2019-nCoV Literature Situation Report (Lit Rep)
April 23, 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

- **Modeling studies continue to highlight the dangers of lifting or relaxing social distancing policies too soon, and suggest a longer-term initial period of restrictive social distancing coupled with a gradual reduction in the severity of social distancing as being more effective.**
- **No SARS-CoV-2 is detected in the amniotic fluid of 2 pregnant women with COVID-19 in their first trimester.**
- **Studies continue to look into the relationship between mandatory BCG vaccination and impact on COVID-19 incidence and mortality; one finding no statistical evidence to support this association.**
- **Housing options including Permanent Supportive Housing will be critical in slowing the spread of COVID-19 among those experiencing homelessness, but will require ongoing disease surveillance and proactive protective measures.**

Non-Pharmaceutical Interventions

- This study describes the rapid development of the first comprehensive, labeled dataset of 1,640 NPIs implemented at federal, provincial/territorial and municipal levels in Canada to guide COVID-19 research.

  McCoy et al. (Apr 17, 2020). CAN-NPI: A Curated Open Dataset of Canadian Non-Pharmaceutical Interventions in Response to the Global COVID-19 Pandemic. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.17.20068460

Transmission

- No SARS-CoV-2 was detected in the amniotic fluid of 2 pregnant women who were diagnosed with COVID-19 in the early stage of pregnancy in Wuhan. These findings could contribute to understanding the potential for intrauterine transmission in the first trimester.

  Yu et al. (Apr 22, 2020). No SARS-CoV-2 detected in amniotic fluid in mid-pregnancy. Lancet. https://doi.org/10.1016/S1473-3099(20)30320-0

Geographic Spread

- Socioeconomic predictors that could explain the between-neighborhood variation in the number of detected COVID-19 cases in NYC in this ecological analysis include: neighborhoods with a large dependent population (under 18 or 65+ years), those with a high proportion of males, and low-income neighborhoods.

Whittle & Diaz-Artiles (Apr 22, 2020). An ecological study of socioeconomic predictors in detection of COVID-19 cases across neighborhoods in New York City. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.17.20069823

Testing and Treatment

- In order to circumvent the limited availability of RNA extraction reagents and to reduce the cost and turn-around time of the assay, the authors describe a new protocol for direct RT-qPCR to detect SARS-CoV-2 in nasopharyngeal swabs. The new approach provides higher analytic sensitivity for detection than many other commercial and laboratory-developed methods, and the rate of RT-qPCR inhibition was similar to the standard approach.

  Hasan et al. (Apr 18, 2020). Detection of SARS-CoV-2 RNA by direct RT-qPCR on nasopharyngeal specimens without extraction of viral RNA. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.18.20070755

- Yong et al assess the diagnostic values of different methods for detecting and estimating the SARS-CoV-2 infection of antibody assays in this study. Their findings suggest that antibody detection can be an effective supplementary indicator in diagnosing suspected cases with no detectable viral RNA, and in conjunction with nucleic acid detection in confirming the infection.

  Yong et al. (Apr 22, 2020). Evaluation of the auxiliary diagnostic value of antibody assays for the detection of novel coronavirus (SARS-CoV-2). Jour Med Virol. https://doi.org/10.1002/jmv.25919

- Shivendu et al analyze data from on COVID-19 and BCG vaccination from 98 countries, finding that COVID-19 cases deaths across countries share a relationship with national BCG vaccination, but that this relationship is nullified when controlling for testing.
- This study concludes that there is no statistical evidence to support the assertion that inclusion of BCG vaccination in NIP has an impact on COVID-19 incidence or mortality.

  Shivendu et al. (Apr 18, 2020). Is there evidence that BCG vaccination has non-specific protective effects for COVID 19 infections or is it an illusion created by lack of testing? Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.18.20071142

- Zhang et al speculate on the likely benefits of melatonin in the attenuation of COVID-19 based on its putative pathogenesis. Although the direct evidence of melatonin application in COVID-19 is unclear, both its use in experimental animal models and in studies on humans has continuously documented its efficacy and safety, and its role in limiting virus-related diseases.

  Zhang et al. (Mar 23, 2020). COVID-19: Melatonin as a potential adjuvant treatment. Life Sci. https://doi.org/10.1016/j.lfs.2020.117583

Clinical Characteristics and Health Care Setting

- Paranjpe et al conducted a descriptive study of about 2,200 patients from the 5 Mount Sinai Health System hospitals in New York. Key findings from this study include: i) of 49% of patients completing their hospital course, the overall mortality was 29% and 36% required intensive care; ii) median age was 65 years overall and 75 years in those who died; iii) pre-existing conditions were present in 65% of those who died and in 46% of those discharged; iv) perturbations in inflammatory markers were also different in these 2 groups.

