Washington State Department of Health

2019-nCoV Literature Situation Report (Lit Rep)
August 4, 2020

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

➤ **SARS-CoV-2 transmission in schools and childcare facilities in New South Wales, Australia, demonstrated higher attack rates from adult cases than child cases, for both transmission to child and adult contacts.** More

➤ **A randomized controlled trial of the antiviral agent favipiravir in patients hospitalized with COVID-19 in Russia demonstrated favorable results for viral clearance and time to fever resolution. However, at the time of interim analyses more patients receiving standard of care had been discharged from the hospital than those receiving favipiravir.** More

➤ **Investigation of an outbreak in a San Francisco homeless shelter using mass testing found 67% of residents and 17% of staff were infected.** More

➤ **Comparison of transaction data from Sweden and Denmark suggests the majority of the economic contraction since the onset of the COVID-19 pandemic is the result of the pandemic itself rather than lockdown policies.** More

➤ **A systematic review and meta-analysis found COVID-19 patients with cancer had significantly higher odds of death, severe/critical disease, ICU admission, and mechanical ventilation than COVID-19 patients without cancer.** More

Non-Pharmaceutical Interventions

- Sheridan et al. used real-time transaction data from a large Scandinavian bank to estimate reduction in aggregate spending due COVID-19, and found that most of the economic contraction was due to the pandemic in Scandinavian countries, rather than lockdown policies. In Sweden, there was a 25% reduction in aggregate spending as a result of the pandemic. In Denmark, where policies to control the pandemic where imposed, there was an additional 4% reduction.
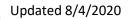
  Sheridan et al. (Aug 2020). Social Distancing Laws Cause Only Small Losses of Economic Activity during the COVID-19 Pandemic in Scandinavia. Proceedings of the National Academy of Sciences of the United States of America. https://doi.org/10.1073/pnas.2010068117

- Iwata et al. fit a time series model to case data through March 31 to assess effectiveness of school closure in Japan. They assumed the effect of school closures on March 1st would become apparent 9 days following closure. They found the expected daily change in the number of cases pre- versus post-school closures was 0.08 (95% CI -0.36, 0.65). As this estimate was greater than zero, the

authors concluded school closures did not reduce incidence; however, the estimations had wide confidence intervals and results may lack precision.

Iwata et al. (July 2020). Was School Closure Effective in Mitigating Coronavirus Disease 2019 (COVID-19)? Time Series Analysis Using Bayesian Inference. International Journal of Infectious Diseases. https://doi.org/10.1016/j.ijid.2020.07.052

Transmission

- Transmission between laboratory-confirmed pediatric (≤18) and adult COVID-19 cases from schools and early childhood education care (ECEC) setting and close contacts was examined in South Wales, Australia. Close contacts (n=1448) of infectious cases (n=27; n=12 children, n=15 adults) were followed to measure transmission. Close contacts were quarantined at home for 14 days, monitored, and offered testing if symptomatic. The secondary attack rate from cases to contacts was 0.3% from child to child, 1% from child to adult, 1.5% from adult to child, and 4.4% from adult to adult, with 44% of close contacts tested. Secondary transmission occurred in 16% of settings. Among facilities where asymptomatic contacts were also tested, 23% developed COVID-19 symptoms and the secondary attack rate was 1.8% among child contacts vs 2.8% among adult contacts.

    Macartney et al. (Aug 2020). Transmission of SARS-CoV-2 in Australian Educational Settings: A Prospective Cohort Study. The Lancet Child & Adolescent Health.
    https://doi.org/10.1016/S2352-4642(20)30251-0

Testing and Treatment

- *[pre-print, not peer-reviewed]* Ivashchenko et al. report on a phase II/III randomized clinical trial of the antiviral agent favipiravir. Hospitalized patients with pneumonia and confirmed SARS-CoV-2 infection (n=60) were randomized in a 1:1:1 ratio to receive low-dose favipiravir, high-dose favipiravir, or standard of care (SOC). Patients receiving favipiravir (both arms combined) were more likely than patients in SOC arm to have viral clearance by day 5 (63% vs 30%) and have lower median time to fever resolution (2 vs 4 days). Improvements in chest CT scans by day 15 was similar (83% favipiravir arms vs 75% SOC). However, at the time of the interim analysis, more patients in the SOC arm (90%) versus the favipiravir arm (80%) had been discharged. Mild to moderate adverse drug reactions were reported in 18% of patients, resulting in 5% early discontinuation. Efficacy and safety results were similar for both (high- and low-dose) favipiravir arms.

