2019-nCoV Literature Situation Report (Lit Rep)

April 6, 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

- **An estimated 37,300 children aged 0-17 years in the US had lost at least 1 parent due to COVID-19 by February 2021, according to demographic simulations using kinship networks. Roughly 3 in 4 children who are estimated to have lost a parent are adolescents aged 10-17 years, and Black children were disproportionately affected.** More
- **Transient local and systemic reactions were more frequently reported following the second dose of an mRNA vaccine (Pfizer-BioNTech or Moderna) according to a CDC surveillance system (V-safe). Reported reactions were highest on day 1 after vaccination and declined markedly through day 7, findings generally consistent with clinical trials. Reactions were more commonly reported by recipients of the Moderna vaccine compared to those who received the Pfizer-BioNTech vaccine.** More
- **Peaks in the incidence of multisystem inflammatory syndrome in children (MIS-C) occurred 2-5 weeks after peaks in the incidence of COVID-19 in the US. Clinical manifestations of MIS-C varied by age.** More

Transmission

- The median incubation period between SARS-CoV-2 exposure and symptom onset was 7 days, based on the estimated exposure date from 787 non-Wuhan cases (of which 598 are from mainland China). A longer incubation period was positively correlated with age and negatively correlated with disease severity. 92% of infected persons developed symptoms within 14 days.

  Huang et al. (Apr 4, 2021). Incubation Period of Coronavirus Disease 2019: New Implications for Intervention and Control. International Journal of Environmental Health Research. https://doi.org/10.1080/09603123.2021.1905781

Geographic Spread

- A novel SARS-CoV-2 mutation (P323 F/L) in the non-structural protein ORF was identified using a genomic surveillance sample of 200 high quality sequences obtained in Nevada from March to June 2020. Phylogenetic reconstruction of the samples cross-referenced to a subsample of sequences in the Nextstrain global genome database show that variants with the mutation P323L have been identified across the world, while variants with the mutation P323F was only noted in North America. Because this mutation is located in a region required to coordinate polymerase activity, the authors are conducting further investigations to determine whether there are phenotypic consequences to this mutation.

Hartley et al. (Feb 18, 2021). Genomic Surveillance of Nevada Patients Revealed Prevalence of Unique SARS-CoV-2 Variants Bearing Mutations in the RdRp Gene. Journal of Genetics and Genomics. https://doi.org/10.1016/j.jgg.2021.01.004

- *[Pre-print, not peer-reviewed]* A SARS-CoV-2 variant (named B.1.x) may be an emerging lineage that has been poorly recognized due to a deletion mutation that causes the submission of its sequence to be rejected by automated sequence repository quality control in genome databases such as GISAID and Genbank. The variant, which contains a deletion in the non-structural protein ORF, was identified in 8 samples (out of 339) from Santa Cruz, California. The lineage also contains the N501Y mutation present in the B.1.1.7 and B.1.351 variants of concern. Based on the growing proportion of B.1.1.7 samples, the authors suggest that B.1.x could be growing at a similarly fast rate.

  Thornlow et al. (Apr 6, 2021). A New SARS-CoV-2 Lineage That Shares Mutations with Known Variants of Concern Is Rejected by Automated Sequence Repository Quality Control. Pre-print downloaded Apr 6 from https://doi.org/10.1101/2021.04.05.438352

Testing and Treatment

- *[Pre-print, not peer-reviewed]* SLAMP, a novel RT-LAMP (reverse transcriptase loop-mediated isothermal amplification) assay applied to heat-inactivated saliva samples, demonstrated 91% sensitivity at 98% specificity compared to RT-PCR using nasopharyngeal swab samples among 243 individuals (65 SARS-COV-2 positive).

  Bikos et al. (Apr 5, 2021). SLAMP A Rapid Fluorometric RT-LAMP Assay for Sensitive and Specific Detection of SARS-CoV-2 from Human Saliva. Pre-print downloaded Apr 6 from https://doi.org/10.1101/2021.03.31.21254634

Vaccines and Immunity

- Local and systemic adverse reactions within 7 days of vaccination were more frequently self-reported by those who received the Moderna vaccine compared to those who received the Pfizer-BioNTech vaccines. Reactions were also more frequently reported after the second dose of these vaccines. These findings are based on V-Safe, a CDC surveillance system that included 3.6 million first-dose recipients and 1.9 million second-dose recipients up to February 21, 2021. Injection site reactions within 7 days were reported by 70% and 75% of first- and second-dose recipients, while systemic reactions within 7 days of vaccination were reported by 50% and 69% of first- and second-dose recipients. The most frequently reported solicited reactions after the first dose were injection site pain (68%), fatigue (31%), and headache (26%), and for the second dose were fatigue (54%), headache (47%), and myalgia (44%). Reported reactions were highest on day 1 after vaccination and declined markedly through day 7. These findings are generally consistent with frequencies observed in clinical trials.

