2019-nCoV Literature Situation Report (Lit Rep)

August 21, 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

- **Immunologic examinations of 15 people who had recovered from mild COVID-19 found evidence of SARS-CoV-2-specific immune markers that the authors believe provide evidence that recovered individuals will be protected from a second SARS-CoV-2 infection.** More
- **An analysis of COVID-19 cases in five Georgia counties found that 2% of cases were directly responsible for 20% of infections, highlighting the importance of super-spreader events in COVID-19 transmission.** More
- **Childcare centers in Rhode Island have experienced COVID-19 cases in 29 of the 666 centers approved to reopen since June 1, with the majority of affected centers (69%) reporting a single case without evidence of secondary transmission.** More

Non-Pharmaceutical Interventions

- A survey of 6,973 German adults suggests that the implementation of mandatory masking policies in shops and aboard public transit increased compliance despite only moderate acceptance of those policies. Individuals who reported wearing masks were also more likely to report washing their hands regularly, avoiding handshakes, and keeping physical distances.
- Mandatory mask policies were perceived to be fairer than a voluntary mask policy, particularly among participants belonging to a risk group.

  Betsch et al. (Aug 20, 2020). Social and Behavioral Consequences of Mask Policies during the COVID-19 Pandemic. PNAS. https://doi.org/10.1073/pnas.2011674117

- Individual-level surveys showed that rural residents are more likely to engage in social distancing behavior than otherwise similar rural residents if their local news is produced in a city that is more affected by COVID-19. However, the effect is less than half the size of the difference in behavior that is attributable to political party affiliation.

  Kim et al. (Aug 20, 2020). The Effect of Big-City News on Rural America during the COVID-19 Pandemic. PNAS. https://doi.org/10.1073/pnas.2009384117

- *[pre-print, not peer-reviewed]* Pan et al. quantified the effectiveness of non-pharmaceutical interventions on the spread of COVID-19 in the United States and found that only the most stringent level of restrictions (e.g, sheltering in place / stay-at-home, public mask requirements, or travel restrictions) significantly decreased COVID-19 cases and deaths in the US. These policies achieved at least a 50% reduction in case rates in six days, compared to eight days for the next highest level of

policies (e.g. non-essential business closures, suspending non-violent arrests, suspending elective medical procedures, suspending evictions, or restricting mass gatherings of at least 10 people).

Pan et al. (Aug 20, 2020). COVID-19 Effectiveness of Non-Pharmaceutical Interventions in the United States before Phased Removal of Social Distancing Protections Varies by Region. Pre-print downloaded Aug 21 from https://doi.org/10.1101/2020.08.18.20177600

Transmission

- *[pre-print, not peer-reviewed]* An analysis of COVID-19 cases in Georgia found that 2% of cases were directly responsible for 20% of infections, with infected people under 60 infecting 2.8-times more people than older persons. Lau et al. incorporated individual-level surveillance data with geolocation data and aggregate mobility data to analyze transmission of COVID-19 in five Georgia counties with the largest number of COVID-19 cases (four in metro Atlanta and one rural) between March and early May of 2020.
- The authors also find that super-spreading events may be responsible for disproportionately large outbreaks in rural, less-populated areas, although super-spreading was found in both urban and rural settings before and after local shelter-in-place orders.

  Lau et al. (June 22, 2020). Characterizing Super-Spreading Events and Age-Specific Infectivity of COVID-19 Transmission in Georgia USA. Pre-print downloaded Aug 21 from https://doi.org/10.1101/2020.06.20.20130476

- Link-Gelles et al. report 52 confirmed and probable childcare-associated cases of COVID-19 in 29 childcare programs in the state of Rhode Island in the two months following reopening of childcare programs on June 1. Of the cases, 30 (58%) were among children (median age = 5 years), and 22 (42%) were among adults (20 teachers and 2 parents, median age = 30 years). The majority of affected centers (69%) reported only a single case without apparent secondary transmission. Secondary transmission was suspected in four childcare centers, including in one in which an investigation revealed a lack of adherence to the guideline prohibiting switching between groups of children.

