2019-nCoV Literature Situation Report (Lit Rep)

January 7, 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

- **Anti-spike and anti-RBD IgG antibodies persisted up to 6-8 months post-symptom onset in 90% and 88% of individuals, respectively. Paired timepoint analysis showed that anti-spike and anti-RBD IgG declined with a half-life of 68 and 69 days, respectively.** More
- **A randomized trial of adults aged ≥75 years (n=160) found that transfusion of convalescent plasma within 3 days of onset of mild COVID-19 symptoms reduced likelihood of developing severe respiratory disease by 48% compared to placebo (RR=0.52, 95% CI: 0.29-0.94).** More
- **Incidence of severe COVID-19 was low among school-aged children in Sweden, and risk among teachers was similar to other non-healthcare occupations, despite schools remaining open and the lack of face mask policies.** More

Transmission

- Incidence of severe COVID-19 was low among school-aged children in Sweden from March to June 2020, despite keeping schools open and the absence of face mask policies. A total of 15 children (0.77 per 100,000) were admitted to the ICU, four of whom had an underlying condition. All children survived. Risk of severe COVID-19 among schoolteachers and preschool teachers was similar to other occupations (excluding healthcare workers), after adjusting for sex and age.

  Ludvigsson et al. (Jan 6, 2021). Open Schools, Covid-19, and Child and Teacher Morbidity in Sweden. New England Journal of Medicine. https://doi.org/10.1056/NEJMc2026670

Testing and Treatment

- In a randomized, double-blind, placebo-controlled trial of non-hospitalized adults aged ≥75 years (n=160) with mild COVID-19, patients who received convalescent plasma within 72 hours after onset of symptoms were 48% less likely to develop severe respiratory disease than patients receiving placebo (RR = 0.52, 95% CI: 0.29-0.94). Risk of severe disease was 60% lower (RR = 0.40, 95% CI: 0.20-0.81) when patients who developed severe respiratory disease before infusion of treatment or placebo were excluded.

  Libster et al. (Jan 6, 2021). Early High-Titer Plasma Therapy to Prevent Severe Covid-19 in Older Adults. New England Journal of Medicine. https://doi.org/10.1056/NEJMoa2033700

Vaccines and Immunity

- IgG antibodies against the Spike protein and the receptor binding domain (RBD) were relatively stable over 6 months in a cohort study of individuals with confirmed COVID-19 (n=188). Among 40 individuals with blood samples 6-8 months post-symptom onset, 90%, 88%, and 90% remained seropositive for anti-spike IgG, anti-RBD IgG, and neutralizing antibodies, respectively. Paired timepoint analysis showed that anti-spike and anti-RBD IgG declined with a half-life of 68 and 69 days, respectively. Spike-specific memory B cells were more abundant at 6 months than at 1 month post-symptom onset, while SARS-CoV-2-specific CD4+ T cells and CD8+ T cells declined with a half-life of 3-5 months.

  Dan et al. (Jan 6, 2021). Immunological Memory to SARS-CoV-2 Assessed for up to 8 Months after Infection. Science. https://doi.org/10.1126/science.abf4063

- Serum samples from a cohort of 140 SARS-CoV-2 positive patients suggest that increasing symptom severity is correlated with higher neutralizing antibody (nAb) titers. Only 1 of 44 patients admitted to the ICU did not develop a nAb response by the time of sampling, while nAb response was more heterogenous and less frequently observed among hospitalized non-ICU patients and outpatients. Further analysis of the serum samples also showed an absence of cross-reactivity to other coronaviruses, and no effect of the D614G mutation on neutralization activity.

  Legros et al. (Jan 6, 2021). A Longitudinal Study of SARS-CoV-2-Infected Patients Reveals a High Correlation between Neutralizing Antibodies and COVID-19 Severity. Cellular & Molecular Immunology. https://doi.org/10.1038/s41423-020-00588-2

Clinical Characteristics and Health Care Setting

- A cohort study (n=681) in Italy found that older age was independently associated with prolonged viral shedding. Patients who first had two consecutive negative nasopharyngeal swabs 1-2 days apart within <3 weeks, 3-6 weeks, and >6 weeks, had a mean age of 50.5 years, 57 years, and 65.8 years, respectively ($p<0.05$).

  Bongiovanni et al. (Jan 3, 2021). Insight into the Reason of Prolonged Viral RNA Shedding in Patients with COVID-19 Infection. Journal of Infection. https://doi.org/10.1016/j.jinf.2020.12.030

- Solid organ transplant (SOT) recipients with COVID-19 were more likely to experience adverse outcomes than matched non-SOT recipients in a cohort study conducted between March and September 2020. SOT recipients (n=128) were 1.9 times more likely to die within the study period compared to non-SOT patients (n=3,907). SOT recipients were also more than twice as likely to receive invasive mechanical ventilation, develop acute kidney injury, or receive vasopressor support during hospitalization.