  Paranjpe et al. (Apr 19, 2020). Clinical Characteristics of Hospitalized Covid-19 Patients in New York City. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.19.20062117

Mental Health and Personal Impact

- The prevalence of Post-traumatic Stress symptoms (PTSS) in China's hardest-hit areas a month after the COVID-19 outbreak was 7%. Women reported significant higher PTSS in the domains of re-experiencing, negative alterations in cognition or mood, and hyper-arousal. Participants with better sleep quality or less frequency of early awakenings reported lower PTSS.
- Professional and effective mental health services should be designed in order to aid the psychological wellbeing of the population in affected areas, especially those living in hardest-hit areas, females and people with poor sleep quality.

  Liu et al. (Mar 16, 2020). Prevalence and predictors of PTSS during COVID-19 outbreak in China hardest-hit areas: Gender differences matter. Psych Res. https://doi.org/10.1016/j.psychres.2020.112921

Modelling and Prediction

- Using a deterministic-stochastic hybrid model, Romero-Severson et al found a declining transmission rate in 42 of the 51 examined countries, suggesting that global scale social distancing efforts to slow the spread of COVID-19 are effective and need to be strengthened or maintained.
- This study indicates that outbreaks can grow rapidly if social distancing measures are completely relaxed, and emphasizes the need for alternative strategies to control the virus beforehand.

  Romero-Severson et al. (Apr 18, 2020). DECLINE IN GLOBAL TRANSMISSION RATES OF COVID-19. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.18.20070771

- Projections made from SEIR epidemic model suggest that, even when infection rates appear to be slowing down or decreasing, prematurely relaxing social distancing policies produces a severe second peak far worse than the first. The study suggests that a longer-term initial period of restrictive social distancing coupled with a gradual reduction in the severity of social distancing would be more effective in controlling the COVID-19 outbreak.

  Feng et al. (Apr 22, 2020). Sustaining Social Distancing Policies to Prevent a Dangerous Second Peak of COVID-19 Outbreak. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.17.20069351

Public Health Policy and Practice

- Findings from an online survey of 4,676 US adults show that: about 52% adults went out of their home the previous day, and on average had close contact with 1.9 non-household members; older people have significantly fewer close contacts than younger people; people experiencing shortness of breath are practicing more intense social distancing; and those with only fever and dry cough are not engaging in greater social distancing.
- The authors recommend 2 policy changes based on these findings – 1) PH authorities should give clear guidance on what symptoms signal a strong likelihood of having COVID-19 and should lead to more intense social distancing, and 2) messaging should be clear regarding how people should respond if they have COVID-19 symptoms.

  Canning et al. (Apr 18, 2020). The association between age, COVID-19 symptoms, and social distancing behavior in the United States. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.19.20065219

- Survey results collected from about 550 permanent supportive housing (PSH) tenants in Los Angeles, CA show that nearly all were aware of COVID-19, and that 65% considered it to be a very serious

threat. The authors suggest that in order to continue supportive services while maintaining social distance, PSH providers should consider telehealth and find new ways to provide resources such as food and medication while emphasizing the importance of ongoing disease surveillance and proactive protective measures in this setting.

Henwood et al. (Apr 22, 2020). Surveying Tenants of Permanent Supportive Housing in Skid Row about COVID-19. Pre-print downloaded Apr 23 from https://doi.org/10.1101/2020.04.17.20070052

Other Resources and Commentaries

- Points to consider in the preparation and transfusion of COVID-19 convalescent plasma – Vox Sang (Apr 22)
    - The document covers important factors considering CP treatment including: (a) eligibility criteria of convalescent COVID-19 patients to donate whole blood or plasma, (b) pre-screening and pre-donation testing of convalescent COVID-19 donors; (c) criteria for collection of COVID-19 plasma; (d) post-donation treatment of plasma; and (e) it offers recommendations for plasma transfusion.
- COVID-19 Pandemic: Health System and Community Response to a Text Message (Text4Hope) Program Supporting Mental Health in Alberta – Disaster Manag and PH Prep (Apr 22)
- SARS-CoV-2 Seroconversion in Humans: A Detailed Protocol for a Serological Assay, Antigen Production, and Test Setup – Current Protocols (Apr 17)
    - This article describes a detailed protocol for expression of antigens derived from the spike protein of SARS-CoV-2 that can serve as a substrate for immunological assays, as well as a two-stage serological enzyme-linked immunosorbent assay (ELISA). These assays can be used for research studies and for testing in clinical laboratories.
- Robot assisted surgery during the COVID-19 pandemic, especially for gynecological cancer: a statement of the Society of European Robotic Gynaecological Surgery (SERGS) – Jour Gynec Oncology
- Utah-Stanford Ventilator (Vent4US): Developing a rapidly scalable ventilator for COVID-19 patients with ARDS – MedRxiv (Apr 22)
    - The authors describe a minimum, rapidly scalable ventilator designed for COVID-19 patients with ARDS in this article.