

2019-nCoV Literature Situation Report (Lit Rep) September 14, 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

- **A 3% prevalence of SARS-CoV-2 antibodies among 50,130 consecutive life insurance applicants in the US corresponds to an estimate of the total number of SARS-CoV-2 infections that is 3.8-times higher than the number of cases reported by the CDC.** [More](#)
- **Approximately 1.8% of blood donations made at American Red Cross Centers were positive for SARS-CoV-2 antibodies, with donations from younger donors more likely to be positive.** [More](#)
- **Sequencing of SARS-CoV-2 from sewage samples in the San Francisco Bay Area identified dominant genotypes that were identical to clinical genomes from the region and identified minor genotypic variants that were similar to strains in the area, demonstrating the potential of wastewater sequencing to track viral lineages during local epidemiological surveillance.** [More](#)

Transmission

- A study among children (n=83) and adults (n=131) hospitalized in Milan, Italy for noninfectious conditions identified 1 child (1%) and 12 (9%) adults who were asymptomatic carriers of SARS-CoV-2, suggesting children without symptoms and signs of SARS-CoV-2 infection may be less likely to be carriers than adults.

Milani et al. (Sept 14, 2020). Frequency of Children vs Adults Carrying Severe Acute Respiratory Syndrome Coronavirus 2 Asymptotically. JAMA Pediatrics.

<https://doi.org/10.1001/jamapediatrics.2020.3595>

Geographic Spread

- *[Preprint, not peer-reviewed]* Classifying US counties based on a social vulnerability index and comparing COVID-19 burden over time shows that early in the COVID-19 pandemic, US counties with a high social vulnerability index had fewer COVID-19 cases. However, after March 30, the relationship reversed and counties with higher social vulnerability experienced a greater burden of cases, with the excess burden peaking on July 29 (RR=3.22). By late August, the discrepancies between counties with higher and lower social vulnerability had declined. Differences in COVID-19 burden based on county-level social vulnerability were partially explained by rural/urban distribution and resident health level, and average daily pollution levels (PM_{2.5}).

Neelon et al. (Sept 11, 2020). Spatial and Temporal Trends in Social Vulnerability and COVID-19 Incidence and Death Rates in the United States. Pre-print downloaded September 14 from

<https://doi.org/10.1101/2020.09.09.20191643>

Testing and Treatment

- [Preprint, not peer-reviewed] Testing for SARS-CoV-2 antibodies indicates that the total number of SARS-CoV-2 infections in the US is 3.8-times higher than the total number of cases reported to the CDC. This estimate is based on a seropositivity rate of 3% among 50,130 consecutive life insurance applicants, which would correspond to 6.98 million SARS-CoV-2 infections when applied to state population data from the US Census as of June 1, 2020.
Rigatti et al. (Sept 11, 2020). SARS-CoV-2 Antibody Prevalence and Association with Routine Laboratory Values in a Life Insurance Applicant Population. Pre-print downloaded September 14 from <https://doi.org/10.1101/2020.09.09.20191296>
- [Preprint, not peer-reviewed] Genome sequencing of SARS-CoV-2 in sewage samples from the San Francisco Bay Area found that the dominant genotypes matched genotypes found in clinical samples from the region. Genotypic variants found in wastewater samples were more similar to local California patient-derived genotypes than they were to those from other regions within the US or globally. The authors conclude that wastewater sequencing could be used to track viral lineages during local epidemiological surveillance and can detect recent introductions of new viral lineages before they are detected by local clinical sequencing.
Crits-Christoph et al. (Sept 14, 2020). Genome Sequencing of Sewage Detects Regionally Prevalent SARS-CoV-2 Variants. Pre-print downloaded September 14 from <https://doi.org/10.1101/2020.09.13.20193805>
- Routine testing of blood donated at American Red Cross centers since June 15, 2020 (n=953,926 donations) found that 1.8% of donations tested positive for SARS-CoV-2 antibodies, with an increase in seropositivity over the study period. Blood from first-time donors was more likely to test positive than blood from repeat donors (3% vs. 1.6%, p<0.001). The likelihood of testing positive was greater among blood from donors aged 18-24 years compared to donors aged 55 years or older (OR=2.4).
Dodd et al. (Sept 14, 2020). Change in Donor Characteristics and Antibodies to SARS-CoV-2 in Donated Blood in the US, June-August 2020. JAMA. <https://doi.org/10.1001/jama.2020.18598>

