

## 2019-nCoV Literature Situation Report (Lit Rep)

April 14, 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

- **Adults with COVID-19 who were not hospitalized and who received the monoclonal antibody bamlanivimab had a significantly lower 30-day hospitalization rate than those who did not receive the treatment. [More](#)**
- ▣ **A county-level population-based study in Indiana found that every 10% increase in the proportion of elementary and secondary school students attending in-person instruction increased daily SARS-CoV-2 infections by 0.336 per 100,000 population, a very small increase in proportion to the overall number of new cases expected in absence of in-person instruction. [More](#)**
- ▣ **A laboratory model of airborne SARS-CoV-2 transmission on single- and twin-aisle aircraft found that exposures were reduced by 23-57% in seating scenarios when the middle seat was left vacant compared to when every seat was filled. [More](#)**
- ▣ **A modeling study found that a vaccine with 65% and 60% efficacy before and after the widespread infections due to SARS-CoV-2 variants, respectively, can reduce transmissions more effectively than a vaccine with 95% and 90% efficacy if it is distributed 46-48% faster. [More](#)**

### Transmission

- A county-level population-based study in Indiana found that for every 10% increase in the proportion of students attending in-person instruction, daily risk of SARS-CoV-2 infection increased by 0.336 per 100,000 population. This corresponds to an overall 0.8% increase over the expected number of cases 28 days later. The authors note that this increase is very small in proportion to the overall number of new cases that would be expected in the absence of in-person instruction.  
*Bosslet et al. (Apr 13, 2021). The Effect of In-Person Primary and Secondary School Instruction on County-Level SARS-CoV-2 Spread in Indiana. Clinical Infectious Diseases.*  
<https://doi.org/10.1093/cid/ciab306>
- A laboratory model of airborne SARS-CoV-2 transmission on single- and twin-aisle aircraft found that exposures were reduced by 23-57% in seating scenarios when the middle seat was left vacant compared to when every seat was filled. Data from a study which examined aerosolized dispersion of a non-pathogenic respiratory virus in various airline cabin mock-ups from various locations within the cabin prior to the COVID-19 pandemic were used to model aerosol

concentration. The effect of masking on transmission was not included in the model; therefore, results only simulate exposure and not transmission probability.

*Dietrich et al. (Apr 14, 2021). Laboratory Modeling of SARS-CoV-2 Exposure Reduction Through Physically Distanced Seating in Aircraft Cabins Using Bacteriophage Aerosol — November 2020. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm7016e1>*

- No evidence of SARS-CoV-2 infection was found among newborns born to mothers positive for SARS-CoV-2 (n = 55) who were separated from mothers post-delivery. All newborns tested negative for SARS-CoV-2 post-delivery, and 75% were fed unpasteurized, expressed breast milk during the separation until discharge. 89% of neonates were discharged after mothers were instructed in anti-infection measures. In 40% of households, there were additional SARS-CoV-2–positive residents, and all infants who breastfed at home remained SARS-CoV-2 negative.

*Shlomai et al. (Apr 13, 2021). Neonatal SARS-CoV-2 Infections in Breastfeeding Mothers. Pediatrics. <https://doi.org/10.1542/peds.2020-010918>*

## Testing and Treatment

- Adults with COVID-19 who were not hospitalized and received the monoclonal antibody therapy bamlanivimab (n = 218) had a 63% lower 30-day hospitalization rate than those who did not receive the treatment (n = 185) in a case-control study conducted between November 20, 2020 and January 19, 2021. Odds of hospitalization was 4.2 times higher among controls who had a referral order but did not receive bamlanivimab than those who received treatment. To prevent one hospitalization, 8 patients with mild or moderate COVID-19 would need to be treated with bamlanivimab.

*Kumar et al. (Apr 13, 2021). Real-World Experience of Bamlanivimab for COVID-19: A Case-Control Study. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab305>*

## Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* A study comparing documented SARS-CoV-2 infections and deaths in Spain to counterfactual model predictions from February 6 to March 28, 2021 estimated that after 70% of long-term care facility residents had been fully vaccinated with the Pfizer-BioNTech vaccine, 74% of COVID-19 deaths and 75% of all documented infections were prevented, and transmission was reduced up to 90%. The authors note that in enclosed populations such as long-term care facilities, high vaccination rates may rapidly control SARS-CoV-2 transmission. *Salazar et al. (Apr 13, 2021). High Coverage COVID-19 mRNA Vaccination Rapidly Controls SARS-CoV-2 Transmission in Long-Term Care Facilities. Pre-print downloaded Apr 14 from <https://doi.org/10.1101/2021.04.08.21255108>*
- An in-vitro study of serum from persons with either prior SARS-CoV-2 infection or two doses of the Pfizer-BioNTech vaccine (N=34) found that antibody neutralization in all samples was reduced against SARS-CoV-2 virus with a single spike E484K mutation compared to the USA-WA1/2020 strain (the strain first detected in the US). The largest reductions in antibody neutralization were observed in samples with low and moderate IgG antibody levels. Samples with high IgG levels from individuals with two doses of the vaccine were still able to fully neutralize virus. The authors suggest this data may indicate that delaying the second vaccine