    Ivashchenko et al. (August 4, 2020). Interim Results of a Phase II/III Multicenter Randomized Clinical Trial of AVIFAVIR in Hospitalized Patients with COVID-19. Pre-print downloaded on August 4 from https://doi.org/10.1101/2020.07.26.20154724

- *[pre-print, not peer-reviewed]* Conklin et al. evaluated 15 different rapid point-of-care tests for SARS-CoV-2 antibodies from 40 SARS-CoV-2 infected, convalescent individuals (average 45 days post-symptom onset) and 60 pre-pandemic samples from negative control individuals (known to be infected with other respiratory viruses; rhinoviruses and coronaviruses). Overall, sensitivity ranged from 55-97%, and specificity ranged from 78-100%. Sensitivity and specificity values were higher for IgG alone than for IgM alone. Cross-reactivity was more pronounced with sera from patients infected with strains of coronaviruses other than SARS-CoV-2. Median time post-symptom onset to a positive result was 7 days for IgM (IQR 5.4, 9.8) and 8.2 days for IgG (IQR 6.3, 11.3).

    Conklin et al. (August 4, 2020). Evaluation of Serological SARS-CoV-2 Lateral Flow Assays for Rapid Point of Care Testing. Pre-print downloaded on August 4 from https://doi.org/10.1101/2020.07.31.20166041

- To measure sensitivity of antibody response against SARS-CoV-2 spike protein and nucleoprotein, 4 automated immunoassays (Roche Abbott, Diasorin, and Snibe) and 3 ELISAs (2 from Euroimmun and Mikrogen) were evaluated using samples from 114 patients with moderate, severe, or critical COVID-19 and 113 pre-pandemic samples. Three weeks post-symptom onset, sensitivity was 100%. Specificity varied from 94.7% to 100%; using a ROC curve to estimate cut-offs corresponding to specificities of 95% and 97.5%, the Roche assay (all immunoglobulins, anti-nucleocapsid) had the highest sensitivity (85% and 81%, respectively). Seroconversion occurred on average 2 days earlier for anti-nucleocapsid assays than the anti-spike assays. Time to IgG seroconversion was similar for critical and non-critical cases.

  Van Elslande et al. (July 2020). Antibody Response against SARS-CoV-2 Spike Protein and Nucleoprotein Evaluated by 4 Automated Immunoassays and 3 ELISAs. Clinical Microbiology and Infection. https://doi.org/10.1016/j.cmi.2020.07.038

Clinical Characteristics and Health Care Setting

- *[pre-print, not peer-reviewed]* A study among workers at a multi-site healthcare system in LA County estimated SARS-CoV-2 antibody seroprevalence post-stratified on demographic group (n=15,000 invited; 6,062 participated). Overall seroprevalence was 4.1% (95% CI 3.1, 5.7%), with lower estimates in older workers (aOR = 0.8, 95% CI 0.7, 0.9) and higher estimates in Hispanic workers (5.7%; 95% CI 3.9, 8.3%; aOR = 1.8, 95% CI 1.3, 2.4). Significantly higher estimates were also observed for African American race (aOR=1.8, 95% CI 1.1, 2.9), and for workers with asthma (aOR=0.5, 95% CI 0.3, 0.8).

  Ebinger et al. (August 4, 2020). SARS-CoV-2 Seroprevalence Across a Diverse Cohort of Healthcare Workers. Pre-print downloaded on August 4 from https://doi.org/10.1101/2020.07.31.20163055

- A cross-sectional study of African American patients with COVID-19 treated in a single tertiary care center (n=158) between March 12 and April 9 found older age (OR 1.07, 95% CI 1.03, 1.11), higher BMI (OR 1.12, 95% CI 1.05, 1.18) and lung disease (OR 3.1, 95% CI 1.4, 8.4) were significant risk factors for ICU admission. In contrast with other patient populations with COVID-19, the majority of cases (61%) were women.

  Alkhatib et al. (Aug 2020). BMI Is Associated with Coronavirus Disease 2019 Intensive Care Unit Admission in African Americans. Obesity. https://doi.org/10.1002/oby.22937

- Strang et al. used the Swedish Register of Palliative Care, which has national coverage, to compare symptoms and symptom control in the last week of life among patients dying of COVID-19 in nursing homes and hospitals (n=390) to registered deaths in similar settings in 2019 (n=46,698). They found breathlessness was more common in COVID-19 patients than the reference population, and in hospitals than in nursing homes. Relief of breathlessness, anxiety, delirium, and death rattles were less successful in COVID-19 patients than the reference population. Complete relief was more common in nursing homes than hospitals for breathlessness, anxiety, and pain.

