2019-nCoV Literature Situation Report (Lit Rep)

March 9, 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

- **New recommendations from the CDC indicate that fully vaccinated individuals can gather with other vaccinated individuals indoors safely without wearing masks. This guidance comes in light of increasing evidence that vaccines can reduce likelihood of asymptomatic infection and transmission of SARS-CoV-2. The CDC recommends that everyone continue to practice COVID-19 precautions such as wearing masks in public and avoiding medium to large-sized gatherings.** More
- **SARS-CoV-2 infection with the B.1.1.7 variant was associated with a 1.7-fold increased risk of death compared to non-B.1.1.7 infection in UK electronic health record data collected from November 2020 to February 2021 (n=441,161).** More
- **In a survey of US adults with a history of COVID-19 (n=6,211), 80% reported recovering within 2 months, 3% were symptomatic for at least 4 months and 2% for at least 6 months. Older age was associated with greater likelihood of persistent symptoms.** More

Testing and Treatment

- *[Pre-print, not peer-reviewed]* A rapid field study conducted in the Kahului main airport in Maui, Hawaii identified 2 SARS-CoV-2 PCR positive participants out of 279 consecutively sampled participants boarding for departure, despite all participants having a negative PCR test 72 hours prior. This positivity rate corresponded to 7 cases per 1,000 travelers, which corresponds to an estimated 52-70 infected travelers arriving daily to Hawaii during November to December 2020. Participants were sampled anonymously at the time of departure to avoid interfering with travel plans, but had to have a ≤14 day stay in Hawaii to be eligible for the study.

  Hou et al. (Mar 8, 2021). A Rapid Method to Evaluate Pre-Travel Testing Programs for COVID-19 A Study in Hawaii. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.06.21251482

- Using simulated patients designed to have signs and symptoms consistent with typical COVID-19 presentations as well as patients with conditions that can mimic COVID-19 (e.g. sepsis and bacterial pneumonia), the CDC Coronavirus Symptom Checker only successfully triaged 38% of cases to seek further health assessment. In contrast, the corresponding symptom checkers used in the UK, Japan, and Singapore triaged 44%, 77%, and 88% of cases to healthcare contact, respectively. Both the US and UK symptom checkers consistently failed to identify severe COVID-19, bacterial pneumonia, and sepsis, triaging such cases to stay home.

Mansab et al. (Mar 8, 2021). Performance of National COVID-19 'Symptom Checkers': A Comparative Case Simulation Study. BMJ Health & Care Informatics. https://doi.org/10.1136/bmjhci-2020-100187

Vaccines and Immunity

- Among employees of Mass General Brigham (MGB), a Boston-based hospital and physicians network, who received their first dose of either the Pfizer-BioNTech or Moderna vaccine (n=64,900), acute allergic reactions of any type were reported by 1,365 employees overall (2.1%) and anaphylaxis was reported by 16 employees (2.5 cases per 10,000 vaccinations).. Among those reporting anaphylaxis, 63% had a prior allergy history and 31% had a history of anaphylaxis.

  Blumenthal et al. (Mar 8, 2021). Acute Allergic Reactions to MRNA COVID-19 Vaccines. JAMA. https://doi.org/10.1001/jama.2021.3976

- Seroprevalence of SARS-CoV-2-specific antibodies varied dramatically across WHO regions, according to a systematic review and meta-analysis including over 5 million participants from 400 serosurveys. The Southeast Asia region had the highest seroprevalence (20%), while the Western Pacific region, including Australia and New Zealand, had the lowest (1.7%). In a subset of serosurveys with higher quality data, seroprevalence in close contacts (18%) and high-risk healthcare workers (17%) was higher compared to low-risk healthcare workers (4%) and the general population (8%).

  Chen et al. (Mar 8, 2021). Serological Evidence of Human Infection with SARS-CoV-2: A Systematic Review and Meta-Analysis. The Lancet Global Health. https://doi.org/10.1016/S2214-109X(21)00026-7

- Interim results from a double-blind randomized phase 2 trial (n=380) of the Bharat Biotech whole-virion inactivated SARS-CoV-2 vaccine (BBV152) show robust neutralizing titers against wild-type SARS-CoV-2 at day 56 following two doses administered on day 0 and day 28. In a plaque-reduction neutralization test, the 6 µg dose group compared to the 3 µg dose group had higher geometric mean neutralizing titers (197 vs 100) and higher proportion of seroconversion (98% vs 93%) at day 56. No significant difference was observed in the proportion of participants who reported local or systematic adverse reactions between the dose groups (20% vs 21%), and no serious adverse events were reported in the study.