  Chapin-Bardales et al. (Apr 5, 2021). Reactogenicity Following Receipt of mRNA-Based COVID-19 Vaccines. JAMA. https://doi.org/10.1001/jama.2021.5374

- *[Pre-print, not peer-reviewed]* The antibody response induced by mRNA vaccines (Moderna and Pfizer-BioNTech) after the first dose was lower among pregnant (n=84) and lactating (n=31) women compared to non-pregnant age-matched controls (n=16), but after the second dose no significant differences were observed. Differences in antibody response after the first dose related to lower antibody titers and delayed kinetics in Fc-receptor-binding and antibody effector functions.

Atyeo et al. (Apr 5, 2021). COVID-19 MRNA Vaccines Drive Differential Fc-Functional Profiles in Pregnant Lactating and Non-Pregnant Women. Pre-print downloaded Apr 6 from https://doi.org/10.1101/2021.04.04.438404

- Clinical depression, peri-traumatic distress, and clinical anxiety were associated with vaccine hesitancy in a cross-sectional study (n=254) of vaccinated participants aged ≥60 years in Israel.

  Palgi et al. (Mar 26, 2021). No Psychological Vaccination: Vaccine Hesitancy Is Associated with Negative Psychiatric Outcomes among Israelis Who Received COVID-19 Vaccination. Journal of Affective Disorders. https://doi.org/10.1016/j.jad.2021.03.064

Clinical Characteristics and Health Care Setting

- Peaks in the incidence of multisystem inflammatory syndrome in children (MIS-C) occurred 2-5 weeks after peaks in the incidence of COVID-19 and clinical manifestations of MIS-C varied by age. These findings were based on a cross-sectional study of 1,733 patients with MIS-C in the United States. Children age 0-4 had the lowest proportion of severe manifestations, whereas patients aged 18-20 had the highest proportion with myocarditis, pneumonia, and acute respiratory distress syndrome. A higher proportion of older adolescents reported a preceding COVID-19-like illness. Less than 30% of patients reported respiratory symptoms such as cough, shortness of breath, or chest pain.

  Belay et al. (Apr 6, 2021). Trends in Geographic and Temporal Distribution of US Children With Multisystem Inflammatory Syndrome During the COVID-19 Pandemic. JAMA Pediatrics. https://doi.org/10.1001/jamapediatrics.2021.0630

- In a cross-sectional study (n=424) of age and sex-matched SARS-CoV-2 positive and negative participants, mean relative expression of both the transmembrane and soluble isoforms of ACE2 was higher in negative participants despite ACE2 serving as the host receptor for SARS-CoV-2 cell entry. When analyzed together and adjusting for other factors, expression of transmembrane ACE2 was positively correlated with viral load while expression of soluble ACE2 was negatively correlated with viral load, suggesting that ACE2 plays dual and contrasting roles in SARS-CoV-2 infection.

  Nikiforuk et al. (Apr 2, 2021). The Contrasting Role of Nasopharyngeal Angiotensin Converting Enzyme 2 (ACE2) Transcription in SARS-CoV-2 Infection: A Cross-Sectional Study of People Tested for COVID-19 in British Columbia, Canada. EBioMedicine. https://doi.org/10.1016/j.ebiom.2021.103316

- The 30-day incidence of venous thromboembolism (VTE) among SARS-CoV-2-positive individuals was not significantly increased compared to negative individuals in an outpatient setting (1.8 vs 2.2 cases per 1000) and in a post-hospitalization setting (1.0 vs 1.1 case per 1000) in a retrospective cohort study in Northern California (n=220,588) from February to August 2020. A significant increase was observed in hospital-associated VTE between SARS-CoV-2 positive and negative individuals (4.7 vs 1.6 cases per 1,000).

