



2019-nCoV Literature Situation Report (Lit Rep)

May 12, 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

- **Among nearly 2.5 million contacts of over 1 million SARS-CoV-2 index cases in England, index cases with lower cycle threshold values (suggesting higher viral loads) tended to have higher attack rates. Attack rates were 55% higher among index cases with S gene target failure (proxy for the B.1.1.7 variant), and highest among household contacts (9%). Contacts of children were the least likely to test positive. [More](#)**
- **A decline in hospitalization (44% to 16%) and death (20% to 5%) in the 30 days following a positive SARS-CoV-2 test was observed between February and July 2020, according to data from the US Veterans Affairs healthcare system (n=55,952). This change coincided with differences in clinical management, including reduced use of hydroxychloroquine (57% to 0%) and azithromycin (48% to 17%) and increased use of dexamethasone (5% to 29%) and remdesivir (2% to 45%) [More](#)**

Transmission

- *[Pre-print, not peer-reviewed]* The proportion of people with SARS-CoV-2 positive PCR tests was higher among participants living in houses with more occupants than rooms (“overcrowded houses”) when compared to houses with fewer occupants (7% vs 3%) per room, according to a household community cohort study in England and Wales (n=10,33) conducted between June 2020 to May 2021. Adjusting for age, sex, ethnicity, household income, and geographical region, the likelihood of having a positive PCR SARS-CoV-2 antigen test was nearly 4-fold higher among those living in houses with more occupants than rooms. Similarly, the likelihood of being positive for anti-SARS-CoV-2 antibodies was nearly 3-fold higher among those in overcrowded houses.
Aldridge et al. (May 11, 2021). Household Overcrowding and Risk of SARS-CoV-2 Analysis of the Virus Watch Prospective Community Cohort Study in England and Wales. Pre-print downloaded May 12 from <https://doi.org/10.1101/2021.05.10.21256912>
- SARS-CoV-2 index cases with lower PCR cycle threshold (Ct) values (suggesting a higher viral load) tended to have a higher proportion of contacts infected with SARS-CoV2, according to a study combining testing and contact tracing data from England between September 2020 and February 2021. Attack rates were 12% for index cases with Ct=15 and 5% for index cases with Ct=30. Attack rates were 55% higher among index cases with infections with S gene target failure (a known proxy for the B.1.1.7 variant). Attack rates were highest among household contacts (9%) followed by household visitors (7%), and lower among outdoor contacts (3%) and work/education contacts (5%).

Contacts of children were the least likely to test positive, particularly following contact outdoors or at work/educational settings.

Lee et al. (May 11, 2021). SARS-CoV-2 Infectivity by Viral Load, S Gene Variants and Demographic Factors and the Utility of Lateral Flow Devices to Prevent Transmission. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciab421>

Testing and Treatment

- 34% of COVID-19 patients in a multicenter cohort in Spain (n=13,932) were inappropriately prescribed antibiotics, defined as the patient not fulfilling any accepted criteria for use of antibiotics such as shock, sepsis, or coinfections. Patients admitted to the hospital early in the pandemic (February to March 2020) and presenting with dry cough, fever, and flu-like symptoms were more likely to be inappropriately prescribed antibiotics.

Calderón-Parra et al. (May 11, 2021). Inappropriate Antibiotic Use in the COVID-19 Era: Factors Associated with Inappropriate Prescribing and Secondary Complications. *Analysis of the Registry SEMI-COVID*. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0251340>

- Participants with severe COVID-19 randomized to receive convalescent plasma (n=150) had significantly lower 28-day mortality (OR=0.44, 95% CI: 0.22-.91) compared to those receiving controlled plasma (n=73) in a randomized double-blind controlled trial conducted in New York and Brazil. However, no significant improvement in clinical status, as measured on an ordinal scale, was observed at 28 days (OR=1.50, 95% CI: 0.83-2.68) and the authors caution that the difference in mortality was not observed in larger inpatient trials explicitly designed to test for effects on mortality. The median titer of anti-SARS-CoV-2 neutralizing antibody in infused convalescent plasma units was 1:160. No evidence of SARS-CoV-2 variants linked with neutralization escape was found in a subset of samples from Brazil.

