Washington State Department of Health

2019-nCoV Literature Situation Report (Lit Rep)
April 20, 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

➢ **In Brazil, younger patients without pre-existing conditions accounted for a larger proportion of severe COVID-19 cases leading to death in the second wave of cases (February 2021) compared to the first wave (November-December 2020). The second wave was predominated by the P.1 variant.** More

➢ **Results from the phase 1-2 trial for the SARS-CoV-2 recombinant protein vaccine candidate CoV2 preS dTM (Sanofi Pasteur) found lower immune responses than anticipated. No unusual side effects were reported, but the vaccine was associated with more typical vaccine side effects such as local pain at the injection site than was anticipated.** More

Transmission

- The overall SARS-CoV-2 household attack rate was 45% among 112 index cases and 179 total household contacts in a study conducted in Norway from February to April 2020. Attack rates were equally high in children (48%) and young adults (42%). The attack rate was not associated with household size or with whether or not the household included children. Attack rates were as high as 42% among symptomatic members with a negative PCR test. Seropositivity for SARS-CoV-2 IgG antibodies 6-8 weeks after inclusion in the study identified more infections than PCR testing.

  Kuwelker et al. (Mar 31, 2021). Attack Rates amongst Household Members of Outpatients with Confirmed COVID-19 in Bergen, Norway: A Case-Ascertained Study. The Lancet Regional Health - Europe. https://doi.org/10.1016/j.lanepe.2020.100014

Testing and Treatment

- No difference in ventilator-free days through 28 days (p=0.86) was observed between patients randomized to receive convalescent plasma (CP) vs standard plasma in a 4:1 randomized doubled-blind placebo-controlled trial (n=74). CP increased antibody levels by 14%, whereas standard plasma led to a 7% decrease. All-cause mortality through 90 days was non-significantly lower in the CP group (27% vs 33%, p=0.63). The trial was halted after the FDA granted emergency use authorization for CP.

  Bennett-Guerrero et al. (Apr 16, 2021). Severe Acute Respiratory Syndrome Coronavirus 2 Convalescent Plasma Versus Standard Plasma in Coronavirus Disease 2019 Infected Hospitalized Patients in New York. Critical Care Medicine. https://doi.org/10.1097/CCM.0000000000005066

Vaccines and Immunity

- *[Pre-print, not peer-reviewed]* Anti-nucleocapsid protein (N) antibodies were found to be an accurate method for differentiating between antibodies produced by natural infection and antibodies produced in response to vaccination, according to a study of healthcare workers (n=82). Participants were tested for anti-spike (S) IgG antibodies and anti-N IgG at two time points. No participants were vaccinated prior to the first time point and 46% reported vaccination by the second time point. Anti-spike antibodies were detectable prior to vaccination in 9.5% of participants. Among those with no prior infection at the second assay, anti-N levels were not significantly different by vaccination status whereas anti-S1 and S2 levels were elevated among vaccinated individuals. In contrast, anti-S1, S2, and N IgG levels were significantly elevated among infected vs uninfected individuals regardless of vaccination status. [*EDITORIAL NOTE: Details on which vaccine participants received was not included but presumably were one of the EUA-approved vaccines in the US, all of which do not include a nucleocapsid insert. These data may not apply to all vaccines.*]

    Demmer et al. (Apr 19, 2021). Identification of Natural SARS-CoV-2 Infection in Seroprevalence Studies among Vaccinated Populations. Pre-print downloaded Apr 20 from https://doi.org/10.1101/2021.04.12.21255330

- The SARS-CoV-2 recombinant protein vaccine candidate CoV2 preS dTM (Sanofi Pasteur) was safe and immunogenic in a randomized Phase I/II trial (n=439) but elicited lower immune responses than anticipated. Both a one and two dose regimen were tested but a single vaccine dose did not generate neutralizing antibody titers above placebo levels in any group. After two doses 22 days apart, geometric mean neutralizing titers (GMTs) were highest in the high-dose group with the GlaxoSmithKline adjuvant AS03 (GMT=75.1) and lowest in the low-dose group with the Sanofi Pasteur adjuvant AF03 (GMT=13.1) versus placebo (GMT=5). GMTs were lower among participants 50 years and older. These titers were lower than anticipated and investigations suggested the final drug product delivered in the vaccine doses was 4-to-6-fold lower than planned due to contamination with other proteins. No unusual side effects were reported, but the vaccine was associated with more typical vaccine side effects such as local pain at the injection site than was anticipated based upon previous experience with similar vaccines.

    Goepfert et al. (Apr 19, 2021). Safety and Immunogenicity of SARS-CoV-2 Recombinant Protein Vaccine Formulations in Healthy Adults: Interim Results of a Randomised, Placebo-Controlled, Phase 1–2, Dose-Ranging Study. The Lancet Infectious Diseases. https://doi.org/10.1016/S1473-3099(21)00147-X

- SARS-CoV-2 anti-nucleocapsid IgM antibodies were detected in a small proportion (6%) of asymptomatic food workers (n=508) in Wuhan in April 2020. In a follow-up survey among 21 of seropositive participants, IgM levels had declined by up to 50% in 90% of individuals. In comparison to a cohort of symptomatic patients 2 months after infection, asymptomatic individuals had lower IgM and IgG-RBD and memory B cell levels at a similar time point after infection.