Modeling and Prediction

- [Preprint, not peer-reviewed] A modeling study estimated that implementing a digital contact tracing system (DCT) combined with other interventions (social distancing and/or random testing) could effectively reduce the transmission of SARS-CoV-2 by pushing R_0 from above 3 to below 1 in a scenario where 40% of people infected with SARS-CoV-2 were asymptomatic. At least 60% of the population would need to use the DCT system to achieve a significant impact.
- The infections prevented by the DCT intervention come at the cost of requiring up to 15% of the population to be quarantined each day for the duration of the epidemic, even when there is sufficient testing capability to test every traced person.
Pollmann et al. (Sept 14, 2020). The Impact of Digital Contact Tracing on the SARS-CoV-2 Pandemic - a Comprehensive Modelling Study. Pre-print downloaded September 14 from <https://doi.org/10.1101/2020.09.13.20192682>
- [Preprint, not peer-reviewed] A modeling study of university reopening in the UK compared transmission dynamics under different assumptions about the infectiousness of asymptomatic patients. Assuming an infectious period of 5 days, the authors report that if asymptomatic cases are 50% as infectious as symptomatic cases, then 20% undergraduates would be infected. If

asymptomatic cases are equally as infectious as symptomatic cases, 94% would be infected. First-year students are predicted to be the main drivers of transmission due to high numbers of contacts in communal residences. Reduced face-to-face interactions and reduced living circles could effectively decrease infections by 75%. The model predicts that mass testing of students is not the most effective option due to the cost of large-scale self-isolation.

Brooks-Pollock et al. (Sept 11, 2020). High COVID-19 Transmission Potential Associated with Re-Opening Universities Can Be Mitigated with Layered Interventions. Pre-print downloaded September 14 from <https://doi.org/10.1101/2020.09.10.20189696>

Public Health Policy and Practice

- *[Preprint, not peer-reviewed]* Among patients hospitalized with COVID-19 (n=2,406) in New York, Black patients (34%) and Hispanic patients (37%) were younger than white patients (29%) (median age 67 and 63 vs 73, $p < 0.001$ for both). Black patients were more likely to have hypertension (41% vs 32%), diabetes (27% vs 17%), and chronic kidney disease (16% vs 8%) compared to white patients. Hispanic patients were more likely to have diabetes (27% vs 17%), chronic kidney disease (13% vs 8%), and chronic liver disease (4% vs 2%) compared to white patients.

Jun et al. (Sept 11, 2020). Mortality and Risk Factors among US Black Hispanic and White Patients with COVID-19. Pre-print downloaded September 14 from <https://doi.org/10.1101/2020.09.08.20190686>

Other Resources and Commentaries

- [Reassuring the Public and Clinical Community About the Scientific Review and Approval of a COVID-19 Vaccine](#) – JAMA (Sept 10)
- [Characterizing COVID-19 Clinical Phenotypes and Associated Comorbidities and Complication Profiles](#) – medRxiv (Sept 14)
- [Places and the Pandemic—Barriers and Opportunities to Address Geographic Inequity](#) – JAMA Health Forum (Sept 10)
- [COVID-19 and the Path to Immunity](#) – JAMA (Sept 11)
- [Coronavirus Disease 2019 Has Worsened Food Insecurity Among Families With Low Incomes, but Medicaid Is a “Potential Vehicle” for Relief](#) – JAMA Health Forum (Sept 11)

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