  Roubinian et al. (Apr 5, 2021). Incidence of 30-Day Venous Thromboembolism in Adults Tested for SARS-CoV-2 Infection in an Integrated Health Care System in Northern California. JAMA Internal Medicine. https://doi.org/10.1001/jamainternmed.2021.0488

Public Health Policy and Practice

- An estimated 37,300 children aged 0-17 years in the US had lost at least 1 parent due to COVID-19 by February 2021, of which roughly 3 in 4 are adolescents aged 10-17 years. Estimates were computed by taking current COVID-19 mortality estimates (479,000) and applying a bereavement multiplier (number of children parentally bereaved per COVID-19 death = 0.078) and calculated from demographic simulations using kinship networks of white and Black individuals in the US. Relying on estimates of excess deaths rather than confirmed deaths due to COVID-19 raised the estimate to 43,000 children. Black children are disproportionately affected, comprising roughly 20% of parentally bereaved children while only comprising 14% of the US population of children.

  Kidman et al. (Apr 5, 2021). Estimates and Projections of COVID-19 and Parental Death in the US. JAMA Pediatrics. https://doi.org/10.1001/jamapediatrics.2021.0161

- Public Service Announcements (PSA) tailored to match the identity of the viewer increase the likelihood that the viewer reported a willingness to comply with mask-use and stay-at-home policies. In this cross-sectional online experiment of Amazon Mechanical Turk workers (n=292), a PSA tailored for Christians when matched with a Christian identity increased likelihood of reported compliance with mask-use policies by 12% , while a PSA focused on economics when matched with an economics-focused identity increased likelihood of compliance by 6%. Within-subject effects were controlled for by showing the control and tailored PSAs in a random order for each participant.

  Dennis et al. (Apr 6, 2020). Assessment of the Effectiveness of Identity-Based Public Health Announcements in Increasing the Likelihood of Complying with COVID-19 Guidelines: An Online Experiment (Preprint). JMIR Public Health and Surveillance. https://doi.org/10.2196/25762

Other Resources and Commentaries

- COVID-19 Is Not over and Age Is Not Enough: Using Frailty for Prognostication in Hospitalized Patients – Journal of the American Geriatrics Society (Apr 5)
- Telling People to "Rely on Their Reasoning" Increases Intentions to Wear a Face Covering to Slow down COVID -19 Transmission – Applied Cognitive Psychology (Jan 24)
- Equity Impacts of Dollar Store Vaccine Distribution – MedRxiv (Apr 5)
- The Impact of the Lockdown and the Re-Opening of Schools and Day Cares on the Epidemiology of SARS-CoV-2 and Other Respiratory Infections in Children – A Nationwide Register Study in Finland – EClinicalMedicine (Mar 30)
- To What Extent Are Conspiracy Theorists Concerned for Self versus Others? A COVID-19 Test Case – European Journal of Social Psychology (Feb 2)
- Racial Disparities in Potentially Avoidable Hospitalizations During the COVID-19 Pandemic – American Journal of Preventive Medicine (Mar 19)
- Joint Testing of IgM and IgG Has High Value for Ruling in SARS-CoV-2 Infection – Annals of Internal Medicine (Apr 6)
- The FDA and the COVID -19: A Political Economy Perspective – Southern Economic Journal (Feb 28)
- SARS-CoV-2 IgG Seropositivity and Acute Asymptomatic Infection Rate Among Firefighter First Responders in an Early Outbreak County in California – Prehospital Emergency Care (Apr 5)
- COVID-19 Research Priorities for Non-Pharmaceutical Public Health and Social Measures – Epidemiology and Infection (Apr 5)
- Characteristics of Viral Shedding Time in SARS-CoV-2 Infections: A Systematic Review and Meta-Analysis – Frontiers in Public Health (Mar 19)

- Measuring Voluntary and Policy-Induced Social Distancing Behavior during the COVID-19 Pandemic – Proceedings of the National Academy of Sciences (Apr 5)
- Tocilizumab in Treatment for Patients With COVID-19 – JAMA Internal Medicine (Apr 5)
- Patient Use and Clinical Practice Patterns of Remote Cardiology Clinic Visits in the Era of COVID-19 – JAMA Network Open (Apr 5)
- Serologic Screening of Severe Acute Respiratory Syndrome Coronavirus 2 Infection in Cats and Dogs during First Coronavirus Disease Wave, the Netherlands – Emerging Infectious Diseases (Mar 24)

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