



2019-nCoV Literature Situation Report (Lit Rep)

August 10, 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

- **Survey results suggest that while Americans have more privacy and security concerns regarding the use of digital contact tracing apps compared to citizens of other countries, more than 68% would still be willing to use such an app on their phone.** [More](#)
- **Among workers from a Nebraska meat packing facility, 31% of 1,216 tested positive for active SARS-CoV-2 infections in late April.** [More](#)
- **Although the cumulative rate of COVID-19-associated hospitalization among children is low compared to adults, one in three hospitalized children in 14 US states were admitted to an intensive care unit.** [More](#)

Non-Pharmaceutical Interventions

- Altmann et al. measured support for digital contact tracing of COVID-19 infections using anonymous online surveys of 5,995 people in France, Germany, Italy, the UK, and the US. In spite of concerns about cyber-security and privacy and a lack of trust in governments, they found strong support (>68%) for installing and using a digital contact tracing app that would automatically notify users if they have been in close contact for at least 15 minutes with an infected person.
- There was little correlation between regional-level COVID-19 mortality and support for the app.
- American and German respondents reported stronger privacy and security concerns compared to other countries, but a large majority still said that they would probably or definitely install or keep the app on their phones.

Altmann et al. (May 4, 2020). Acceptability of App-Based Contact Tracing for COVID-19: Cross-Country Survey Evidence (Preprint). JMIR MHealth and UHealth. <https://doi.org/10.2196/19857>

- Palladino et al. evaluated the effect of the national lockdown in Italy and compared ICU admission, general hospital admissions, and deaths to estimated numbers that may have resulted if the lockdown had started one week earlier. They conclude that an earlier implementation of the lockdown would have avoided about 60% of cases, 52% of non-ICU admissions, 48% of ICU admissions, and 44% of deaths in the two months following the lockdown.

Palladino et al. (Aug 5, 2020). Excess Deaths and Hospital Admissions for COVID-19 Due to a Late Implementation of the Lockdown in Italy. International Journal of Environmental Research and Public Health. <https://doi.org/10.3390/ijerph17165644>

- Teasing et al. compared homemade masks made from various readily available materials to N95, FFP2, and KN95 masks. The homemade versions were tested for their ability to filter at least 35% of 0.3 micron particles, to maintain their hydrophobic properties, to seal on the face, breathability, and washability.
- Leather, a folded coffee filter between quilt fabric, a folded household paper towel between quilt fabric, and microfiber fabric performed the best at filtering particles. Duckbill models all passed the fit test, but no model that involved an inserted filter in a cotton mask provided a satisfactory fit. The manufactured filters, cleaning cloth, leather, static dust cloth, and felt were all malformed after washing.

Teasing et al. (Aug 2020). Is There an Adequate Alternative for Commercially Manufactured Face Masks? A Comparison of Various Materials and Forms. Journal of Hospital Infection.

<https://doi.org/10.1016/j.jhin.2020.07.024>

Transmission

- Among 1,216 workers from a Nebraska meat packing facility tested for active SARS-CoV-2 infections in late April, 375 (31%) had positive results by RT-PCR.
- Case investigators following up with those who tested positive were able to reach 241 workers. Of these, 57% were male, the median age was 41, and 46% were Hispanic. Of the 163 (68%) symptomatic respondents, two were hospitalized. No deaths were reported.
- Close contact with a visibly ill person at work was reported by 29% of respondents, typically in either the production areas or cafeteria/break rooms.
- Although most (87%) reported always having their temperature checked upon entry to work, fewer (41%) reported always being asked about symptoms.

Donahue et al. (Aug 7, 2020). Notes from the Field: Characteristics of Meat Processing Facility Workers with Confirmed SARS-CoV-2 Infection — Nebraska, April–May 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6931a3>

Testing and Treatment

- Among 217 asymptomatic adult males who had tested positive for SARS-CoV-2 and had subsequently been isolated at a quarantine center for 8 to 10 days, 160 (74%) tested positive again based on saliva, nasopharyngeal swab, or both. The detection rate for SARS-CoV-2 was higher in saliva compared to nasopharyngeal swab testing (93% vs. 53%). Concordance between the two tests was 46%.