  Fisher et al. (Jan 6, 2021). Outcomes of COVID-19 in Hospitalized Solid Organ Transplant Recipients Compared to a Matched Cohort of Non-Transplant Patients at a National Healthcare System in the United States. Clinical Transplantation. https://pubmed.ncbi.nlm.nih.gov/33406279/

- Among 713 nursing homes in California, the size of outbreaks in for-profit nursing homes was 12.7 times larger than their non-profit counterparts. Nursing homes with higher ratings on Centers for Medicare & Medicaid Services (CMS) health inspections were associated with a lower number of infections among both staff and residents, while higher self-reported ratings were associated with a greater number of infections. Nursing homes with larger discrepancies between CMS and self-reported ratings had more infections among both staff and residents. Improvements in CMS-

reported staff ratings were associated with fewer infections among residents, though this association was highly dependent on staff-to-resident ratio.

Gopal et al. (Jan 6, 2021). Compress the Curve: A Cross-Sectional Study of Variations in COVID-19 Infections across California Nursing Homes. BMJ Open. https://doi.org/10.1136/bmjopen-2020-042804

Mental Health and Personal Impact

- In a cohort study in Korea matched on age, gender and a co-morbidity index, there was no association between mental disorders and SARS-CoV-2 infection. Among COVID-19 patients, those with mental disorders (n=24,558) had a 2-fold risk of death compared to those without mental disorders (n=97,966). In a subgroup analysis, individuals with schizophrenia-related disorders had a 1.5-fold risk SARS-CoV-2 infection compared to those without, while COVID-19 patients with mood disorders had a 2.3-fold risk of death compared to those without mental disorders.

  Jeon et al. (Jan 7, 2021). Association of Mental Disorders with SARS-CoV-2 Infection and Severe Health Outcomes: Nationwide Cohort Study. The British Journal of Psychiatry. https://doi.org/10.1192/bjp.2020.251

- A study of 303 parent-child pairs in the US found that parental impacts from COVID-19 (e.g. knowing someone who tested positive or died from COVID-19, reporting loss of job or income) and worry about COVID-19 did not correlate with parenting practices characterized as harsh or warm. In contrast, COVID-19-related parental worries were associated with higher levels of child conduct problems. Parental worries about a household member contracting the virus were, in particular, related to higher levels of child conduct problems.

  Waller et al. (Jan 6, 2021). The Impact of the COVID-19 Pandemic on Children's Conduct Problems and Callous-Unemotional Traits. Child Psychiatry & Human Development. https://doi.org/10.1007/s10578-020-01109-y

Modeling and Prediction

- *[Pre-print, not peer reviewed]* In a model parametrized to long-term care facility populations, high vaccination coverage among staff combined with strong adherence to nonpharmaceutical interventions (NPIs) produced the least morbidity and mortality, even among unvaccinated residents. However, in scenarios where adherence to NPIs was waning or low, vaccination among residents had a stronger impact on reducing morbidity and mortality than vaccinating staff.

  Love et al. (Jan 6, 2021). Continued Need for Non-Pharmaceutical Interventions after COVID-19 Vaccination in Long-Term-Care Facilities. Pre-print downloaded Jan 7 from https://doi.org/10.1101/2021.01.06.21249339

Public Health Policy and Practice

- The Michigan emergency medical services (EMS) Information System identified 1,854 out-of-hospital cardiac arrest (OHCA) calls between March to May 2020, a 60% increase from the same period in 2019. Though the spike in OHCAs closely mirror the COVID-19 epidemic curve with a slight lag, it is not clear from these data whether COVID-19 infections directly affect the increase in OHCAs or the two are indirectly linked through changes in EMS utilization during the pandemic.

  Nickles et al. (Jan 6, 2021). Comparison of Out-of-Hospital Cardiac Arrests and Fatalities in the Metro Detroit Area During the COVID-19 Pandemic With Previous-Year Events. JAMA Network Open.
  https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774638

Other Resources and Commentaries

- Nosocomial Transmission and Outbreaks of Coronavirus Disease 2019: The Need to Protect Both Patients and Healthcare Workers – Antimicrobial Resistance & Infection Control (Jan 6)
- Covid-19 Vaccination: What's the Evidence for Extending the Dosing Interval? – BMJ (Jan 6)
- Africa Succeeded Against COVID-19's First Wave, but the Second Wave Brings New Challenges. – JAMA (Jan 6)
- Problems With Paying People to Be Vaccinated Against COVID-19. – JAMA (Jan 6)
- Test Groups, Not Individuals: A Review of the Pooling Approaches for SARS-CoV-2 Diagnosis – Diagnostics (Jan 4)
- How Can We Build and Maintain the Resilience of Our Health Care Professionals during COVID-19? Recommendations Based on a Scoping Review – BMJ Open (Jan 6)
- Audio Interview: Planning for the SARS-CoV-2 Vaccine Rollout – New England Journal of Medicine (Jan 7)
- Boundaries of Solidarity: A Meta-Ethnography of Mask Use during Past Epidemics to Inform SARS-CoV-2 Suppression – BMJ Global Health (Jan 6)
- Beyond Politics — Promoting Covid-19 Vaccination in the United States – New England Journal of Medicine (Jan 6)
- Changing Disparities in COVID-19 Burden in the Ethnically Homogeneous Population of Hong Kong through Pandemic Waves: An Observational Study – Clinical Infectious Diseases (Jan 6)

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