

2019-nCoV Literature Situation Report (Lit Rep)

October 1, 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

- **SARS-CoV-2 contact investigations in two Indian states showed the distribution of COVID-19 cases and deaths was younger than previously observed in the US, and is not explained by differences in underlying age of the populations. Risk of infection was higher among similar-age contacts, and most contacts who tested positive were exposed to an index case aged 20-44 years.** [More](#)
- **Patients with a COVID-19-related hospitalization who had antibodies to endemic human coronaviruses, a cause of the "common cold" that shares extensive sequence homology with SARS-CoV-2, had a lower risk of ICU admission (OR=0.1) and death (HR=0.3).** [More](#)
- **Excluding SARS-CoV-2 case reports with missing race/ethnicity information in analyses may underestimate disparities in infection rates. Compared to complete case analyses, imputation and bias-adjustment for race/ethnicity yielded higher case estimates among Black and Hispanic people.** [More](#)
- **The proportion of pediatric COVID-19 cases has risen substantially in the US, from less than 3% in April to 12-16% in the 8 weeks prior to September 10. Hospitalizations and deaths due to COVID-19 among children remain low (1.7% and 0.07%, respectively).** [More](#)

Non-Pharmaceutical Interventions

- The emotion of empathy was linked to physical distancing and wearing face masks during the COVID-19 pandemic among participants in the US, UK, and Germany. In June 2020, 1526 participants were randomized to (1) read an informative text about coronavirus [information only]; (2) read informative text about an immunocompromised woman with COVID-19 [information and empathy]; or (3) no text to read [control]. Participants in the empathy group reported significantly higher empathy levels and motivation to wear a mask than the information only and control groups. *Pfattheicher et al. (Sept 29, 2020). The Emotional Path to Action: Empathy Promotes Physical Distancing and Wearing of Face Masks During the COVID-19 Pandemic. Psychological Science.* <https://doi.org/10.1177/0956797620964422>

Transmission

- SARS-CoV-2 contact investigations in two Indian states showed a younger age distribution of COVID-19 cases and deaths than has been previously reported in the United States, and these differences are not attributed to underlying age differences in the general population. Among 575,071 contacts exposed to 84,965 confirmed cases, the secondary attack rate ranged from 5% for low-risk contacts (in the proximity of index cases but did not meet criteria for high-risk exposure) to 11% for high-risk contacts (close social contact or direct physical contact with index cases without protective

measures). Infection risks were significantly higher among similar-age contacts, and individuals in most age groups who tested positive were exposed to an index case between age 20-44 years. COVID-19 mortality increased with each age group before plateauing at age groups ≥ 65 years, in contrast to the United States where COVID-19 mortality plateaued at ages ≥ 85 years.

Laxminarayan et al. (Sept 30, 2020). Epidemiology and Transmission Dynamics of COVID-19 in Two Indian States. Science.

<https://science.sciencemag.org/content/early/2020/09/29/science.abd7672>

Geographic Spread

- The seroprevalence of anti-SARS-CoV-2 IgG among people accessing health care for reasons other than COVID-19 symptoms in a low-density, suburban and rural population in North Carolina was 0.8% (24 of 2973) of outpatients and 0.7% (10 of 1449) of inpatients. Participants were sampled between March and June 2020, when state restrictions and physical distancing mandates were in place. Serological testing was performed with the Abbott SARS-CoV-2 IgG assay. The authors state that the low prevalence suggests that shelter-in-place mandates and physical distancing practices may have limited asymptomatic spread.

Barzin et al. (Sept 29, 2020). SARS-CoV-2 Seroprevalence among a Southern U.S. Population Indicates Limited Asymptomatic Spread under Physical Distancing Measures. MBio.

<https://doi.org/10.1128/mBio.02426-20>

Testing and Treatment

- A 10:1 pooled test strategy for nasopharyngeal swabs was used to screen airline passengers arriving in China. Among 944 specimens collected and tested for RNA using the Xpert Xpress assay, the pooled approach identified 2 positive individuals who were immediately quarantined, which resulted in no local contacts in China. The pooled approach saved 827 (87.6%) test cartridges, 3 hours of staff time, and nearly \$50,000 in costs. The authors conclude that implementing pooled testing on-site for SARS-CoV-2 detection could increase test throughput, limit the use of reagents, increase overall testing efficiency without significant loss of sensitivity, and may limit the need for contact tracing.

Li et al. (Sept 30, 2020). Real-Time Screening of Specimen Pools for Coronavirus Disease 2019 (COVID-19) Infection at Sanya Airport, Hainan Island, China. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciaa1074>

Clinical Characteristics and Health Care Setting

- Obesity (BMI ≥ 30 kg/m²) was associated with a higher risk of ICU admission (adjusted OR=1.96, 95%CI 1.03-3.75) among a cohort of 331 patients hospitalized with COVID-19 at the beginning of the epidemic in Italy. There were no significant differences in mortality, mortality in ICU and length of hospital stay between obese patients and non-obese patients.