dose may leave persons vulnerable to infection with a variant containing the E484K mutation; however, the study did not include sera from persons with only one dose as a comparison. *Jangra et al. (Apr 7, 2021). SARS-CoV-2 Spike E484K Mutation Reduces Antibody Neutralisation. The Lancet Microbe. [https://doi.org/10.1016/S2666-5247\(21\)00068-9](https://doi.org/10.1016/S2666-5247(21)00068-9)*

- A study of 1<sup>st</sup> dose post-vaccination adverse events in Korean healthcare workers at a single hospital (N=1,483) found that adverse events were significantly more common in recipients of the Oxford/AstraZeneca vaccine (N=1,403) than the Pfizer-BioNTech vaccine (N=80). The adverse events included injection-site pain (78% vs. 51%), myalgia (61% vs. 11%), fatigue (52% vs. 8%), headache (47% vs. 8%), and fever (36% vs. 5%) ( $p < 0.001$  for all). Young healthcare workers were more likely to experience adverse events and most adverse events were mild or moderate. *Kim et al. (Apr 2021). Adverse Events in Healthcare Workers after the First Dose of ChAdOx1 NCoV-19 or BNT162b2 MRNA COVID-19 Vaccination: A Single Center Experience. Journal of Korean Medical Science. <https://doi.org/10.3346/jkms.2021.36.e107>*
- [Pre-print, not peer-reviewed] A survey of individuals vaccinated for SARS-CoV-2 in Israel found mask wearing was 21% lower and social distancing was 47% lower than before prior to vaccination, with no differences by sex. Decreases in mask wearing (28%) and social distancing (56.1%) were larger among people under age 50 than people over the age of 50 (17% and 42%, respectively). *Rahamim-Cohen et al. (Apr 13, 2021). Survey of Behaviour Attitudes Towards Preventive Measures Following COVID-19 Vaccination. Pre-print downloaded Apr 14 from <https://doi.org/10.1101/2021.04.12.21255304>*
- [Pre-print, not peer-reviewed] SARS-CoV-2 specific IgA and IgG were detected in milk and plasma samples from 22 lactating healthcare workers who had received either the Moderna or Pfizer-BioNTech vaccines, with peak levels occurring 7-10 days after the second dose. Samples were collected prior to vaccination, after the first dose, and after the second dose in a prospective observational study. The authors suggest these antibodies may be transferred to infants during nursing, and future studies should examine the duration of this immune response and the clinical significance for infants. *Valcarce et al. (Apr 13, 2021). Detection of SARS-CoV-2 Specific IgA in the Human Milk of COVID-19 Vaccinated Lactating Health Care Workers. Pre-print downloaded Apr 14 from <https://doi.org/10.1101/2021.04.02.21254642>*

## Clinical Characteristics and Health Care Setting

- [Pre-print, not peer-reviewed] A population-based study of post-COVID-19 sequelae in England found that hospitalized patients had higher rates of 13 of 26 symptoms assessed and 11 of 19 diseases, and had higher healthcare utilization, than those who had not been hospitalized. Comparing symptom rates (per 100,000 person-weeks), hospitalized patients experienced more breathlessness (536 vs. 87), joint pain (295 vs. 168), diabetes (303 vs. 36), and hypertension (244 vs. 47). 4.2% (1882/45,272) of those who had not been hospitalized had a post-acute symptom, most frequently reporting anxiety, breathlessness, chest pain and fatigue. Healthcare utilization among those who were not hospitalized increased by 28.5% post-COVID-19 relative to pre-pandemic. *Whittaker et al. (Apr 13, 2021). Post-Acute COVID-19 Sequelae in Cases Managed in the Community or Hospital in the UK a Population Based Study. Pre-print downloaded Apr 14 from <https://doi.org/10.1101/2021.04.09.21255199>*

## Mental Health and Personal Impact

- Between April – July 2020, the number of deaths by suicide in high-income (n = 16) and upper-middle-income (n = 5) countries remained largely unchanged or declined compared to pre-pandemic expected levels based on an interrupted time-series analysis using data from official government sources.