  Link-Gelles et al. (Aug 21, 2020). Limited Secondary Transmission of SARS-CoV-2 in Child Care Programs — Rhode Island, June 1–July 31, 2020. MMWR. https://doi.org/10.15585/mmwr.mm6934e2

Testing and Treatment

- 3D-printed polyester-tipped swabs were shown to be effective for use in nasopharyngeal sample collection and diagnosis of COVID-19. Overall concordance between the prototype and control swabs was 81%, with most discordant results resulting from prototype-positive, control-negative results. The prototype had higher sensitivity than the control swabs (91% vs. 81%).
- The authors suggest that the materials required to make these swabs are safe, readily available, and durable. The total cost of production for each swab is estimated at around $ 0.05.

  Alghounaim et al. (Aug 12, 2020). Low-Cost Polyester-Tipped 3-Dimensionally-Printed Nasopharyngeal Swab for the Diagnosis of Severe Acute Respiratory Syndrome-Related Coronavirus 2 (SARS-CoV-2). Journal of Clinical Microbiology. https://doi.org/10.1128/JCM.01668-20

- An open-label randomized trial of 5- or 10-days of remdesivir treatment compared to standard care found that 5-day remdesivir treatment had a statistically significant improvement in clinical status

on day 11 after initiation of treatment, although the clinical importance of the effect was uncertain. The difference in clinical status on day 11 between the 10-day remdesivir and standard care groups was not significantly different (P = 0.18).

Spinner et al. (Aug 21, 2020). Effect of Remdesivir vs Standard Care on Clinical Status at 11 Days in Patients With Moderate COVID-19: A Randomized Clinical Trial. JAMA. https://doi.org/10.1001/jama.2020.16349

Vaccines and Immunity

- *[pre-print, not peer-reviewed]* Immunologic examinations of 15 people who had recovered from mildly symptomatic, PCR-confirmed COVID-19 found evidence of expanded SARS-CoV-2-specific immune mediators (IgG antibodies and neutralizing plasma, virus-specific memory B and T cells). Responses were persistent, and in some cases increased over three months following symptom onset. They also found that SARS-CoV-2-specific memory lymphocytes exhibited characteristics associated with potent antiviral immunity. The authors conclude that these findings provide evidence that recovered individuals will be protected from a second SARS-CoV-2 infection and that Th1 memory should be the target of vaccine elicited memory.

  Rodda et al. (Aug 15, 2020). Functional SARS-CoV-2-Specific Immune Memory Persists after Mild COVID-19. Pre-print downloaded Aug 21 from https://doi.org/10.1101/2020.08.11.20171843

Clinical Characteristics and Health Care Setting

- *[pre-print, not peer-reviewed]* After adjusting for socioeconomic status and comorbidities, Mendy et al. found no association between ABO or Rh blood groups and hospitalization or disease severity among 428 people diagnosed with COVID-19 at the University of Cincinnati's health system.

  Mendy et al. (Aug 2020). Is Blood Type Associated with COVID-19 Severity? Pre-print downloaded Aug 21 from https://doi.org/10.1101/2020.08.11.20172676

Mental Health and Personal Impact

- Disparities in accessing telehealth appointments since the beginning of the COVID-19 pandemic were identified in a retrospective cohort study using a database linking insurance claims with patient-reported data. There was a rise in telehealth use from 0.2% to 2% in March 2020 compared to a similar time period in 2019. Adults over 45 were less likely to use telehealth than adults under 45, and respondents living in urban areas were more likely to use telehealth than those living in rural areas. Although presence of anxiety or depression were major predictors of telehealth use compared with in-person visits, no significant differences by sex, ethnicity, socioeconomic behaviors, or health behaviors were observed.

  Jaffe et al. (Aug 18, 2020). Health Inequalities in the Use of Telehealth in the United States in the Lens of COVID-19. Population Health Management. https://doi.org/10.1089/pop.2020.0186

- *[pre-print, not peer-reviewed]* A racially diverse cohort of HIV+ gay, bisexual, and other men who have sex with men in the American South was interviewed about the early impact of the COVID-19 pandemic. Rhodes et al. identified themes related to knowledge about the pandemic, information sources, personal impact on health and behaviors, and general concerns related to the pandemic.
- Participants reported that following stay-at-home orders to minimize their risk of contracting COVID-19 led to both positive (e.g. drinking cessation) and negative (e.g. working out less) changes in health behaviors. Feelings of isolation, hopelessness, and worry were common. Accessing care

and adhering to medical regimens was more difficult. Participants report being worried about the pandemic's effects on the economy and that their states may be re-opening too quickly.

