



2019-nCoV Literature Situation Report (Lit Rep)

April 22, 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

- ☐ **Models suggest using controlled avalanche strategy to achieve herd immunity faster and with lower mortality rates. This strategy reduces overall mortality and ICU admissions by 43 and 62% respectively.**
- ☐ **Glucocorticoid therapy was found to reduce the duration of fever, but not mortality, duration of hospitalization or lung inflammation.**
- ☐ **Asymptomatic infections are generally less contagious, can occur at any age and are correlated with local clusters of diseases.**
- ☐ **The long term clinical problems in survivors after hospitalization may include; respiratory dysfunction, reduced exercise capacity, psychological problems such as PTSD, depression and anxiety, and reduced quality of life.**

Non-Pharmaceutical Interventions

- Klement et al used a compartmental model to examine the implications of the controlled avalanche (CA) strategy over the population in Israel. Its main goal is to approach herd immunity faster than the current alternatives, with lower mortality rates and lower demand for critical health-care resources. It involves voluntarily exposing low risk groups (20-49 year olds).
- Through modeling, the authors show that CA strategy reduces overall mortality by 43%, ICU admission by 62% and release time of 50% of low risk population by more than 2 months. They however warn of serious ethical considerations.

Klement et al. (Apr 22, 2020). A Controlled avalanche – A regulated voluntary exposure approach for addressing Covid-19. Pre-print downloaded Apr 22 from <https://doi.org/10.1101/2020.04.12.20062687>

Transmission

- Yong et al describe how active case finding and contact tracing were used to identify cases and establish links between three clusters of COVID -19 in Singapore. The investigations used both SARS-CoV-2 serological assays and traditional epidemiological methods to confirm transmission between cases. This study is important to those establishing links among locally transmitted COVID-19 cases and tracing the transmission chain to an imported or initial source.

Yong et al. (April 22, 2020). *Connecting clusters of COVID-19: an epidemiological and serological investigation. Lancet Infectious disease (2020). Pre-print downloaded Apr 22 from [https://doi.org/10.1016/S1473-3099\(20\)30273-5](https://doi.org/10.1016/S1473-3099(20)30273-5)*

Testing and Treatment

- This meta-analysis of 22 studies evaluated the effectiveness and safety of glucocorticoids in children and adults with COVID-19, SARS and MERS. Lu et al report that, in adults with COVID-19 or SARS, systemic glucocorticoid use did not reduce mortality, duration of lung inflammation but had a significant reduction in the duration of fever. They warn against the use of systemic glucocorticoid therapy for its ability to prolong the duration of hospital stay in all patients (COVID-19, SARS and MERS) and increased risk of adverse reactions.

Lu et al. (Apr 22, 2020). Glucocorticoids for COVID-19 effectiveness and safety of glucocorticoids to treat COVID-19: A rapid review and meta-analysis. Pre-print downloaded Apr 22 from <https://doi.org/10.1101/2020.04.17.20064469>

- Williams et al investigated the feasibility and utility of saliva as a non-invasive diagnostic specimen for COVID-19 screening in a clinic in Melbourne, Australia. Overall 84.6% of the positive RT PCR patients had SARS-CoV-2 detected in their saliva, while 2% of PCR-negative patients were positive. They argue that use of saliva reduces risk to healthcare workers, does not require specialized consumables, causes less patient discomfort, and may be a useful sample for self-collection. They conclude that saliva could be a suitable alternative first-line screening test in several environments including low resource settings.

Williams et al. (April 21, 2020). Saliva as a non-invasive specimen for detection of SARS-CoV-2. Clin Microbiol. <https://jcm.asm.org/content/early/2020/04/17/JCM.00776-20>

- Iron-containing enzymes are required for viruses, most likely including coronaviruses, to complete their replication process. Liu et al suggest that; even though little is known about iron regulation in COVID-19 patients thus far, it could be deduced from other viral infections that using either iron chelators or key iron regulators might be an alternative beneficial adjuvant in treating COVID-19.

Liu et al. (Apr 20, 2020). Depriving iron supply to the virus represents a promising adjuvant therapeutic against viral survival. Curr Clin Microbiol reports. <https://doi.org/10.1007/s40588-020-00140-w>

Clinical Characteristics and Health Care Setting

- Pan et al retrospectively analyzed 26 persistently asymptomatic SARS-CoV-2 carriers. They reported that 22 cases (84.6%) correlated with clustering occurrence. The median period from contact to diagnosis and the last positive nucleic acid test was 19 and 21.5 days, respectively. This period was found different between patients with atypical chest CT findings and those with typical ground-glass or patchy opacities on CT.
- They conclude that asymptomatic infections are generally less contagious, can occur at any age and are correlated with local clusters of diseases, but warn that asymptomatic carriers should be recognized as an infection source for COVID-19 patients.

