

2019-nCoV Literature Situation Report (Lit Rep)

November 6, 2020

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

- **Intermittent excretion of low levels of SARS-CoV-2 RNA after hospital discharge was not associated with either secondary transmission or worsening clinical disease.** [More](#)
- **COVID-19 mitigation measures in Delaware likely contributed to an 82% reduction in COVID-19 incidence, an 88% reduction in hospitalizations, and a 100% reduction in mortality in the state during late April–June.** [More](#)
- **A study of children and adults with SARS-CoV-2 infection found differences in antibody responses between adult and pediatric populations. There were no difference in the antibody response between children with multisystem inflammatory disease compared to children with uncomplicated COVID.** [More](#)
- **In opposite sex couples where both partners work and have young children, an “alternating day” strategy for childcare was associated with higher rates of individual well-being and job performance whereas a model termed “remote wife does it all” had the lowest rates of well-being and job performance among women.** [More](#)
- **Testing all college students upon arrival to campus and retesting them seven days later would detect the greatest number of cases of SARS-CoV-2, according to a modeling study.** [More](#)

Non-Pharmaceutical Interventions

- COVID-19 mitigation measures in Delaware, including stay-at-home orders, public mask mandates, and case investigations with contact tracing followed by isolation or quarantine, likely contributed to an observed 82% reduction in COVID-19 incidence, an 88% reduction in hospitalizations, and a 100% reduction in mortality in the state during late April–June. The authors note that barriers to case identification and contact tracing included that 83% of interviewed patients either refused to disclose contacts or could not recall them and cases were contacted a median of 8 days after receiving their test result.

Kanu et al. (Nov 6, 2020). Declines in SARS-CoV-2 Transmission, Hospitalizations, and Mortality After Implementation of Mitigation Measures— Delaware, March–June 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6945e1>

Transmission

- A network analysis of the movements of detained persons and staff members during an outbreak of SARS-CoV-2 in a Chicago jail found that the systematic identification and isolation of infected persons was likely effective at limiting transmission. The movement patterns and connections of

5,884 persons (65% detained persons and 35% staff members) at the jail were analyzed. The network analysis showed higher than expected likelihood of shared shifts between staff who had COVID-19, indicating possible transmission chains. In contrast, the lower than expected observed connections between detained persons with COVID-19 supports the effectiveness of isolation of infected detained individuals.

Kirbyyik et al. (Nov 6, 2020). Network Characteristics and Visualization of COVID-19 Outbreak in a Large Detention Facility in the United States — Cook County, Illinois, 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6944a3>

- After 2 members of the Hopi tribe tested positive for SARS-CoV-2, among 58 of their primary and secondary contacts (immediate and extended family and community members), 27 (47%) laboratory-confirmed SARS-CoV-2 infections occurred. Among all 29 infected individuals, 22 (76%) were symptomatic and seven were asymptomatic. The majority of people who had presymptomatic and asymptomatic infection were children and young adults. The authors suggest that among communities with similar levels of interaction with extended family, emphasizing ways to stay in touch that involve mask wearing, frequent hand washing, and physical distancing might help limit the spread of SARS-CoV-2.

Hirschman et al. (Nov 6, 2020). A SARS-CoV-2 Outbreak Illustrating the Challenges in Limiting the Spread of the Virus — Hopi Tribe, May–June 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6944a5>

Testing and Treatment

- A randomized, open-label, phase 3 trial of remdesivir in hospitalized patients who did not require mechanical ventilation showed that there was no significant difference between a 5-day versus a 10-day course of treatment on the outcome of clinical status on a 7-point scale at day 14 in patients with confirmed SARS-CoV-2 infection. The authors note that there was no placebo control group in this study, and therefore the magnitude of benefit cannot be determined.

Goldman et al. (Nov 5, 2020). Remdesivir for 5 or 10 Days in Patients with Severe Covid-19. New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2015301>

Vaccines and Immunity

- A study of children and adults with SARS-CoV-2 infection in New York found that there are different antibody responses between adult and pediatric populations. Cohorts of adults with COVID-19 had anti-spike IgG, IgM and IgA antibodies, as well as anti-nucleocapsid IgG antibody, while children with and without multisystem inflammatory syndrome (MIS-C) predominantly generated IgG antibodies specific for the spike protein but not the nucleocapsid protein. Additionally, children with and without MIS-C showed reduced neutralizing activity compared to adults. The authors note that this suggests an immune response independent of MIS-C development, and highlight the need for age-specific strategies for testing and protecting the population.

