2019-nCoV Literature Situation Report (Lit Rep)

April 1, 2021

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

- **45% of 5,110 residents from three prisons and 13 jails across four states (all three prisons and 10 jails in Washington State) said they would refuse to receive a COVID-19 vaccine. The most common reason for vaccination refusal was distrust of health care, correctional, or government personnel or institutions. Willingness to be vaccinated was lowest among Black participants, participants aged 18–29 years, and those who lived in jails vs prisons.** More
- **378,048 US death certificates containing ICD-10 codes for COVID-19 from 2020 were consistent with the approximately 375,000 deaths in 2020 attributable to COVID-19 reported to the CDC's National Vital Statistics System. Most death certificates had a co-occurring diagnosis that was a plausible chain-of-event condition, a significant contributing condition, or both. 64% of death certificates were reported from inpatient settings.** More
- **Compared to the SARS-CoV-2 infection rates in surrounding communities, the infection rate among healthcare workers from Boston Medical Center was 27% and 82% lower at 1-14 days and >14 days, respectively, from receiving the first dose of either Pfizer-BioNTech or Moderna vaccines. Infections >14 days from the first dose were more frequently asymptomatic, among older HCWs, and HCWs of Latinx ethnicity. Analysis of 48 viral genomes sequenced from first-dose infections did not suggest selection pressure towards antibody-escaping mutations in the spike protein.** More

Non-Pharmaceutical Interventions

- Perception about the existence of state mask mandate was 91% accurate in states with a mandate but only 46% accurate in states without one, according to a nationally representative cross-sectional survey (n=1,073) conducted in July 2020. The survey also measured participants' mask-wearing and physical distancing behaviors and found that perceived existence of a mask mandate better predicted preventive behaviors than an actual mask mandate. In contrast, participants' perception of state reopening did not correlate with actual state reopening policies.

  Li and Colby. (Mar 31, 2021). Association Between Actual and Perceived U.S. COVID-19 Policies and Preventive Behavior. Annals of Behavioral Medicine. https://doi.org/10.1093/abm/kaab021

- US adults with more medical risk factors associated with COVID-19 adverse outcomes perceived they had a higher chance of hospitalization or death if they were infected compared to those without risk factors in a nationally representative cross-sectional study conducted from November to December 2020 (n=5,910). Respondents with 3 or more medical risk factors perceived a 42%

chance of hospitalization if infected with SARS-CoV-2 compared to an 18% perceived chance among those without medical risk factors. Perceived chance of hospitalization ranged from 24% among those with high blood pressure to 40% among those with chronic lung disease. Fewer potentially higher risk activities were also undertaken by adults with 3 or more risk factors. Most respondents did not consistently wear masks according to risk of infection. Mask-wearing across risk factor groups was similar except when visiting a grocery store or pharmacy, where mask wearing was more common among those with 3 or more medical risk factors.

Schoeni et al. (Mar 31, 2021). Association Between Risk Factors for Complications From COVID-19, Perceived Chances of Infection and Complications, and Protective Behavior in the US. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.3984

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* Among a cohort of healthcare workers (HCW) from Boston Medical Center who received the first dose of either the Pfizer-BioNTech or Moderna vaccines, the SARS-CoV-2 infection rate was 27% and 82% lower 1-14 days and >14 days after receiving the first dose, respectively, compared to surrounding community infection rates. SARS-CoV-2 infections occurred in 1.4% (96 of 7109) of HCWs given at least a first dose and 0.3% (17 of 5913) of HCWs given both doses. SARS-CoV-2 infections >14 days from the first dose were more frequently asymptomatic, among older HCWs, and HCWs of Latinx ethnicity. Analysis of 48 SARS-CoV-2 genomes sequenced from first-dose infections did not indicate selection pressure towards mutations in the spike protein known to escape antibody neutralization.

  Bouton et al. (Mar 31, 2021). COVID-19 Vaccine Impact on Rates of SARS-CoV-2 Cases and Post Vaccination Strain Sequences among Healthcare Workers at an Urban Academic Medical Center a Prospective Cohort Study. Pre-print downloaded Apr 1 from https://doi.org/10.1101/2021.03.30.21254655

- SARS-CoV-2-specific IgG antibody titers gradually increased with neutralizing antibody titers while IgM titers more quickly waned in a study of the antibody response dynamics in 24 COVID-19 recovered patients followed up to 42 weeks. While IgG titers were higher among severe than among mild cases, titers did not decline significantly over time in either group. 17% of patients were IgM-negative by 8-11 weeks, and the proportion continued to increase during the following weeks. Neutralizing antibody titers initially showed significant drops up to week 13, but remained stable through 42 weeks.