O'Donnell et al. (May 11, 2021). A Randomized Double-Blind Controlled Trial of Convalescent Plasma in Adults with Severe COVID-19. *Journal of Clinical Investigation*. <https://doi.org/10.1172/JCI150646>

- A systematic review and meta-analysis of 5 randomized placebo-controlled trials (n=7,540 total participants) found no significant evidence that remdesivir (100 mg over 10 days) reduced all-cause mortality (RR=0.94, CI 0.82-1.07), clinical progression (RR=1.08, CI 0.99-1.18), or diarrhea (RR=0.82, CI 0.40-1.66). The authors conducted a trial sequential analysis and found that the meta-analysis was underpowered to detect a 10% reduction in all-cause mortality at 0% sample heterogeneity and 11% baseline risk (required n=24,281).

Okoli et al. (May 11, 2021). Remdesivir for Coronavirus Disease 2019 (COVID-19): A Systematic Review with Meta-Analysis and Trial Sequential Analysis of Randomized Controlled Trials. *Infectious Diseases*. <https://doi.org/10.1080/23744235.2021.1923799>

Vaccines and Immunity

- Anti-SARS-CoV-2 nucleocapsid (N) antibodies were detected in 7% of pets (14 of 198) in a serosurvey conducted in Italy from March to June 2020. All 14 seropositive animals lived with SARS-CoV-2-infected owners. In the households of SARS-CoV-2-infected owners, 20% (11 of 54) of cats and 3% (3 of 93) of dogs were seropositive. The proportion of seropositive pets increased with length of

exposure, with all 14 cases classified as positive after ≥ 54 days of exposure. Clinical signs, such as cough and sneezing, were observed in 5 of 14 seropositive animals.

Colitti et al. (May 11, 2021). *Cross-Sectional Serosurvey of Companion Animals Housed with SARS-CoV-2-Infected Owners, Italy. Emerging Infectious Diseases.*

https://wwwnc.cdc.gov/eid/article/27/7/20-3314_article

- *[Pre-print, not peer-reviewed]* Sera of participants with detectable spike antibodies produced by natural infection had higher levels of anti-SARS-CoV-2 spike IgG antibodies against the wild-type strain and variants of concern (B.1.1.7, B.1351, and P.1) at least one week after a single dose of the Oxford-Astrazeneca vaccine (n=83) compared to sera from a mixed group of seronegative and seropositive participants at least 2 weeks after the second dose of the Pfizer-BioNTech vaccine (n=149; 36 with previous infection and 113 without). Similarly, levels of pseudo-neutralizing spike-ACE2 blocking antibodies against the wild-type strain and variants of concern were also higher among seropositive individuals with a single dose of the Oxford-Astrazeneca vaccine compared to a mixed group of seronegative and seropositive vaccine recipients after 2 doses of the Pfizer-BioNTech vaccine. *[editorial note: Previous studies have clearly established that seropositive individuals receiving mRNA vaccines have much higher antibody titers after vaccination compared to seronegative individuals receiving the same vaccine. Since the authors of this preprint analyzed a combined group of seronegative and seropositive individuals receiving an mRNA vaccine, the editors advise caution in interpreting the data from this preprint].*

Havervall et al. (May 11, 2021). *Antibody Responses After a Single Dose of ChAdOx1 NCoV-19 Vaccine in Healthcare Workers Previously Infected with SARS-CoV-2. Pre-print downloaded May 12 from <https://doi.org/10.1101/2021.05.08.21256866>*

- *[Pre-print, not peer-reviewed]* In a cohort of US mothers testing positive for SARS-CoV-2 during pregnancy (n=145), anti-SARS-CoV-2 antibodies were detected in 65% and 58% of maternal and cord blood samples at delivery, respectively. The IgG transplacental transfer ratio was significantly higher among women receiving their first maternal positive PCR test 60-180 days before delivery compared to those receiving their first test <60 days before delivery (ratio 1.2 vs 0.6). Infants were followed with serial serologic analysis and 2 of 147 infants seroconverted (defined as high levels of IgG and IgM) by as early as 2 weeks, including one premature infant with confirmed intrapartum infection. IgG antibody levels in the infants correlated with IgG levels in the cord blood. In infants with maternally derived antibody, 8% (4 of 48) became undetectable at 1-4 weeks and 38% (5 of 14) were undetectable by 13-28 weeks, with some antibodies persisting up to 6 months of age.

