



2019-nCoV Literature Situation Report (Lit Rep)

June 3, 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

- **Preventive treatment with the monoclonal antibody bamlanivimab reduced the risk of COVID-19 among residents and staff of skilled nursing facilities who were negative for SARS-CoV-2 infection and seronegative at baseline in a randomized trial (8.5% vs 15.2%, OR=0.43 95% CI 0.28-0.68).**
[More](#)
- **Effectiveness of the Pfizer-BioNTech vaccine >7 days after the second dose among high-risk groups ranged between 53-86% in preventing SARS-CoV-2 infection, ≥75% in preventing COVID-19 hospitalizations, and ≥89% in preventing COVID-19 deaths, based on findings from a nationwide cohort study of high-risk groups in Denmark. Vaccine effectiveness against all COVID-19 related outcomes were lowest among long-term care facility residents.** [More](#)

Transmission

- In a longitudinal study of 76 dogs and cats living with at least one SARS-CoV-2 infected human in Texas, 4 pets were PCR-positive for SARS-CoV-2, while 14 pets had detectable anti-SARS-CoV-2 neutralizing antibodies (including 2 of the 4 PCR-positive pets). Re-sampling showed persistent PCR positivity up to 25 days and sequencing of PCR samples showed viral genomes belonging to clades predominantly observed in human samples in Texas during the same period. Neutralizing activity among pets with detectable antibodies was relatively stable over 2-3 months of follow-up. 82% of infected pets were asymptomatic.

Hamer et al. (May 19, 2021). SARS-CoV-2 Infections and Viral Isolations among Serially Tested Cats and Dogs in Households with Infected Owners in Texas, USA. Viruses.

<https://doi.org/10.3390/v13050938>

Geographic Spread

- A forecasting model incorporating North American prevalence of SARS-CoV-2 variants of concern from the genome database GISAID suggests that the B.1.1.7 variant could become dominant (>60% of sequenced strains) by summer 2021 but would sharply decrease in frequency when 75% of the population is immune through vaccination or natural infection due to its high binding affinity to the neutralizing antibody CV30 (~90%). Though the B.1.351, B.1.617, and P.1 variants remain in low frequencies, they may each consist of up to 5% of strains even after high vaccination coverage due to their lower binding affinity to neutralizing antibodies (~70%).

Quinonez et al. (May 17, 2021). Structural Analysis of the Novel Variants of SARS-CoV-2 and Forecasting in North America. *Viruses*. <https://doi.org/10.3390/v13050930>

Testing and Treatment

- Preventive treatment with the monoclonal antibody bamlanivimab reduced the risk of COVID-19 among residents and staff of skilled nursing facilities (n=966) who were negative for SARS-CoV-2 infection and seronegative at baseline in a randomized trial (8.5% vs 15.2%, OR=0.43 95% CI 0.28-0.68). All 5 deaths occurred in residents randomized to receive placebo. Participants were enrolled from 74 skilled nursing and assisted living facilities in the US and received the treatment (bamlanivimab or a placebo infusion) within 7 days of a confirmed SARS-CoV-2 case at their facility. They were followed for 24 weeks with 8 additional tests for SARS-CoV-2 infection by RT-PCR. Adverse events were balanced between the bamlanivimab and placebo groups.

Cohen et al. (June 3, 2021). Effect of Bamlanivimab vs Placebo on Incidence of COVID-19 Among Residents and Staff of Skilled Nursing and Assisted Living Facilities. JAMA.

<https://doi.org/10.1001/jama.2021.8828>

- There was high correlation in the SARS-CoV-2 viral load measurements from paired self-collected pure saliva (SCPS) and nasopharyngeal swabs (NPS) from asymptomatic and mildly symptomatic patients with confirmed COVID-19 (r=0.72; n=31). SCPS performance was more similar to NPS among samples obtained from symptomatic adults, with 74% of samples in agreement.

Carrouel et al. (May 12, 2021). Performance of Self-Collected Saliva Testing Compared with Nasopharyngeal Swab Testing for the Detection of SARS-CoV-2. Viruses.

<https://doi.org/10.3390/v13050895>

Vaccines and Immunity

- An SMS/text messaging-based intervention to address COVID-19 vaccine hesitancy using a short web-based education video delivered to a cohort of immunosuppressed patients in the UK (n=8,886, 27% response rate) was associated with an increase in the proportion of patients who reported being aware that vaccines were safe and recommended from 36% to 88% among those aged 30-49 years and from 47% to 94% among those aged 50-69 years. The authors note that a key limitation of this intervention is the absence of a comparator group.

Bateman et al. (June 2021). COVID-19 Vaccination Advice via SMS-Based Video to Improve Vaccination Uncertainty in at-Risk Groups. The Lancet Rheumatology.

