2019-nCoV Literature Situation Report (Lit Rep)

May 13, 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

- **The CDC released updated guidance on May 13, 2021 that fully vaccinated individuals no longer need to wear face coverings or physically distance in most indoor and outdoor settings regardless of crowd size. Mask wearing is still recommended in certain indoor settings, such as healthcare facilities, transportation hubs, and correctional facilities. Fully vaccinated people should continue to follow any applicable federal, state, local, tribal, or territorial laws, rules, and regulations.** More
- **67% of California prison residents who were offered a COVID-19 vaccine accepted at least one dose through March 2021. Acceptance was highest among Hispanic (73%) and white residents (72%), and among those at high risk for severe COVID-19 (>80%). Acceptance was lowest among Black residents (55%) and those at low risk for severe COVID-19 (<65%). Almost half of those who initially declined vaccination accepted at least one vaccine dose after they were offered the vaccine at a later time.** More
- **There were no differences observed in the frequency of preterm birth (7.5%) and stillbirth (0.5%) between births during the pandemic compared to pre-pandemic births occurring within the same calendar period from 2015 to 2019 in Ontario, Canada. There were also no differences in extreme preterm birth, severe small for gestational age, neonatal intensive care unit admission, or neonatal death.** More

Non-Pharmaceutical Interventions

- The CDC released updated guidance as of May 13, 2021 that fully vaccinated individuals (2 weeks after a single dose vaccine or 2 weeks after the second dose of a 2-dose vaccine) no longer need to wear face coverings or physically distance in most indoor and outdoor settings regardless of crowd size. Officials at the CDC justified the revised recommendations based on several recent studies showing that COVID-19 vaccines are >90% effective in preventing mild and severe disease, hospitalizations, and deaths from COVID-19 in real-world settings. However, mask wearing even by those fully vaccinated is recommended when visiting healthcare facilities, traveling by public transportation or going to transportation hubs, or visiting prisons, jails, or homeless centers. The updated CDC recommendations do not supersede state, local, or tribal laws and regulations or local rules for businesses and workplaces.

  CDC (May 13, 2021). Guidance for Fully Vaccinated People.
  https://www.cdc.gov/coronavirus/2019-ncov/vaccines/fully-vaccinated-guidance.html

- No evidence of onward SARS-CoV-2 transmission was observed among college students released from quarantine after 7 days at the University of Notre Dame between September and November 2020. The 7-day quarantine protocol required both a negative PCR test on day 4 and a negative antigen test on day 7. Among 1,130 asymptomatic contacts of index cases who completed the 7-day quarantine, 11% were PCR positive on day 4, and 1% (15 of 1,167) had positive rapid antigen tests on day 7. Overall, 6% (74 of 1,152) of individuals completing the 7-day quarantine tested positive, 76% (56 of 74) of whom were beyond the 14-day quarantine period following initial exposure and 18 were within 14 days of initial exposure. Nine of the 18 were detected during routine screening tests while the other 9 were seeking a test for symptom onset, new exposure, or both.

  Fox et al. (May 12, 2021). Results of a Shortened Quarantine Protocol on a Midwestern College Campus. Clinical Infectious Diseases. https://doi.org/10.1093/cid/ciab342

Testing and Treatment

- Anti-SARS-CoV-2 spike IgG antibodies were detectable in >85% of saliva samples obtained from 74 mostly mild COVID-19 patients up to 9 months-post symptom onset. Salivary IgG responses were highly correlated with anti-spike IgG. In contrast, anti-nucleocapsid IgG was much lower in samples collected 3 months post symptom onset. In a separate cohort of 147 asymptomatic individuals, only 14-15% had salivary IgG, which was more common among those self-reporting COVID-19-like symptoms prior to saliva sampling.

  Alkharaan et al. (May 12, 2021). Persisting Salivary IgG against SARS-CoV-2 at 9 Months After Mild COVID-19: A Complementary Approach to Population Surveys. The Journal of Infectious Diseases. https://doi.org/10.1093/infdis/jiab256

Vaccines and Immunity

- 67% of California prison residents offered a COVID-19 vaccine (n=64,633) accepted at least one dose through March 2021. Acceptance was highest among Hispanic (73%) and white residents (72%), and lowest among Black residents (55%). Acceptance was highest among residents aged ≥65 years and those at high risk for severe COVID-19 (>80%) and lowest among those aged 18-39 years at low risk for severe COVID-19 (<65%). Acceptance was similar between those with and without history of COVID-19. Forty-six percent (901 of 1,962) of residents who initially declined and were subsequently reoffered vaccination accepted at least one dose.

  Chin et al. (May 12, 2021). Covid-19 Vaccine Acceptance in California State Prisons. New England Journal of Medicine. https://doi.org/10.1056/NEJMc2105282

- Non-Hispanic Black US military service members were 28% less likely to initiate vaccination than non-Hispanic white members, after adjusting for potential confounders. From December 2020 to March 2021 a total of 361,538 service members (27%) initiated a COVID-19 mRNA vaccine. Increasing age, higher education levels, higher military rank, and Asian/Pacific Islander race/ethnicity were also associated with increasing incidence of initiation after adjustment for confounders. Similar results were observed when the analysis was restricted only to active military service members.

