



2019-nCoV Literature Situation Report (Lit Rep)

April 15, 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

- Text messages sent to COVID-19 vaccine-eligible patients increased appointment and vaccination rates by 86% and 26%, respectively, in a large, randomized trial ($n > 110,000$). A follow-up trial among patients who had not made first-dose appointments 8 days after the first trial ($n > 90,000$) repeating the intervention increased appointment and vaccination rates by 52% and 16%, respectively. [More](#)
- Neutralizing activity of convalescent sera 6 months post infection against the D614G, B.1.1.7., and P.1 SARS-CoV-2 variants was similar to neutralizing activity against the parent Wuhan strain, but was 3-fold lower than neutralizing activity against the B.1.351. variant. [More](#)

Testing and Treatment

- The interferon therapy IFN β 1a was associated with a shorter time to clinical improvement (TTCI) compared to control (HR: 2.4, 95% CI 1.1-5.2) among people with severe COVID-19 in a 1:1:1 randomized, placebo-controlled, open-label trial ($n=60$), but patients treated with IFN β 1b did not have a statistically significant different TTCI (HR: 1.4, 95% CI 0.6-3.2). The median TTCI for both interferon groups compared to the control group was 5 vs 7 days. TTCI was defined as the time from enrollment to discharge or a two-step decline on the clinical seven-step ordinal scale, whichever came first. Mortality was 20%, 30% and 45% in the IFN β 1a, IFN β 1b, and control group, respectively. All participants also received hydroxychloroquine and lopinavir/ritonavir. Alavi Darazam et al. (Apr 13, 2021). *Role of Interferon Therapy in Severe COVID-19: The COVIFERON Randomized Controlled Trial. Scientific Reports.* <https://doi.org/10.1038/s41598-021-86859-y>

Vaccines and Immunity

- [Pre-print, not peer-reviewed] Neutralizing antibody activity induced by the SARS-CoV-2 vaccine candidate INO-4800 (Inovia Pharmaceuticals), a DNA-based vaccine, was reduced against variants of concern B.1.1.7 and B.1.351 compared to the wild-type strain by 2.1 and 6.9-fold, respectively. In contrast, neutralizing activity was maintained against the P.1 variant, which harbors the same E484K mutation as B.1.351 that is thought to reduce antibody activity. There was no observed difference in the post-vaccination T-cell ELISPOT responses induced by overlapping peptide pools from either the variant or the parent strain.



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Andrade et al. (Apr 14, 2021). *INO-4800 DNA Vaccine Induces Neutralizing Antibodies and T Cell Activity Against Global SARS-CoV-2 Variants*. Pre-print downloaded Apr 15 from <https://doi.org/10.1101/2021.04.14.439719>

- Vaccine-elicited neutralizing antibody geometric mean titers (GMT) among healthcare workers who received the first dose of the Pfizer-BioNTech vaccine 1-2 months, 2-3 months, and more than 3 months after a prior SARS-CoV-2 infection were 437, 559, and 694 arbitrary units/mL, respectively. In contrast, healthcare workers with no prior infection had a GMT of 118 units/mL after receiving the second dose, consistent with other studies. The findings from this cohort study (n=100; 38 with prior infection) indicate a higher neutralizing antibody response when the vaccine was administered more than 3 months after infection.

Anichini et al. (Apr 14, 2021). *SARS-CoV-2 Antibody Response in Persons with Past Natural Infection*. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMc2103825>

- Neutralizing activity in sera of SARS-CoV-2 infected individuals (n=104) against the variants D614G, B.1.1.7, and P.1 up to 6 months after infection was similar compared to the prototypic strain isolated originally in Wuhan, but was reduced 3-fold against the B.1.351 variant. Similar to other studies, anti-spike and anti-nucleocapsid IgG levels waned over time (2.8% reverted to seronegative status by 6 months), and higher neutralizing activity was observed among individuals with a more severe disease course.

