2019-nCoV Literature Situation Report (Lit Rep)

November 3, 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 study from England found that living with children was not associated with the risk of SARS-CoV-2 infection or with adverse COVID-19 outcomes. There were also no changes in risk following the closure of schools.** More
- **Adults in the US experienced increases in psychological distress from March to April 2020, which then recovered to baseline levels by June, according to longitudinal survey data.** More
- **Data from 45 countries indicate that the age-related pattern in the proportion of people with SARS-CoV-2 who die is similar across settings, reaching a peak infection fatality ratio of 8.3% among people age 80 years or older.** More
- **Contact tracing in Singapore found that the attack rate among household contacts was much higher compared to work and social contacts. Close physical proximity and verbal interactions of at least 30 minutes were identified as risk factors.** More

Transmission

- A retrospective cohort study of all close contacts of confirmed COVID-19 cases in Singapore (n=7,770) found the attack rate among household contacts (5.9%) was higher compared to work contacts and social contacts (both 1.3%). Among contacts, close physical proximity (sharing a bedroom for household contacts and sharing a vehicle for work and social contacts) and verbal interactions 30 minutes or longer were associated with SARS-CoV-2 transmission. Findings further estimate that a symptom-based PCR-testing strategy missed 62% of COVID-19 diagnoses, and that 36% of individuals with SARS-CoV-2 infection were asymptomatic.

  Ng et al. (Nov 2, 2020). SARS-CoV-2 Seroprevalence and Transmission Risk Factors among High-Risk Close Contacts: A Retrospective Cohort Study. The Lancet Infectious Diseases. https://doi.org/10.1016/S1473-3099(20)30833-1

- *[Pre-print, not peer-reviewed]* A population-based cohort study in England found that living with children was not associated with adverse COVID-19 related outcomes. Additionally, no consistent changes in risk were observed following school closure. Among 9 million adults ≤65 years old, living with children age 0-11 years was not associated with increased risk of recorded SARS-CoV-2 infection or COVID-19 related hospital or ICU admission, but was associated with a lower risk of COVID-19-related death. Living with children aged 12-18 was only associated with a small increase in risk of recorded SARS-CoV-2 infection (HR=1.08), but was not associated with other outcomes. Similarly,

among 2.6 million older adults over age 65, there were no differences in SARS-CoV-2 outcomes between those who were living with children and those who were not.

Forbes et al. (Nov 2, 2020). Association between Living with Children and Outcomes from COVID-19 an OpenSAFELY Cohort Study of 12 Million Adults in England. Pre-print downloaded Nov 3 from https://doi.org/10.1101/2020.11.01.20222315

Geographic Spread

- Using age-specific COVID-19 death data and seroprevalence studies, the age distribution of deaths among those <65 years old was consistent across 45 countries. The infection fatality ratio (IFR) was estimated to be the lowest among children aged 5-9 years old (0.001%) and increased with age. The highest IFR was observed among those 80+ (8.3%). Mortality varied more substantially between locations among people ≥65 than among younger groups. The authors further estimate that approximately 5% of the populations across 45 countries have been infected, with a potentially much higher transmission having occurred in Latin America.

  O'Driscoll et al. (Nov 2, 2020). Age-Specific Mortality and Immunity Patterns of SARS-CoV-2. Nature. https://doi.org/10.1038/s41586-020-2918-0

Testing and Treatment

- From April 13 to June 8, San Francisco's contact tracing program was able to reach 85% (1,394 out of 1,633) of reported cases and subsequent contacts and secondary cases for interviews. People who identified as Latino represented a majority of these cases, despite comprising 15% of San Francisco residents. The secondary household attack proportion (percentage of contacts testing positive) was found to be much higher than the non-household attack proportion (11.4% vs 3.9%), and household contacts represented 90% of secondary cases.

  Sachdev et al. (Nov 2, 2020). Outcomes of Contact Tracing in San Francisco, California—Test and Trace During Shelter-in-Place. JAMA Internal Medicine. https://doi.org/10.1001/jamainternmed.2020.5670

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* Blood samples from 100 convalescent donors 6 months after their initial SARS-CoV-2 infection found that T-cell responses against SARS-CoV-2 were present in all donors. The median response was 50% higher among donors with an initial symptomatic infection. T-cell responses to both spike and nucleoprotein/membrane proteins strongly correlated with peak antibody levels against each respective protein. A reduced rate of antibody level decline was strongly correlated with the magnitude of T-cell response, though this relationship was only observed for antibodies specific to the nucleoprotein.

  Zuo et al. (Nov 2, 2020). Robust SARS-CoV-2-Specific T-Cell Immunity Is Maintained at 6 Months Following Primary Infection. Pre-print downloaded Nov 3 from https://doi.org/10.1101/2020.11.01.362319

Clinical Characteristics and Health Care Setting

- A systematic review of 9 studies found that compared to recovered COVID-19 patients who did not experience a recurrent positive PCR test, recovered COVID-19 patients who experienced a recurrent positive test had shorter hospital stay (14.5 vs 15.5 days) and were more likely to have fatigue symptoms, and to test positive for IgM and IgG. Recurrent positivity was negatively associated with elevated lactate dehydrogenase, C-reactive protein, low lymphocyte count, and steroid and arbidol abuse.

