2019-nCoV Literature Situation Report (Lit Rep)
March 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

- **While highly disruptive to society, a study found four social distancing interventions to be highly effective in flattening the curve, even after a 10-week delay from index case arrivals.**
- **Another study highlights the importance of using telehealth to deliver care and shares strategies on integrating telehealth into the general healthcare system.**
- **A couple of studies describe the use of AI and machine learning-based diagnosis tools used in China, which could be considered for faster and extensive COVID-19 screening capabilities.**
- **A report shares 10 key recommendations for management of COVID-19 during pregnancy.**
- **Two studies review the effectiveness of COVID-19 treatments: one indicates convalescent plasma (CP) therapy may have a potential therapeutic effect on severe cases; the other suggests potential safety concerns related to ribavirin.**

Non-Pharmaceutical Interventions

- By adapting an established simulation model based on the infection history of individual cases, the authors find that application of 4 social distancing interventions (school closure, workplace non-attendance, increased case isolation and community contact reduction) is highly effective in flattening the epidemic curve.
- These interventions were found to be effective even 10 weeks after the first index cases. The most effective intervention was increasing case isolation to 100% of children and 90% of adults.
- While effective, these interventions are highly disruptive to society and creates challenges for government officials, who need to consider what the population can sustain.

  Milne & Xie (Mar 21, 2020). The Effectiveness of Social Distancing in Mitigating COVID-19 Spread: a modelling analysis. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.20.20040055

Transmission

- Outbreaks of COVID-19 on cruise ships pose a risk for rapid spread of disease beyond the voyage. Transmission occurred from crew members and passengers, and from ship to ship by crew members. Aggressive efforts are required to contain spread.
- Everyone should defer all cruise travel worldwide during this outbreak.

  Moriarty et al. (Mar 23, 2020). Public Health Responses to COVID-19 Outbreaks on Cruise Ships —Worldwide, February–March 2020. MMWR. http://dx.doi.org/10.15585/mmwr.mm6912e3

- This article suggests that immunosuppressed adults and children are not at increased risk of severe complications from COVID-19 compared to the general population.

  D'Antiga (Mar 20, 2020). Coronaviruses and immunosuppressed patients. The facts during the third pandemic. Liver Transplantation. https://doi.org/10.1002/lt.25756

Testing and Treatment

- Kwon et al share the concept, advantages, and limitations of the drive-through screening centers designed and implemented in Korea for COVID-19 testing. This could be implemented in other countries to cope with COVID-19 testing needs.

  Kwon et al. (Mar 23, 2020). Drive-Through Screening Center for COVID-19: a Safe and Efficient Screening System against Massive Community Outbreak. Jour Korean Med Sci. https://doi.org/10.3346/jkms.2020.35.e123

- The authors describe their experience in building and deploying an AI system in China that automatically analyzes CT images to detect COVID-19 pneumonia features for faster examination. They report high sensitivity (97%) and high specificity (92%) using the test dataset.
- Authors of another study on AI applications for COVID-19 provide a machine learning based diagnosis model using 620 lab samples, which could facilitate extensive COVID-19 screening.

  Jin et al. (Mar 19, 2020). AI-assisted CT imaging analysis for COVID-19 screening: Building and deploying a medical AI system in four weeks. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.19.20039354

  Meng et al. (Mar 21, 2020). Development and utilization of an intelligent application for aiding COVID-19 diagnosis. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.18.20035816

- The authors conducted a comprehensive literature review on the effectiveness and safety of antiviral therapies for COVID-19 and found that the current evidence on the effectiveness and safety of antiviral therapies is inconclusive. In particular, ribavirin has not shown conclusive effectiveness and may cause harmful adverse events.

  Rios et al. (Mar 19, 2020). Effectiveness and safety of antiviral or antibody treatments for coronavirus. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.19.20039008

- Results from a pilot study based on 19 severe COVID-19 patients indicate that convalescent plasma therapy may have a potential therapeutic effect and low risk in the treatment of severe cases.

  Duan et al. (Mar 16, 2020). The feasibility of convalescent plasma therapy in severe COVID- 19 patients: a pilot study. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.16.20036145

Clinical Characteristics and Health Care Setting

- Park et al present the mild clinical course of the first pediatric case of COVID-19 in Korea and highlight the need to develop pediatric-specific guidelines on isolation and adequate PPE for caregivers.

