



2019-nCoV Literature Situation Report (Lit Rep)

May 18, 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

- **The Pfizer-BioNTech vaccine was 90% effective in preventing any SARS-CoV-2 infection during 7-27 days after the second dose (protection period) compared to 1-7 days after the first dose (reference period) based on a cohort study in Israel (n=1.2 million). Vaccine effectiveness was 71% among immunosuppressed participants, 82% among those aged ≥65 years, and 52% among those in both groups. [More](#)**
- **The mean interval between exposure to COVID-19 and the development of symptoms was 3.2 days, according to an analysis of 186 likely infector-infectee pairs in England and Wales and was not statistically different among infector-infectee pairs in regions and study weeks with high percentage of infections due to the B.1.1.7 variant based on surveillance data. [More](#)**
- **Adults aged >80 years with 11-12 week intervals between doses of the Pfizer-BioNTech vaccine had 3.5-fold higher peak titers of anti-SARS-CoV-2 spike antibodies compared to adults >80 given a standard three-week interval between doses. However, the magnitude of spike-specific T cell responses 2-3 weeks after the second dose was 3.6-fold lower in the extended interval cohort compared to the standard interval cohort. [More](#)**

Non-Pharmaceutical Interventions

- Observed mask adherence was on average 77% throughout a school day among pre-K to 2nd grade students participating in in-school instruction in an observational survey (n=1,000) across 15 private schools in Atlanta, GA during Fall 2020. Mask adherence, as observed by teachers for 1,048 classroom days, was lowest among Pre-K students (50-60%) and highest among 2nd grade students (85-90%). Teachers reported that the most challenging time of day was following recess and lunch. Overall, masks were well-tolerated by students.

Mickells et al. (May 16, 2021). Adherence to Masking Requirement During the COVID-19 Pandemic by Early Elementary School Children. Journal of School Health.
<https://doi.org/10.1111/josh.13033>

Transmission

- *[Pre-print, not peer-reviewed]* The mean interval between exposure to COVID-19 and the development of symptoms was 3.2 days, according to an analysis of 186 likely infector-infectee pairs in England and Wales. The mean serial interval in individuals belonging to households in regions and

belonging to study weeks classified as having a high percentage of infections due to the B.1.1.7 variant was not statistically different from regions without a high prevalence of the variant of concern.

Geismar et al. (May 17, 2021). Serial Interval of COVID-19 and the Effect of Variant B.1.1.7 Analyses from a Prospective Community Cohort Study (Virus Watch). Pre-print downloaded May 18 from <https://doi.org/10.1101/2021.05.17.21257223>

- Clustering of SARS-CoV-2 cases in Switzerland from January to June 2020 by region and date of diagnosis found that of the 457 clusters with significantly higher risk of infection compared to the surrounding region, 57% had at least one person with extremely high viral load (>1 billion copies/mL). Clusters with the highest viral loads tended to have lower average age groups. 20 clusters had viral loads <100,000 copies/mL among the first three cases, suggesting that individuals may be infectious even if their viral load is below that threshold.

Ladoy et al. (May 15, 2021). Size and Duration of COVID-19 Clusters Go along with a High SARS-CoV-2 Viral Load: A Spatio-Temporal Investigation in Vaud State, Switzerland. Science of The Total Environment. <https://doi.org/10.1016/j.scitotenv.2021.147483>

- *[Pre-print, not peer-reviewed]* Secondary attack rates (SARs) were 17-37% in three kindergarten schools in Germany during three SARS-CoV-2 outbreaks likely caused by the B.1.1.7 variant. A majority (>80%) of secondary cases occurred within 7 days. The pooled household SAR was 37% after excluding single-occupant households and households with another possible index case. Notably, the attack rate among household child contacts was similar to household adult contacts (39% vs 32%).

