2019-nCoV Literature Situation Report (Lit Rep)
April 27, 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 Advisory Committee on Immunization Practices (ACIP) reaffirmed its interim recommendation for use of the Johnson & Johnson COVID-19 vaccine in all persons aged ≥18 years on April 23, 2021, with the addition of a warning that rare clotting events may occur in female vaccine recipients aged 18-49 years. A risk-benefit analysis that guided ACIP recommendations suggested that for every 1 million doses administered to women aged 18-49 years, 297 COVID-19-related hospitalizations, 56 ICU admissions, and 6 deaths could be prevented, compared with 7 expected cases of thrombosis with thrombocytopenia.** More
- **The effectiveness of COVID-19 mRNA vaccines (Pfizer-BioNTech and Moderna) in preventing PCR-confirmed SARS-CoV-2 infection was 96% among 45,000 fully vaccinated US healthcare personnel. Vaccine effectiveness was 78% among those receiving only one dose (n>4,000).** More

Transmission

- An analysis of SARS-CoV incidence and the rate of test positivity in Israel suggests that children age 0-9 years of age did not have substantially elevated rates of SARS-CoV-2 infection during school attendance. Compared to the period before school reopening, after school reopened in September 2020 there was a 10% increase in SARS-CoV-2 incidence and a 23% decline in test positivity in this age group. Larger increases in incidence and test positivity were observed in other age groups, with up to 3.2-fold higher incidence for those aged 40-59 years. Similar patterns were observed during a second period of school reopening in November 2020 following a country-wide lockdown.

  Somekh et al. (Apr 26, 2021). Comparison of COVID-19 Incidence Rates Before and After School Reopening in Israel. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.7105

Testing and Treatment

- The implementation of point prevalence survey (PPS) testing for SARS-CoV-2 infections in 34 nursing homes in Connecticut was associated with a 41-80% reduction in the incidence rate in nursing homes. Data were obtained from public health surveillance records beginning 4 weeks prior to widespread implementation of PPS testing on May 2020 and up to 12 weeks after implementation, during which a combined total of 205 PPSs among staff and 232 PPSs testing among residents were conducted. Results were adjusted for decreases in community incidence during the study period.

Ehrlich et al. (Apr 20, 2021). SARS-CoV-2 in Nursing Homes after 3 Months of Serial, Facilitywide Point Prevalence Testing, Connecticut, USA. Emerging Infectious Diseases. https://doi.org/10.3201/eid2705.204936

- A retrospective study found that 7% participants (271 of 3,075) who underwent both PCR and serologic testing had discordant test results (i.e. negative PCR result and seropositive or vice-versa). These participants either sought PCR testing after viral shedding would be expected to have ended (PCR- but seropositive) or sought serology tests before a detectable antibody response would be expected (PCR+ but seronegative). Cycle threshold (Ct) values for PCR tests was positively correlated with days since symptom onset, indicating that viral load decreased with increasing time. However, no relationship was observed between Ct values and antibody titers from serology tests.

  Murad et al. (Apr 26, 2021). SARS-Cov2 Infection Detection by Polymerase Chain Reaction and Serologic Testing in Clinical Practice. Journal of Clinical Microbiology. https://doi.org/10.1128/JCM.00431-21

Vaccines and Immunity

- The Advisory Committee on Immunization Practices (ACIP) reaffirmed its interim recommendation for use of the Johnson & Johnson vaccine in all persons aged ≥18 years on April 23, 2021 and recommended including a warning that rare clotting events may occur in female vaccine recipients aged 18-49 years. The updated recommendations follow the recommended pause by the FDA and CDC on April 13, 2021 after reports of thrombosis with thrombocytopenia (TTS) among a small number of vaccine recipients, including central venous sinus thrombosis. As of April 21, 2021, 15 reports of TTS have been reported among approximately 8 million Johnson & Johnson vaccine doses.
- A risk-benefit analysis model that guided ACIP recommendations suggested that over 6 months, resuming vaccine use among persons aged ≥18 years (at 50% of administration rate before the pause) could prevent 3,926 to 9,395 COVID-19-related hospitalizations, 928 to 2,236 ICU admissions, and 586 to 1,435 deaths compared with 26 expected cases of TTS. For every 1 million doses administered to women aged 18-49 years, 297 COVID-19-related hospitalizations, 56 ICU admissions, and six deaths could be prevented, compared with 7 expected TTS cases.