Betton et al. (Apr 14, 2021). *Sera Neutralizing Activities against SARS-CoV-2 and Multiple Variants Six Month after Hospitalization for COVID-19*. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciab308>

- [Pre-print, not peer-reviewed] Text-based behavioral nudges increased COVID-19 appointment and vaccination rates by 86% and 26%, respectively, in a randomized controlled trial conducted in patients from the University of California Los Angeles Health system (n > 110,000). In the experimental group, receiving text messages, including ownership messages (e.g "claim your dose") increased the efficacy of the intervention, while including video-based information to address vaccine hesitancy did not yield additional benefits. In a second trial among participants who had not made first-dose appointments 8 days after the first trial (n> 90,000), repeating the text-based intervention increased appointment and vaccination rates by 52% and 16%, respectively.

Dai et al. (Apr 14, 2021). *Behavioral Nudges Increase COVID-19 Vaccinations Two Randomized Controlled Trials*. Pre-print downloaded Apr 15 from <https://doi.org/10.1101/2021.04.12.21254876>

- [Pre-print, not peer-reviewed] Neutralizing antibody activity induced by SARS-CoV-2 adenovirus vector vaccine Sputnik V had geometric mean titers (GMT) that were reduced by 6.8-fold against a pseudovirus bearing B.1.351 spike protein mutations when compared to the prototypic D614G strain. GMT reduction was reduced by 2.8-fold against the pseudovirus with the E484K mutation alone. Among the 12 serum samples collected from fully vaccinated individuals from Argentina, only 1 effectively neutralized the B.1.351 pseudovirus at concentrations present in serum (undilute). By contrast, the same set of sera efficiently neutralized a pseudovirus bearing the B.1.1.7 mutations.

Ikegame et al. (Apr 8, 2021). Neutralizing Activity of Sputnik V Vaccine Sera against SARS-CoV-2 Variants. Research Square. <https://doi.org/10.21203/rs.3.rs-400230/v1>

- In a cohort of 20 healthcare workers receiving the first dose of the Pfizer-BioNTech vaccine, SARS-CoV-2 spike-specific memory T-cell and binding antibody responses were universally detected prior to the time where vaccine efficacy is first detected in clinical trials (day 12). In contrast, receptor blocking and neutralizing antibodies were not detected on day 7 and present only in 20% of individuals by day 10.

Kalimuddin et al. (Apr 8, 2021). Early T Cell and Binding Antibody Responses Are Associated with Covid-19 RNA Vaccine Efficacy Onset. Med. <https://doi.org/10.1016/j.medj.2021.04.003>

- Surveillance for variants of concern (VOC) in British Columbia, Canada identified 77 VOC samples from 2,618 SARS-CoV-2 positive samples during January to March 2021 (57 B.1.1.7, 7 B.1.351, and 13 P.1 samples). This marked the first detection of the P.1 variant in British Columbia, and the 13 P.1 samples represented an epidemiologic cluster.

Matic et al. (Mar 30, 2021). Rapid Detection of SARS-CoV-2 Variants of Concern, Including B.1.1.28/P.1, in British Columbia, Canada. *Emerging Infectious Diseases*.

https://wwwnc.cdc.gov/eid/article/27/6/21-0532_article

- [Pre-print, not peer-reviewed] SARS-CoV-2 specific B cells isolated from individuals who had recovered from SARS-CoV-2 infection appeared similar to B cells isolated previously described in individuals with chronic infections or inflammation (IgD negative, CD27 negative), according to a longitudinal study of convalescent individuals (n=22). After vaccination, the frequency of IgD/CD27 negative cells (“double negative”) decreased. A more robust immune response elicited by vaccination among individuals with prior infection compared to naïve individuals was documented by comparing memory B cell responses of this cohort with those of non-infected vaccinated controls.

Mishra et al. (Apr 14, 2021). Vaccination Boosts Protective Responses and Counters SARS-CoV-2-Induced Pathogenic Memory B Cells. Pre-print downloaded Apr 15 from

<https://doi.org/10.1101/2021.04.11.21255153>

- [Pre-print, not peer-reviewed] Immune serological responses against SARS-CoV-2 among 55 recipients of the Pfizer-BioNTech vaccine were dominated by IgG antibody responses compared to more diverse responses (including IgM and IgA) elicited by natural infection among 100 COVID-19 patients. Vaccinated individuals also had decreased breadth of antibody response against endemic human coronaviruses compared to convalescent individuals. Similar to other studies, antibody binding among both vaccinees and convalescent individuals progressively decreased for B.1.1.7, P.1 and B.1.351 compared to the parent strain.

