

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

- **A man from Nevada was reported as the first case of SARS-CoV-2 reinfection in North America, with genomic evidence supporting that the first infection in May and the second in June were from separate occasions. Symptoms were more severe during the second infection. [More](#)**
- **A surveillance study in Orange County, California found an 11.5% prevalence of antibodies against SARS-CoV-2, which was 7-fold higher than estimates using official county statistics. [More](#)**
- **An outbreak of SARS-CoV-2 in a nursery in Poland resulted in at least 29 people infected and 27% of contacts testing positive, 12 of whom were children's family members who did not enter the nursery. [More](#)**

Transmission

- A man in Nevada was found to be the first case of SARS-CoV-2 reinfection in North America, testing positive first in April, then receiving two negative tests during follow-up in May, then testing positive again in June. Genomic analysis of the positive samples show significant genetic differences between viral strains collected during the two periods that could not be accounted for by short-term *in vivo* evolution, suggesting the patient was infected on two separate occasions. The second infection was reported to be symptomatically more severe than the first. [EDITORIAL NOTE: This manuscript was previously summarized in the Lit Rep as a pre-print on August 31, 2020].
Tillett et al. (Oct 12, 2020). Genomic Evidence for Reinfection with SARS-CoV-2: A Case Study. The Lancet Infectious Diseases. [https://doi.org/10.1016/S1473-3099\(20\)30764-7](https://doi.org/10.1016/S1473-3099(20)30764-7)
- A SARS-CoV-2 outbreak was identified in a nursery in Poland in late May. The index case was a nursery worker who reported family contact with a symptomatic SARS-CoV-2-infected person, resulting in a cluster of 29 cases and positivity among 27% of contacts (compared to national estimates of 1%). Twelve of those infected were children's family members who did not enter the facility; one child with a negative result had 2 parents with positive results.
Okarska-Napierala et al. (Oct 9, 2021). SARS-CoV-2 Cluster in Nursery, Poland. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2701.203849>
- Among 101 neonates born to 100 mothers with SARS-CoV-2 infection in New York City, only two newborns had positive test results for SARS-CoV-2, and none had clinical evidence of COVID-19. Seventy-six newborns shared hospital rooms with their mothers. Reasons for not sharing rooms included maternal or newborn need for ICU-level care. Ninety-one mothers breastfed. Newborns

were tested using nasopharyngeal swabs processed with the Cobas RT-PCR or Xpert Xpres assays. The newborns were tested between 0-3 days of life, with the majority (79%) tested on day 1 of life.

Dumitriu et al. (Oct 12, 2020). Outcomes of Neonates Born to Mothers With Severe Acute Respiratory Syndrome Coronavirus 2 Infection at a Large Medical Center in New York City. JAMA Pediatrics. <https://doi.org/10.1001/jamapediatrics.2020.4298>

- Fenizia et al. report 3 cases of vertical transmission in a cohort of 31 mothers with SARS-CoV-2 infection. They also found SARS-CoV-2 RNA in umbilical cord blood from one participant, two at-term placentas, one sample from vaginal mucosa, and one milk specimen. IgM and IgG SARS-CoV-2-specific antibodies were also found in one umbilical cord blood and one milk specimen. These findings suggest that while unlikely, in utero vertical transmission of SARS-CoV-2 is possible.

Fenizia et al. (Oct 12, 2020). Analysis of SARS-CoV-2 Vertical Transmission during Pregnancy. Nature Communications. <https://doi.org/10.1038/s41467-020-18933-4>

- A literature review of 22 household transmission studies comprising 20,291 SARS-CoV-2 household contacts from 10 countries found an overall pooled estimate of household secondary attack proportion of 17% (95%CI: 14-21%). Stratifying the studies by testing frequency showed the pooled secondary attack proportion estimates to be 9% with one test, 18% with two tests, and 21% with >2 tests, suggesting that household secondary attack proportion derived from single follow-up tests may be an underestimation. Household secondary attack proportion also tended to be higher among older adult contacts and among contacts of symptomatic cases.

Fung et al. (Oct 12, 2020). The Household Secondary Attack Rate of SARS-CoV-2: A Rapid Review. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1558>

Testing and Treatment

- [Pre-print, not peer-reviewed] A SARS-CoV-2 surveillance study in Orange County, CA conducted from July to August 2020 reported an adjusted SARS-CoV-2 seroprevalence estimate of 11.5%, which is 7-fold greater than the estimate using official County statistics on cases reported. To minimize bias, the authors recruited adults (n=2,979) to answer a survey without knowing they would be offered a SARS-CoV-2 serology test. Results also show that prevalence was elevated higher among Hispanic participants and among those participants with household income <\$50,000.

Bruckner et al. (Oct 12, 2020). Estimated Seroprevalence of SARS-CoV-2 Antibodies Among Adults in Orange County California. Pre-print downloaded Oct 13 <https://doi.org/10.1101/2020.10.07.20208660>

Modeling and Prediction

- Non-medical mask-wearing by 75% of the population in one modeling study reduced infections by 38%, hospitalizations by 44%, and deaths by 47% in the absence of a shelter-in-place strategy. In combination with mask-wearing, sheltering people aged 50 to 64 decreased deaths by more than 82%. The authors noted that in this model, wearing masks with only 20% efficacy in preventing transmission had a substantial impact on outbreak control. They also suggest that shelter-in-place strategies are important public health interventions amid ongoing outbreaks.

