- **The UK New and Emerging Respiratory Virus Advisory Group states that the B.1.1.7 SARS-CoV-2 variant has quickly become dominant in the UK, and it is possible that infection with this variant is associated with increased risk of death. The statement cites evidence of increased case fatality from several independent UK studies of samples with s-gene target failure, a proxy for the B.1.1.7 variant.** [More](#)
- **Self-reported willingness to receive the COVID-19 vaccine differed by hospital role among US healthcare workers, with physicians and research scientists reporting the highest acceptance (80%).** [More](#)

Non-Pharmaceutical Interventions

- An analysis of the Coronavirus Tracking Survey completed between April 1 and November 24, 2020 found that the adherence index (range 0 [low] to 100 [high]) to non-pharmaceutical interventions decreased substantially from 70 in April to the high 50's in June, before rising back to 60 by late November. All US Census regions experienced significant decreases in the NPI adherence index during this time. Protective behaviors that had the largest decreases in adherence were staying at home, except for essential activities or exercise, (80% to 41%), having no close contact with non-household members (64% to 38%), not having visitors (80% to 58%), and avoiding eating at restaurants (87% to 66%). Reported mask wearing showed a significant increase among participants from 39% to 89%.

Crane et al. (Jan 22, 2021). Change in Reported Adherence to Nonpharmaceutical Interventions During the COVID-19 Pandemic, April-November 2020. JAMA. <https://doi.org/10.1001/jama.2021.0286>



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Transmission

- A multicenter, cross-sectional study of SARS-CoV-2 seroprevalence among children aged 1-10 years (n=2,482) in Germany and a corresponding parent (n=2,482) found that between April 22 and May 15 2020, the estimated seroprevalence was low in parents (1.8%) and 3-fold lower in children (0.6%). Only two participants (0.04%) tested positive for SARS-CoV-2 RNA. Among 56 families with at least 1 seropositive child or parent, the risk of a seropositive parent and seronegative dyad was 4.3 times higher than the risk of a seronegative parent and seropositive child dyad. Virus-neutralizing activity was observed for 94% of 70 IgG-positive serum samples.

Tönshoff et al. (Jan 22, 2021). Prevalence of SARS-CoV-2 Infection in Children and Their Parents in Southwest Germany. JAMA Pediatrics. <https://doi.org/10.1001/jamapediatrics.2021.0001>

- A study of workers (n=212) at the Bogota, Colombia airport conducted between June 1 and September 30, 2020 found that the cumulative incidence and seroprevalence of SARS-CoV-2 among workers was 23.6% and 16.0%, respectively. Most cases were asymptomatic (84%), and 61% of participants seroconverted during the study period, with no significant differences in seroconversion between asymptomatic and mild cases.

Malagón-Rojas et al. (Jan 22, 2021). Seroprevalence and Seroconversions for SARS-CoV-2 Infections in Workers at Bogota Airport, Colombia 2020. Journal of Travel Medicine. <https://doi.org/10.1093/jtm/taab006>

- Investigation of a SARS-CoV-2 family cluster outbreak in Wuhan, China transmitted by a 3-month-old infant showed an attack rate of 80% (4/5 family members), and fecal tests for SARS-CoV-2 RNA remained positive for 27 days after the infant was discharged from the hospital. The infant was suspected to have been infected while at a swimming pool, and the authors raised concerns about possible fecal-oral transmission from this investigation.

Lin et al. (Dec 18, 2021). Epidemiological Investigation of a COVID-19 Family Cluster Outbreak Transmitted by a 3-Month-Old Infant. Health Information Science and Systems. <https://doi.org/10.1007/s13755-020-00136-2>

- *[Report, not peer-reviewed]* The UK New and Emerging Respiratory Virus Advisory Group (NERVTAG) states the B.1.1.7 SARS-CoV-2 variant has quickly become dominant in the UK, and that there is a possibility that infection with this variant is associated with increased risk of death compared to previous strains. NERVTAG cites evidence of increased case fatality from several independent UK studies of samples with s-gene target failure, a proxy for the B.1.1.7 variant. The COVID Clinical Information Network has not found evidence of increased hospital case fatality with this variant.

Horby et al. (Jan 18, 2021). NERVTAG Note on B.1.1.7 Severity. <https://www.gov.uk/government/publications/nervtag-paper-on-covid-19-variant-of-concern-b117>

Testing and Treatment

- Antigen testing using the BD Veritor System for SARS-CoV-2 demonstrated a higher positive predictive value (90%) than rt-PCR (70%) with the Quidel Lyra SARS-CoV-2 Assay when compared to virus culture as the gold standard. The positive percentage agreement for detection of infectious virus for the antigen test was similar to rt-PCR when compared to culture results. The authors

suggest that the low cost and scalability of antigen-based testing could be important for suppressing community transmission.

