

2019-nCoV Literature Situation Report (Lit Rep)

June 15, 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 comparison between nasal specimens and standard nasopharynx swabs found high concordance (Cohen's kappa >0.8) for the detection of SARS-CoV-2 among patients with viral loads >1000 copies/mL. Those with viral loads <1000 copies/mL had low concordance between sample types (Cohen's kappa = 0.49).** 😊
- **Genetic mutations of SARS-CoV-2 could diminish the sensitivity of SARS-CoV-2 PCR assay panels, stressing the importance of targeting more than one region in the viral genome for SARS-CoV-2 detection due to the unknown mutation rate.** 😊
- **There was clinical improvement in 11 of 12 patients with severe COVID-19 pneumonia after treatment with lenzilumab. No adverse events due to lenzilumab were observed and none of the treated patients died.** 😊
- **GPS data from all 50 states and Washington, DC indicated significant increases in social distancing scores in response to stay-at-home orders, and that higher social distancing scores were associated with lower COVID-19 incidence and mortality.** 😊

Non-Pharmaceutical Interventions

- *[pre-print, not peer reviewed]* Arp et al. examined the use of face coverings at grocery stores across 20 counties in Wisconsin between May 16 and June 1, 2020. Of 3,271 people observed, 41% used face coverings. Adults (aOR=1.65), females (aOR=1.43) and customers at a more expensive grocery store (aOR=1.95) were more likely to be wearing face coverings.
Arp et al. (June 12, 2020). Use of Face Coverings by the Public during the COVID-19 Pandemic an Observational Study. Pre-print downloaded June 15 from <https://doi.org/10.1101/2020.06.09.20126946>
- *[pre-print, not peer reviewed]* VoPham et al. used nationwide smartphone GPS data for 3,054 counties (94%) in all 50 states and Washington, DC, to estimate county-level social distancing based on (1) change in average distance traveled (per device), (2) change in non-essential venue visitation (e.g., hair salons), and (3) the probability that two users were in close proximity.
- Stay-at-home orders were associated with a 35% increase in social distancing score ($p < 0.001$). Higher social distancing score was associated with 29% reduction in COVID-19 incidence (aIRR=0.71, 95%CI 0.57, 0.87) and a 35% reduction in COVID-19 mortality (aIRR=0.65, 95%CI 0.55, 0.76).
VoPham et al. (June 12, 2020). Effect of Social Distancing on COVID-19 Incidence and Mortality in the US. Pre-print downloaded June 15 from <https://doi.org/10.1101/2020.06.10.20127589>

Transmission

- Miyamae et al. found the median duration of viral shedding among 23 passengers from the Diamond Princess cruise ship with asymptomatic or mild SARS-CoV-2 infection was 19 days (range 6-37 days) from initial viral detection. Eight people (35%) had another positive PCR result after testing negative once.

Miyamae et al. (June 8, 2020). Duration of Viral Shedding in Asymptomatic or Mild Cases of Novel Coronavirus Disease 2019 (COVID-19) from a Cruise Ship: A Single-Hospital Experience in Tokyo, Japan. International Journal of Infectious Diseases.

<https://doi.org/10.1016/j.ijid.2020.06.020>

- Sakurai et al. reported a case series of 90 patients from the Diamond Princess cruise ship who were asymptomatic when they tested positive for SARS-CoV-2, and remained asymptomatic throughout the course of the infection. The median number of days between the first positive PCR result and the first of the two serial negative results was 9 days (IQR 6-11, range 3-21), and the cumulative percentages of people with resolution of infection within 8 and 15 days after the first positive result were 48% and 90%, respectively. The likelihood of delayed resolution increased with age.

Sakurai et al. (June 12, 2020). Natural History of Asymptomatic SARS-CoV-2 Infection. New England Journal of Medicine. <https://doi.org/10.1056/NEJMc2013020>

- Walker et al. conducted a systematic review with 49 studies including 666 neonates to estimate the risk of neonatal SARS-CoV-2 infection. In total, 8/292 (3%) vaginally delivered neonates and 20/374 (5%) Caesarean births developed confirmed SARS-CoV-2 infection.