  Strang et al. (July 2020). Symptom Relief Is Possible in Elderly Dying COVID-19 Patients: A National Register Study. Journal of Palliative Medicine. https://doi.org/10.1089/jpm.2020.0249

- A systematic review and meta-analysis (n=22 studies with 1,018 cancer patients) found the prevalence of cancer among patients was 2.1% (95% CI 1.3, 3%). Case fatality among these patients was 21.1% (95% CI 14.7, 27.6%). The probability for severe/critical disease was 45.4% (95% CI 37.4, 53.3%), for ICU admission was 14.5% (95% CI 8.5, 20.4%), and need for mechanical ventilation was 11.7% (95% CI 5.5, 18.8%). COVID-19 patients with cancer were found to have a higher odds of

mortality (OR=3.23, 95% CI 1.7, 6.1), severe/critical disease (OR=3.9, 95% CI 2.7, 5.7), ICU admission (OR=3.1, 95% CI 1.9, 5.7) and mechanical ventilation (OR=4.9, 95% CI 1.3, 18.7) compared with COVID-19 patients without cancer.

Elgohary. (July 2020). The Risk and Prognosis of COVID-19 Infection in Cancer Patients: A Systematic Review and Meta-Analysis. Hematology/Oncology and Stem Cell Therapy. https://doi.org/10.1016/j.hemonc.2020.07.005

Modeling and Prediction

- Panovska-Griffiths et al. apppplied the Covasim model (developed by the Institute for Disease Modeling) to simulate six scenarios for the UK representing a combination of school reopening strategies and contact tracing and testing coverage. Under full re-opening of schools, if 68% of contacts could be traced, 75% of symptomatic individuals would need to be tested (and positives isolated) to prevent a second wave. If only 40% of contacts could be traced, 87% would need to be tested. In a rotation scenario where 50% of students attend school on alternate weeks, slightly fewer contacts would need to be traced.
- The results were largely robust to changing the assumptions about infectiousness of children and young adults.

Panovska-Griffiths et al. (Aug 2020). Determining the Optimal Strategy for Reopening Schools, the Impact of Test and Trace Interventions, and the Risk of Occurrence of a Second COVID-19 Epidemic Wave in the UK: A Modelling Study. The Lancet Child & Adolescent Health. https://doi.org/10.1016/S2352-4642(20)30250-9

Public Health Policy and Practice

- Imbert et al. report on an outbreak of COVID-19 in a San Francisco homeless shelter, during which 255 residents and 64 staff were present. An initial strategy of tracing bedmates of the first 2 cases and temperature checks and symptom screening of residents identified 7 additional cases. Subsequently, mass testing of 150 of 255 residents identified that 67% were positive, of which 48% were symptomatic at the time of testing. Of the 60 staff tested, 17% were positive. After the shelter closed, 12% of cases visited the ER, 8% were hospitalized, and 1% died.

Imbert et al. (Aug 2020). Coronavirus Disease 2019 (COVID-19) Outbreak in a San Francisco Homeless Shelter. Clinical Infectious Diseases. https://doi.org/10.1093/cid/ciaa1071

Other Resources and Commentaries

- Real-Time Digital Contact Tracing: Development of a System to Control COVID-19 Outbreaks in Nursing Homes and Long-Term Care Facilities– JMIR Public Health and Surveillance (Aug 3)
- A COVID-19 Crisis in US Jails and Prisons – Cancer Cytopathology (Aug 3)
- Small Particle Aerosol Exposure of African Green Monkeys to MERS-CoV as a Model for Highly Pathogenic Coronavirus Infection. – Emerging Infectious Diseases (Aug 3)
- Protecting Access To Abortion During The COVID-19 Pandemic – Health Affairs (Aug 1)
- COVID-19 Vulnerability of Transgender Women With and Without HIV Infection in the Eastern and Southern U.S. – MedRxiv : The Preprint Server for Health Sciences (July 24)
- Use of Facemasks during the COVID-19 Pandemic – The Lancet Respiratory Medicine (Aug 3)
- COVID-19 Interstitial Pneumonia: Monitoring the Clinical Course in Survivors – The Lancet Respiratory Medicine (Aug 3)
- SARS-CoV-2 Infection Among Symptom-Free Healthcare Workers – Medrxiv (Aug 4)
- Age Differences in Risk and Resilience Factors in COVID-19-Related Stress. – The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences (Aug 3)

- [Finding a Path to Reopen Schools during the COVID-19 Pandemic](#) – The Lancet Child & Adolescent Health (Aug 3)
- [Vitamin D for COVID-19: A Case to Answer?](#) – The Lancet Diabetes & Endocrinology (Aug 3)
- [COVID-19 and School Closures](#) – JAMA (July 29)

Report prepared by the UW MetaCenter 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

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