  Cheng et al. (Mar 31, 2021). Longitudinal Dynamics of Antibody Responses in Recovered COVID-19 Patients. Signal Transduction and Targeted Therapy. https://doi.org/10.1038/s41392-021-00559-7

- The COVID-19 vaccination refusal rate was 45% among 5,110 surveyed residents of three prisons and 13 jails across four states during September to December 2020 (all three prisons and 10 jails in Washington State). The most common reason for vaccination refusal was distrust of health care, correctional, or government personnel or institutions (20%). 10% of surveyed residents expressed vaccine hesitancy; waiting for more information was the most common reason for hesitancy (55%). Willingness to be vaccinated was lowest among Black participants (37%; 510 of 1,390), participants aged 18–29 years (39%; 583 of 1,516), and those who lived in jails versus prisons (44%; 1,850 of 4,232).

  Stern et al. (Apr 2, 2021). Willingness to Receive a COVID-19 Vaccination Among Incarcerated or Detained Persons in Correctional and Detention Facilities — Four States, September–December

2020. MMWR. Morbidity and Mortality Weekly Report. https://doi.org/10.15585/mmwr.mm7013a3

Clinical Characteristics and Health Care Setting

- Individuals discharged following hospitalization for COVID-19 were 4 and 8 times more likely to be readmitted and to die compared to controls matched for personal and clinical characteristics. In this retrospective cohort study, 47,780 patients with COVID-19 discharged by August 2020 were matched to a pool of about 50 million people in England. Nearly a third of individuals in the discharged cohort were readmitted, and more than 1 in 10 died over a mean follow-up of 140 days. Compared to controls, patients with COVID-19 had significantly higher rates of respiratory disease, diabetes, and cardiovascular disease. Patients with COVID-19 aged 70 or older (vs younger) and those in ethnic minority groups as (vs white) were more likely to experience multiorgan dysfunction.

  Ayoubkhani et al. (Mar 31, 2021). Post-Covid Syndrome in Individuals Admitted to Hospital with Covid-19: Retrospective Cohort Study. BMJ. https://doi.org/10.1136/bmj.n693

- *[Pre-print, not peer-reviewed]* 69% of non-hospitalized individuals infected with SARS-CoV-2 in Arizona (n=303) experienced post-acute sequelae of SARS-CoV-2 infection (PASC, experiencing at least one symptom for ≥30 days). In a subset of the cohort (n=157) followed for >60 days, prevalence of PASC was 77%. Participants were followed for a median of 61 days; during follow-up, individuals reported a median of 3 symptoms (range: 1-20) with fatigue, shortness-of-breath, brain fog, and stress and being the most commonly reported symptoms.

  Bell et al. (Mar 31, 2021). Post-Acute Sequelae of COVID-19 in a Non-Hospitalized Cohort Results from the Arizona CoVHORT. Pre-print downloaded Apr 1 from https://doi.org/10.1101/2021.03.29.21254588

Modeling and Prediction

- An agent-based transmission model calibrated to the population and COVID-19 case numbers observed in Ontario, Canada suggests that changes in case numbers associated with school reopenings were relatively small compared with the changes associated with non-pharmaceutical interventions (NPIs). Among 1 million simulated individuals from September to October 2020, incident COVID-19 cases without community-based NPIs were 4,414 when schools remained closed, and 4,740 when they reopened. In contrast, 714 and 780 incident COVID-19 cases with community-based NPIs were expected when schools remained closed and reopened, respectively. Across all modeled scenarios, school-acquired infections were <5% of total infections. A mean difference of 39,355 cumulative cases was observed between community-based NPI vs no community-based NPI scenarios compared to a mean difference of only 2,040 cases between school closing vs reopening scenarios.

  Naimark et al. (Mar 31, 2021). Simulation-Based Estimation of SARS-CoV-2 Infections Associated With School Closures and Community-Based Nonpharmaceutical Interventions in Ontario, Canada. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.3793

Public Health Policy and Practice

- National COVID-19 case surveillance data received by the CDC from April to September 2020 represented only 73% (~5 of 6.9 million) of the absolute number of cases and 72% of the absolute number of deaths (~142,000 of 198,000), as of November 2020. Completeness of case surveillance records was highest for age and sex (>98%), but race/ethnicity data were complete for only 57% of

cases, with variation by region. Data for each underlying medical condition assessed was less than 25% complete and declined during the study period. Only about half of records had complete hospitalization and death status.