Loenenbach et al. (May 17, 2021). Susceptibility and Infectiousness of Children and Adults with SARS-CoV-2 Variant B.1.1.7 Deduced from Three Daycare Centre Outbreaks and Related Household Situations Germany 2021. Pre-print downloaded May 18 from <https://doi.org/10.1101/2021.05.12.21256608>

Vaccines and Immunity

- The Pfizer-BioNTech vaccine was 90% effective in preventing any SARS-CoV-2 infection when comparing incidence of infection between 7-27 days after the second dose (protection period) vs 1-7 days after the first dose (reference period). The findings are based on a cohort belonging to a large health provider in Israel (n=1.2 million), of which 74% had reached the protection period. Vaccine effectiveness when comparing an infection occurring during the protection period versus in the reference period were lower among immunosuppressed participants (71%) and those aged ≥65 years (82%), with lowest vaccine effectiveness in immunosuppressed participants aged ≥65 years (52%). The immunosuppressed category included a variety of conditions such as hematopoietic or solid organ transplant, patients under immunosuppressive therapy, asplenia, and chronic renal failure. Decreases in likelihood of hospitalization following infection during the protection period vs the reference period was less pronounced in younger age groups.

Chodick et al. (May 17, 2021). The Effectiveness of the TWO-DOSE BNT162b2 Vaccine: Analysis of Real-World Data. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab438>

- *[Pre-print, not peer-reviewed]* Data on vaccination coverage among nursing home residents and staff reported by pharmacies participating in the temporary federal Pharmacy Partnership for Long-Term Care Program correlated well with data reported by nursing homes to the new COVID-19 vaccination

modules of the CDC's National Healthcare Safety Network (NHSN) throughout January 2021 ($r=0.89-0.97$ for residents and $r=0.74-0.9$ for staff). 77% for residents and 50% for staff had received at least 1 vaccine dose by the end of January and plateaued through April 2021 based on subsequent NHSN reporting.

Geller et al. (May 18, 2021). *Surveillance of COVID-19 Vaccination in US Nursing Homes December 2020-April 2021*. Pre-print downloaded May 18 from <https://doi.org/10.1101/2021.05.14.21257224>

- Antibody effector functions associated with opsonization and killing of infected cells declined over time in a cohort of 58 subjects recovering from mild-to-moderate COVID-19. Levels of anti-SARS-CoV-2 spike (S) antibodies with Fcγ receptors, S-specific antibody-dependent cellular cytotoxicity (ADCC), and antibody dependent phagocytosis (ADP) declined from the initial peak in samples drawn ~30-60 days post-symptom onset but remained detectable in 94% of subjects when the last samples were collected at a median of 123 days post-symptom onset.

Lee et al. (May 5, 2021). *Decay of Fc-Dependent Antibody Functions after Mild to Moderate COVID-19*. *Cell Reports Medicine*. <https://doi.org/10.1016/j.xcrm.2021.100296>

- [Pre-print, not peer-reviewed] 84% of sera from individuals ($n=60$) recovered from mild SARS-CoV-2 infection caused by the B.1.1.28 variant (the wild-type strain circulating in Brazil) had neutralizing antibodies against the P.1 variant of concern. Neutralization titers against the wild-type strain were consistently higher compared to the P.1 variant, but the differences were not more than a single dilution in over half of samples.

Mendes-Correa et al. (May 17, 2021). *Individuals Who Were Mildly Symptomatic Following Infection with SARS-CoV-2 B.1.1.28 Have Neutralizing Antibodies to the P.1 Variant*. Pre-print downloaded May 18 from <https://doi.org/10.1101/2021.05.11.21256908>

- [Pre-print, not peer-reviewed] Adults aged >80 years with 11-12 week intervals between doses of the Pfizer-BioNTech vaccine ($n=79$) had 3.5-fold higher peak titers of anti-SARS-CoV-2 spike antibodies compared to adults >80 given a standard three-week interval between doses ($n=68$) in a cohort study of in the UK. However, the magnitude of spike-specific T cell responses 2-3 weeks after the second dose was 3.6-fold lower in the extended interval cohort compared to the standard interval cohort.

Parry et al. (May 17, 2021). *Extended Interval BNT162b2 Vaccination Enhances Peak Antibody Generation in Older People*. Pre-print downloaded May 18 from <https://doi.org/10.1101/2021.05.15.21257017>

Clinical Characteristics and Health Care Setting

- Stroke patients with comorbid COVID-19 ($n=5,517$) had a 5-fold higher risk of in-hospital death compared to stroke patients prior to the pandemic ($n=165,912$), according to an analysis of hospital records of patients admitted for ischemic stroke between January 2019 to December 2020. Compared to stroke patients prior to the pandemic and non-COVID-19 patients during the pandemic ($n=111,418$), stroke patients with comorbid COVID-19 were less likely to have conventional risk factors, such as smoking, hypertension, and dyslipidemia.

de Havenon et al. (May 17, 2021). *Characteristics and Outcomes Among US Patients Hospitalized for Ischemic Stroke Before vs During the COVID-19 Pandemic*. *JAMA Network Open*.

