2019-nCoV Literature Situation Report (Lit Rep)
August 18, 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

- An analysis of COVID-19 hospitalizations across 12 US states found that the share of hospitalizations of white patients was substantially smaller than the corresponding share of the states’ populations, and the share of hospitalizations among Black and Hispanic patients was substantially larger. More
- A national survey of adolescents and young adults age found that COVID-19 diagnosis was 5-fold more likely among ever-users of e-cigarettes and 7-fold more likely among dual users of cigarettes and e-cigarettes. More
- An interim analysis (n=316) of an ongoing prospective study showed that convalescent plasma transfusion significantly reduced mortality at 28 days, particularly among patients who received plasma with high IgG titers or were transfused within 72 hours. More
- Death registrations in a cohort in the UK exceeded 3-year historical values by 51% in participants with type 1 diabetes and 64% in participants with type 2 diabetes during the first 19 weeks of 2020, corresponding with the COVID-19 pandemic. More

Transmission

- Antibodies against SARS-CoV-2 were found in 80% of a community sample of 30 individuals who shared a household with a confirmed COVID-19 case but who had not had a prior SARS-CoV-2 diagnosis. McDade et al. tested for anti-SARS-CoV-2 antibodies using a dried blood spot assay from self-collected samples.

Testing and Treatment

- Results of an interim analysis (n=316) of an ongoing prospective study assessing the efficacy of convalescent plasma transfusion showed a significant reduction in mortality (p=0.047) within 28 days, specifically among patients transfused within 72 hours of admission and who received plasma with a high anti-receptor binding domain IgG titer.
- A systematic review (28 studies, 12,437 COVID-19 ICU admissions in 7 countries) found strong correlates of ICU mortality were invasive mechanical ventilation (OR=16.5, 95%CI 4.4-62.0), acute kidney injury (OR=12.5, 95%CI 1.5-102.7), and acute respiratory distress syndrome (OR=6.5, 95% CI 2.7-16.0).


- A study in Israel identified potential cross-reactivity between dengue viruses and SARS-CoV-2 by testing serum samples from 55 COVID-19 patients for dengue antibodies and detecting 12 positive cases. In comparison, there were no positives for dengue among serum samples obtained from 70 healthy individuals prior to September 2019 (p < 0.001). In a complementary analysis, 22% (21 of 95) of serum samples obtained prior to September 2019 from patients with diagnosis of past dengue fever were positive on SARS-CoV-2 IgG or IgA antibody tests compared to 4% (4 of 102) of healthy controls (p < 0.001). The investigators suggest that potential cross-reactivity between dengue viruses and SARS-CoV-2 could lead to false positive tests.


- Severely ill patients developed significantly higher SARS-CoV-2 specific antibody responses, based on analysis of 625 serial plasma samples from 40 hospitalized patients with COVID-19 and 170 SARS-CoV-2 infected outpatients and asymptomatic individuals. The development of plasma antibodies was also correlated with decreases in viral RNAemia, suggesting potential humoral immune clearance of virus. Additionally, the serological responses of outpatient and asymptomatic individuals were found to decrease within 2 months.


Immunity

- Wu et al. collected plasma at hospital discharge from a cohort of 175 patients who recovered from mild COVID-19 in Shangai and found that the titers of SARS-CoV-2 specific neutralizing antibodies varied substantially, showing a moderate correlation with older age (r=0.414; 95%CI, 0.279-0.533), including 10 patients in whom neutralizing antibodies were below the limit of detection.


Clinical Characteristics and Health Care Setting

- A national survey of adolescents and young adults in the US (n=4,351) aged 13-24 found that COVID-19 diagnosis was associated with ever-use of e-cigarettes (aOR=5.1), ever dual use of e-cigarettes and cigarettes (aOR=7.0), and past 30-day dual use (aOR=6.8).

• Analysis of a cohort study of people diagnosed with type 1 and type 2 diabetes registered with a general practice in England found that weekly death registrations in the first 19 weeks of 2020 exceeded corresponding 3-year weekly averages by 51% among people with type 1 diabetes and by 64% among people with type 2 diabetes. Male sex, older age, renal impairment, non-white ethnicity, socioeconomic deprivation, and prior cardiovascular disease was associated with increased COVID-19 related mortality.


• A systematic review including 61 studies comprising 790 COVID-19 positive females and 548 neonates found that C-section, premature birth, and adverse pregnancy events varied geographically among women with COVID-19. C-section prevalence ranged from 38% in European studies to 91% in Chinese studies, while adverse pregnancy event prevalence ranged from 15% in US studies to 21% in Chinese studies.


• Among COVID-19 positive healthcare workers in Los Angeles County (n=5,118), Hartmann et al. found that the highest proportion worked in long-term care facilities (46%) and hospitals (28%). Sixty-eight percent worked at some point during their infectious period, while nearly half reported a known exposure to a positive patient and/or co-worker. Compared to the general population, healthcare workers reported lower hospitalization rates (5% vs 12%) and death rates (0.7% vs 4%).


• [Pre-print, not peer reviewed] A large serosurveillance study (n=10,019) of asymptomatic healthcare workers across Oregon found 2.5% (n=253) had antibodies against SARS-CoV-2. The highest seroprevalence was found among those with a job type of housekeeper (8%). Comparing self-reported swab PCR testing with serology results showed only modest agreement (K=0.47).


Modeling and Prediction

• [Pre-print, not peer reviewed] Using sociodemographic data and 668,428 COVID diagnoses in 4,803 ZIP codes in the US, Amram et al. developed a small area vulnerability index and found that zip codes with higher population density, higher percentage of uninsured, and a higher proportion of nonwhite race and Hispanic ethnicity had higher COVID-19 diagnosis rates.

Public Health Policy and Practice

- Across 12 states, the share of the COVID-19 hospitalizations (April 30 and June 24) of white patients was substantially smaller than the corresponding proportion of the state population.
- Asian patients were underrepresented among hospitalized patients in 6 of 10 states reporting hospitalization of Asian individuals. Black patients were overrepresented among the hospitalized patients in all 12 states, and Hispanic patients were overrepresented in 10 out of the 11 states reporting hospitalizations of Hispanic individuals.


Other Resources and Commentaries

- Design and Implementation of a Regional Inpatient Psychiatry Unit for Patients Who Are Positive for Asymptomatic SARS-CoV-2 – Psychosomatics (July 2)
- CoV-AbDab: The Coronavirus Antibody Database – Bioinformatics (Aug 17)
- Spatial Analysis of COVID-19 Clusters and Contextual Factors in New York City – Spatial and Spatio-Temporal Epidemiology (June 21)
- Efficacy and Safety of Disinfectants for Decontamination of N95 and SN95 Filtering Facepiece Respirators: A Systematic Review – Journal of Hospital Infection (Aug 12)
- Policy Implications of the Orphan Drug Designation for Remdesivir to Treat COVID-19 – JAMA Internal Medicine (Aug 17)
- Hospital Ward Adaptation During the COVID-19 Pandemic: A National Survey of Academic Medical Centers – Journal of Hospital Medicine (Aug 1)

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