[https://doi.org/10.1016/S2665-9913\(21\)00148-X](https://doi.org/10.1016/S2665-9913(21)00148-X)

- *[Pre-print, not peer-reviewed]* Effectiveness of the Pfizer-BioNTech vaccine >7 days after the second dose ranged between 53-86% in preventing SARS-CoV-2 infection, ≥75% in preventing COVID-19 hospitalizations, and ≥89% in preventing COVID-19 deaths in a nationwide cohort study of high-risk groups in Denmark including long term care facility (LTCF) residents, individuals aged ≥65 years requiring personal care at home, individuals aged ≥85 years, healthcare workers, and individuals with comorbidities (n=864,096). Effectiveness against infection 0-7 days after the second dose ranged from 46-71%. Vaccine effectiveness against all COVID-19 related outcomes was lowest among LTCF residents.

Emborg et al. (June 2, 2021). Vaccine Effectiveness of the BNT162b2 mRNA COVID-19 Vaccine against RT-PCR Confirmed SARS-CoV-2 Infections Hospitalisations and Mortality in Prioritised Risk Groups. Pre-print downloaded Jun 3 from <https://doi.org/10.1101/2021.05.27.21257583>

- The Pfizer-BioNTech vaccine elicited worse local and systemic reactions among individuals with a history of allergy in an online survey of vaccinated medical professionals in Poland (n=1,808). However, no severe allergic reactions were reported. Local redness (17% vs 11%), pain (86% vs 80%), and swelling (19% vs 13%) after the first dose and vomiting (3% vs 1%) and joint pain (32% vs 26%) after the second dose were more frequent in allergic individuals. Other common symptoms such as fever and fatigue were not significantly different between the two groups.

Nittner-Marszalska et al. (May 25, 2021). Pfizer-BioNTech COVID-19 Vaccine Tolerance in Allergic versus Non-Allergic Individuals. *Vaccines*. <https://doi.org/10.3390/vaccines9060553>

- In a systematic review and meta-analysis of 25 randomized trials assessing safety and efficacy of COVID-19 vaccines, mRNA-based (e.g., Pfizer-BioNTech and Moderna) and adenovirus-vectored (e.g., Oxford-AstraZeneca, Johnson & Johnson, Sputnik V) vaccines had the highest efficacy in phase 2/3 trials (94.6% and 80.2%, respectively). The mRNA-based vaccines had the highest level of side effects reported, except for diarrhea and joint pain (arthralgia). All vaccines stimulated robust immune responses. Among 58,889 participants who received a COVID-19 vaccine and 46,638 controls who received a placebo included in the analysis, few extreme adverse effects were observed.

Pormohammad et al. (May 6, 2021). Efficacy and Safety of COVID-19 Vaccines: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. *Vaccines*.

<https://doi.org/10.3390/vaccines9050467>

- Mild perimyocarditis following vaccination with the Pfizer-BioNTech vaccine was reported in 7 adolescent males aged 16-18 years across 3 pediatric medical centers in Israel. Patients presented with chest pain 1-3 days following vaccination, with symptoms beginning following the second dose in 6 of the 7 patients. All cases were mild, and none required cardiovascular or respiratory support. The authors note that the incidence of perimyocarditis during the vaccination period was elevated compared to previous years.

Snapiri et al. (June 2, 2021). Transient Cardiac Injury in Adolescents Receiving the BNT162b2 mRNA COVID-19 Vaccine. *The Pediatric Infectious Disease Journal*.

<https://doi.org/10.1097/INF.0000000000003235>

Clinical Characteristics and Health Care Setting

- [Pre-print, not peer-reviewed] SARS-CoV-2 RNA was detected in 23 placentas (41%) from a cohort of 55 women who had SARS-CoV-2 infection during late pregnancy and had positive PCR results at delivery. Among infected placentas, three had high viral content and were obtained from mothers who presented with severe COVID-19 and had perinatal adverse outcomes. Examination of the placentas with high viral load showed efficient SARS-CoV-2 infection restricted to syncytiotrophoblast cells, which envelope the fetal chorionic villi and are in direct contact with maternal blood, and considerable infiltration of maternal immune cells.

Argueta et al. (June 2, 2021). SARS-CoV-2 Infects Syncytiotrophoblast and Activates Inflammatory Responses in the Placenta. Pre-print downloaded Jun 3 from

<https://doi.org/10.1101/2021.06.01.446676>

- A literature review including 10 studies found evidence of hospital-based infection caused by the bacterium *Klebsiella pneumoniae* that was resistant to the carbapenem class of antibiotics among ICU patients with COVID-19 in 6 countries, ranging in prevalence from 0.35% to 53%. The majority of infected patients were male (85%), with a mean age of 61 years.