Gold et al. (Mar 31, 2021). COVID-19 Case Surveillance: Trends in Person-Level Case Data Completeness, United States, April 5-September 30, 2020. Public Health Reports (Washington, D.C. : 1974). https://pubmed.ncbi.nlm.nih.gov/33789540/

- The number of US death certificates from 2020 listing COVID-19 and at least one other co-occurring diagnosis were consistent with the number of deaths attributable to COVID-19 in 2020 (approximately 375,000) reported to the CDC's National Vital Statistics System (NVSS). Among 378,048 death certificates including the ICD-10 code for COVID-19, 5.5% (20,915) only listed that code. Of the 357,133 (92% of total) death certificates with at least one other code, 97% had a co-occurring diagnosis that was a plausible chain-of-event condition (such as pneumonia), a significant contributing condition (such as hypertension), or both.
- Deaths reported from inpatient settings accounted for 64% (240,770) of all death certificates, 86% of which had co-occurring diagnoses identified as chain-of-event and significant contributing conditions. 2.5% (9,638) of death certificates had co-occurring diagnosis codes not categorized as chain-of-event or contributing conditions, which were noted more frequently among those who died at home, were declared dead on arrival, and whose manner of death was not natural. 35% and 10% of deaths from individuals aged <18 years and 18-29 years, respectively, belonged in this small proportion of deaths.

  Gundlapalli et al. (Mar 31, 2021). Death Certificate–Based ICD-10 Diagnosis Codes for COVID-19 Mortality Surveillance — United States, January–December 2020. MMWR. Morbidity and Mortality Weekly Report. https://doi.org/10.15585/mmwr.mm7014e2

- Individual-level factors were more likely to be associated with risk of SARS-CoV-2-related hospitalization and death than risk of SARS-CoV-2 infection. In a retrospective longitudinal cohort study of over 482,000 long-stay nursing home residents, risk of hospitalization was associated with BMI >45; male sex; Hispanic, Black, or Asian race/ethnicity; comorbidities; and older age (>90 years). In contrast, only BMI was associated with risk of infection. Facility and county-level factors explained 37% and 23% of the variation in risk of infection, respectively).

  Mehta et al. (Mar 31, 2021). Risk Factors Associated With SARS-CoV-2 Infections, Hospitalization, and Mortality Among US Nursing Home Residents. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.6315

Other Resources and Commentaries

- Provision Mortality Data – United States, 2020 – MMWR (Mar 31)
- Defining Long COVID: Going Back to the Start – Med (Mar)
- Association Between Renin-Angiotensin-Aldosterone System Inhibitors and Clinical Outcomes in Patients With COVID-19: A Systematic Review and Meta-Analysis – JAMA Network Open (Mar 31)
- Diagnostic Accuracy of Two Commercial SARS-CoV-2 Antigen-Detecting Rapid Tests at the Point of Care in Community-Based Testing Centers – PLOS ONE (Mar 31)
- Containment of COVID-19: Simulating the Impact of Different Policies and Testing Capacities for Contact Tracing, Testing, and Isolation – PLOS ONE (Mar 31)
- Is Covid-19 Community Level Testing Effective in Reaching at-Risk Populations? Evidence from Spatial Analysis of New Orleans Patient Data at Walk-up Sites – BMC Public Health (Apr 1)

- Primary Care Clinicians as COVID-19 Vaccine Ambassadors – Journal of Primary Care & Community Health (Mar 31)
- Nonpharmaceutical Interventions Remain Essential to Reducing COVID-19 Burden Even in a Well-Vaccinated Society A Modeling Study – MedRxiv (Mar 31)
- When "Model Minorities" Become "Yellow Peril"-Othering and the Racialization of Asian Americans in the COVID-19 Pandemic – Sociology Compass (Jan 16)
- Beliefs Regarding COVID-19 Vaccines among Canadian Workers in the Intellectual Disability Sector Prior to Vaccine Implementation – Journal of Intellectual Disability Research (Mar 31)
- Pediatric Household Transmission of SARS-CoV-2 Infection – MedRxiv (Mar 31)
- SNAP Participants and High Levels of Food Insecurity in the Early Stages of the COVID-19 Pandemic – Public Health Reports (Mar 31)

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