



2019-nCoV Literature Situation Report (Lit Rep)

October 23, 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

- **Universal mask wearing in the United States could save an additional 129,574 lives from September 22 through the end of February 2021, or 85% mask use could save an additional 95,814 lives when compared to a reference scenario in a model from IHME. [More](#)**
- **US counties with greater social vulnerability were more likely to become COVID-19 hotspots. [More](#)**
- **Survey responses from primary election poll workers in Delaware indicated that SARS-CoV-2 mitigation measures had been widely implemented at polling places and that most poll workers surveyed had good knowledge about preventing SARS-CoV-2 transmission, although 72% reported being within 6 feet of more than 100 people on election day. [More](#)**

Non-Pharmaceutical Interventions

- Survey responses from primary election poll workers in Delaware indicated that SARS-CoV-2 mitigation measures at polling places generally aligned with CDC guidelines and were widely adopted and feasible, but there were some gaps in infection prevention control efforts. Most poll workers surveyed had good knowledge about SARS-CoV-2 transmission and 80% had received COVID-19 mitigation training. However, masks were not always worn correctly (covering both nose and mouth), and 72% of respondents reported being within 6 feet of more than 100 people on election day.

Leidman et al. (Oct 23, 2020). Adoption of Strategies to Mitigate Transmission of COVID-19 During a Statewide Primary Election — Delaware, September 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6943e2>

- *[Pre-print, not peer-reviewed]* An analysis of the impact of face mask mandates instituted over the spring and summer in the US indicated that mask mandates across 1,083 counties in the U.S decreased hospitalization rates from COVID-19 even when controlling for other factors that could affect disease severity. Using a staggered difference-in-difference design, the study found a statistically significant drop in hospitalization rates due to COVID-19 of 7 percentage points up to 12 weeks following county mask mandates, after controlling for age categories by county, testing access, numbers of cases, and population mobility (as a proxy for other non-pharmaceutical interventions like sheltering-in-place).

Adjodah et al. (Oct 23, 2020). Decrease in Hospitalizations for COVID-19 after Mask Mandates in 1083 U.S. Counties. Pre-print downloaded Oct 23 from

<https://doi.org/10.1101/2020.10.21.20208728>



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Transmission

- Children with asymptomatic SARS-CoV-2 infection were found to have lower levels of virus in their nasopharynx/oropharynx than children with symptomatic infection, but timing of infection relative to diagnosis likely influenced levels in asymptomatic children. A study assessing Ct values and estimated viral load in children with asymptomatic versus symptomatic infection showed that the median adjusted Ct value in children with no symptoms was 10.3 cycles higher than for children with symptoms, indicating a lower viral load. Children with no symptoms who had diabetes (OR=6.5), recent contact with an infected person (OR=2.3), and who were tested for surveillance (OR=2.7) had higher estimated risk of having a higher viral load.

Kocielek et al. (Oct 22, 2020). Comparison of Upper Respiratory Viral Load Distributions in Asymptomatic and Symptomatic Children Diagnosed with SARS-CoV-2 Infection in Pediatric Hospital Testing Programs. Journal of Clinical Microbiology.

<https://doi.org/10.1128/JCM.02593-20>

Testing and Treatment

- A study using the Simplexa COVID-19 Direct assays on oral fluid found that the assay had high sensitivity and specificity to detect SARS-CoV-2 RNA. Simplexa COVID-19 Direct is a rapid assay platform that does not require additional equipment. The assay was used to test oral fluids and nasopharyngeal swab specimens collected in parallel from 164 patients hospitalized with COVID-19. Parallel testing of the oral and nasopharyngeal samples indicated highly concordant results ($\kappa = 0.83$) and high correlation of viral load values. Viral RNA shedding was also observed up to 100 days from symptom onset, with 32% and 29% positivity observed in oral and nasopharyngeal samples, respectively, collected between 60 and 100 days from symptom onset.

Bordi et al. (Oct 20, 2020). Frequency and Duration of SARS-CoV-2 Shedding in Oral Fluid Samples Assessed by a Modified Commercial Rapid Molecular Assay. Viruses.

<https://doi.org/10.3390/v12101184>

- *[Pre-print, not peer-reviewed]* Prospective longitudinal testing for SARS-CoV-2 among players, staff, and vendors associated with the National Basketball Association (n=68) indicated that on average, individuals with symptomatic infection reached similar peak viral RNA concentrations to those with asymptomatic infection (cycle threshold 22.2 vs. 22.4) within similar amounts of time, but acute shedding lasted longer for individuals with symptoms.