Walker et al. (June 12, 2020). Maternal Transmission of SARS-COV-2 to the Neonate, and Possible Routes for Such Transmission: A Systematic Review and Critical Analysis. BJOG: An International Journal of Obstetrics & Gynaecology. <https://doi.org/10.1111/1471-0528.16362>

Testing and Treatment

- *[pre-print, not peer reviewed]* Callahan et al. compared results of nasal specimens under 3 transport conditions, traditional viral transport media (VTM), GITC transport medium, and dry swabs, to those of standard nasopharynx swabs collected at the same time among 308 individuals. They observed high concordance (Cohen's kappa >0.8) only for patients with viral loads (VL) from the nasal samples >1000 copies/mL. There was low concordance (Cohen's kappa = 0.49) for those with VL<1000 copies/mL.

Callahan et al. (June 14, 2020). Nasal-Swab Testing Misses Patients with Low SARS-CoV-2 Viral Loads. Pre-print downloaded June 15 from <https://doi.org/10.1101/2020.06.12.20128736>

- Hartman et al. re-tested 86 patients within 28 days after self-reported symptom resolution to investigate SARS-CoV-2 clearance. They found persistent viral shedding in 11/86 (13%) participants at a median of 19 days (range 12-24 days) after symptom resolution. Participants with persistent shedding were significantly older (mean age 54 years vs. 42 years) and older people were more likely to have higher viral concentrations.
- These results may have implications for convalescent plasma donors, who may return to clinical facilities within 28 days after symptom resolution if viral shedding indicates infectiousness.

Hartman et al. (June 13, 2020). Persistent Viral RNA Shedding after COVID-19 Symptom Resolution in Older Convalescent Plasma Donors. Transfusion. <https://doi.org/10.1111/trf.15927>

- Penarrubia et al. assessed the effect of accumulated genetic variability of SARS-CoV-2 on sensitivity of five SARS-CoV-2 PCR assays. A total of 11,627 (34%) genomes included single mutations that affected annealing of a PCR assay. Variations in 8,773 (26%) genomes were considered high risk, whereas an additional 2,854 (8.43%) genomes had single mutations that were not predicted affect sensitivity.
- Targeting more than one region in the viral genome for SARS-CoV-2 detection may mitigate the risk of loss of sensitivity due to the unknown mutation rate during this SARS-CoV-2 outbreak.
Penarrubia et al. (June 8, 2020). Multiple Assays in a Real-Time RT-PCR SARS-CoV-2 Panel Can Mitigate the Risk of Loss of Sensitivity by New Genomic Variants during the COVID-19 Outbreak. International Journal of Infectious Diseases. <https://doi.org/10.1016/j.ijid.2020.06.027>
- *[pre-print, not peer reviewed]* Temesgen et al. reported the use of lenzilumab, an anti- GM-CSF monoclonal antibody, in 12 patients with severe COVID-19 pneumonia. Of the 12 treated patients, 11 (92%) patients had significantly improved clinical outcomes. There were no treatment-related adverse events and no deaths.
Temesgen et al. (June 12, 2020). First Clinical Use of Lenzilumab to Neutralize GM-CSF in Patients with Severe and Critical COVID-19 Pneumonia. Pre-print downloaded June 15 from <https://doi.org/10.1101/2020.06.08.20125369>