Medrzycka-Dabrowska et al. (May 12, 2021). Carbapenem-Resistant Klebsiella Pneumoniae Infections in ICU COVID-19 Patients—A Scoping Review. Journal of Clinical Medicine.

<https://doi.org/10.3390/jcm10102067>

- Of 1,080 microbiologically confirmed infections in patients hospitalized for COVID-19 between February and June 2020 in the UK, 762 (70.6%) were secondary, occurring >2 days after hospital admission. Among patients hospitalized for COVID-19 during this period and with available data, 37% (13,390 of 36,1456) had received antimicrobials in the community prior to hospital admission, and 85% (39,258 of 46,061) received antimicrobials during inpatient care. Broad-spectrum antimicrobials including carbapenems were more frequently used than carbapenem-sparing alternatives.

Russell et al. (June 17, 2021). Co-Infections, Secondary Infections, and Antimicrobial Use in Patients Hospitalised with COVID-19 during the First Pandemic Wave from the ISARIC WHO CCP-UK Study: A Multicentre, Prospective Cohort Study. The Lancet Microbe.

[https://doi.org/10.1016/S2666-5247\(21\)00090-2](https://doi.org/10.1016/S2666-5247(21)00090-2)

Other Resources and Commentaries

- [WHO announces simple, easy-to-say labels for SARS-CoV-2 Variants of Interest and Concern](#) (May 31)
- [Factors Influencing Public Attitudes towards COVID-19 Vaccination: A Scoping Review Informed by the Socio-Ecological Model](#) – Vaccines (May 24)
- [Environmental Risk Assessment of Recombinant Viral Vector Vaccines against SARS-Cov-2](#) – Vaccines (May 3)
- [Multisystem Inflammatory Syndrome Associated with COVID-19 Anti-Thrombosis Guideline of Care for Children by Action](#) – Pediatric Cardiology (June)
- [Vaccine Breakthrough Infections with SARS-CoV-2 Variants](#) – New England Journal of Medicine (June 2)
- [Practices and Activities Among Healthcare Personnel with SARS-CoV-2 Infection Working in Different Healthcare Settings—10 Emerging Infections Program Sites, April–November 2020](#) – Infection Control & Hospital Epidemiology (June 2)
- [Advocacy, Hesitancy, and Equity: Exploring U.S. Race-Related Discussions of the COVID-19 Vaccine on Twitter](#) – International Journal of Environmental Research and Public Health (May 26)
- [A Pandemic within Other Pandemics. When a Multiple Infection of a Host Occurs: SARS-CoV-2, HIV and Mycobacterium Tuberculosis](#) – Viruses (May 17)
- [SARS-CoV-2 Variants, Spike Mutations and Immune Escape](#) – Nature Reviews Microbiology (June 1)
- [Systematic Review on Outbreaks of SARS-CoV-2 on Cruise, Navy and Cargo Ships](#) – International Journal of Environmental Research and Public Health (May 13)
- [Association of the US COVID-19 Pandemic and Attenuated Influenza Detection](#) – Southern Medical Journal (June)
- [Epidemic Spread of SARS-CoV-2 Lineage B.1.1.7 in Brazil](#) – Viruses (May 26)

- [Post-Acute COVID-19 Neurological Syndrome: A New Medical Challenge](#) – Journal of Clinical Medicine (May 1)
- [COVID-19 Vaccine Hesitancy: The Five Cs to Tackle Behavioural and Sociodemographic Factors](#) – Journal of the Royal Society of Medicine (June 2)
- [Presence of SARS-CoV-2 and Its Entry Factors in Oral Tissues and Cells: A Systematic Review](#) – Medicina (May 23)
- [Mutations in the B.1.1.7 SARS-CoV-2 Spike Protein Reduce Receptor-Binding Affinity and Induce a Flexible Link to the Fusion Peptide](#) – Biomedicines (May)
- [Who Stays at Home? The Politics of Social Distancing in Brazil, Mexico, and the United States during the COVID-19 Pandemic](#) – Journal of Health Politics, Policy and Law (May)
- [Reducing Morbidity and Mortality Rates from COVID-19, Influenza and Pneumococcal Illness in Nursing Homes and Long-Term Care Facilities by Vaccination and Comprehensive Infection Control Interventions](#) – Geriatrics (May 8)
- [The Relevance of Monoclonal Antibodies in the Treatment of COVID-19](#) – Vaccines (May)
- [An Epidemiological Analysis of SARS-CoV-2 Genomic Sequences from Different Regions of India](#) – Viruses (May)

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