2019-nCoV Literature Situation Report (Lit Rep)

September 11, 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

- **Twelve children who acquired SARS-CoV-2 in child care facilities in Utah transmitted the infection to at least 12 out of 46 (26%) non-facility contacts.** More
- **In a hospitalized cohort of COVID-19 patients in France who had severe respiratory disease or rapid clinical worsening (n=162) 27% had pulmonary embolism detected by computed tomography pulmonary angiography.** More
- **Twelve of 26 (46%) competitive college athletes recovering from mild or asymptomatic COVID-19 had findings of myocarditis or earlier myocardial injury on cardiac MRI.** More

Transmission

- Analysis of contact tracing data in Salt Lake County, Utah identified outbreaks of COVID-19 in three child care facilities linked to index cases in adults and associated with transmission from children to other contacts outside of the facilities. In these three outbreaks, 54% of the cases linked to the child care facilities occurred in children. Transmission was documented from these children to at least 12 (26%) of 46 non-facility contacts (confirmed or probable cases). Additionally, transmission was observed from two of three children with confirmed, asymptomatic COVID-19.

  Lopez et al. (Sept 11, 2020). Transmission Dynamics of COVID-19 Outbreaks Associated with Child Care Facilities — Salt Lake City, Utah, April–July 2020. MMWR. https://doi.org/10.15585/mmwr.mm6937e3

- *[Pre-print, not peer reviewed]* A study utilizing Danish registry data found that the proportion of contacts of an initial index case with SARS-CoV-2 infection who tested positive increased in an approximately linear manner with increasing age of the index case. Overall, 17% of household contacts of an index case tested positive within 14 days.

  Lyngse et al. (Sept 9, 2020). COVID-19 Transmission Within Danish Households A Nationwide Study from Lockdown to Reopening. Pre-print downloaded Sep 11 from https://doi.org/10.1101/2020.09.09.20191239

Testing and Treatment

- In preliminary findings from a randomized trial at 3 participating centers in China (n=200), recombinant human granulocyte colony-stimulating factor (rhG-CSF) treatment for patients with COVID-19 with lymphopenia but no comorbidities did not accelerate clinical improvement, but the number of patients who developed critical illness (proportion difference=-13%, 95%CI -21.4 to -5.4) or died (HR=0.19, 95%CI 0.04–0.88) may have been reduced. An accompanying editorial by Meyer et

al. called for subsequent studies to use updated therapies from those used early in the pandemic and to include patients with comorbidities.

Cheng et al. (Sept 10, 2020). Effect of Recombinant Human Granulocyte Colony–Stimulating Factor for Patients With Coronavirus Disease 2019 (COVID-19) and Lymphopenia. JAMA Internal Medicine. https://doi.org/10.1001/jamainternmed.2020.5503

Clinical Characteristics and Health Care Setting

- Pulmonary embolism (PE) was diagnosed in 44/162 (27%) patients hospitalized with COVID-19 in a university hospital in France who had severe respiratory disease or rapid clinical worsening and who received computed tomography pulmonary angiography. Elevated D-dimer level (OR=4.0 per additional quartile) and lack of anticoagulant therapy (OR=4.5) were associated with confirmed PE. D-dimer level >2590 ng/mL was associated with a 17-fold increase in the adjusted risk of PE.

  Mouhat et al. (Sept 9, 2020). Elevated D-Dimers and Lack of Anticoagulation Predict PE in Severe COVID-19 Patients. The European Respiratory Journal. https://doi.org/10.1183/13993003.01811-2020

- Among 26 competitive college athletes who had tested positive for SARS-CoV-2 11-53 days earlier and had not require hospitalization, 4 (15%) had cardiac MRI findings suggestive of myocarditis (heart muscle inflammation) and 8 (31%) athletes exhibited late gadolinium enhancement (LGE) without T2 elevation, suggestive of prior myocardial injury. Cardiac ventricular function was within normal ranges for all athletes, as measured by cardiac MRI and transthoracic echocardiogram. The authors suggest that cardiac MRI may be a useful tool to risk-stratify athletes for return to competitive sports participation following recovery from COVID-19.