    Yang et al. (Apr 19, 2021). Serological Investigation of Asymptomatic Cases of SARS-CoV-2 Infection Reveals Weak and Declining Antibody Responses. Emerging Microbes & Infections. https://doi.org/10.1080/22221751.2021.1919032

Clinical Characteristics and Health Care Setting

- Fatigue and shortness of breath with exertion were present four months after infection in approximately 70% of COVID-19 survivors, according to a prospective study of hospitalized COVID-19 patients in Ottawa, Canada (n=25). Among non-hospitalized survivors (n=38), fatigue and exertional breathlessness persisted in 71% and 55%, respectively. At follow-up, forced vital capacity, total lung capacity, peak VO2% predicted, peak heart rate, and oxygen pulse were all lower in hospitalized compared with non-hospitalized survivors. Chronotropic insufficiency (heart rate reserve <0.8) was more prevalent in hospitalized survivors (68% vs 18%).

  Abdallah et al. (Apr 19, 2021). Symptoms, Pulmonary Function and Functional Capacity Four Months after COVID-19. Annals of the American Thoracic Society.
  https://doi.org/10.1513/AnnalsATS.202012-1489RL

- A total of 83 of 85 (98%) of infants aged <12 months with multisystem inflammatory syndrome (MIS-C) tested positive for SARS-CoV-2 by either PCR or serology, according to data from a US surveillance system from May 2020 to January 2021. Rash, diarrhea, and vomiting were the most common reported symptoms and the median time from symptom onset to hospitalization was three days. Median time to recovery was four days. One infant with complex congenital malformations died after experiencing multisystem organ failure secondary to MIS-C.

  Godfred-Cato et al. (Apr 16, 2021). Multisystem Inflammatory Syndrome in Infants <12 Months of Age, United States, May 2020–January 2021. Pediatric Infectious Disease Journal.
  https://doi.org/10.1097/INF.0000000000003149

Mental Health and Personal Impact

- Elevated stress, depressive symptoms, and poorer mental/emotional health prior the COVID-19 pandemic were significantly associated with substance abuse during the pandemic, according to a cross-sectional online survey (n=83) conducted in April 2020.

  Smith et al. (Apr 17, 2021). Substance Use and Mental Health in Pregnant Women during the COVID-19 Pandemic. Journal of Reproductive and Infant Psychology.
  https://doi.org/10.1080/02646838.2021.1916815

Public Health Policy and Practice

- *[Pre-print, not peer-reviewed]* A higher proportion of younger patients (age <60 years) were observed among severe COVID-19 cases leading to death (28%) in the second wave in Brazil (February 2021) as compared to the first wave (18%) (November-December 2020). This second wave was predominantly the P.1 variant. Similarly, a higher proportion of patients without pre-existing conditions was present among severe COVID-19 cases (22% vs 13%). While the case fatality rate (CFR) increased for all age groups between the first and second wave, females aged 20-39 years with no pre-existing conditions had a 5.6-fold higher CFR during the second vs first wave and individuals aged 40-59 years had a 7.7-fold higher CFR.

  Freitas et al. (Apr 19, 2021). The Increase in the Risk of Severity and Fatality Rate of Covid-19 in Southern Brazil after the Emergence of the Variant of Concern (VOC) SARS-CoV-2 P.1 Was Greater among Young Adults without Pre-Existing Risk Conditions. Pre-print downloaded Apr 20 from https://doi.org/10.1101/2021.04.13.21255281

Other Resources and Commentaries

- [Contact Tracing Apps for the COVID-19 Pandemic: A Systematic Literature Review of Challenges and Future Directions for Neo-Liberal Societies](#) – Health Information Science and Systems (Dec)
- [Charting Elimination in the Pandemic A SARS-CoV-2 Serosurvey of Blood Donors in New Zealand](#) – MedRxiv (Apr 19)
- [Safety and Immunogenicity of an MF59-Adjuvanted Spike Glycoprotein-Clamp Vaccine for SARS-CoV-2: A Randomised, Double-Blind, Placebo-Controlled, Phase 1 Trial](#) – The Lancet Infectious Diseases (Apr 20)
- [Strategies and Action Points to Ensure Equitable Uptake of COVID-19 Vaccinations A National Qualitative Interview Study to Explore the Views of Undocumented Migrants Asylum Seekers and Refugees](#) – MedRxiv (Apr 19)
- [Assessing the Impact of SARS-CoV-2 Prevention Measures in Schools by Means of Agent-Based Simulations Calibrated to Cluster Tracing Data](#) – MedRxiv (Apr 19)
- [Returning to a Normal Life via COVID-19 Vaccines in the USA: A Large-Scale Agent-Based Simulation Study (Preprint)](#) – JMIR Medical Informatics (Jan 24)
- [Are Sniffer Dogs a Reliable Approach for Diagnosing SARS-CoV-2 Infection](#) – Diagnosis (Berlin, Germany) (Apr)
- [Convicted Drinking and Driving Offenders: Comparing Alcohol Use before and after the Pandemic Outbreak](#) – Alcoholism, Clinical and Experimental Research (Apr)
- [Parking Meters to Touch Screens: The Unforeseen Barriers That Expansion of Telemedicine Presents to the Disability Community](#) – American Journal of Physical Medicine & Rehabilitation (Apr)
- [There Is a Real Danger That Covid-19 Will Become Entrenched as a Disease of Poverty](#) – BMJ (Apr 19)
- [The Safety and Immunogenicity of an Inactivated SARS-CoV-2 Vaccine in Chinese Adults Aged 18–59 Years: A Phase I Randomized, Double-Blinded, Controlled Trial](#) – Vaccine (Apr)
- [Multisystem Inflammatory Syndrome in Children: A Review](#) – The American Journal of Nursing (Apr)
- [Indigenous Data Sovereignty and COVID-19 Data Issues for American Indian and Alaska Native Tribes and Populations](#) – Journal of Population Research (Canberra, A.C.T.) (Apr)

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