  Ella et al. (Mar 8, 2021). Safety and Immunogenicity of an Inactivated SARS-CoV-2 Vaccine, BBV152: Interim Results from a Double-Blind, Randomised, Multicentre, Phase 2 Trial, and 3-Month Follow-up of a Double-Blind, Randomised Phase 1 Trial. The Lancet Infectious Diseases. https://doi.org/10.1016/S1473-3099(21)00070-0

- *[Pre-print, not peer-reviewed]* The Pfizer-BioNTech and Moderna vaccines elicited similar immune responses among pregnant (n=84) and lactating (n=31) women compared to non-pregnant reproductive-age women (n=16). All vaccine-induced SARS-CoV-2-specific antibody titers were higher compared to titers from a group of pregnant women (n=37) that had SARS-CoV-2 infection 4-12 weeks prior. Vaccine-induced antibodies were detected in all umbilical cord blood (n=10) and breastmilk samples (n=31), although only IgG and not IgA antibodies were increased in maternal blood and breastmilk following vaccination. No differences were noted in reactogenicity across the groups.

  Gray et al. (Mar 8, 2021). COVID-19 Vaccine Response in Pregnant and Lactating Women a Cohort Study. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.07.21253094

- *[Pre-print, not peer-reviewed]* Whole blood analysis from 94 individuals who had been infected with SARS-CoV-2 in South Korea found that, SARS-CoV-2-specific memory T cell responses were maintained at up to 8 months post-symptom onset. Among 30 individuals with longitudinal samples beyond the first month, no significant differences in memory T cell responses were observed between paired samples from different time points. The proportion of stem cell-like memory T cells peaked at 4 months post-symptom onset. Given the self-renewal capacity and multipotency of stem cell-like memory T cells, the authors suggest they may confer long-lasting memory T cell production against SARS-CoV-2.

  Shin et al. (Mar 8, 2021). SARS-CoV-2-Specific T Cell Memory Is Sustained in COVID-19 Convalescents for 8 Months with Successful Development of Stem Cell-like Memory T Cells. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.04.21252658

Clinical Characteristics and Health Care Setting

- Individuals infected with the SARS-CoV-2 B.1.1.7 variant may have higher viral loads and longer viral shedding duration, according to a surveillance study in Italy. 313 individuals with sequencing-confirmed B.1.1.7 infection had lower median cycle thresholds of the SARS-CoV-2 nucleocapsid (N) protein (indicating higher viral loads) compared to individuals without B.1.1.7 infection (15.8 vs 16.9). Among those with negative PCR results, the median duration of RNA positivity was longer in the B.1.1.7-infected group (16 vs. 14 days).

  Calistri et al. (Mar 5, 2021). Infection Sustained by Lineage B.1.1.7 of SARS-CoV-2 Is Characterised by Longer Persistence and Higher Viral RNA Loads in Nasopharyngeal Swabs. International Journal of Infectious Diseases. https://doi.org/10.1016/j.ijid.2021.03.005

- *[Pre-print, not peer-reviewed]* Among US individuals with a history of symptomatic COVID-19 (n=6,211) participating in a 10-wave survey between June 2020 to January 2021, 80% reported recovering within less than 2 months and 8% reported experiencing symptoms for 2 months or more. 3% and 2% reported being symptomatic for ≥4 months and ≥6 months, respectively. Older age and presence of headache were associated with greater likelihood of persistent symptoms, while fever was associated with lower likelihood.

  Perlis et al. (Mar 8, 2021). Persistence of Symptoms up to 10 Months Following Acute COVID-19 Illness. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.07.21253072

Modeling and Prediction

- A transmission model calibrated to the US population suggests that implementing weekly home-based SARS-CoV-2 antigen testing could avert 2.8 million infections and 15,700 deaths over 60 days. In contrast, a scenario with no testing anticipates 11.6 million infections and 119,000 deaths over the same time period. While the scenario with testing could cost an additional $22.3 million compared to the scenario with no testing, lower inpatient costs and fewer workdays lost could offset the costs and yield incremental cost-effectiveness ratios of $8,000 per infection averted and $1.4 million per death averted (for reference, the commonly accepted willingness-to-pay values per statistical life saved are between $5-17 million). *[EDITORIAL NOTE: A pre-print related to this manuscript was summarized on February 9, 2020]*

Paltiel et al. (Mar 9, 2021). Clinical and Economic Effects of Widespread Rapid Testing to Decrease SARS-CoV-2 Transmission. Annals of Internal Medicine. https://doi.org/10.7326/M21-0510

Public Health Policy and Practice

- *[Pre-print, not peer-reviewed]* In 9 California prisons that experienced major COVID-19 outbreaks, risk factors for SARS-CoV-2 infection included living in a dormitory vs. in a cell (2.5-fold risk) and living in a room with residents who participated in out-of-room labor vs. other rooms (1.6-fold). By the end of the study, 18% had high COVID-19 risk scores, among whom nearly 40% lived in dormitory settings, and 15% lived in rooms with 10 or more occupants. The observational study also found that the incarcerated population in the state decreased by 19% between March to October 2020.