*Pirkis et al. (Apr 14, 2021). Suicide Trends in the Early Months of the COVID-19 Pandemic: An Interrupted Time-Series Analysis of Preliminary Data from 21 Countries. The Lancet Psychiatry. [https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366\(21\)00091-2/fulltext](https://www.thelancet.com/journals/lanpsy/article/PIIS2215-0366(21)00091-2/fulltext)*

## Modeling and Prediction

- *[Pre-print, not peer-reviewed]* Vaccines with lower efficacy can reduce population-level transmission more than vaccines with higher efficacy if distribution of lower efficacy vaccines was comparatively faster based on findings from a modeling study. A vaccine with 65% and 60% efficacy before and after the variants, respectively, can outperform a vaccine with 95% and 90% efficacy, if its distribution were 46-48% faster. The authors state that these results have implications for vaccine distribution strategies in the face of an increasing proportion of infections with SARS-CoV-2 known and future variants against which current vaccines may have lower efficacy.

*Kim et al. (Apr 13, 2021). The Balancing Role of Distribution Speed against Varying Efficacy Levels of COVID-19 Vaccines under Variants. Pre-print downloaded Apr 14 from <https://doi.org/10.1101/2021.04.09.21255217>*

- A modeling study using data on children's social contacts found that closures of elementary schools in spring 2020 in the Bay Area of California averted comparatively fewer cases than closures of middle and high schools and workplaces. The authors hypothesize this relatively smaller reduction in averted cases may be due to elementary school children having a higher proportion of social contacts outside of school as a result of requirements to accompany family members on essential activities or attend daycare. The study also found that reopening elementary schools with universal masking protocols and classroom cohorts could avert most in-school transmissions.

*Head et al. (Apr 14, 2021). School Closures Reduced Social Mixing of Children during COVID-19 with Implications for Transmission Risk and School Reopening Policies. Journal of The Royal Society Interface. <https://doi.org/10.1098/rsif.2020.0970>*

## Other Resources and Commentaries

- [Data Leak Exposes Early COVID-19 Vaccine Manufacturing Hiccups](#) – JAMA (Apr 13)
- [Ovarian Follicular Function Is Not Altered by SARS-Cov-2 Infection or BNT162b2 MRNA Covid-19 Vaccination](#) – MedRxiv (Apr 13)
- [SARS-CoV-2 vs Smallpox: Mass Vaccinations in the Mirror](#) – Internal and Emergency Medicine (Apr 13)
- [Remaining Vigilant about COVID-19 and Suicide](#) – The Lancet Psychiatry (Apr 14)
- [Confronting Challenges in the US Health Care System](#) – JAMA (Apr 13)
- [Consider This Before Using the SARS-CoV-2 Pandemic as an Instrumental Variable in an Epidemiological Study](#) – American Journal of Epidemiology (Apr 13)

- [Monitoring and Evaluation of COVID-19 Response in the WHO African Region: Challenges and Lessons Learned](#) – Epidemiology and Infection (Apr 14)
- [Review of Infective Dose, Routes of Transmission, and Outcome of COVID-19 Caused by the SARS-COV-2: Comparison with Other Respiratory Viruses](#) – Epidemiology and Infection (Apr 14)
- [COVID-19 Precautions Are Scarce in Non-Health Care Workplaces](#) – JAMA (Apr 13)
- [How Could a COVID Vaccine Cause Blood Clots? Scientists Race to Investigate](#) – Nature (Apr 15)
- [Covid-19: Moderna and Novavax Vaccines to Be Tested in Mixing Vaccines Trial](#) – BMJ (Apr 13)
- [Coordinated Strategy for a Model-Based Decision Support Tool for Coronavirus Disease, Utah, USA](#) – Emerging Infectious Disease Journal (Apr 12)
- [Case Fatality Rates for COVID-19 Are Higher than Case Fatality Rates for Motor Vehicle Accidents for Individuals over 40 Years of Age](#) – MedRxiv (Apr 13)
- [Reinfection of SARS-CoV-2 - Analysis of 23 Cases from the Literature](#) – Infectious Diseases (Apr 13)
- [COVID-19 Morbidity and Mortality in U.S. Meatpacking Counties](#) – Food Policy (Apr 8)
- [Ensuring COVID-19 Vaccines for Migrant and Immigrant Farmworkers](#) – The American Journal of Tropical Medicine and Hygiene (Apr 13)
- [SARS-CoV-2 Incidence and Vaccine Escape](#) – The Lancet Infectious Diseases (Apr 14)
- [Biden Pursues Giant Boost for Science Spending](#) – Nature (Apr 9)

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