Weisberg et al. (Nov 5, 2020). Distinct Antibody Responses to SARS-CoV-2 in Children and Adults across the COVID-19 Clinical Spectrum. Nature Immunology. <https://doi.org/10.1038/s41590-020-00826-9>

Clinical Characteristics and Health Care Setting

- Intermittent excretion of low levels of SARS-CoV-2 RNA after hospital discharge was not associated with either secondary transmission or worsening clinical disease. A population-based observational

study of patients in China who had clinically recovered from SARS-CoV-2 and satisfied criteria for discharge including two negative PCR tests were then re-tested as outpatients. 479 patients were found to be SARS-CoV-2 positive with a median time-to-positivity of five days. These patients were re-admitted and this population exhibited mild (28%) or no (72%) symptoms with significantly lower levels of viral RNA than the corresponding values at disease onset. 96 close contacts and 1,200 candidate contacts of 23 recurrent-positive patients showed no clinical symptoms. The authors conclude that recurrent-positive patients pose a low transmission risk.

Yang et al. (Jan 1, 2020). Viral RNA Level, Serum Antibody Responses, and Transmission Risk in Recovered COVID-19 Patients with Recurrent Positive SARS-CoV-2 RNA Test Results: A Population-Based Observational Cohort Study. Emerging Microbes & Infections.
<https://doi.org/10.1080/22221751.2020.1837018>

- A study of frontline healthcare workers in Michigan found that having direct contact with patients who were positive for SARS-CoV-2 increased the likelihood of seropositivity but masks were protective. Of those who reported direct contact with SARS-CoV-2-infected patients, seropositivity rates were 10% with an N95 mask, 13% with surgical mask, and 18% with no mask. Among the 1,818 participants (9% of the total population) who were seropositive between April 13 and May 28, 2020, 44% reported that they were asymptomatic during the month prior to blood collection. Participants in roles such as phlebotomy, respiratory therapy, and nursing/nursing support had a significantly higher likelihood of being seropositive.

Sims et al. (Nov 5, 2020). COVID-19 Seropositivity and Asymptomatic Rates in Healthcare Workers Are Associated with Job Function and Masking. Clinical Infectious Diseases.
<https://doi.org/10.1093/cid/ciaa1684>

- There was no evidence for transmission of SARS-CoV2 in dental patients undergoing procedures in New York during a period that included the peak of the pandemic. A prospective study of dental patients (n =2,810) in New York treated in three different dental offices over a 6 months period of March 15-September 15 found that there was no evidence of SARS-CoV-2 transmission to dental workers or patients. Participants were screened both before and 14-days after dental procedures and no participants reported SARS-CoV-2 infection in the 14 days following a procedure. The offices used enhanced infection control measures for patients, including screening questionnaires, temperature screening, and mandatory handwashing and provided N95 masks to staff.

Froum and Froum. (Nov 2020). Incidence of COVID-19 Virus Transmission in Three Dental Offices: A 6-Month Retrospective Study. The International Journal of Periodontics & Restorative Dentistry. <https://doi.org/10.11607/prd.5455>

Mental Health and Personal Impact

- In dual-earning opposite sex couples with young children, an “alternating day” strategy for childcare was associated with higher rates of individual well-being and job performance. A study of the childcare strategies for 274 dual-earner couples found that 37% used strategies where women did most or all childcare and 45% used egalitarian strategies. 133 couples were followed up 7 weeks later and asked to perform standard measures of wellbeing and job performance. The model termed the “remote wife does it all” was associated with the lowest rates of well-being and job performance.

Shockley et al. (Nov 5, 2020). Work-Family Strategies during COVID-19: Examining Gender Dynamics among Dual-Earner Couples with Young Children. Journal of Applied Psychology.
<https://doi.org/10.1037/apl0000857>

- Female adolescent student-athletes report higher levels of moderate-to-severe anxiety and all student-athletes who participate in team sports reported more frequent symptoms associated with depression compared to those participating in individual sports. A cross-sectional study of adolescent student athletes during COVID-19 related school closures and sport cancellations found adolescents who identify as female reported a higher prevalence of moderate to severe anxiety symptoms than those who identify as males (44% vs. 28%). Prevalence of depression symptoms was highest among those participating in team sports (74%) and lowest for individual sports (65%), and the total quality of life score was worst for athletes from counties with the highest poverty levels.

McGuine et al. (Nov 5, 2020). The Health Of Us Adolescent Athletes During Covid-19 Related School Closures And Sport Cancellations. Journal of Athletic Training.

<https://doi.org/10.4085/478-20>

Modeling and Prediction

- A decision-tree analysis evaluating five SARS-CoV-2 testing strategies for college students returning to campus found that testing all students upon arrival and then retesting them seven days later identified the greatest number of cases. The five different strategies evaluated were: (1) classifying students with symptoms as having COVID-19, (2) RT-PCR testing for symptomatic students, (3) RT-PCR testing for all students, (4) RT-PCR testing for all students and retesting only symptomatic students with a negative first test, and (5) RT-PCR testing for all students and retesting all students with a negative first test seven days after the initial test. The percentage of correctly identified infections was 41%, 29%, 54%, 73%, and 87% for Strategies 1–5, respectively. The authors note that if test cost is a concern, schools can consider testing all returning students, and deciding whether or not to repeat testing based on the measured prevalence of infection.