Hoang. (Nov 2, 2020). Systematic Review and Meta-analysis of Factors Associated with Re-positive Viral RNA after Recovery from COVID-19. Journal of Medical Virology. https://doi.org/10.1002/jmv.26648

- *[Pre-print, not peer-reviewed]* Results from a large prospective cohort (n=60,161 symptomatic patients with confirmed COVID-19 from 43 countries) found that the most sensitive case definition, which was met by 92% of the cohort, was one or more of cough, shortness of breath, fever, muscle pains or sort throat. These symptoms were more frequent among patients aged 30-60 years, and less frequent among both children (<=18 years) and older adults (>=70 years). For patients who did not meet any of the assessed case definitions, confusion was the most common symptom, particularly among older patients. For patients younger than 70 years old, nausea and vomiting, and abdominal pain were the most common symptoms. The authors note that older adults and children admitted to hospital with COVID-19 are less likely to present with typical symptoms of cough, fever and shortness of breath, and that inclusion of atypical symptoms could result in higher sensitivity.

  Pritchard et al. (Oct 27, 2020). Symptoms at Presentation for Patients Admitted to Hospital with Covid-19 Results from the ISARIC Prospective Multinational Observational Study. Pre-print downloaded Nov 3 from https://doi.org/10.1101/2020.10.26.20219519

- Persons with substance use disorders may be more vulnerable to adverse effects of COVID-19, according to a cohort study of COVID-19 patients (n=11,124) matched for demographic characteristics and presence of diabetes and obesity. Analysis showed that substance use disorder was associated with a 1.84-fold increased risk of hospitalization, 1.45-fold increased risk of ventilator use, and 1.30-fold increased risk of mortality. All associations except for mortality remained significant after further matching for hypertension, COPD, ischemic heart disease, and cerebrovascular diseases, although the magnitude of the associations were reduced.

  Baillargeon et al. (Nov 3, 2020). The Impact of Substance Use Disorder on COVID-19 Outcomes. Psychiatric Services. https://doi.org/10.1176/appi.ps.202000534

Mental Health and Personal Impact

- Longitudinal, nationally representative data from eight waves of the Understanding America Survey (n=7,319; observations=46,145) show that psychological distress increased significantly from March to April as the pandemic emerged and lockdown restrictions were put in place, then declined back to baseline levels by June 2020. A similar increase in distress followed by recovery to baseline levels was also observed among those with pre-existing diagnosed mental health conditions. The findings suggest population level resilience in mental health may be occurring as a response to the pandemic.

  Daly and Robinson. (Oct 27, 2020). Psychological Distress and Adaptation to the COVID-19 Crisis in the United States. Journal of Psychiatric Research. https://doi.org/10.1016/j.jpsychires.2020.10.035

Modeling and Prediction

- A study using an agent-based disease transmission model examined the costs and benefits of replacing lockdowns with a one-step tracing and quarantine strategy. This strategy of closing workplaces when a case is identified, isolating social contacts of the case, and keeping symptomatic individuals in quarantine until symptoms resolve (estimated at 5 days) reduces transmission by 50%, while costing fewer lost workdays than an overall lockdown, assuming that the daily probability of testing is only 10%.

  Eilersen and Sneppen. (Oct 29, 2020). Cost–Benefit of Limited Isolation and Testing in COVID-19 Mitigation. Scientific Reports. https://doi.org/10.1038/s41598-020-75640-2

Public Health Policy and Practice

- Analysis of the impact of COVID-19 containment policies on crime across 77 communities in the Chicago area report mixed findings. Burglaries, assaults, narcotics-related offenses, and robberies had a statistical reduction only in 13%, 23%, 45%, and 13% of communities, respectively. The prevalence of COVID-19 infections was not found to have any association with crime levels, although certain health-related demographic variables, such as age, were associated with significant reductions of crime.

  Campedelli et al. (Oct 27, 2020). Disentangling Community-Level Changes in Crime Trends during the COVID-19 Pandemic in Chicago. Crime Science. https://doi.org/10.1186/s40163-020-00131-8

Other Resources and Commentaries

- Why Schools Probably Aren't COVID Hotspots – Nature (Oct 29)
- Limitations of Using Mobile Phone Data to Model COVID-19 Transmission in the USA – The Lancet Infectious Diseases (Nov 2)
- Partisan Differences in Physical Distancing Are Linked to Health Outcomes during the COVID-19 Pandemic – Nature Human Behaviour (Nov 2)
- Harms of Public Health Interventions against Covid-19 Must Not Be Ignored – BMJ (Nov 2)
- Measuring Immunity to SARS-CoV-2 Infection: Comparing Assays and Animal Models – Nature Reviews Immunology (Nov 2)
- New Perspectives on Antimicrobial Agents: Remdesivir Treatment for COVID-19 – Antimicrobial Agents and Chemotherapy (Nov 2)
- Health Disparities in COVID-19: Addressing the Role of Social Determinants of Health in Immune System Dysfunction to Turn the Tide – Frontiers in Public Health (Oct 8)
- COVID-19: US Federal Accountability for Entry, Spread, and Inequities—Lessons for the Future – European Journal of Epidemiology (Nov 2)
- Utilization of Mobility Data in The Fight Against COVID-19 – Mayo Clinic Proceedings: Innovations, Quality & Outcomes (Oct 1)
- Do "Brassy" Sounding Musical Instruments Need Increased Safe Distancing Requirements to Minimize the Spread of COVID-19? – The Journal of the Acoustical Society of America (Oct 15)
- Telehealth During COVID-19—Does Everyone Have Equal Access? – American Journal of Psychiatry (Nov 1)
- Hydroxychloroquine and COVID-19 – American Journal of Therapeutics (Oct 29)
- Covid-19: US Cases Soar as Fauci Warns of Tough Times Ahead – BMJ (Nov 2)
- Preparing for the 2020-2021 Influenza Season – JAMA (Nov 2)
- Immunoassays for anti-SARS-CoV-2 antibodies: recent insights – The Lancet Infectious Diseases (Oct 30)
- Juntos en la pandemia de COVID-19 (together in the COVID-19 pandemic): health-care professionals and the Latinx community – The Lancet Respiratory Medicine (Oct 30)

Report prepared by the UW Alliance 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