



2019-nCoV Literature Situation Report (Lit Rep)

October 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

- **Lopinavir-ritonavir was not associated with a reduction in 28 day all-cause mortality, duration of hospital stay, or death in a randomized open-label trial (RECOVERY Trial).** [More](#)
- **An adolescent who had potential exposure to SARS-CoV-2 but tested negative by a rapid antigen test was the source of an outbreak at a 3-week family gathering.** [More](#)
- **A 151% increase in the average daily number of SARS-CoV-2 cases in Arizona prompted local officials to enact mitigation measures such as mask wearing, closures of key business, and limiting restaurant capacity, which was followed by a 75% decrease in cases.** [More](#)
- **14% of people hospitalized with COVID-19 in a New York City study developed a neurological disorder, which was associated with increased risk of hospital mortality and decreased likelihood of hospital discharge.** [More](#)

Non-Pharmaceutical Interventions

- COVID-19 incidence decreased following implementation of mitigation measures in Arizona. Prior to these measures, the average number of daily cases increased approximately 151% from June 1 to June 15, after which local officials enacted mitigation measures that included mask wearing (June 17), closures of bars, gyms, movie theaters, and water parks (June 29), and limiting restaurant capacity to <50% (July 9). The 7-day moving average of daily cases then peaked, stabilized and subsequently decreased by 75% from July 13 to August 7.

Galloway et al. (Oct 6, 2020). Trends in COVID-19 Incidence After Implementation of Mitigation Measures — Arizona, January 22–August 7, 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6940e3>

- *[Pre-print, not peer reviewed]* Four mobile air purifiers with HEPA filters in a regular high school classroom were able to reduce the concentration of aerosols by more than 90% within less than 30 minutes compared to a neighboring classroom without purifiers. The authors further estimate that the inhaled dose via airborne transmission from staying in the room with a super-infectious person for two hours is reduced by a factor of 6 by the air exchange rate when using the purifiers.

Curtius et al. (Oct 5, 2020). Testing Mobile Air Purifiers in a School Classroom Reducing the Airborne Transmission Risk for SARS-CoV-2. Pre-print downloaded Oct 6 from

<https://doi.org/10.1101/2020.10.02.20205633>



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Transmission

- An adolescent (13 years old) was the index case of an outbreak that occurred during a 3-week family gathering where 11 of 14 attendees developed COVID-19, despite the index case testing negative with a rapid antigen test prior to the gathering. Six other family members who maintained physical distancing by remaining outdoors did not develop COVID-19.
- This outbreak investigation highlights the possibility of spread from children and adolescents, evidence of benefit from physical distancing, the lower sensitivity of rapid antigen tests, and the efficiency with which SARS-CoV-2 can spread during gatherings with prolonged close contact.

Schwartz et al. (Oct 5, 2020). Adolescent with COVID-19 as the Source of an Outbreak at a 3-Week Family Gathering — Four States, June–July 2020. MMWR.

<https://doi.org/10.15585/mmwr.mm6940e2>

Geographic Spread

- Genomic analysis of 6,359 SARS-CoV-2 isolates from the US identified a pattern of strongly localized outbreaks, which may point to the effectiveness of travel restriction policies and other public health measures. The authors identified prominent trends of localized haplotype patterns, which are the collection of variants in a viral genome, particular to Washington and California as well as other states.

Shen et al. (Sept 3, 2020). Comprehensive Genome Analysis of 6,000 USA SARS-CoV-2 Isolates Reveals Haplotype Signatures and Localized Transmission Patterns by State and by Country. Frontiers in Microbiology.

<https://doi.org/10.3389/fmicb.2020.573430>

Testing and Treatment

- A randomized open-label trial (RECOVERY trial) found that among patients admitted to hospital with COVID-19, treatment with lopinavir-ritonavir was not associated with reduction in 28-day all-cause mortality (RR=1.03, 95%CI: 0.91-1.17), duration of hospital stay (RR=0.98, 95%CI: 0.91-1.05), or progression to mechanical ventilation or death (RR=1.09, 95%CI: 0.99-1.20). 23% of patients receiving lopinavir-ritonavir died within 28 days, while 22% of patients receiving usual care died within 28 days. Results were consistent across patient subgroups.