Pekosz et al. (Jan 20, 2021). Antigen-Based Testing but Not Real-Time Polymerase Chain Reaction Correlates With Severe Acute Respiratory Syndrome Coronavirus 2 Viral Culture. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1706>

Vaccines and Immunity

- Self-reported willingness to receive the COVID-19 vaccine differed by hospital role among US healthcare workers (n=5287), with physicians and research scientists reporting the highest acceptance (80.4%). 33.6% of registered nurses, 31.6% of allied health professionals, and 32% of master's level clinicians were unsure if they would get the vaccine. Fewer direct care (54.0%) than non-care providers (62.4%) indicated they would get the vaccine, and fewer people who had provided care for COVID patients (52.0%) than those who had not (60.6%) indicated willingness to be vaccinated.

Shaw et al. (Jan 25, 2021). Assessment of U.S. Health Care Personnel (HCP) Attitudes towards COVID-19 Vaccination in a Large University Health Care System. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab054>

- A Markov cohort model estimating COVID-19 related direct medical costs and deaths in the US found that with a SARS-CoV-2 vaccine with 60% efficacy, the incremental cost per quality-adjusted life-year (QALY) gained for the US adult population would be \$8,200 (compared to no vaccination). For those at high risk of hospitalization and death, vaccination was cost-saving compared to no vaccination, but the cost per QALY gained increased to over \$94,000 for those at low risk. The study estimated that the vaccine could prevent 31% of expected deaths if large supplies were available, compared to 23% if supplies were limited.

Kohli et al. (Jan 2021). The Potential Public Health and Economic Value of a Hypothetical COVID-19 Vaccine in the United States: Use of Cost-Effectiveness Modeling to Inform Vaccination Prioritization. Vaccine. <https://doi.org/10.1016/j.vaccine.2020.12.078>

- *[Pre-print, not peer-reviewed]* Sera from human subjects or non-human primates (NHPs) that received the mRNA-1273 (Moderna) vaccine showed no significant reduction in neutralization activity against the SARS-CoV-2 B.1.1.7 variant emerging from the UK, but reduced activity against the B.1.351 variant emerging from South Africa. The study used two pseudovirus neutralization assays expressing spike proteins of different SARS-CoV-2 variants, and found that pseudoviruses with spike containing K417N-E484K-N501Y-D614G and full B.1.351 mutations resulted in 2.7 and 6.4-fold geometric mean titer (GMT) reduction, respectively, when compared to the D614G pseudovirus. The GMT of these human sera to the full B.1.351 spike variant was 1/290; all evaluated sera were able to fully neutralize.

Wu et al. (Jan 25, 2021). mRNA-1273 Vaccine Induces Neutralizing Antibodies against Spike Mutants from Global SARS-CoV-2 Variants. Pre-print downloaded Jan 25 from <https://doi.org/10.1101/2021.01.25.427948>

- *[Pre-print, not peer-reviewed]* A study of SARS-CoV-2 reinfection in Qatar found that reinfection was rare, and that natural infection elicited strong antibody response with at least 90% efficacy lasting at least 7 months. Among study participants (n = 314) with at least one PCR positive swab ≥14 days

after the first-positive antibody test, 129 (41.1%) had supporting epidemiological evidence for reinfection. Reinfection risk was estimated to be 0.10%, and reinfection incidence was estimated to be 0.66 per 10,000 person-weeks. Most reinfections (66.7%) were diagnosed incidentally through random or routine testing or through contact tracing and tended to be less severe than the initial infection.

Abu-Raddad et al. (Jan 15, 2021). SARS-CoV-2 Reinfection in a Cohort of 43,000 Antibody-Positive Individuals Followed for up to 35 Weeks. Pre-print downloaded Jan 25 from <https://doi.org/10.1101/2021.01.15.21249731>

Clinical Characteristics and Health Care Setting

- At least one third of SARS-CoV-2 infections were characterized as asymptomatic in a systematic review of cross-sectional and longitudinal observational studies and reports of mass screening for SARS-CoV-2. Most studies (43/61) used PCR testing of nasopharyngeal swabs to detect current infection, and 18 studies used antibody testing to detect current or prior infection. In 14 studies with longitudinal data, nearly 75% of individuals who were asymptomatic at the time of testing remained asymptomatic.

Oran and Topol. (Jan 22, 2021). The Proportion of SARS-CoV-2 Infections That Are Asymptomatic. Annals of Internal Medicine. <https://doi.org/10.7326/M20-6976>

- *[Pre-print, not peer-reviewed]* A study evaluating the statistical relationship between COVID-19 infections and reported deaths in the UK identified an increase in the case fatality ratio in December 2020. While deaths were well described as 1/55th of cases detected 12 days prior during the months of October and November, by early December the case fatality ratio was higher, particularly in regions affected by the B.1.1.7 variant. The authors propose that lack of sufficient testing in December, more testing of those less likely to be infected, or confounding due to abnormally low levels of influenza and associated deaths could be alternative explanations for this finding.