  Rajpal et al. (Sept 11, 2020). Cardiovascular Magnetic Resonance Findings in Competitive Athletes Recovering From COVID-19 Infection. JAMA Cardiology. https://doi.org/10.1001/jamacardio.2020.4916

Mental Health and Personal Impact

- Results from online surveys disseminated to Chinese adults during the initial (n=1,148) and second stages (n=470) of the COVID-19 pandemic showed that watchfulness among older Chinese adults fluctuated over time and their worries gradually increased. In the first wave, older adults were less likely to worry about being infected by COVID-19 and reported less attention paid to protective measures than young adults. However, as the disease evolved, older participants in the second wave were more worried than young adults and older adults in the first wave.

  Jiang et al. (Sept 10, 2020). Worries, Strategies and Confidence of Older Chinese Adults During the 2019 Novel Coronavirus Outbreak. International Journal of Geriatric Psychiatry. https://pubmed.ncbi.nlm.nih.gov/32909299

- Among participants in the COVID-19 Eating and Activity over Time (C-EAT) study (n=584), young adults who have experienced weight stigma were found to have increased vulnerability to distress and maladaptive eating during the COVID-19 pandemic. Pre-pandemic experiences of weight stigma predicted higher levels of depressive symptoms, stress, eating as a coping strategy, and an increased likelihood of binge eating (OR=2.9) among young adults during the pandemic. Prior weight stigma was unrelated to physical activity during the pandemic.

  Puhl et al. (Sept 10, 2020). Weight Stigma as a Predictor of Distress and Maladaptive Eating Behaviors During COVID-19: Longitudinal Findings From the EAT Study. Annals of Behavioral Medicine. https://doi.org/10.1093/abm/kaaa077

Public Health Policy and Practice

- A study of nasal epithelial gene expression in a racially/ethnically diverse cohort (n=305) showed significantly higher expression of transmembrane serine protease 2 (TMPRSS2) in Black individuals compared with Asian, Latino, mixed race/ethnicity, and white individuals. Given the essential role of TMPRSS2 in SARS-CoV-2 entry, higher nasal expression of TMPRSS2 may be one of the many factors that contribute to a higher burden of COVID-19 among Black individuals.

  Bunyavanich et al. (Sept 10, 2020). Racial/Ethnic Variation in Nasal Gene Expression of Transmembrane Serine Protease 2 (TMPRSS2). JAMA. https://doi.org/10.1001/jama.2020.17386

- Higher proportions of Google searches for COVID-19 preventive measures were associated at the state level with longer Stay-at-Home orders and fewer COVID-19 cases after the Stay-at-Home orders expired (r=-0.33) and higher case-fatality rates (r=0.60). A moderate to strong negative correlation was found between states' percentage of voters supporting the Republican nominee in 2016 and the proportion of queries for preventative measures (r = -0.77). The proportion of queries for preventive measures were collected from Google Trends for the topics "hand sanitizer," "social distancing," "COVID testing," and "contact tracing," for each state.

  Hartwell et al. (Sept 10, 2020). Association of Public Interest in Preventative Measures and Increased COVID-19 Cases after Expiration of Stay-at-Home Orders: A Cross-Sectional Study. Disaster Medicine and Public Health Preparedness. https://doi.org/10.1017/dmp.2020.333

Other Resources and Commentaries

- Covid-19: Oxford Researchers Halt Vaccine Trial While Adverse Reaction Is Investigated – BMJ (Sept 9)
- Trained Innate Immunity, Epigenetics, and Covid-19 – The New England Journal of Medicine (Sept 10)
- Immune Stimulation With Recombinant Human Granulocyte Colony–Stimulating Factor for Coronavirus Disease 2019 (COVID-19)—Beware of Blind Spots – JAMA Internal Medicine (Sept 10)
- Leading Coronavirus Vaccine Trial Is on Hold: Scientists React – Nature (Sept 9)
- How the FDA Should Protect Its Integrity from Politics – Nature (Sept 9)
- Recognizing Privilege as a Social Determinant of Health During COVID-19 – Health Equity (Aug 27)
- Exploring the Coronavirus Pandemic with the WashU Virus Genome Browser – Nature Genetics (Sept 9)
- COVID-19 Herd Immunity: Where Are We? – Nature Reviews Immunology (Sept 9)

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