2019-nCoV Literature Situation Report (Lit Rep)
March 26, 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

- **A free online tool that is capable of estimating the maximum daily number of incident COVID-19 cases that a healthcare system could manage given age-based distribution and severity is shared in a study.**
- **A retrospective study of 788 COVID-19 patients investigating the clinical and epidemiological characteristics of 788 COVID-19 patients found that older patients (60+ years) were more likely to be female, have high body temperature, have co-existing diseases and develop severe or critical infection type when compared with younger patients.**
- **Another study suggests that cardiac injury may be associated with a higher risk of in-hospital mortality.**
- **A report provides detailed information on the "ABCD's" (awareness, behaviors, containment, decisions) of the COVID-19 pandemic for geriatrics healthcare providers.**

Non-Pharmaceutical Interventions

- This study suggests that early adoption of social distancing is more effective than delayed implementation, even of highly restrictive measures, implying that there may be a threshold of public health interventions after which a decline in death rates begins to occur.
- This method may be helpful in planning for and monitoring the relaxation of social distancing and evaluating the effectiveness of implementation in individual countries.

  Pike & Saini (Mar 25, 2020). An international comparison of the second derivative of COVID-19 deaths after implementation of social distancing measures. Pre-print downloaded Mar 26 from https://doi.org/10.1101/2020.03.25.20041475

Testing and Treatment

- Reeves et al outline the design and implementation of EHR based rapid screening processes, laboratory testing, clinical decision support, reporting tools, and patient-facing technology related to COVID-19; and highlight the essential role of EHR in supporting clinical needs of a health system during this outbreak.

  Reeves et al. (Mar 24, 2020). Rapid Response to COVID-19: Health Informatics Support for Outbreak Management in an Academic Health System. J Am Med Inform Assoc. https://doi.org/10.1093/jamia/ocaa037

- This case study presents two false negative results of real-time RT-PCR which is regarded as the gold standard method for confirming SARS-CoV-2 infection. The study discusses using complementary approaches such as computed tomography (CT) in combination with rRT-PCR to achieve more reliable diagnosis.

  Li et al. (Apr 2020). False-Negative Results of Real-Time Reverse-Transcriptase Polymerase Chain Reaction for Severe Acute Respiratory Syndrome Coronavirus 2: Role of Deep-Learning-Based CT Diagnosis and Insights from Two Cases. KJR. https://doi.org/10.3348/kjr.2020.0146

Clinical Characteristics and Health Care Setting

- This retrospective study of 788 COVID-19 patients, 136 of whom were older patients (60+ years), from Wuhan describes the specific epidemiological and clinical features of older COVID-19 patients.
- The study finds that these older patients were more likely to: be female gender; have high body temperature; show familiar clustering; have co-existing basic diseases, dyspnea, or lymphocytopenia; develop severe/critical infection type and be admitted to ICU; have higher levels of AST, CK, LDH, CRP; and have lower levels of haemoglobin and albumin when compared to the younger patients.

  Lian et al. (Mar 25, 2020). Analysis of Epidemiological and Clinical features in older patients with Corona Virus Disease 2019 (COVID-19) out of Wuhan. Clin Infec Dis. https://doi.org/10.1093/cid/ciaa242

- In this cohort study of 416 patients from 1 hospital in Wuhan, the authors find that cardiac injury was a common condition among patients hospitalized with COVID-19 and was associated with a higher risk of in-hospital mortality.
- Although the exact mechanism of cardiac injury needs to be further explored, the findings highlight the need to consider this complication in COVID-19 management.

  Shi et al. (Mar 25, 2020). Association of Cardiac Injury With Mortality in Hospitalized Patients With COVID-19 in Wuhan, China. JAMA Cardio. https://doi.org/10.1001/jamacardio.2020.0950

- This study presents clinical characteristics of COVID-19 from 9 children and their families, indicating that new control measures should include rapid medical assessment and removal of cases from home and increased awareness of the importance of protective measures after symptom onset.