Rao et al. (Aug 6, 2020). Comparing Nasopharyngeal Swab and Early Morning Saliva for the Identification of SARS-CoV-2. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1156>

- *[pre-print, not peer-reviewed]* Testing of oropharyngeal self-collected samples for SARS-CoV-2 among asymptomatic students and others associated with the University of California Santa Barbara (UCSB) found that none of 732 samples from the first round of testing (May 28 to June 11) were positive and that there were 9 positives out of 1,076 tests in the second round (June 23 to July 2).
- The authors report near-perfect concordance in results obtained by RT-qPCR and CREST, a CRISPR-based method recently developed at UCSB.

Rauch et al. (Aug 7, 2020). CRISPR-Based and RT-QPCR Surveillance of SARS-CoV-2 in Asymptomatic Individuals Uncovers a Shift in Viral Prevalence among a University Population.

Pre-print downloaded Aug 10 from <https://doi.org/10.1101/2020.08.06.20169771>

- Novaferon, a medication modeled after human interferons, effectively inhibited replication of cells infected with SARS-CoV-2 in a laboratory setting. Healthy cells that were incubated with the drug also resisted the entry of SARS-CoV-2.
- In a clinical trial, patients with moderate to severe COVID-19 (n=89) randomized to receive Novaferon or Novaferon plus Lopinavir/Ritonavir had significantly higher viral clearance rates on day 6 after treatment than patients treated with Lopinavir/Ritonavir alone. There was no significant difference in viral clearance rates between the Novaferon group and the Novaferon plus Lopinavir/Ritonavir group. Median time to viral clearance were 6 days for the Novaferon group, 6 days for the Novaferon plus Lopinavir/Ritonavir group, and 9 days for the Lopinavir/Ritonavir alone group. No severe adverse events were reported.

Zheng et al. (Aug 2020). SARS-CoV-2 Clearance in COVID-19 Patients with Novaferon Treatment: A Randomized, Open-Label, Parallel Group Trial. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.07.053>

Clinical Characteristics and Health Care Setting

- An analysis of pediatric hospitalization data from 14 states found that although the cumulative rate of COVID-19-associated hospitalization among children (8 per 100,000 population) is low compared to adults (165 per 100,000), one in three hospitalized children was admitted to an intensive care unit, which is similar to the proportion among hospitalized adults.
- Infants less than three months accounted for 19% of all children hospitalized. Among 526 (91%) children for whom race and ethnicity information were reported, 46% were Hispanic, 30% were Black, and 14% were white; 5% were non-Hispanic Asian or Pacific Islander; and 1% were non-Hispanic American Indian/Alaska Native.

Kim et al. (Aug 7, 2020). Hospitalization Rates and Characteristics of Children Aged <18 Years Hospitalized with Laboratory-Confirmed COVID-19 — COVID-NET, 14 States, March 1–July 25, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6932e3>

- Godfred-Cato et al. describe symptoms, treatment, and outcomes for a cohort of 570 pediatric patients with COVID-19-associated multisystem inflammatory syndrome in children (MIC-S). The median patient age was 8 years; 55% were male, 41% were Hispanic or Latino, 33% were non-Hispanic black, and 13% non-Hispanic white. Although about 2/3 of patients did not report any underlying medical condition, among those who did, obesity was the most common.
- In 490 (86%) patients, the illness involved 4 or more organ systems. The most common symptoms were abdominal pain, vomiting, skin rash, diarrhea, hypotension, and conjunctival injection. Severe complications were common, with cardiac dysfunction (41%), shock (35%), myocarditis (23%), coronary artery dilatation or aneurysm (19%), and acute kidney injury (18%) among the most prevalent. Ten of the 570 patients (2%) died.

Godfred-Cato et al. (Aug 7, 2020). COVID-19–Associated Multisystem Inflammatory Syndrome in Children — United States, March–July 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6932e2>

- Ortiz-Fernández and Sawalha report significant variability in genetic determinants of the expression of ACE2 and TMPRSS2, two enzymes that might regulate the ability of SARS-CoV-2 to infiltrate host cells, among individuals and between populations.
- African populations showed a genetic predisposition for lower expression of both ACE2 and TMPRSS2 compared to South or East Asians, Europeans, and an “admixed” American population.

Ortiz-Fernández and Sawalha. (Aug 6, 2020). Genetic Variability in the Expression of the SARS-CoV-2 Host Cell Entry Factors across Populations. *Genes & Immunity*.