  MacNeil et al. (Apr 27, 2021). Updated Recommendations from the Advisory Committee on Immunization Practices for Use of the Janssen (Johnson & Johnson) COVID-19 Vaccine After Reports of Thrombosis with Thrombocytopenia Syndrome Among Vaccine Recipients — United States, April 2021. MMWR. https://doi.org/10.15585/mmwr.mm7017e4

- The COVID-19 mRNA vaccines were up to 96% effective in preventing PCR-confirmed SARS-CoV-2 infection following two doses, according a retrospective cohort study of over 45,000 US healthcare personnel. The Pfizer-BioNTech vaccine accounted for 93% of vaccinations and the Moderna vaccine accounted for 7%. The authors adjusted for age, gender, region, job, and week of vaccination in their analysis. Vaccine effectiveness was 78% among those receiving only one dose (n>4,000).

  Swift et al. (Apr 26, 2021). Effectiveness of MRNA COVID-19 Vaccines against SARS-CoV-2 Infection in a Cohort of Healthcare Personnel. Clinical Infectious Diseases. https://doi.org/10.1093/cid/ciab361

Clinical Characteristics and Health Care Setting

- Impaired lung function was present in 52% of COVID-19 patients four months after discharge from the ICU from March to July 2020 (n=60). The most prevalent impairment was lower than normal diffusing capacity for carbon monoxide (DLCO) (45%). Impaired DLCO was more common among those aged >60 years and those who received invasive mechanical ventilation at the ICU.

  Ekbom et al. (Apr 9, 2021). Impaired Diffusing Capacity for Carbon Monoxide Is Common in Critically Ill Covid-19 Patients at Four Months Post-Discharge. Respiratory Medicine. https://doi.org/10.1016/j.rmed.2021.106394

- The SARS-CoV-2 D614G variant was associated with increased survival in hospitalized patients (86% vs 59% for other identified variants) according to analysis from a repeated cross-sectional study (n=302) of SARS-CoV-2 isolates from the Cleveland Clinic during the first wave of infection (March to April 2020). While 6 different clades were initially identified in the beginning of the study, clade diversity rapidly decreased with D614G isolates comprising 64% of samples (21 of 33) in week 1 to 93% of samples (28 of 30) by week 6. The authors suggest these findings may help explain decreasing mortality among those hospitalized throughout the pandemic.

  Esper et al. (Apr 26, 2021). Genomic Epidemiology of SARS-CoV-2 Infection During the Initial Pandemic Wave and Association With Disease Severity. JAMA Network Open. https://doi.org/10.1001/jamanetworkopen.2021.7746

- *[Pre-print, not peer-reviewed]* 180-day mortality was 30% in a large cohort (n=8,679; median age 72 years) from Germany hospitalized with COVID-19 from February to April 2020. 180-day mortality was 52% among patients aged ≥80 years and 53% for patients who had undergone invasive mechanical ventilation. Coagulopathy, BMI ≥ 40, and age were risk factors for 180-day mortality. Overall readmission rate within 180 days of discharge was 27%.

  Guenster et al. (Apr 26, 2021). 6-Month Follow Up of 8679 Hospitalized COVID-19 Patients in Germany A Nationwide Cohort Study. Pre-print downloaded Apr 27 from https://doi.org/10.1101/2021.04.24.21256029

- *[Pre-print, not peer-reviewed]* 24% of children hospitalized with COVID-19 in Moscow, Russia reported persistent symptoms at approximately 1 year post-discharge (n=518; median age 10 years). The most commonly reported symptoms were fatigue, followed by sleep disturbance and sensory problems. Persistent symptoms were more common among those aged 6-18 years compared to patients aged <2 years, as well as among those with allergic diseases.