Van Pelt et al. (Nov 2020). Evaluation of COVID-19 Testing Strategies for Repopulating College and University Campuses: A Decision Tree Analysis. Journal of Adolescent Health.

<https://doi.org/10.1016/j.jadohealth.2020.09.038>

- Identification of the source of newly-detected SARS-CoV-2 infections (“backward contact tracing”), was found to be a potentially effective outbreak control measure. Endo et. al used a simple branching process model and found that backward tracing was expected to identify a primary case generating 3-10 times more infections than average, which could increase the proportion of subsequent cases averted by a factor of 2-3. In the study, the estimated number of cases avoided by backward contact tracing increased as overdispersion increased suggesting that backward contact tracing may be especially effective in situations where there is high individual variation in the number of secondary transmissions

Endo et al. (Oct 13, 2020). Implication of Backward Contact Tracing in the Presence of Overdispersed Transmission in COVID-19 Outbreaks. Wellcome Open Research.

<https://doi.org/10.12688/wellcomeopenres.16344.1>

Public Health Policy and Practice

- The use of preventive and elective care services dropped dramatically during the first two months of the COVID-19 pandemic and was not compensated by a commensurate rise in telemedicine. A cross-sectional study of health service use among people in the US with commercial health insurance found that while telemedicine use increased, the magnitude of decline in preventative services was greater. Furthermore, patients living in zip codes with greater proportions of lower-income

individuals or racial/ethnic minority groups experienced smaller reductions in in-person visits, but also had lower rates of telemedicine use.

Whaley et al. (Nov 5, 2020). Changes in Health Services Use Among Commercially Insured US Populations During the COVID-19 Pandemic. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2020.24984>

- The scientific quality of COVID-19 publications in the three highest ranked scientific medical journals (NEJM, JAMA, and The Lancet) was below the quality average of these journals for non-COVID-19 research. Among 155 COVID-19 studies and 130 non-COVID-19 studies included in the analysis, the non-COVID-19 publications had higher levels of evidence as defined by the level of evidence pyramid. The COVID-19 publications had an 18-times higher odds of be of lower evidence quality. The quantitative quality score was significantly higher for non-COVID-19 studies (mean difference 11.1). [EDITORIAL NOTE: In the interest of highlighting examples of a lower quality of COVID-9 related publications, it should be noted that the analysis described in this article uses a cohort study design rather than a case-control design, as indicated by the authors.]

Zdravkovic et al. (Nov 5, 2020). Scientific Quality of COVID-19 and SARS CoV-2 Publications in the Highest Impact Medical Journals during the Early Phase of the Pandemic: A Case Control Study. PLOS ONE.

<https://doi.org/10.1371/journal.pone.0241826>

Other Resources and Commentaries

- [Model Calculations of Aerosol Transmission and Infection Risk of COVID-19 in Indoor Environments](#) – International Journal of Environmental Research and Public Health (Nov 2020)
- [An artificial intelligence-based first-line defense against COVID-19: digitally screening citizens for risks via a chatbot](#) – Scientific Reports (Nov 2020)
- [Spotlight on COVID-19 rapid guidance: NICE's experience of producing rapid guidelines during the pandemic](#) – Journal of Public Health (Nov 2020)
- [Elective Care and Health Services Research in the COVID-19 Era](#) – JAMA Network Open (Nov 2020)
- [The International Biomedical Workforce is Critical to Our Response to COVID-19 in the United States](#) – Mayo Clinic Proceedings (Nov 2020)
- [Computerized monitoring of COVID-19 trials, studies and registries in ClinicalTrials.gov registry](#) – PeerJ (Nov 2020)
- [Covid-19: NHS hospitals are urged to recruit more patients to Recovery trial to find what treatments work](#) – BMJ (Nov 2020)
- [Ensuring that COVID-19 research is inclusive: guidance from the NIHR INCLUDE project](#) – BMJ Open (Nov 2020)
- [COVID-19 Vaccines Currently under Preclinical and Clinical Studies, and Associated Antiviral Immune Response](#) – Vaccines (Nov 2020)
- [Containing COVID-19 by Matching Messages on Social Distancing to Emergent Mindsets-The Case of North America](#) – International Journal of Environmental Research and Public Health (Nov 2020)
- [“A Menace to the Public Health” — Contact Tracing and the Limits of Persuasion](#) – New England Journal of Medicine (Nov 2020)
- [Community Health Workers and Covid-19 — Addressing Social Determinants of Health in Times of Crisis and Beyond](#) – New England Journal of Medicine (Nov 2020)

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