Horby et al. (Oct 5, 2020). Lopinavir–Ritonavir in Patients Admitted to Hospital with COVID-19 (RECOVERY): A Randomised, Controlled, Open-Label, Platform Trial. The Lancet.

[https://doi.org/10.1016/S0140-6736\(20\)32013-4](https://doi.org/10.1016/S0140-6736(20)32013-4)

- *[Pre-print, not peer reviewed]* Analysis of 981 COVID-19 convalescent plasma (CP) samples from 196 donors shows that over time, neutralizing capacities of CP can decrease below recommended FDA levels of 50% neutralization (PRNT_{50%}) and 90% neutralization (PPRNT_{90%}). The most significant decreases of PRNT_{50%} titer occurred at more than 43 days post initial donation, suggesting a 6-week window may be optimal for collecting therapeutically effective CP.

Girardin et al. (Oct 6, 2020). Temporal Analysis of COVID-19 Convalescent Plasma Donations Reveals Significant Decrease in Neutralizing Capacity Over Time. Pre-print downloaded Oct 6 from <https://doi.org/10.1101/2020.10.04.20206011>

Clinical Characteristics and Health Care Setting

- Analysis of a large retrospective study (n=1,137) found that among adults hospitalized with COVID-19, smokers were more likely to develop critical illness that required mechanical ventilation (47% vs

37%, $p=0.005$). In univariate analysis, current smokers had a 1.6-fold higher risk of death compared with never smokers (95% CI: 1.2-2.1). In adjusting for confounders, female sex, young age, low serum lactate dehydrogenase, and systemic steroid use were all associated with improved survival.

Adrish et al. (Oct 5, 2020). Association of Smoking Status with Outcomes in Hospitalised Patients with COVID-19. BMJ Open Respiratory Research. <https://doi.org/10.1136/bmjresp-2020-000716>

- A prospective multi-center observational study of hospitalized COVID-19 patients in New York City ($n=4,491$) found that 14% of patients developed a new neurological disorder at a median of 2 days after COVID-19 symptom onset, which was also associated with increased adjusted risk of in-hospital mortality and decreased likelihood of hospital discharge. The most common diagnoses were toxic/metabolic encephalopathy (6.8%), seizure (1.6%), stroke (1.9%), and hypoxic/ischemic injury (1.4%).

Frontera et al. (Oct 5, 2020). A Prospective Study of Neurologic Disorders in Hospitalized COVID-19 Patients in New York City. Neurology. <https://doi.org/10.1212/WNL.0000000000010979>

Mental Health and Personal Impact

- A retrospective observational study conducted in London, UK from March 1 to April 30 ($n=344$) found that people in psychiatric inpatient settings who were admitted without known SARS-CoV-2 infection had a high risk of SARS-CoV-2 infection and mortality compared to the general population. The authors calculated a period prevalence of 38%, of which 12% were asymptomatic, 92% had comorbidities, 56% had dementia, and 15% died from COVID-19 related causes.

Livingston et al. (Oct 5, 2020). Prevalence, Management, and Outcomes of SARS-CoV-2 Infections in Older People and Those with Dementia in Mental Health Wards in London, UK: A Retrospective Observational Study. The Lancet Psychiatry. [https://doi.org/10.1016/S2215-0366\(20\)30434-X](https://doi.org/10.1016/S2215-0366(20)30434-X)

Public Health Policy and Practice

- Interviews from public health and preparedness officials representing 33 jurisdictions across the US reveal that most jurisdictions were not capable of or had not planned for implementation of rapid mass vaccination within a short period of time. Key barriers include an insufficient number of qualified personnel to administer vaccinations, increased patient load, cold chain logistical challenges, and operational challenges addressing high-risk populations including children, pregnant women, and non-English speaking populations.