Biscarini et al. (Aug 11, 2020). The Obesity Paradox: Analysis from the SMAAtteo Covid-19 REgistry (SMACORE) Cohort. Nutrition, Metabolism, and Cardiovascular Diseases.

<https://doi.org/10.1016/j.numecd.2020.07.047>

- Using publicly available microarray datasets, Matusiak and Schürch reported different protein expression of SARS-CoV-2 entry receptors and cofactors ACE2, TMPRSS2, BSG (CD147) and FURIN among various airway tissue types between smokers vs. non-smokers, and between people with asthma vs. healthy controls. These findings warrant further studies to use larger numbers of samples

from multiple donor cohorts and more antibodies to better delineate the cellular subsets expressing these SARS-CoV-2 entry receptors and cofactors.

Matusiak and Schürch. (Sept 29, 2020). Expression of SARS-CoV-2 Entry Receptors in the Respiratory Tract of Healthy Individuals, Smokers and Asthmatics. Respiratory Research. <https://doi.org/10.1186/s12931-020-01521-x>

- Pre-existing immune responses against endemic human coronaviruses (eCoVs), which are etiologic agents for the "common cold" that share extensive sequence homology with SARS-CoV-2, may mitigate disease manifestations from SARS-CoV-2 infection. A study among 252 patients with a COVID-19 related hospitalization reported lower risk of ICU admission (OR=0.1) and death (HR=0.3) among patients with eCoV antibodies than among patients without them.

Sagar et al. (Sept 30, 2020). Recent Endemic Coronavirus Infection Is Associated with Less Severe COVID-19. The Journal of Clinical Investigation. <https://doi.org/10.1172/JCI143380>

Vaccines and Immunity

- Among 28 vaccine experts (20 Canada, 6 US) with 25 median years of experience working with vaccines (range 8–42), 53% said the pace of COVID-19 research is increasing the potential for errors. The median probability forecast that a vaccine would receive a black box warning label for a widely deployed vaccine was 30% and that the first field study would not report a positive efficacy endpoint was 40%.

Kane et al. (Sept 28, 2020). Expert Forecasts of COVID-19 Vaccine Development Timelines. Journal of General Internal Medicine. <https://doi.org/10.1007/s11606-020-06244-9>

Mental Health and Personal Impact

- *[Preprint, not peer-reviewed]* An online survey in Delaware found significantly higher levels of anxiety and depression among undocumented college students (n=109) compared to the expected proportion based on a large national survey of mental health among college students in US during the COVID-19 pandemic (47% vs. 31% for anxiety; 63% vs 41% for depression, respectively). The authors conclude that the pandemic may be affecting the mental health of undocumented students to a greater degree than the general population of college students in the US.

Goodman et al. (Sept 30, 2020). Mental Health of Undocumented College Students during the COVID-19 Pandemic. Preprint downloaded Oct 1 from <https://doi.org/10.1101/2020.09.28.20203489>

Modeling and Prediction

- *[Preprint, not peer-reviewed]* Black and Latino people in the US are estimated to have a reduction in life expectancy at birth due to COVID-19 of 2.7 and 3.7 years, respectively, both of which are larger than the 0.84-year reduction for white people. These projections imply a 50% increase (from 3.6 to 5.5 years) in the Black-white life expectancy gap, reversing 20 years of progress in reducing this disparity. The previous Latino survival advantage relative to whites would be reduced by 85%. These analyses used COVID-19 estimates made by the Institute for Health Metrics and Evaluation.

[EDITORIAL NOTE: This article was previously summarized as a pre-print on July 15].

Andrasfay and Goldman. (Sept 15, 2020). Reductions in 2020 US Life Expectancy Due to COVID-19 and the Disproportionate Impact on the Black and Latino Populations. Preprint downloaded Oct 1 from <https://doi.org/10.1101/2020.07.12.20148387>