  Lang et al. (Apr 2021). Disparities in COVID-19 Vaccine Initiation and Completion Among Active Component Service Members and Health Care Personnel, 11 December 2020-12 March 2021. MSMR. http://www.ncbi.nlm.nih.gov/pubmed/33975434

- SARS-CoV-2-specific cellular and humoral immune responses were maintained up to 5 months post infection in a cohort of professional soccer players in Italy (n=30). 20% of participants displayed weaker immune responses over time, indicating heterogeneity in magnitude of immunological memory. Stronger cellular immune response was associated with symptomatic infection as indicated by higher levels of SARS-CoV-2-specific CD4+ T cells.

  Mazzoni et al. (May 6, 2021). Heterogeneous Magnitude of Immunological Memory to SARS-CoV-2 in Recovered Individuals. Clinical & Translational Immunology. https://doi.org/10.1002/cti2.1281

- *[Pre-print, not peer-reviewed]* CD4+ T cell responses elicited by COVID-19 mRNA vaccines respond similarly to spike protein epitopes derived from the SARS-CoV-2 B.1.1.7 and B.1.351 variants of concern and the ancestral strain, based on an analysis of 24 specimens obtained at 3 different timepoints from 8 fully vaccinated individuals. The second vaccine dose appeared to elicit a quantitative increase of spike-specific T cells in individuals without prior infection (n=4), but not in those with prior infection (n=4). Regardless of history of infection, the second dose did not change T cell phenotype. The authors conclude that T cell phenotype among those with prior infection indicates superior long-term persistence as compared to those without prior infection.

  Neidleman et al. (May 12, 2021). mRNA Vaccine-Induced SARS-CoV-2-Specific T Cells Recognize B.1.1.7 and B.1.351 Variants but Differ in Longevity and Homing Properties Depending on Prior Infection Status. Pre-print downloaded May 13 from https://doi.org/10.1101/2021.05.12.443888

- *[Pre-print, not peer-reviewed]* Individuals with prior SARS-CoV-2 infection (n=18) had 24-fold higher levels of anti-SARS-CoV-2 neutralizing antibodies (nAbs) against the B.1.617.1 variant, which is linked to recent surges in cases in India, 4 weeks after the second dose of the Covishield vaccine (Oxford-AstraZeneca vaccine version manufactured in India), compared to those without a previous history of infection (n=43). Geometric mean titers (GMTs) for nAbs against the D614G variant among vaccinated individuals with prior infection were also 30-fold higher than vaccinated individuals without prior infection. Among vaccinated individuals without prior infection, neutralization titers against the B.1.617.1 variant were reduced 2-fold compared to those against the D614G variant .

  Yadav et al. (May 12, 2021). Neutralization Potential of Covishield Vaccinated Individuals against B.1.617.1. Pre-print downloaded May 13 from https://doi.org/10.1101/2021.05.12.443645

- Anti-SARS-CoV-2 IgG, IgM, and neutralizing antibodies against the spike and nucleocapsid proteins were detected in approximately 90% of participants in a cross-sectional study of 59 mostly mild COVID-19 patients after a median of 317 days (range 257 - 343) since symptom onset, while roughly 60% of patients had anti-receptor binding domain (RBD) IgG antibodies. In terms of cellular immune responses, SARS-CoV-2-specific memory B and T cells were detectable in over 70% of patients.

  Yao et al. (May 12, 2021). Persistence of Antibody and Cellular Immune Responses in COVID-19 Patients over Nine Months after Infection. The Journal of Infectious Diseases. https://doi.org/10.1093/infdis/jiab255

Clinical Characteristics and Health Care Setting

- Lack of eye protection during the care of a COVID-19 patient was associated with test positivity for SARS-CoV-2 infection (RR=10) among 345 healthcare personnel (HCP) who sustained significant occupational exposure to COVID-19 patients in a tertiary care center in Minnesota from May to

November 2020. While the most common reason for significant exposure was use of a surgical facemask in place of a respirator during aerosol generating procedures, this was not associated with test positivity. 2.3% (8 of 345) of HCP tested positive during the study period.

Shah et al. (May 12, 2021). Evaluation of Healthcare Personnel Exposures to Patients with SARS-CoV-2 Associated with Personal Protective Equipment Use. Infection Control & Hospital Epidemiology. https://doi.org/10.1017/ice.2021.219

Modeling and Prediction

- *[Pre-print, not peer-reviewed]* An age-stratified SARS-CoV-2 transmission model calibrated to the US population and current vaccination rates suggests that the SARS-CoV-2 B.1.1.7 variant would likely remain the dominant variant of concern in the US compared to the B.1.351 variant through December 2021, if the B.1.351 variant reduced vaccine efficacy by less than 30% or if the relative transmissibility of the B.1.351 variant is less than 4% higher than the original strain. However, if the selection advantage of the variant exceeds these thresholds, the variant could become predominant as early as July 2021 and cause a resurgence in cases and hospitalizations. For example, if the B.1351 variant reduced vaccine efficacy by 60% and is 20% more transmissible than the original strain, the authors project a resurgence of 19 cases per 100,000 at the epidemic peak, which could increase to 93 cases per 100,000 if the variant is 50% more transmissible.