Clinical Characteristics and Health Care Setting

- Assaker et al. performed a meta-analysis of 28 articles including 1,614 individuals to describe COVID-19 symptoms in children. Of 23 studies (n=1,543 patients) describing the distribution of COVID-19 severity, they found that children typically presented with mild (37%) or moderate (45%) upper respiratory tract infection, and cases were rarely severe (3%) or critical (0.6%). Fever (48% prevalence) and cough (40% prevalence) were the most common symptoms.
Assaker et al. (May 31, 2020). Presenting Symptoms of COVID-19 in Children: A Meta-Analysis of Published Studies. British Journal of Anaesthesia. <https://doi.org/10.1016/j.bja.2020.05.026>
- Hung et al. reported a case series of 9 adult passengers with COVID-19 who had been on board the Diamond Princess cruise ship in Japan. By day 8 of the 14-day quarantine period, eight (89%) were simultaneously positive for nasopharyngeal swab RT-PCR and anti-RBD IgG. Six (67%) remained asymptomatic throughout the quarantine period.
- A combination of RT-PCR and serology could improve case finding and contact tracing to facilitate early diagnosis, prompt isolation, and treatment.
Hung et al. (June 12, 2020). SARS-CoV-2 Shedding and Seroconversion among Passengers Quarantined after Disembarking a Cruise Ship: A Case Series. The Lancet Infectious Diseases. [https://doi.org/10.1016/S1473-3099\(20\)30364-9](https://doi.org/10.1016/S1473-3099(20)30364-9)
- A meta-analysis of 41 articles reported a wide spectrum of neurological involvement in COVID-19. The most common neurological symptoms included olfactory (smell) and gustatory (taste) disorders. Guillain-Barre syndrome and inflammation of the brain, spinal cord, and meninges were reported in multiple case series.
Wang et al. (June 4, 2020). Clinical Manifestations and Evidence of Neurological Involvement in 2019 Novel Coronavirus SARS-CoV-2: A Systematic Review and Meta-Analysis. Journal of Neurology. <https://doi.org/10.1007/s00415-020-09974-2>

- Tabata et al. described the clinical features of 104 people with SARS-CoV-2 infection on board the Diamond Princess cruise ship in Tokyo, Japan. On admission to hospital, 43 (41%) were asymptomatic, 41 (39%) had mild COVID-19, and 20 (19%) had severe disease.
- Patients who progressed to severe disease were older age (median age 73 years vs. 60; $p=0.028$), were more likely to have consolidation on chest CT images (46% vs. 21%; $p=0.035$), and were more likely to have lymphopenia (57% vs. 23%; $p=0.0055$).

Tabata et al. (June 12, 2020). Clinical Characteristics of COVID-19 in 104 People with SARS-CoV-2 Infection on the Diamond Princess Cruise Ship: A Retrospective Analysis. The Lancet Infectious Diseases. [https://doi.org/10.1016/S1473-3099\(20\)30482-5](https://doi.org/10.1016/S1473-3099(20)30482-5)

Other Resources and Commentaries

- [Passive antibody therapy in COVID-19](#) - Nature Reviews: Immunology (June 12)
- [“Social Media Misinformation”—An Epidemic within the COVID-19 Pandemic](#) - The American Journal of Tropical Medicine and Hygiene (June 12)
- [Addressing Health Inequities Exacerbated by COVID-19 Among Youth With HIV: Expanding Our Toolkit](#) - The Journal of Adolescent Health (June 8)
- [Ten recommendations for supporting open pathogen genomic analysis in public health](#) - Nature Medicine (June 11)
- [Can existing live vaccines prevent COVID-19?](#) – Science (June 12)
- [COVID-19 Pandemic, Unemployment, and Civil Unrest](#) - JAMA (June 12)
- [The Impact of COVID-19 Infection on Labor and Delivery, Newborn Nursery, and Neonatal Intensive Care Unit: Prospective Observational Data from a Single Hospital System](#) - American Journal of Perinatology (June 13)
- [Convalescent Plasma and COVID-19](#) - JAMA (June 12)
- [Ethics and governance for digital disease surveillance](#) - Science (May 29)
- [Bridging a false dichotomy in the COVID-19 response: a public health approach to the ‘lockdown’ debate](#) - BMJ Global Health (June 10)
- [New-Onset Diabetes in Covid-19](#) - NEJM (June 12)
- [Neuropathological Features of Covid-19](#) - NEJM (June 12)
- [How Fear Appeal Approaches in COVID-19 Health Communication May Be Harming the Global Community](#) - Health Education & Behavior (June 11)
- [COVID-19 vaccines for all?](#) - The Lancet (June 13)

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