  Chin et al. (Mar 8, 2021). Covid-19 in the California State Prison System An Observational Study of Decarceration Ongoing Risks and Risk Factors. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.04.21252942

- *[Pre-print, not peer-reviewed]* Infection with the SARS-CoV-2 B.1.1.7 variant was associated with 1.7-fold increased risk of death compared to infection with non-B.1.1.7 strains, according to UK electronic health record data collected from November 2020 to February 2021. Increased risk of death was consistent across subgroups by age, number of comorbidities, ethnicity, and deprivation index quintile. Out of 441,161 individuals included in the study, 184,786 (42%) had S-gene target failure indicating B.1.1.7 infection. Among all-cause deaths that occurred during the study, nearly half were among B.1.1.7 cases (419 of 867).

  Grint et al. (Mar 8, 2021). Case Fatality Risk of the SARS-CoV-2 Variant of Concern B.1.1.7 in England. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.04.21252528

- *[Pre-print, not peer-reviewed]* The COVID-19 case fatality rate (CFR) among people experiencing homelessness (PEH) residing in 7 of the most populous US health jurisdictions was 1.3-times higher than that of the general population. In Los Angeles County, where PEH data is further stratified by additional demographic characteristics, the PEH CFR was up to 14-times higher among those aged 18-29 years. Of note, in King County, Washington, which was included in the analysis, PEH had a similar CFR compared with the jurisdiction population.

  Leifheit et al. (Mar 8, 2021). Elevated Mortality among People Experiencing Homelessness with COVID-19. Pre-print downloaded Mar 9 from https://doi.org/10.1101/2021.03.05.21253019

- New recommendations from CDC indicate that fully vaccinated individuals can now safely gather indoors with other fully vaccinated individuals without wearing a mask, in light of the increasing evidence that vaccinated individuals are less likely to have asymptomatic infection and to transmit SARS-CoV-2 to others. In contrast, CDC recommends that fully vaccinated individuals only gather indoors and unmasked with *unvaccinated* people if they are from only one other household and no one is at increased risk for severe illness from COVID-19.
- The CDC still recommends taking COVID-19 precautions, such as wearing a mask in public, avoiding gatherings with unvaccinated people from multiple households and other medium to large-sized gatherings, and delaying travel.

- Following a confirmed COVID-19 exposure, the CDC recommends that fully vaccinated individuals must still isolate themselves if they experience symptoms, but do not need to quarantine or be tested if they remain asymptomatic.
- An individual is considered fully vaccinated 2 weeks after their second dose in a 2-dose series (e.g. Pfizer-BioNTech and Moderna vaccine) or 2 weeks after a single-dose vaccine (e.g. Johnson & Johnson vaccine).

  U.S. Centers for Disease Control and Prevention. (Mar 8, 2021). When You've Been Fully Vaccinated. CDC. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated.html

Other Resources and Commentaries

- How Do Nocebo Effects in Placebo Groups of Randomized Controlled Trials Provide a Possible Explicative Framework for the COVID-19 Pandemic – Expert Review of Clinical Pharmacology (Mar 8)
- Susceptibility of Midge and Mosquito Vectors to SARS-CoV-2 – Journal of Medical Entomology (Mar 4)
- Update Alert 5: Masks for Prevention of Respiratory Virus Infections, Including SARS-CoV-2, in Health Care and Community Settings – Annals of Internal Medicine (Mar 9)
- How I Advocate the Importance of Vaccines to My Black Family – Nature (Mar 8)
- A Global Panel Database of Pandemic Policies (Oxford COVID-19 Government Response Tracker) – Nature Human Behaviour (Mar 8)
- Racism, Disease, and Vaccine Refusal: People of Color Are Dying for Access to COVID-19 Vaccines – PLOS Biology (Mar 8)
- Sex-Disaggregated Data in COVID-19 Vaccine Trials – The Lancet (Mar 5)
- Antibody Resistance of SARS-CoV-2 Variants B.1.351 and B.1.1.7 – Nature (Mar 8)
- Quantifying Compliance with COVID-19 Mitigation Policies in the US: A Mathematical Modeling Study – Infectious Disease Modelling (Mar 4)
- The Impact of COVID-19 Proactive Outreach With Somali Seniors – The Annals of Family Medicine (Mar 8)

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