Hosangadi et al. (Oct 2, 2020). Current State of Mass Vaccination Preparedness and Operational Challenges in the United States, 2018- 2019. Health Security.

<https://doi.org/10.1089/hs.2019.0146>

- In analyzing clinical characteristics of 52,833 patients, common coronaviruses (229E, HKU1, NL63, OC43) were associated with a higher risk of death or pneumonia compared to influenza (A and B). While ICU admission rates were similar, patients with coronavirus infections had significantly more pneumonia (15% vs 7%, $p<0.001$) and a higher death rate at 30 days post-testing (5% vs 3%, $p<0.001$).

Li et al. (Oct 3, 2020). Comparing Clinical Characteristics of Influenza and Common Coronavirus Infections Using Electronic Health Records. The Journal of Infectious Diseases.

<https://doi.org/10.1093/infdis/jiaa626>

- [Pre-print, not peer reviewed] Using census and individual-level mortality data in Cook County, IL, Feldman et al. found that racial/ethnic inequalities in COVID-19 mortality are only partly attributable

to differences in socioeconomic position. Among those in the highest-poverty quartile, Black and Hispanic/Latinx young people shared similar mortality rates with white young people, while in the lowest-poverty quartile mortality rates were nearly three-fold higher among younger Black and Hispanic/Latinx people compared young white people. Among the older age groups, white people in the highest-poverty quartile had a lower mortality rate than Black and Hispanic/Latinx people in the lowest-poverty quartile.

Feldman et al. (Oct 6, 2020). The Relationship between Neighborhood Poverty and COVID-19 Mortality within Racial/ethnic Groups (Cook County Illinois). Pre-print downloaded Oct 6 from <https://doi.org/10.1101/2020.10.04.20206318>

Other Resources and Commentaries

- [Exclusion of Older Adults in COVID-19 Clinical Trials](#) – Mayo Clinic Proceedings (Aug 14)
- [Emerging Threats Linking Tropical Deforestation and the COVID-19 Pandemic](#) – Perspectives in Ecology and Conservation (Sept 30)
- [Completion of Clinical Trials in Light of COVID-19](#) – The Lancet Respiratory Medicine (Oct 1)
- [Contributing Factors to Personal Protective Equipment Shortages during the COVID-19 Pandemic](#) – Preventive Medicine (Oct 2)
- [Minimising Long-Term Effect of COVID-19 in Dementia Care](#) – The Lancet (Oct 3)
- [What Role Can Health Policy and Systems Research Play in Supporting Responses to COVID-19 That Strengthen Socially Just Health Systems?](#) – Health Policy and Planning (Oct 6)
- [COVID-19 Devastation of African American Families: Impact on Mental Health and the Consequence of Systemic Racism](#) – International Journal of Maternal and Child Health and AIDS (IJMA) (Sept 16)
- [Coronavirus Pandemic Highlights Critical Gaps in Rural Internet Access for Migrant and Seasonal Farmworkers: A Call for Partnership with Medical Libraries](#) – Journal of the Medical Library Association (Oct 1)
- [The Performance of Truth: Politicians, Fact-Checking Journalism, and the Struggle to Tackle COVID-19 Misinformation](#) – American Journal of Cultural Sociology (Sept 28)
- [COVID-19: The Additional Sentence for the Incarcerated](#) – Health Equity (Sept 1)
- [Airborne Transmission of SARS-CoV-2](#) – Science (Oct 5)
- [Crowding and the Shape of COVID-19 Epidemics](#) – Nature Medicine (Oct 5)
- [MIS-C: Post-Infectious Syndrome or Persistent Infection?](#) – The Lancet Infectious Diseases (Oct 5)
- [COVID-19 Vaccine Research and Development: Ethical Issues](#) – Tropical Medicine & International Health (Oct 4)

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