Public Health Policy and Practice

- The US CDC deployed 208 teams to assist 55 state, tribal, local, and territorial health departments with COVID-19 emergency public health response activities between January 21–July 25, 2020. Teams assisted with investigations of transmission in high-risk congregate settings, including long-term care facilities (53 deployments; 26%), food processing facilities (24; 12%), correctional facilities (12; 6%), and settings providing services to persons experiencing homelessness (10; 5%).
Dirlikov et al. (Oct 2, 2020). CDC Deployments to State, Tribal, Local, and Territorial Health Departments for COVID-19 Emergency Public Health Response — United States, January 21–July 25, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm6939a3>
- [Preprint, not peer-reviewed] Among 19,637 cases of SARS-CoV-2 infection reported in Fulton County, Georgia from February 29th to August 19th 2020, 36% were missing race/ethnicity information in the case report. Compared to complete case analyses, imputation and bias-adjustment for race/ethnicity yielded higher estimates of infection rates (1.5 to 1.8-fold increase). The magnitude of the absolute disparity increased in the bias-adjusted analysis relative to the complete case analysis (1.3-fold among classified Black and 1.6-fold among classified Hispanic vs. classified white). The authors conclude that complete case analyses may underestimate absolute disparities in infection rates.
Labgold et al. (Sept 30, 2020). Widening the Gap Greater Racial and Ethnic Disparities in COVID-19 Burden after Accounting for Missing Race/ethnicity Data. Preprint downloaded Oct 1 from <https://doi.org/10.1101/2020.09.30.20203315>
- A racial sentiment analysis using >3.3 million race-related tweets from Twitter users in the US showed the proportion of negative tweets referencing Asians since the emergence of COVID-19 has increased by 68% (from 10% in November 2019 to 16% in March 2020). Common themes that emerged during the content analysis of a random subsample of 3300 tweets included racism and blame (20%), anti-racism (20%), and daily life impact (27%). In contrast, negative tweets referencing other racial/ethnic minorities (Blacks and Latinx) remained relatively stable during this time period.
Nguyen et al. (Sept 25, 2020). Exploring U.S. Shifts in Anti-Asian Sentiment with the Emergence of COVID-19. International Journal of Environmental Research and Public Health. <https://doi.org/10.3390/ijerph17197032>
- Emergency room visits and deaths related to opioid overdose increased in San Francisco during the first weeks of COVID-19 pandemic (January 1 through April 18, 2020). Visits related to opioid overdose were 2.5 patients per day during this period vs. 1.4 prior, and deaths were 1.47 per day during this period vs. 0.95 prior.
Rodda et al. (Sept 28, 2020). Opioid Overdose–Related Emergency Department Visits and Accidental Deaths during the COVID-19 Pandemic. Journal of Urban Health. <https://doi.org/10.1007/s11524-020-00486-y>
- As of Sept 10, 2020, there were 549,432 cumulative COVID-19 cases in the US among children (729 cases per 100,000 children). The geographic focus of case growth shifted from the Northeast in April to the South and West in June and to the Midwest in July. Over time, the proportion of pediatric COVID-19 cases has risen substantially, from less than 3% in April to 12–16% of new weekly reported cases in the last 8 weeks of the study. Hospitalizations and deaths due to COVID-19 among children remain low (1.7% and 0.07%, respectively).

Sisk et al. (Sept 29, 2020). National Trends of Cases of COVID-19 in Children Based on US State Health Department Data. *Pediatrics*. <https://doi.org/10.1542/peds.2020-027425>

Other Resources and Commentaries

- [COVID Vaccine Confidence Requires Radical Transparency](#) – Nature (Oct 1)
- [The Challenge of Clearly Counting COVID-19 Cases in Children](#) – Pediatrics (Sept 29)
- [Applicability of Mobile Contact Tracing in Fighting Pandemic \(COVID-19\): Issues, Challenges and Solutions](#). – Computer Science Review (Sept 23)
- [Whither COVID-19 Vaccines?](#) – Nature Biotechnology (Sept 28)
- [On the Importance of Early Testing Even When Imperfect in a Pandemic Such as COVID-19](#) – Global Epidemiology (Aug 3)
- [Application of State Law in the Public Health Emergency Response to COVID-19: An Example from Delaware in the United States](#). – Journal of Public Health Policy (Sept 28)
- [Evaluation of Testing Frequency and Sampling for Severe Acute Respiratory Syndrome Coronavirus 2 Surveillance Strategies in Long-Term Care Facilities](#) – Journal of the American Medical Directors Association (Aug 24)
- [Rethinking Covid-19 Test Sensitivity — A Strategy for Containment](#) – NEJM (Sept 30)
- [Novel Insights into the Treatment of SARS-CoV-2 Infection: An Overview of Current Clinical Trials](#) – International Journal of Biological Macromolecules (Sept 28)
- [Risk of COVID-19 During Air Travel](#) – JAMA (Oct 1)
- [Delaying Pregnancy during a Public Health Crisis — Examining Public Health Recommendations for Covid-19 and Beyond](#) – NEJM (Sept 30)
- [COVID-19 Vaccine Development during Pandemic: Gap Analysis, Opportunities, and Impact on Future Emerging Infectious Disease Development Strategies](#) – Human Vaccines & Immunotherapeutics (Sept 29)
- [Audio Interview: Covid-19 Testing and the Individual Physician](#) – NEJM (Oct 1)
- [Clinical Screening for COVID-19 in Asymptomatic Patients With Cancer](#) – JAMA Network Open (Sept 29)
- [The Major Genetic Risk Factor for Severe COVID-19 Is Inherited from Neanderthals](#) – Nature (Sept 30)

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