<https://doi.org/10.1001/jamanetworkopen.2021.10314>

Modeling and Prediction

- *[Pre-print, not peer-reviewed]* In a quantitative risk assessment model simulating a susceptible worker exposed to a SARS-CoV-2-infected worker during an 8-hour shift at an enclosed food manufacturing facility, infection risk was highest (96%) via droplet and aerosol transmission within 1-3 meters in the absence of any mitigation measures. Droplet transmission contributed mostly at 1 meter distance, while aerosols comprised the majority of the exposure dose by 3 meters. Transmission by fomites was low, even at 1 meter distance (26%). Physical distancing, universal masking, and improving ventilation could reduce risks by up to 91%, 88%, and 85%, respectively; combining strategies could result in <1% infection risk.

Sobolik et al. (May 18, 2021). Controlling Risk of SARS-CoV-2 Infection in Essential Workers of Enclosed Food Manufacturing Facilities. Pre-print downloaded May 18 from

<https://doi.org/10.1101/2021.05.14.21257244>

Other Resources and Commentaries

- [Specific COVID-19 Messaging Targeting Ethnic Minority Communities](#) – EClinicalMedicine (May)
- [HLA-B*1501 Is Associated with Asymptomatic SARS-CoV-2 Infection](#) – MedRxiv (May 17)
- [Association Between Cigarette Smoking and COVID-19 Outcomes](#) – JAMA Internal Medicine (May 17)
- [Knowledge and Attitudes Toward Covid-19 and Vaccines Among a New York Haredi-Orthodox Jewish Community](#) – Journal of Community Health (May)
- [COVID-19 Vaccine Intentions in the United States December 2020 to March 2021](#) – MedRxiv (May 17)
- [Why N95 Should Be the Standard for All COVID-19 Inpatient Care](#) – Annals of Internal Medicine (May)
- [Increases in Naloxone Administrations by Emergency Medical Services Providers During the COVID-19 Pandemic: Retrospective Time-Series Study \(Preprint\)](#) – JMIR Public Health and Surveillance (Apr 1)
- [SARS-CoV-2 mRNA Vaccines Induce a Greater Array of Spike-Specific Antibody Isotypes with More Potent Complement Binding Capacity than Natural Infection](#) – MedRxiv (May 17)
- [Genomic Variation, Origin Tracing and Vaccine Development of SARS-CoV-2: A Systematic Review](#) – The Innovation (May)
- [BCG Scar Local Skin Inflammation as a Novel Reaction Following mRNA COVID-19 Vaccines in Two International Healthcare Workers](#) – Cureus (Apr)
- [Efficacy of COVID-19 Vaccines Against Active Comparators or Inert Placebos](#) – JAMA Internal Medicine (May 17)
- [Active Prescription of Low-Dose Aspirin During or Prior to Hospitalization and Mortality in COVID-19 - A Systematic Review and Meta-Analysis of Adjusted Effect Estimates](#) – International Journal of Infectious Diseases : IJID : Official Publication of the International Society for Infectious Diseases (May)
- [Disease Surveillance for the COVID-19 Era: Time for Bold Changes](#) – The Lancet (May)
- [Prolonged Facemask Use in the Heat Worsens Dyspnea without Compromising Motor-Cognitive Performance](#) – Temperature (Apr 3)
- [Do Asymptomatic Carriers of SARS-COV-2 Transmit the Virus](#) – The Lancet Regional Health - Europe (May)

- [Recurrent Varicella Following SARS-CoV-2 Vaccination with BNT162b2](#) – International Journal of Dermatology (May 17)
- [Broad Neutralization against SARS-CoV-2 Variants Induced by a Modified B.1.351 Protein-Based COVID-19 Vaccine Candidate](#) – BioRxiv (May 17)
- [How to Quantify and Interpret Treatment Effects in Comparative Clinical Studies of COVID-19](#) – Annals of Internal Medicine (May)

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