<https://doi.org/10.1038/s41435-020-0107-7>

Modeling and Prediction

- Firth et al. simulated COVID-19 transmission control strategies in a real-world social network (based on GPS data gathered by tracking 468 individuals in a UK town). Isolation of individuals when they became symptomatic resulted in 66% of the population infected, and primary contact tracing resulted in 48% infected. Secondary contact tracing resulted in 16% of the population infected after 70 days.
- Under both primary and secondary contact tracing scenarios, the proportion of the population quarantined was very high, with a median of 43% of the population quarantined during the outbreak peak with secondary contact tracing.

Firth et al. (Aug 7, 2020). Using a Real-World Network to Model Localized COVID-19 Control Strategies. Nature Medicine. <https://doi.org/10.1038/s41591-020-1036-8>

Vaccines

- *[pre-print, not peer-reviewed]* NVX-CoV2373, a recombinant nanoparticle vaccine, induced mean anti-spike IgG and neutralizing antibody responses that exceeded the mean responses in sera from convalescent COVID-19 patients with clinically significant illness. There were no serious adverse events and reactogenicity was mainly mild and not long-lasting.

Keetch et al. (Aug 6, 2020). First-in-Human Trial of a SARS CoV 2 Recombinant Spike Protein Nanoparticle Vaccine. Pre-print downloaded Aug 10 from <https://doi.org/10.1101/2020.08.05.20168435>

Other Resources and Commentaries

- [COVID-19, Asthma, and Return to School](#) – The Lancet. Respiratory Medicine (Aug 6)
- [Modelling the Impact of Testing, Contact Tracing and Household Quarantine on Second Waves of COVID-19](#) – Nature Human Behaviour (Aug 5)
- [Low Physical Functioning and Impaired Performance of Activities of Daily Life in COVID-19 Patients Who Survived the Hospitalisation](#) – The European Respiratory Journal (Aug 6)
- [Post-Intensive Care Syndrome and COVID-19 - Implications Post Pandemic](#) – Cleveland Clinic Journal of Medicine (Aug 5)
- [Body Temperature Screening to Identify SARS-CoV-2 Infected Young Adult Travellers Is Ineffective](#) – Travel Medicine and Infectious Disease (Aug 5)
- [Seroprevalence and Presentation of SARS-CoV-2 in Pregnancy](#) – The Lancet (Aug 6)
- [Communication for Awareness and Action on Inequitable Impacts of COVID-19 on Latinos](#) – Health Promotion Practice (Aug 7)
- [Reopening K-12 Schools During the COVID-19 Pandemic](#) – JAMA (July 29)
- [COVID-19 Has Increased Medicaid Enrollment, But Short-Term Enrollment Changes Are Unrelated To Job Losses](#) – Health Affairs (Aug 6)
- [Elimination of COVID-19: What Would It Look like and Is It Possible?](#) – The Lancet Infectious Diseases (Aug 6)
- [Allocation of COVID-19 Relief Funding to Disproportionately Black Counties](#) – JAMA (Aug 7)
- [Impact of COVID-19 on Maternal and Child Health. – The Lancet Global Health \(Aug 3\)](#) – The Lancet Global Health (Aug 3)

- [Control of Epidemics by Jails: Lessons for COVID-19 from HIV](#) – The Lancet HIV (Aug 4)
- [Lessons from the Covid-19 Pandemic Provide a Blueprint for the Climate Emergency](#) – BMJ (Aug 6)
- [How the Pandemic Might Play out in 2021 and Beyond](#) – Nature (Aug 5)
- [Unwavering Regulatory Safeguards for COVID-19 Vaccines](#) – JAMA (Aug 7)
- [Seeds of Hope in COVID-19 Vaccine Preliminary Data](#) – Nature Medicine (Aug 7)
- [Covid-19: Mental Health and Economic Problems Are Worse in US than in Other Rich Nations.](#) – BMJ (Aug 6)
- [New Trends of Substance Abuse During COVID-19 Pandemic: An International Perspective](#) – Frontiers in Psychiatry (July 16)
- [Rapid Expert Consultation on Staffing Considerations for Crisis Standards of Care for the COVID-19 Pandemic](#) – National Academies of Sciences, Engineering, and Medicine (July 28)
- [Genomic Epidemiology Data Infrastructure Needs for SARS-CoV-2](#) – National Academies of Sciences, Engineering, and Medicine (Aug 10)

Report prepared by the UW MetaCenter 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