Röltgen et al. (Apr 7, 2021). mRNA Vaccination Compared to Infection Elicits an IgG-Predominant Response with Greater SARS-CoV-2 Specificity and Similar Decrease in Variant Spike Recognition.

Pre-print downloaded Apr 15 from <https://doi.org/10.1101/2021.04.05.21254952>

- 76% of respondents reported having one or more concerns about the COVID-19 vaccine in a cross-sectional national survey of Asian Americans and Pacific Islander (AAPI) adults in the US (n=1,646) conducted between October to December 2020. The most common concern was side effects (65%). In multivariable analyses, participants who were more likely to report more

concerns were ages 30-49 years vs age <30 years, female vs male, and those experiencing milder negative impacts on family income due to COVID-19

Ta Park et al. (Apr 14, 2021). Differences in COVID-19 Vaccine Concerns Among Asian Americans and Pacific Islanders: The COMPASS Survey. Journal of Racial and Ethnic Health Disparities.

<https://doi.org/10.1007/s40615-021-01037-0>

Clinical Characteristics and Health Care Setting

- Seven percent (5 of 75) infants born to women with a positive SARS-CoV-2 PCR test at any stage of gestation until 72 hours after birth had at least one positive PCR test during the first week of life, in an urban safety-net hospital in Boston. All infants had clinical courses expected for their gestational age.

Sabharwal et al. (Apr 14, 2021). Mother–Infant Dyads with COVID-19 at an Urban, Safety-Net Hospital: Clinical Manifestations and Birth Outcomes. American Journal of Perinatology.

<https://pubmed.ncbi.nlm.nih.gov/33853145/>

Public Health Policy and Practice

- Most COVID-19 state government public dashboards displayed similar metrics and largely aligned with CDC goals, according to an expert review. Data generally included total deaths, total cases, new cases, laboratory tests, and hospitalization, but aggregation and stratification of these metrics varied greatly across dashboards. 96% had some interactive functionality such as tooltips, zooming, or data exporting.

Fareed et al. (Mar 14, 2021). U.S. COVID-19 State Government Public Dashboards: An Expert Review. Applied Clinical Informatics. <https://pubmed.ncbi.nlm.nih.gov/33853140/>

Other Resources and Commentaries

- [Rapid Spread and High Impact of the Variant of Concern P.1 in the Largest City of Brazil](#) – MedRxiv (Apr 14)
- [Effects of SARS-CoV-2 Variants on Vaccine Efficacy and Response Strategies](#) – Expert Review of Vaccines (Apr 14)
- [Reconstructing the Course of the COVID-19 Epidemic over 2020 for US States and Counties: Results of a Bayesian Evidence Synthesis Model](#) – MedRxiv (Apr 6)
- [COVID-19–Related Circumstances for Hospital Readmissions](#) – Journal of Patient Safety (Apr 15)
- [Quantifying The Relationship Between Lockdowns, Mobility, and Effective Reproduction Number \(Rt\) During The COVID-19 Pandemic in The Greater Toronto Area](#) – Research Square (Apr 8)
- [Pandemic Boosts an Old Idea-Bringing Acute Care to the Patient](#) – JAMA (Apr 14)
- [Structural Basis for Enhanced Infectivity and Immune Evasion of SARS-CoV-2 Variants](#) – BioRxiv (Apr 14)
- [Thrombotic Thrombocytopenia after Ad26.COVS.2.S Vaccination](#) – New England Journal of Medicine (Apr 14)
- [Polyester Nasal Swabs Collected in a Dry Tube Are a Robust and Inexpensive, Minimal Self-Collection Kit for SARS-CoV-2 Testing](#) – PLOS ONE (Apr 14)
- [COVID-19 and Children’s Health in the United States: Consideration of Physical and Social Environments during the Pandemic](#) – Environmental Research (Apr 14)
- [Experts Discuss COVID-19-Variants and Vaccine Efficacy, Immunosuppressed Patients, and More](#) – JAMA (Apr 14)

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



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