Kissler et al. (Oct 23, 2020). Viral Dynamics of SARS-CoV-2 Infection and the Predictive Value of Repeat Testing. Pre-print downloaded Oct 23 from

<https://doi.org/10.1101/2020.10.21.20217042>

- *[Pre-print, not peer-reviewed]* A multicenter, randomized, placebo-controlled trial of the antiparasitic drug nitazoxanide indicated that for patients with mild COVID-19, at 1-week follow-up, 78% of patients (n=194) who had received nitazoxanide and 57% who had received placebo (n=198) reported complete resolution of symptoms (p=0.048). Swabs collected were negative for SARS-CoV-2 in 30% of patients in the nitazoxanide group versus 18% in the placebo group (p=0.009), and viral load was significantly reduced after nitazoxanide compared to placebo (p=0.006). No deaths or life-threatening adverse events occurred in the nitazoxanide group.

Rocco et al. (Oct 23, 2020). Early Use of Nitazoxanide in Mild Covid-19 Disease Randomized Placebo-Controlled Trial. Pre-print downloaded Oct 23 from

<https://doi.org/10.1101/2020.10.21.20217208>

- *[Pre-print, not peer-reviewed]* The randomized, placebo-controlled multi-country EMPACTA trial indicated that tocilizumab reduced the likelihood of progression to requiring mechanical ventilation or death in patients who were hospitalized with COVID-19 pneumonia and were not on a ventilator (n=389). The cumulative proportion of patients requiring mechanical ventilation or who had died by day 28 was 12% in the tocilizumab group and 19% in the placebo groups (HR=0.56, 95%CI 0.33 – 0.97). All-cause mortality by Day 28 was 10% with tocilizumab and 9% with placebo. Serious adverse events occurred in 15% of patients receiving tocilizumab and 20% of patients receiving placebo.

Salama et al. (Oct 23, 2020). Tocilizumab in Nonventilated Patients Hospitalized with Covid-19 Pneumonia. Pre-print downloaded Oct 23 from <https://doi.org/10.1101/2020.10.21.20210203>

- In a population of patients with a low prevalence of SARS-CoV-2 infection, repeat testing of negative patients who had persistent symptoms still yielded a negative result in 96% of the cases. Out of more than 5,000 patients who were tested, 4% of patients were tested more than once, and 96% of those patients were tested twice. The largest proportion of these patients (71%) were those who had an initial negative test followed by a repeat test done for persistent symptoms.

Kovacs et al. (Sept 2020). Utilization and Results of Repeat SARS-CoV-2 RT-PCR Testing in a Presumptive Low Prevalence Population. Wisconsin Medical Journal.

<http://www.ncbi.nlm.nih.gov/pubmed/33091285>

Clinical Characteristics and Health Care Setting

- At the national level in Colombia, pediatric patients with more severe COVID-19 were significantly younger than those who experienced mild illness or no symptoms. A retrospective analysis found that the mean age of children who had asymptomatic infection was 9.4 years compared to a mean of 4.9 years among those with severe infection and a mean of 2.9 years among children who died. *Post hoc* analysis indicated that the mean age of patients who stayed home (9.4 years) and those recovered (9.3 years) was significantly higher than those who went to the intensive care unit (4.9 years), were in the hospital (6.1 years), or than those who had died (2.9 years). *[EDITORIAL NOTE: differences in asymptomatic screening by age could potentially explain at least some of the difference in age between severe and mild or asymptomatic cases]*

Bolaños-Almeida and Espitia Segura. (Oct 20, 2020). Clinical and Epidemiologic Analysis of COVID-19 Children Cases in Colombia PEDIACOVID. Pediatric Infectious Disease Journal.

<https://doi.org/10.1097/INF.0000000000002952>

- Universal PCR-based surveillance testing for SARS-CoV-2 before surgeries or procedures at a tertiary care center in New York City identified 65 patients (0.6%) were positive out of 11,540 patients tested. The proportion of tests that were positivity peaked at 4.3% and fell below 0.3% after April 2020. Three of the 65 individuals who tested positive were pre-symptomatic, and 38 were asymptomatic. Five patients newly tested positive in the immediate post-operative period, exposing 82 employees with one case of probable transmission (1.2%).

Aslam et al. (Oct 22, 2020). SARS CoV-2 Surveillance and Exposure in the Perioperative Setting with Universal Testing and Personal Protective Equipment (PPE) Policies. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciaa1607>

Mental Health and Personal Impact

- Following a sharp drop in outpatient visits for mental health and/or substance use disorders early in the COVID-19 period, there was an increase in these visits over the course of the surge period in Massachusetts, supported by telemedicine, which was used in more than 80% of visits. During the

surge, mental health visit volume increased 12% while visits for substance use disorders remained 13% below pre-pandemic levels. During partial reopening, while mental health visits returned to 2020 pre-pandemic levels, substance use disorder visits declined 31%. Mental health and substance use disorder visits decreased among individuals who were Hispanic (–33%) and non-Hispanic Black (–25%), and among people who were enrolled in Medicaid (–19%) and Medicare (–21%). The authors conclude that the decrease in mental health and substance abuse visits after the surge to levels below the pre-pandemic period may reflect barriers to accessing care, with evidence of racial/ethnic disparities.