  Park et al. (Mar 23, 2020). First Pediatric Case of Coronavirus Disease 2019 in Korea. Jour Korean Med Sci. https://doi.org/10.3346/jkms.2020.35.e124

- Smith et al recognize the critical role of telehealth in emergency responses and share strategies for integrating telehealth into the general healthcare system. Some strategies include flexible funding arrangements, training and accrediting our health workforce, redesigning existing models of care and change management strategies.

  Smith et al. (Mar 20, 2020). Telehealth for global emergencies: Implications for coronavirus disease 2019 (COVID-19). Journal of Telemedicine and Telecare. https://doi.org/10.1177%2F1357633X20916567

- This report shares 10 key recommendations for management of COVID-19 during pregnancy.
- Route of delivery and delivery timing should be individualized based on obstetrical indications and maternal-fetal status.

  Chen et al. (Mar 20, 2020). Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection. International Jour of Gynaec & Obstetrics. https://doi.org/10.1002/ijgo.13146

- While general muscle pain and fatigue are common symptoms of COVID-19, clinicians should consider the diagnosis of rhabdomyolysis when patients have focal muscle pain and fatigue. Rapid clinical recognition of rhabdomyolysis symptoms can be lifesaving.

  Jin & Tong (Mar 20, 2020). Rhabdomyolysis as Potential Late Complication Associated with COVID-19. Emerg Infect Dis. https://doi.org/10.3201/eid2607.200445

- This report highlights the unique challenges and circumstances of cancer treatment amidst the COVID-19 outbreak, and the importance of organizational structure, preparation, agility, and a shared vision for continuing to provide cancer treatment in these times of uncertainty and rapid change.
- The report includes the Incident Command structure at the Seattle Cancer Care Alliance, which may be helpful for similar facilities.

  Ueda (Mar 16, 2020). Managing Cancer Care During the COVID-19 Pandemic: Agility and Collaboration Toward a Common Goal. J Nat Compr Canc Network. https://doi.org/10.6004/jnccn.2020.7560

Mental Health and Personal Impact

- A cross-sectional study used validated questionnaires to assess social capital, anxiety, stress, and quality of sleep on 170 individuals who self-isolated for 14 days in central China. Results suggest that increased social capital (i.e. friends and community engagement, etc.) improved sleep quality by reducing stress and anxiety.

  Xiao et al. (Mar 20, 2020). Social Capital and Sleep Quality in Individuals Who Self-Isolated for 14 Days During the Coronavirus Disease 2019 (COVID-19) Outbreak in January 2020 in China. Med Sci Monitor. https://www.medscimonit.com/abstract/index/idArt/923921

- Psychological factors play a vital role in the success of public health strategies (risk communication, vaccination and antiviral therapy, hygiene practices, and social distancing) used to manage outbreaks like COVID-19.
- It is critical for public health decision-makers, health authorities and heath care providers across disciplines to understand how health anxiety may influence individual behaviors during COVID-19. This will help tailor messages that may curb irresponsible decisions by the general public.

Asmundson & Taylor (Mar 10, 2020). How health anxiety influences responses to viral outbreaks like COVID-19: What all decision makers, health authorities, and health care professionals need to know. Jour of Anxiety Disorder. https://doi.org/10.1016/j.janxdis.2020.102211

Public Health Policy and Practice

- Simulated models in this study find that HCW absenteeism could range from 7.5% to 8.6%, and about 99% of counties across the U.S. would find it less expensive to provide child care to all HCWs with children than to bear the costs of HCW absenteeism during school closures.

  Chin et al. (Mar 19, 2020). Healthcare worker absenteeism, child care costs, and COVID-19 school closures: a simulation analysis. Pre-print downloaded Mar 23 from https://doi.org/10.1101/2020.03.19.20039404

Other Resources and Commentaries

- Patients with mental health disorders in the COVID-19 epidemic – Lancet (Apr 1 edition)
  - The authors share their concerns over the role of mental disorders in COVID-19 transmission by providing examples from psychiatric hospitals in China.

- Prepare to adapt: Blood supply and transfusion support during the first 2 weeks of the 2019 Novel Coronavirus (COVID-19) pandemic affecting Washington State – Transfusion (Mar 21)
  - This brief report describes the response from the hospital, regional blood center, and the hospital-based transfusion services in response to the COVID-19 outbreak in WA.

- Recommendations for the prevention, mitigation and containment of the emerging SARS-CoV-2 (COVID-19) pandemic in haemodialysis centres – Nephrol Dial Transplant (Mar 20)