Song et al. (May 3, 2021). *Passive and Active Immunity in Infants Born to Mothers with SARS-CoV-2 Infection during Pregnancy: Prospective Cohort Study. Pre-print downloaded May 12 from <https://doi.org/10.1101/2021.05.01.21255871>*

Clinical Characteristics and Health Care Setting

- In the 30 days following a positive SARS-CoV-2 test, a decline in hospitalization (44% to 16%) and death (20% to 5%) was observed between February and July 2020 in a cohort of enrollees in the US Veterans Affairs healthcare system (n=55,952). Similar trends were also observed for 30-day incidence for ICU admission and mechanical ventilation. All trends subsequently plateaued through September 2020. The decrease in hospitalization persisted after adjustment for sociodemographic characteristics, comorbid conditions, documented symptoms and laboratory tests, including among

subgroups of patients either hospitalized, admitted to the ICU or treated with mechanical ventilation. During the study period, there were also reductions in the use of hydroxychloroquine (57% to 0%) and azithromycin (48% to 17%) and increases in the use of dexamethasone (3% to 53%), corticosteroids (5% to 29%), and remdesivir (2% to 45%) among hospitalized patients.

Ioannou et al. (May 11, 2021). Trends over Time in the Risk of Adverse Outcomes among Patients with SARS-CoV-2 Infection. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab419>

- *[Pre-print, not peer-reviewed]* In a cohort of COVID-19 patients from the Netherlands (n=301) 82% of patients recovering from severe/critical disease reported at least one persistent symptom 12 weeks after illness onset, compared to 33% and 64% among those recovering from mild to moderate disease, respectively. At nine months after illness onset, 42% of participants continued to report at least one symptom. Recovery was approximately 50% slower among clinically obese patients (BMI \geq 30) than those with BMI < 25.

Wynberg et al. (May 11, 2021). Evolution of COVID-19 Symptoms during the First 9 Months after Illness Onset. Pre-print downloaded May 12 from <https://doi.org/10.1101/2021.05.05.21256710>

Modeling and Prediction

- *[Pre-print, not peer-reviewed]* Simulations of seating arrangements based on student enrollment data from the 2019-2020 academic year at the University of British Columbia found that assigned seating could reduce the mean number of contacts per student to 31 compared to 130 contacts per student with random seating. In combination with assigned seating, excluding large classes with >200 students further reduced the mean number of contacts per student to 20.

Daly-Grafstein et al. (May 11, 2021). Resuming In-Person Classes under COVID-19 Evaluating Assigned Seating Protocols in Limiting Contacts at Postsecondary Institutions. Pre-print downloaded May 12 from <https://doi.org/10.1101/2021.05.07.21256844>

Other Resources and Commentaries

- [A Next-Generation Rapid, Accurate SARS-CoV-2 Antibody Test](#) – JAMA (May 11)
- [SARS-CoV-2 Escaped Natural Immunity, Raising Questions about Vaccines and Therapies](#) – Nature Medicine (May 10)
- [A Blood Atlas of COVID-19 Defines Hallmarks of Disease Severity and Specificity](#) – MedRxiv (May 11)
- [Stress and Worry in the 2020 Coronavirus Pandemic: Relationships to Trust and Compliance with Preventive Measures across 48 Countries in the COVIDiSTRESS Global Survey](#) – Royal Society Open Science (Feb 10)
- [Potential Reduction in Female Sex Workers' Risk of Contracting HIV during Covid-19](#) – AIDS (May 7)
- [Political Neglect of COVID-19 and the Public Health Consequences in Brazil: The High Costs of Science Denial](#) – EClinicalMedicine (May)
- [A Public Online Resource to Track COVID-19 Misinfodemic](#) – Social Network Analysis and Mining (Dec 5)
- [A Global Database of COVID-19 Vaccinations](#) – Nature Human Behaviour (May 10)
- [How to Interpret and Use COVID-19 Serology and Immunology Tests](#) – Clinical Microbiology and Infection (May)
- [Smartphone Science: Apps Test and Track Infectious Diseases](#) – Nature (May 13)

- [Report of the Independent Panel for Pandemic Preparedness and Response: Making COVID-19 the Last Pandemic](#) – The Lancet (May 12)
- [Ultrafast Sample Placement on Existing TRees \(UShER\) Enables Real-Time Phylogenetics for the SARS-CoV-2 Pandemic](#) – Nature Genetics (May)
- [A Descriptive Analysis of the Impact of Public Health and Social Measures on COVID-19: How the U.S. Compares to Other Countries \(Preprint\)](#) – JMIR Public Health and Surveillance (Feb 12)

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