  Sah et al. (May 12, 2021). Quantifying the Potential for Dominant Spread of SARS-CoV-2 Variant B.1.351 in the United States. Pre-print downloaded May 13 from https://doi.org/10.1101/2021.05.10.21256996

Public Health Policy and Practice

- Adverse pregnancy outcomes occurred more frequently among US women with documented COVID-19 diagnosis at delivery hospitalization compared to those without diagnosis (4.4% vs 0.8%) in a large study including 703 hospitals (n=489,471 delivery hospitalizations; 1.3% of patients with COVID-19) between March and September 2020. In analyses adjusted for confounders, COVID-19 diagnosis was associated with a 1.2-fold increase in risk of any adverse pregnancy outcome, including preterm delivery and stillbirth, and a 6.3-fold increase in risk of any maternal complication, including sepsis and shock. Discharge to home did not differ by COVID-19 status.

  Ko et al. (May 12, 2021). Adverse Pregnancy Outcomes, Maternal Complications, and Severe Illness among U.S. Delivery Hospitalizations with and without a COVID-19 Diagnosis. Clinical Infectious Diseases. https://doi.org/10.1093/cid/ciab344

- There were no differences observed in the frequency of preterm birth (7.5%) and stillbirth (0.5%) between a cohort of births during the COVID-19 pandemic (n=67,747) occurring between March and September 2020 and a cohort of pre-pandemic births (n=348,633) occurring within the same calendar period between 2015 and 2019 according to administrative data in Ontario, Canada. The frequency of very preterm birth was slightly lower among births that occurred during the pandemic compared to the pre-pandemic period (1.2% vs 1.3%; aOR=0.91). There were also no differences in extreme preterm birth, severe small for gestational age, neonatal intensive care unit admission, or neonatal death.

  Simpson et al. (May 12, 2021). Perinatal Outcomes During the COVID-19 Pandemic in Ontario, Canada. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.10104

Other Resources and Commentaries

- Drug Overdose Deaths Before and After Shelter-in-Place Orders During the COVID-19 Pandemic in San Francisco – JAMA Network Open (May 12)
- Spoonful of Honey or a Gallon of Vinegar? A Conditional COVID-19 Vaccination Policy for Front-Line Healthcare Workers – Journal of Medical Ethics (May)
- Social Media Use for Health Purposes: Systematic Review – Journal of Medical Internet Research (May)
- Impact of Vaccination on the COVID-19 Pandemic Evidence from U.S. States – MedRxiv (May 12)
- Industry Sectors Highly Affected by Worksite Outbreaks of Coronavirus Disease, Los Angeles County, California, USA, March 19-September 30, 2020 – Emerging Infectious Diseases (May)
- Reducing Mask Resistance among White Evangelical Christians with Value-Consistent Messages – Proceedings of the National Academy of Sciences of the United States of America (May)
- Droplets and Aerosols: An Artificial Dichotomy in Respiratory Virus Transmission – Health Science Reports (June)
- Effects of Different Types of Written Vaccination Information on COVID-19 Vaccine Hesitancy in the UK (OCEANS-III): A Single-Blind, Parallel-Group, Randomised Controlled Trial – The Lancet Public Health (May 13)
- Cruise Ship Travel in the Era of COVID-19: A Summary of Outbreaks and a Model of Public Health Interventions – Clinical Infectious Diseases (May 12)
- COVID-19 Surveillance for Local Decision Making – Public Health Reports (May 12)
- Influenza Vaccination in Health Centers during the COVID-19 Pandemic—United States, November 7–27, 2020 – Clinical Infectious Diseases (May 12)
- Emerging Technologies and COVID-19 Digital Vaccination Certificates and Passports – Public Health in Practice (May)
- Examining the Effect of Information Channel on COVID-19 Vaccine Acceptance – PLOS ONE (May 12)
- Use of Repurposed and Adjuvant Drugs in Hospital Patients with Covid-19: Multinational Network Cohort Study – BMJ (May 11)
- A Model to Analyze Rideshare Data to Surveil Novel Strains of SARS-CoV-2 – MedRxiv (May 12)
- Adults Hospitalized with COVID-19 —United States, March-June and October-December 2020: Implications for the Potential Effects of COVID-19 Tier-1 Vaccination on Future Hospitalizations and Outcomes – Clinical Infectious Diseases (May 12)
- Evaluating Alternative Hypotheses to Explain the Downward Trend in the Indices of the COVID-19 Pandemic Death Rate – PeerJ (2021)
- More on SARS-CoV-2 Infection after Vaccination in Health Care Workers – New England Journal of Medicine (May 12)
- Coronavirus Variants Are Spreading in India - What Scientists Know so Far – Nature (May)
- COVID-19 Vaccination in Pregnancy – Drugs & Therapy Perspectives (May 6)
- Guidance for Fully Vaccinated People – CDC (May 13)

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