



2019-nCoV Literature Situation Report (Lit Rep)

December 4, 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

- **From March-August 2020, data from the COVID-NET indicated that more than 1 in 5 younger adults (ages 18-49) without underlying conditions who were hospitalized with COVID-19 in the US experienced severe illness requiring ICU-level care. [More](#)**
- **Immunogenicity data from 24 participants obtained 119 days after initial vaccination with the Moderna SARS-CoV-2 vaccine (mRNA-1273) indicates that the vaccine produced high levels of binding and neutralizing antibodies that declined slightly over time, but remained elevated in all participants 3 months after the booster vaccination. [More](#)**
- **Among patients with a median age of 60 who were evaluated at 8-12 weeks following hospital admission for COVID-19, the proportion of people with persistent symptoms was 59% among those with mild illness, 75% for moderate, and 89% for severe. [More](#)**

Non-Pharmaceutical Interventions

- An analysis of the impacts of lockdowns in Germany indicated that reductions in long-distance travel resulted in loss of connectivity between different regions of the country, leading to more locally clustered contact networks and potentially slowing the spatial spread of COVID-19. Using movement data from mobile phones, the authors found that mobility did not decrease homogeneously across the country, with greater reductions seen primarily in large cities.

Schlosser et al. (Dec 3, 2020). COVID-19 Lockdown Induces Disease-Mitigating Structural Changes in Mobility Networks. Proceedings of the National Academy of Sciences. <https://doi.org/10.1073/pnas.2012326117>

- People experiencing job and financial insecurity were found to be less likely to enact CDC-recommended guidelines such as physical distancing, hand washing, and limiting nonessential trips from home in a study modeling data from currently employed US workers (n = 745) from 43 states. The inverse relationship between job insecurity and compliance with the CDC guidelines was attenuated within states that had a more robust unemployment system. In states with more restrictions, employees reporting more financial security were more likely to enact the CDC-recommended guidelines than those who reported less financial security.

Probst et al. (Oct 15, 2020). Economic Stressors and the Enactment of CDC-Recommended COVID-19 Prevention Behaviors: The Impact of State-Level Context. The Journal of Applied Psychology. <https://doi.org/10.1037/apl0000797>

Testing and Treatment

- Cohort-based SARS-CoV-2 testing among detained persons in a Chicago jail who had been exposed to individuals with laboratory-confirmed infection found that the approach identified infected individuals who would not have been detected by symptom screening, with more than half of newly-identified cases either presymptomatic or asymptomatic. Two testing strategies were evaluated, the first involved serial testing at 3 time points over 14 days (n=137) and the second involved a single test and interview at the end of a 14-day quarantine period (day 14 group) (n=87). Overall, 19 of 172 people tested positive for SARS-CoV-2. Cohort-based testing at the start of quarantine identified the majority of SARS-CoV-2 infections (16/19, 84%), while only two cases (11%) were identified in the day 14 group.

Wadhwa et al. (Dec 3, 2020). *Identification of Presymptomatic and Asymptomatic Cases Using Cohort-Based Testing Approaches at a Large Correctional Facility – Chicago, Illinois, USA, May 2020*. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciaa1802>

- Data analyzed from the COVID-19-Associated Hospitalization Surveillance Network (COVID-NET) indicate that among hospitalized individuals in the US with COVID-19 and with available data from March 1–June 30, 43% of received at least one COVID-19 investigational treatment. Hydroxychloroquine, azithromycin, and remdesivir were used frequently; however, hydroxychloroquine and azithromycin use declined over time, while use of remdesivir increased.

Acosta et al. (Nov 9, 2020). *COVID-19 Investigational Treatments in Use among Hospitalized Patients Identified through the U.S. Coronavirus Disease 2019 -Associated Hospitalization Surveillance Network, March 1–June 30, 2020*. *Open Forum Infectious Diseases*. <https://doi.org/10.1093/ofid/ofaa528>

Vaccines and Immunity

- Immunogenicity data from 24 participants obtained at 119 days after initial vaccination (90 days after second vaccination) with the mRNA-1273 SARS-CoV-2 vaccine (Moderna) indicated that the vaccine produced high levels of binding and neutralizing antibodies that declined slightly over time, but remained elevated in all participants 3 months after the booster vaccination. Serum neutralizing antibodies were still detected in all the participants at day 119. No serious adverse events were noted in the trial, and no new adverse events that were considered by the investigators to be related to the vaccine occurred after day 57.