Pan et al. (Apr 22, 2020). Epidemiological and clinical characteristics of 26 asymptomatic SARS-CoV-2 carriers. The Journal of Infectious Diseases. <https://doi.org/10.1093/infdis/jiaa205>

- This paper presents imaging characteristics of initial chest CT and clinical manifestations of patients with COVID-19 pneumonia. It provides description of the nature of lesions, locations, and severity in different age groups. Single site lesions were observed in patients <35 yrs of age, and multiple sites and extensive area were observed in patients > 60 years old.

Fat et al. (Apr 7, 2020). Imaging characteristics of initial chest computed tomography and clinical manifestations of patients with COVID-19 pneumonia. Japanese Journal of Radiology <https://doi.org/10.1007/s11604-020-00973-x>

- Meta-analysis was conducted by Ahmed et al, to determine the long-term clinical problems in adult survivors of COVID-19, SARS and MERS after hospitalization or ICU, using pooled estimates of prevalence and severity for different outcomes and at different time points after follow-up admission. They report that the long term clinical problems in survivors of CoV infections after hospitalization or ICU admission were; respiratory dysfunction, reduced exercise capacity, psychological problems such as PTSD, depression and anxiety, and reduced quality of life. They warn that critical care, rehabilitation and mental health services to anticipate a high prevalence of these problems following COVID-19.

Ahmed et al. (Apr 21, 2020). Long-term clinical outcomes in survivors of coronavirus outbreak after hospitalization or ICU admission: a systematic review and Meta-analysis of follow-up studies. Pre-print downloaded Apr 22 from <https://doi.org/10.1101/2020.04.16.20067975>.

- This paper presents a guidance based on best available evidence and expert opinion from a panel of pediatric infectious diseases physicians and pharmacists from 18 geographically diverse North American institutions. It discourages the use of antivirals in most COVID-19 pediatric patients. For children who develop severe or critical disease, this guidance offers approaches for decision-making regarding use of antivirals.

Chiotos et al. (Apr 22, 2020). Multicenter initial guidance on use of antivirals for children with COVID-19/SARS-CoV-2. Jour of the Ped Infect Dis. <https://doi.org/10.1093/jpids/piaa045>

Mental Health and Personal Impact

- Liang et al conducted a study to assess and investigate factors of mental health among youth groups after COVID-19 occurrence in China. They report that nearly 40.4% of the sampled youth had psychological problems and 14.4% PTSD symptoms. They conclude that an infectious diseases outbreak, such as COVID-19, may have an immense influence on youth mental health and urge local governments to develop effective psychological interventions directed at the youth.

Liang et al. (Apr 21, 2020). The effect of COVID-19 on youth mental health. Psych Quarterly. <https://doi.org/10.1007/s11126-020-09744-3>

Other Resources and Commentaries

- [COVID-19 Outbreak Among Three Affiliated Homeless Service Sites — King County, Washington, 2020](#)— MMWR (Apr 22)
- [Suicide risk and prevention during the COVID-19 pandemic](#) - Lancet Psychiatry (Apr 21)
- [The implications of COVID-19 for the care of children living in residential institutions](#) – Lancet Child Adolescent Health (Apr 21)
- [Managing childhood allergies and immunodeficiencies during respiratory virus epidemics – the 2020 COVID-19 pandemic: A statement from the EAACI-Section on Pediatrics](#) – Ped Allerg Pulmon (Apr 22)
 - This paper puts forward 6 recommendations for the management of childhood allergies and immune-deficiencies based on underlying facts and existing evidence of COVID-19.
- [Mitigating the Impacts of the COVID-19 Pandemic Response on At-Risk Children](#) – Ped Persp (Apr 21)
- [The paramount importance of serological surveys of SARS-CoV-2 infection and immunity](#) - Euro Jour of Epi (Apr 11)

- Goudsmit presents an argument for repeated large-scale SARS-CoV-2 antibody testing of randomly-selected populations as a necessity during lifting of coronavirus pandemic restrictions.
- [COVID-19 Infection in Patients with Sickle Cell Disease](#) – British Journal of Haematology (Apr 11)