  Su et al. (Mar 25, 2020). The different clinical characteristics of corona virus disease cases between children and their families in China – the character of children with COVID-19. Emer Microbes and Infect. https://doi.org/10.1080/22221751.2020.1744483

Modelling and Prediction

- The COVID-19 Acute and Intensive Care Resource Tool (CAIC-RT) is capable of estimating the maximum daily number of incident COVID-19 cases that a Healthcare system could manage based on age-adjusted case distribution and severity data from the US.
- This tool can help planners determine a sustainable threshold for resource utilization, and is available online at https://caic-rt.shinyapps.io/CAIC-RT.

  Giannakeas et al. (Mar 25, 2020). Estimating the maximum daily number of incident COVID-19 cases manageable by a healthcare system. Pre-print downloaded Mar 26 from https://doi.org/10.1101/2020.03.25.20043711

- Sun et al share results from 4 prediction models that included rapidly ascertainable clinical findings, clinical tests, demographic variables and exposure risk factors.

- These could be used to identify individuals with a higher probability for COVID-19 and enable prioritization of PCR-testing and containment efforts. Basic laboratory test results were crucial to prediction models.

  Sun et al. (Mar 25, 2020). Epidemiological and Clinical Predictors of COVID-19. Clin Infec Dis. https://doi.org/10.1093/cid/ciaa322

Public Health Policy and Practice

- Ranney et al share several reasons that may have led to the critical shortage of PPE and ventilator supply in the US, and emphasize that a multipronged strategy requiring a concerted approach from local, state and national governments, private sectors and healthcare providers is necessary.

  Ranney et al. (Mar 25, 2020). Critical Supply Shortages — The Need for Ventilators and Personal Protective Equipment during the Covid-19 Pandemic. NEJM. https://www.nejm.org/doi/full/10.1056/NEJMp2006141

- This report provides detailed information on the "ABCD's" of the COVID-19 pandemic for geriatrics healthcare providers: **Awareness** of potential key clinical differences of COVID-19 in this population; quickly initiating appropriate **behaviors** to clinically manage the infection in LTCFs; implementing **containment** strategies to disrupt further spread of the virus; and being knowledgeable about the **decisions** being made at the local, state, and federal level.

  D'Adamo et al. (Mar 25, 2020). Coronavirus Disease 2019 in Geriatrics and Long-term Care: The ABCDs of COVID-19. J Am Geriatric Soc. https://doi.org/10.1111/jgs.16445

Other Resources

- Corona Virus International Public Health Emergencies: Implications for Radiology Management – Acad Radiology (Apr)
  - The article discusses how the radiology departments can most effectively respond to this public health emergency.
- All Feet On Deck—The Role of Podiatry During the COVID-19 Pandemic: Preventing hospitalizations in an overburdened healthcare system, reducing amputation and death in people with diabetes – J of Amer Podiatric Med Assoc (Mar 25)
  - In this article, the authors emphasize that podiatrists must mobilize by implementing the proposed Diabetic Foot Triage System, in-home visits, higher acuity office visits, telemedicine, and remote patient monitoring to manage diabetic patients, while reducing the COVID-19 risk.
- Renin-Angiotensin System Blockers and the COVID-19 Pandemic – Amer Heart Assoc (Mar 25)
  - This review suggests that based on the currently available evidence, treatment with renin-angiotensin system blockers should not be discontinued because of concerns with SARS-CoV-2 infection.
- COVID-19: decision making and palliative care – Swiss Med Weekly (Mar 24)
  - The authors provide recommendations for health professionals on the treatment of palliative care patients in inpatient and outpatient settings during the COVID-19 outbreak.
- Practical considerations for performing regional anesthesia: lessons learned from the COVID-19 pandemic – Can J Anesth (Mar 18)
  - This article explores the practical considerations and recommended measures for performing regional anesthesia in the COVID-19 patients, and focuses on control measures

geared towards ensuring patient and staff safety, equipment protection and infection prevention.

- Novel corona virus disease (COVID-19) in pregnancy: What clinical recommendations to follow? – AOGS (Mar 5)
    - This editorial summarizes some important practical clinical aspects of managing COVID-19 in pregnancy.