Wallace et al. (Jan 22, 2021). Abrupt Increase in the UK Coronavirus Death-Case Ratio in December 2020. Pre-print downloaded Jan 25 from <https://doi.org/10.1101/2021.01.21.21250264>

- *[Pre-print, not peer-reviewed]* A large community surveillance study in the UK found evidence for increases in S-gene target failures (SGTF) of SARS-CoV-2, consistent with expansion of the B.1.1.7 variant, at a time in mid-November when non-SGTF strains were stable or declining. Data were analyzed from nose and throat swabs (n=1,553,687) collected from September 28, 2020 to January 2, 2021 and tested by RT-PCR. Rates of symptomatic SGTF infections were similar to asymptomatic SGTF infections, and the authors suggest that asymptomatic infections may contribute substantially to B.1.1.7 spread. SGTF positivity rates increased on average 6% more rapidly than rates of non-SGTF positives. Excess growth rates for SGTF vs non-SGTF positives were similar in those up to high school age (5%) and older individuals (6%).

Walker et al. (Jan 15, 2021). Increased Infections, but Not Viral Burden, with a New SARS-CoV-2 Variant. Pre-print downloaded Jan 25 from <https://doi.org/10.1101/2021.01.13.21249721>

Public Health Policy and Practice

- *[Pre-print, not peer-reviewed]* A study using death records from the California Department of Public Health found that during the COVID-19 pandemic, working age adults experienced a 22% increase in

mortality compared to historical periods, which varied by race/ethnicity and occupational sector and occupation. Latino Californians experienced a 36% increase in mortality (59% among Latino food/agriculture workers), with mortality increases of 28% in Black Californians (36% increase for Black retail workers), 18% in Asian Californians (40% increase among Asian healthcare workers), and 6% in white Californians (16% increase among white food/agriculture workers).

Chen et al. (Jan 22, 2021). Excess Mortality Associated with the COVID-19 Pandemic among Californians 18-65 Years of Age by Occupational Sector and Occupation March through October 2020. Pre-print downloaded Jan 25 from <https://doi.org/10.1101/2021.01.21.21250266>

Other Resources and Commentaries

- [Estimating Worldwide Effects of Non-Pharmaceutical Interventions on COVID-19 Incidence and Population Mobility Patterns Using a Multiple-Event Study](#) – Scientific Reports (Dec 21 2020)
- [The Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19: Molecular Diagnostic Testing](#) – Clinical Infectious Diseases (Jan 2021)
- [How Are Countries Prepared to Combat the COVID-19 Pandemic during the Armed Conflict?; The Case of Libya](#) – Travel Medicine and Infectious Disease (Jan 2021)
- [What New COVID Variants Mean for Schools Is Not yet Clear](#) – Nature (Jan 2021)
- [Covid-19 Shocks to Education Supply: How 200,000 U.S. Households Dealt with the Sudden Shift to Distance Learning](#) – Review of Economics of the Household (Jan 18 2021)
- [Lack of Viable SARS-CoV-2 among PCR-Positive Air Samples from Hospital Rooms and Community Isolation Facilities](#) – Infection Control & Hospital Epidemiology (Jan 25 2021)
- [South Africa Responds to New SARS-CoV-2 Variant](#) – The Lancet (Jan 2021)
- [Tracing Surface and Airborne SARS-CoV-2 RNA inside Public Buses and Subway Trains](#) – Environment International (Feb 2021)
- [Getting to the Truth: Ethics, Trust, and Triage in the United States versus Europe during the Covid-19 Pandemic](#) – The Hastings Center Report (Jan 2021)
- [Global Ethical Considerations Regarding Mandatory Vaccination in Children](#) – The Journal of Pediatrics (Jan 2021)
- [An Issue of Trust—Vaccinating Black Patients against COVID-19](#) – The Lancet Respiratory Medicine (Jan 2021)
- [Optimism and Caution for an Inactivated COVID-19 Vaccine](#) – The Lancet Infectious Diseases (Jan 2021)
- [Public Perspectives on Firearm Sales in the United States during the COVID-19 Pandemic](#) – Journal of the American College of Emergency Physicians Open (Feb 21 2021)
- [Developing Statewide Remdesivir Use Criteria](#) – American Journal of Health-System Pharmacy (Jan 2021)
- [Fast-Spreading COVID Variant Can Elude Immune Responses](#) – Nature (Jan 21 2021)
- [Problems with Evidence Assessment in COVID-19 Health Policy Impact Evaluation \(PEACHPIE\) A Systematic Strength of Methods Review](#) – MedRxiv (Jan 22 2021)
- [Disgraced COVID-19 Studies Are Still Routinely Cited](#) – Science (Jan 22 2021)

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