Rhodes et al. (Aug 12, 2020). A Rapid Qualitative Assessment of the Impact of the COVID-19 Pandemic on a Racially/Ethnically Diverse Sample of Gay, Bisexual, and Other Men Who Have Sex with Men Living with HIV in the US South. Pre-print downloaded Aug 21 from https://doi.org/10.21203/rs.3.rs-57507/v1

- Pierce et al. surveyed 2,619 psychologists working in the United States and found that the percentage of clinical work carried out online increased from 7% to 86% during the pandemic. The increase was smaller among psychologists working in Veterans Affairs medical centers or in rural areas and among those treating patients with antisocial personality disorder, performing testing and evaluation, and treating rehabilitation populations.
- Psychologists estimated that they would perform 35% of their clinical care online after the pandemic.

Pierce et al. (Aug 20, 2020). The COVID-19 Telepsychology Revolution: A National Study of Pandemic-Based Changes in U.S. Mental Health Care Delivery. American Psychologist. https://doi.org/10.1037/amp0000722

Modeling and Prediction

- A model incorporating 159 countries suggests that differences in the population age distributions across regions may substantially affect COVID-19 pandemic trajectories, with countries with larger adult populations potentially experiencing more severe and rapid transmission of COVID-19 than countries with younger populations. In the African Region (median age: 18.9 years), the authors estimated a median R_0 of 1.05 versus 2.05 in the European Region (median age: 41.7 years) and 1.65 in the American Region (median age: 30.7 years). In a "worst-case" scenario that did not include mitigation interventions, the median final cumulative infection incidence was 22.5 per 100 persons in the African Region (versus 69.0 in the European Region and 53.0 in the American Region) and the death rate was 0.5 per 100 persons (versus 3.9 in the European Region and 2.0 in the American Region).

Ayoub et al. (Aug 20, 2020). Age Could Be Driving Variable SARS-CoV-2 Epidemic Trajectories Worldwide. PLOS ONE. https://doi.org/10.1371/journal.pone.0237959

Other Resources and Commentaries

- Including Children with Developmental Disabilities in the Equation During This COVID-19 Pandemic – Journal of Autism and Developmental Disorders (Aug 20)
- Returning Athletes Back to High School Sports in the COVID-19 Era: Preparing for the Fall – Sports Health: A Multidisciplinary Approach (Aug 20)
- Challenges and Controversies Related to Testing for COVID-19 – Journal of Clinical Microbiology (Aug 12)
- Passport to Freedom? Immunity Passports for COVID-19 – Journal of Medical Ethics (Aug 15)
- Notes from the Field: COVID-19 Prevention Practices in State Prisons — Puerto Rico, 2020 – MMWR. Morbidity and Mortality Weekly Report (Aug 21)
- Demographic Perspectives on the Mortality of COVID-19 and Other Epidemics – Proceedings of the National Academy of Sciences (Aug 20)
- Addressing Influenza Vaccination Disparities During the COVID-19 Pandemic – JAMA (Aug 20)

- Inactivation of SARS-CoV-2 by Commercially Available Alcohol-Based Hand Sanitizers – American Journal of Infection Control (Aug 17)
- Supporting Intimate Partner Violence Survivors and Their Children During the COVID-19 Pandemic – Pediatrics (Aug 20)
- What Happens When COVID-19 Collides With Flu Season? – JAMA (Aug 20)
- Disability, Ethics, and Health Care in the COVID-19 Pandemic – American Journal of Public Health (Aug 20)
- Pharmacological Treatments of COVID-19 – Pharmacological Reports (Aug 20)
- Biosensors: Frontiers in Rapid Detection of COVID-19 – 3 Biotech (Sept 11)
- A Concern about Survival Time as an Endpoint in Coronavirus Disease 2019 Clinical Trials – Clinical Trials (Aug 20)
- Circumnavigating the Challenges of COVID-19 for Indigenous People: Perspectives for Public Health – Public Health (Sept 1)
- Predicting Disease Severity and Outcome in COVID-19 Patients: A Review of Multiple Biomarkers – Archives of Pathology & Laboratory Medicine (Aug 20)
- Covid-19: Medical Expenses Leave Many Americans Deep in Debt. – BMJ (Aug 14)
- Covid-19: England to Test 150 000 People Every Two Weeks to Track Local Outbreaks – BMJ (Aug 19)

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