Zhang et al. (Oct 2020). The Impact of Mask-Wearing and Shelter-in-Place on COVID-19 Outbreaks in the United States. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.10.002>

- A modeling study evaluating potential hospital bed shortages during COVID-19 surges found that inter-region transfers could alleviate regional bed shortfalls. In the worst-case scenarios in the study, national bed shortfalls ranged from 669 to 58,562 inpatient beds and 3,208 to 31,190 ICU beds.

Average transfer distances that would be required to address these shortfalls ranged from 23 to 352 miles for inpatient and 28 to 423 miles for ICU patients, depending on volume. Under all worst-case scenarios except the highest-volume ICU scenario, the model found that inter-regional transfers could resolve bed shortfalls, with an average transfer distance from 24 to 405 miles for inpatients and 73 to 476 miles for ICU patients.

Michelson et al. (Oct 10, 2020). Inter-Region Transfers for Pandemic Surges. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1549>

- Results from an agent-based simulation model parametrized with data on Georgia population interactions and demographics over 7.5 months suggests that shelter-in-place followed by voluntary quarantine substantially reduced COVID-19 infections, resource needs, and severe outcomes. The combination reduced peak infections from approximately 180,000 under no intervention to below 53,000, and delayed the peak from April to July or later. Increasing voluntary quarantine compliance decreased daily new infections from almost 53,000 to 25,000, and decreased cumulative infections by about 50%. [EDITORIAL NOTE: This manuscript was previously summarized in the Lit Rep as a pre-print on May 4, 2020].

Keskinocak et al. (Oct 12, 2020). The Impact of Social Distancing on COVID19 Spread: State of Georgia Case Study. PloS One. <https://doi.org/10.1371/journal.pone.0239798>

- An agent-based model that simulated communities from K-12 schools across the US found that the percentage of individuals with symptomatic COVID-19 significantly decreased by as much as 75% in scenarios where students returned to school in non-overlapping split cohorts. Depending upon community factors like initial level of COVID-19 incidence and number of workplaces open for in-person businesses, split cohort scenarios could avert approximately 28-60 million cases nationwide over the simulated 8-month period.

Germann et al. (Oct 13, 2020). Using an Agent-Based Model to Assess K-12 School Reopenings Under Different COVID-19 Spread Scenarios – United States, School Year 2020/21. Pre-print downloaded Oct 13 <https://doi.org/10.1101/2020.10.09.20208876>

Public Health Policy and Practice

- Among the forty-three states and the District of Columbia that issued stay-at-home orders during the COVID-19 pandemic, most considered federal firearm licensees to be essential businesses or made provisions for them to remain open in some capacity, while only four states and D.C. did not. The study found that there was an all-time high in firearm background checks, indicating that firearm sales have increased.

Hoops et al. (Oct 2020). Stay-at-Home Orders and Firearms in the United States during the COVID-19 Pandemic. Preventive Medicine. <https://doi.org/10.1016/j.ypmed.2020.106281>

- A study investigating the wording of COVID-19 related reminders in Japan found that there was no significant difference in producing behavior change with reminders that emphasize self-identity. The study used a two-wave design and distributed participants (n=2,536) to non-self-identity messaging ("Don't Spread), self-identity messaging ("Don't be a spreader"), and control (no reminder).

Yonemitsu et al. (Sept 23, 2020). Warning 'Don't Spread' versus 'Don't Be a Spreader' to Prevent the COVID-19 Pandemic. Royal Society Open Science. <https://doi.org/10.1098/rsos.200793>

Other Resources and Commentaries

- [Stem Cell Therapy: A Promising Approach in Treatment of COVID 19](#) – Current Stem Cell Research & Therapy (Oct 12)
- [COVID-19: France Grapples with the Pragmatics of Isolation](#) – The Lancet Public Health (Oct 9)

- [SARS-CoV-2 Neutralizing Antibody Structures Inform Therapeutic Strategies](#) – Nature (Oct 12)
- [Vaccine Development in the SARS-CoV-2 Pandemic: A Balancing Act on Accuracy and Speed](#) – International Journal of Public Health (Oct 13)
- [Cerebrospinal Fluid Findings in COVID-19 Indicate Autoimmunity](#) – The Lancet Microbe (Oct 1)
- [COVID-19 and Mass Incarceration: A Call for Urgent Action](#) – The Lancet Public Health (Oct 9)
- [Pandemic and Promise: Progress towards Finding an Effective Treatment for Novel Coronavirus 19](#) – Australian and New Zealand Journal of Public Health (Oct 12)
- [COVID-19: We Will Not Be Returning to the Old Normal](#) – The Lancet Microbe (Oct 1)
- [Nationwide COVID-19 Survey of Italian Parents Reveals Useful Information on Attitudes to School Attendance, Medical Support, Vaccines and Drug Trials](#) – Acta Paediatrica (Oslo, Norway : 1992) (Oct 12)
- [Clinical Status Determines the Efficacy of Salivary and Nasopharyngeal Samples for Detection of SARS-CoV-2](#) – Clinical Oral Investigations (Oct 12)
- [Navigating Through Health Care Data Disrupted by the COVID-19 Pandemic](#) – JAMA Internal Medicine (Oct 12)
- [Mental Health Disorders Related to COVID-19-Related Deaths](#) – JAMA (Oct 12)
- [After the Lockdown: Simulating Mobility, Public Health and Economic Recovery Scenarios](#) – Scientific Reports (Oct 12)
- [Expeditious Responses to COVID-19 Crisis: From Governmental Management to Laboratory Approach](#) – Biomedical Journal (Sep 19)
- [Beyond COVID-19-a Paradigm Shift in Infection Management?](#) – The Lancet Infectious Diseases (Oct 9)

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