Yang et al. (Nov 2020). Disparities in Outpatient Visits for Mental Health and/or Substance Use Disorders during the COVID Surge and Partial Reopening in Massachusetts. General Hospital Psychiatry. <https://doi.org/10.1016/j.genhosppsy.2020.09.004>

Modeling and Prediction

- An Institute of Health Metrics and Evaluation (IHME) model suggests that universal mask use in the United States could save an additional 129,574 lives from September 22, 2020 through the end of February 2021, or an additional 95,814 lives assuming 85% mask adoption, when compared to the reference scenario. Three possible boundary scenarios were delineated: (1) mandate-easing, in which states continue to remove social distancing measures over time; (2) a plausible reference scenario, in which social interaction and some economic activity are temporarily halted when a threshold of 8 deaths per million population is exceeded; and (3) universal mask use, in which 95% of people wear masks in public. Projections based on current non-pharmaceutical intervention strategies by state indicate that, cumulatively, more than 500,000 lives could be lost to COVID-19 across the United States by the end of February, 2021. [EDITORIAL NOTE: A pre-print associated with this manuscript was summarized in the Lit Rep on July 15, 2020]

IHME COVID-19 Forecasting Team. (Oct 23, 2020). Modeling COVID-19 Scenarios for the United States. Nature Medicine. <https://doi.org/10.1038/s41591-020-1132-9>

- A modeling study of the impacts of introducing and lifting non-pharmaceutical interventions (NPIs) on the level of SARS-CoV-2 transmission (measured as R) found that school and workplace closures, public events bans, and other social distancing requirements were associated with reduced R , though this was only significant for public events bans. The effect of introducing and lifting these interventions was delayed by 1–3 weeks, with a longer delay when lifting NPIs. In response to a possible resurgence of COVID-19, banning public events and gatherings of more than 10 people appeared to reduce R by day 28, with additional reductions possible by implementing measures to close workplaces and encourage people to stay at home.

Li et al. (Oct 2020). The Temporal Association of Introducing and Lifting Non-Pharmaceutical Interventions with the Time-Varying Reproduction Number (R) of SARS-CoV-2: A Modelling Study across 131 Countries. The Lancet Infectious Diseases. [https://doi.org/10.1016/S1473-3099\(20\)30785-4](https://doi.org/10.1016/S1473-3099(20)30785-4)

Public Health Policy and Practice

- Counties with greater social vulnerability were more likely to become areas with rapidly increasing COVID-19 incidence (“hotspot counties”), according to a report from the CDC. Counties with higher percentages of racial and ethnic minority residents (RR=5.3) and people living in high-density housing structures and crowded units (RR=3.1 and RR=2.0), were more likely to become hotspots, especially in less urban areas. Among such hotspot counties, those with greater social vulnerability also had higher incidence of COVID-19 during the 14 days after meeting the hotspot designation.

Dasgupta et al. (Oct 23, 2020). Association Between Social Vulnerability and a County's Risk for Becoming a COVID-19 Hotspot — United States, June 1–July 25, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6942a3>

Other Resources and Commentaries

- [Engineered ACE2 receptor traps potentially neutralize SARS-CoV-2](#) – Proceedings of the National Academy of Sciences (Oct 2020)
- [Broadly-targeted autoreactivity is common in severe SARS-CoV-2 Infection](#) – medRxiv (Oct 2020)
- [Animals and SARS-CoV-2: Species susceptibility and viral transmission in experimental and natural conditions, and the potential implications for community transmission](#) – Transboundary and Emerging Diseases (Oct 2020)
- [Understanding protection from SARS-CoV-2 by studying reinfection](#) – Nature Medicine (Oct 2020)
- [Covid-19: Human challenge studies will see people purposefully infected with virus](#) – BMJ (Oct 2020)
- [Susceptibility to severe COVID-19](#) – Science (Oct 2020)
- [Clinical Endpoints for Evaluating Efficacy in COVID-19 Vaccine Trials](#) – Annals of Internal Medicine (Oct 2020)
- [Medical Staff Responses to Covid-19 “Data”: Have We Misplaced Our Skeptic's Eye?](#) – The American Journal of Medicine (Oct 2020)
- [COVID Care Clinic: A Unique Way for Family Medicine to Care for the Community During the SARS-CoV-2 \(COVID-19\) Pandemic](#) – Journal of Primary Care and Community Health (Oct 2020)
- [Covid-19: Vaccine trials need more transparency to enable scrutiny and earn public trust, say experts](#) – BMJ (Oct 2020)
- [Scientific and Ethical Principles Underlying Recommendations From the Advisory Committee on Immunization Practices for COVID-19 Vaccination Implementation](#) – JAMA (Oct 2020)
- [GeneXpert for the diagnosis of COVID-19 in LMICs](#) – The Lancet Global Health (Oct 2020)
- [The engines of SARS-CoV-2 spread](#) – Science (Oct 2020)
- [SARS-CoV-2 M\(pro\) inhibitors and activity-based probes for patient-sample imaging](#) – Nature Chemical Biology (Oct 2020)

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