Widge et al. (Dec 3, 2020). *Durability of Responses after SARS-CoV-2 MRNA-1273 Vaccination*. *New England Journal of Medicine*. <https://doi.org/10.1056/NEJMc2032195>

Clinical Characteristics and Health Care Setting

- A study evaluating patients in the UK (median age 60 years) who had been hospitalized with COVID-19 8-12 weeks after their admission found that most (74%) had persistent symptoms such as breathlessness (39%) and fatigue (39%), and experienced limitations in physical ability. Sixteen (59%) patients in the mild COVID-19 group reported ongoing symptoms compared with 49 (75%) in the moderate group and 16 (89%) in the group. Clinically significant abnormalities in chest radiographs, exercise tests, blood tests and spirometry were less frequent (35%), especially among patients who did not require supplemental oxygen during their acute infection (7%).

Arnold et al. (Dec 3, 2020). *Patient Outcomes after Hospitalisation with COVID-19 and Implications for Follow-up: Results from a Prospective UK Cohort*. *Thorax*. <https://doi.org/10.1136/thoraxjnl-2020-216086>

- Metformin was associated with significantly reduced mortality among women with obesity or type 2 diabetes who were hospitalized with COVID-19, according to a retrospective cohort analysis using de-identified claims data (HR=0.79, 95%CI 0.65–0.95). Metformin use was not associated with a reduction in mortality among men in the study.

Bramante et al. (Dec 3, 2020). Metformin and Risk of Mortality in Patients Hospitalised with COVID-19: A Retrospective Cohort Analysis. The Lancet Healthy Longevity.

[https://doi.org/10.1016/S2666-7568\(20\)30033-7](https://doi.org/10.1016/S2666-7568(20)30033-7)

- Analysis of data from a large, geographically diverse surveillance network of laboratory-confirmed COVID-19 hospitalizations in the US from March–August found that more than 1 in 5 adults (22%) ages 18–49 (n = 513) without underlying conditions who were hospitalized with COVID-19 experienced severe illness requiring ICU-level care. Additionally, 17% required invasive or noninvasive respiratory support, and three patients died (0.6%).

Owusu et al. (Dec 3, 2020). Characteristics of Adults Aged 18–49 Years without Underlying Conditions Hospitalized with Laboratory-Confirmed COVID-19 in the United States, COVID-NET — March–August 2020. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1806>

- A retrospective cohort analysis of elective surgical case distribution, hospital revenue, and ICU bed capacity during COVID-19 found that in a scenario with 5% infection prevalence, cancelling elective procedures decreased ICU overcapacity from 160 to 130%, but such elective surgical cases contribute 78% (1.1 trillion dollars) to inpatient hospital plus outpatient surgical gross revenue per year. Postponement of musculoskeletal, circulatory and digestive elective procedures accounted for the largest loss of gross revenue (33%, \$447B). Universal mask wearing in all public locations would help avoid overcapacity in all states.

Tonna et al. (Dec 3, 2020). Balancing Revenue Generation with Capacity Generation: Case Distribution, Financial Impact and Hospital Capacity Changes from Cancelling or Resuming Elective Surgeries in the US during COVID-19. BMC Health Services Research.

<https://doi.org/10.1186/s12913-020-05975-z>

Modeling and Prediction

- A compartmental model simulating SARS-CoV-2 transmission dynamics projected that a facility-based isolation strategy with moderate capacity (5 beds per 10,000 total population) could avert 4.2 million new infections and 16,000 deaths in two months compared with home-based isolation, equivalent to relative reductions of 57% of new infections and 37% of deaths. Doubling bed capacity resulted in a 76% reduction in new infections and 52% reduction in deaths when supported by expanded testing with a 20% daily diagnosis rate. Efficacy of this intervention was dependent upon local epidemic burden.

Chen et al. (Dec 3, 2020). Positive Impact of Facility-Based Isolation of Mild COVID-19 Cases on Effectively Curbing the Pandemic: A Mathematical Modelling Study. Journal of Travel Medicine.

<https://doi.org/10.1093/jtm/taaa226>

Public Health Policy and Practice

- A study modeling longitudinal, self-reported data from users of the COVID Symptom Study app in England between March and September 2020 estimated that on Sept 28 there was a daily incidence of 15,841 cases of COVID-19 nationally, a prevalence of 0.53%, and an effective reproduction number, $R(t)$, of 1.17. Users were invited to submit swabs for SARS-CoV-2 RT-PCR testing when they had symptoms, which the authors used to calculate incidence. Prevalence was estimated using symptoms and swab test results. Study estimates identified 15 (75%) of the 20 geographic regions with highest incidence according to government test data.