  Osmanov et al. (Apr 26, 2021). Risk Factors for Long Covid in Previously Hospitalised Children Using the ISARIC Global Follow-up Protocol A Prospective Cohort Study. Pre-print downloaded Apr 27 from https://doi.org/10.1101/2021.04.26.21256110

- *[Pre-print, not peer-reviewed]* Fatigue was more 3.7-fold as common among patients recovering from COVID-19 compared to healthy controls, according to a systematic review of 39 studies (n=8,825 patients). Over half of hospitalized patients reported symptoms of fatigue up to two months after discharge. Female gender was associated with greater self-reported fatigue and self-report of fatigue varied by geographic location, with studies from Europe reporting the highest rates of fatigue.

Rao et al. (Apr 26, 2021). Fatigue Symptoms Associated with COVID-19 in Convalescent or Recovered COVID-19 Patients a Systematic Review and Meta-Analysis. Pre-print downloaded Apr 27 from https://doi.org/10.1101/2021.04.23.21256006

Other Resources and Commentaries

- Overview of SARS-CoV-2 Infection in Adults Living with HIV – The Lancet HIV (May 1)
- One in Every Three COVID-19 Reinfections Result in Hospitalization in the US – Clinical Infectious Diseases (Apr 26)
- SARS-COV-2 Infection in Pregnant Women and Newborns in a Spanish Cohort (GESNEO-COVID) during the First Wave – BMC Pregnancy and Childbirth (Dec 26)
- Introduction of ORF3a-Q57H SARS-CoV-2 Variant Causing Fourth Epidemic Wave of COVID-19, Hong Kong, China – Emerging Infectious Diseases (May 22)
- A Mobile Primary Care Clinic Mitigates an Early COVID-19 Outbreak Among Migrant Farmworkers in Iowa – Journal of Agromedicine (Apr 27)
- Can Shared Decision Making Address COVID-19 Vaccine Hesitancy – BMJ Evidence-Based Medicine (Apr 26)
- Disinfectant Effectiveness against SARS-CoV-2 and Influenza Viruses Present on Human Skin: Model-Based Evaluation – Clinical Microbiology and Infection (Apr 23)
- Quantifying the Online News Media Coverage of the COVID-19 Pandemic: Text Mining Study and Resource – Journal of Medical Internet Research (Apr 18)
- Covid-19: Wider Use of FFP3 Masks May Be Needed Because of Airborne Transmission, Say Scientific Advisers – BMJ (Apr 26)
- Hand Hygiene Compliance Rate During the COVID-19 Pandemic – JAMA Internal Medicine (Apr 26)
- Long-Term Outcomes of Patients Following Hospitalization for COVID-19: A Prospective Observational Study – Clinical Microbiology and Infection (Apr 22)
- Hand Hygiene during the COVID-19 Pandemic among People Experiencing Homelessness—Atlanta, Georgia, 2020 – Journal of Community Psychology (Apr 26)
- COVID-19 Imperils Access to Health and Human Services in El Paso, Texas and New York City: Perspectives from Hispanic Parents – Journal of Racial and Ethnic Health Disparities (Apr 26)
- Patterns of SARS-CoV-2 Aerosol Spread in Typical Classrooms – MedRxiv (Apr 26)
- Predicting Intention to Receive COVID-19 Vaccine among the General Population Using the Health Belief Model and the Theory of Planned Behavior Model – BMC Public Health (Dec 26)
- COVID-19 Vaccines: Building and Maintaining Confidence – The Lancet Haematology (May 1)
- Understanding and Communicating about COVID-19 Vaccine Efficacy, Effectiveness, and Equity – National Academies of Sciences, Engineering, and Medicine (2021)
- Individuals Cannot Rely on COVID-19 Herd Immunity: Durable Immunity to Viral Disease Is Limited to Viruses with Obligate Viremic Spread – PLOS Pathogens (Apr 26)
- SARS-CoV-2 Vaccination Efficacy on Hospitalisation and Variants – Anaesthesia Critical Care & Pain Medicine. (Apr 23)

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