Varsavsky et al. (Dec 3, 2020). *Detecting COVID-19 Infection Hotspots in England Using Large-Scale Self-Reported Data from a Mobile Application: A Prospective, Observational Study*. *The Lancet Public Health*. [https://doi.org/10.1016/S2468-2667\(20\)30269-3](https://doi.org/10.1016/S2468-2667(20)30269-3)

- Negative stereotypes about older age significantly predicted a rejection of hospitalization among older individuals who were sick with COVID-19, but not among younger people holding negative age stereotypes in a survey of individuals (n = 1590) from April to May 2020. The authors highlight the need for future research examining the extent to which the negative age stereotypes of older persons are contributing to pandemic deaths and how they might be mitigated.

Levy et al. (Dec 3, 2020). *Negative Age Stereotypes Associated with Older Persons' Rejection of COVID-19 Hospitalization*. *Journal of the American Geriatrics Society*. <https://doi.org/10.1111/jgs.16980>

- Individuals residing in the most deprived neighborhoods in Louisiana had almost 40% higher risk of COVID-19 compared to those in least deprived neighborhoods. Neighborhood deprivation was assessed using the Area Deprivation Index (ADI), and publicly available data were used to estimate COVID-19 cumulative case counts. The authors propose that factors that may have contributed to different cumulative incidence of COVID-19 by neighborhood disadvantage, as measured by ADI, were neighborhood socioeconomic status, more crowded housing, nature of residents' occupations, use of public transportation, utility disruptions, and telecommunication infrastructure.

K. C. et al. (Dec 3, 2020). *The Effect of Area Deprivation on COVID-19 Risk in Louisiana*. *PLOS ONE*. <https://doi.org/10.1371/journal.pone.0243028>

- A retrospective observational analysis using the National Emergency Medical Services (EMS) Information System showed that through August 1, 2020, overdose-related cardiac arrests in 2020 totaled 49.5 per 100,000 EMS activation (48.5% above baseline). Peak rates in May were more than double baseline levels from 2018 and 2019. Overdose-related EMS activation values were similar before and during reductions in mobility, with 1635.2 per 100,000 EMS activations before March 16 and 1760.7 per 100,000 EMS activations after March 16 (18.5% and 16.7%, respectively, relative to baseline).

Friedman et al. (Dec 3, 2020). *Overdose-Related Cardiac Arrests Observed by Emergency Medical Services During the US COVID-19 Epidemic*. *JAMA Psychiatry*. <https://doi.org/10.1001/jamapsychiatry.2020.4218>

Other Resources and Commentaries

- [Summary of Guidance for Public Health Strategies to Address High Levels of Community Transmission of SARS-CoV-2 and Related Deaths, December 2020](#) – MMWR (Dec 4 2020)
- [Underage Youth and Young Adult e-Cigarette Use and Access Before and During the Coronavirus Disease 2019 Pandemic](#) – JAMA Network Open (Dec 3 2020)
- [Stay with your community: Bridges between clusters trigger expansion of COVID-19](#) – PLOS ONE (Dec 3 2020)
- [Comparative analysis of COVID-19 guidelines from six countries: a qualitative study on the US, China, South Korea, the UK, Brazil, and Haiti](#) – BMC Public Health (Dec 3 2020)
- [Potential health-related behaviors for pre-school and school-aged children during COVID-19 lockdown: A narrative review](#) – Preventive Medicine (Nov 30 2020)

- [Declines in Electronic Cigarette Use Among US Youth in the Era of COVID-19—A Critical Opportunity to Stop Youth Vaping in Its Tracks](#) – JAMA Network Open (Dec 3 2020)
- [Time dynamics of COVID-19](#) – Scientific Reports (Dec 3 2020)
- [Risk at mass-gathering events and the usefulness of complementary events during COVID-19 pandemic](#) – Journal of Infection (Nov 30 2020)
- [Understanding coronaphobia](#) – Asian Journal of Psychiatry (Dec 2020)
- [State-level tracking of COVID-19 in the United States](#) – Nature Communications (Dec 3 2020)
- [COVID-19 vaccine trial ethics once we have efficacious vaccines](#) – Science (Dec 3 2020)
- [A Triple Threat](#) – Journal of Addiction Medicine (Dec 1 2020)
- [COVID-19: A PCR-defined pandemic](#) – International Journal of Infectious Diseases (Nov 30 2020)
- [Improving surveillance estimates of COVID-19 incidence in the United States](#) – Clinical Infectious Diseases (Dec 4 2020)

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