

2019-nCoV Literature Situation Report (Lit Rep)

May 6, 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

- **SARS-CoV-2 could remain stable at 37°C for at least 24 hours, but heating at 56°C for 30 minutes could effectively inactivate the virus while preserving the stability of viral RNA in both human sera and sputum samples.**
- **A case of SARS-CoV-2 infection was identified in a patient in Paris in December 2019, a month before the official first cases in the country. This indicates that the virus may have been circulating globally earlier than previously recognized.**
- **A case series 25 patients with severe COVID-19 showed that tocilizumab therapy was associated with dramatic declines in inflammatory markers, radiological improvement, and reduced need for ventilation.**
- **There is potentially widespread self-misdiagnosis of past COVID-19 disease, which can lead to inaccurate beliefs about immunity, resulting in lower adherence to social distancing measures, which may contribute to transmission.**
- **Americans who have higher knowledge about COVID-19 are less likely to purchase more goods, attend large gatherings, and use medical masks. A national, coordinated effort at pandemic response may produce better compliance with behavioral recommendations.**

Non-Pharmaceutical Interventions

- Wang et al. evaluate the stability of SARS-CoV-2 under four different heat conditions (37, 42, 56, 60°C) and report that the virus is stable at 37°C for at least 24 hours. However, heating at 56°C for 30 minutes effectively inactivates the virus while preserving the stability of viral RNA for further analysis in both human sera and sputum samples. These findings provide a practical way to inactivate infectious virus in clinical specimens.

Wang et al. (May 5, 2020). Effective Heat Inactivation of SARS-CoV-2. Medical Science Monitor.
<https://doi.org/10.1101/2020.04.29.20085498>

Geographic Spread

- Deslandes et al. report the retrospective identification by RT-PCR of a patient with SARS-CoV-2 in Paris in December 2019. The patient hospitalized in December 2019 for hemoptysis with no etiological diagnosis. SARS-CoV-2 RNA was detected in a stored respiratory sample. Based on this result, it appears that SARS-CoV-2 was already spreading in France in late December 2019, a month before the official first cases in the country.

Deslandes et al. (May 3, 2020). SARS-COV-2 was already spreading in France in late December 2019. *International Journal of Antimicrobial Agents*.

<https://doi.org/10.1016/j.ijantimicag.2020.106006>

- Swanson and Cassman estimate the number of positive, unconfirmed COVID-19 cases in Whatcom County, Washington and construct a confidence interval around the estimate, using a previously established method employed by demographers to estimate a population in the absence of a census count. On April 25, 2020, when Whatcom County had reported 284 confirmed cases, the authors estimate that there were 2,670 (95% CI 2,025 – 3,936) unconfirmed positive cases.

Swanson & Cossman. (May 5, 2020). *A Simple Method for Estimating the Number of Unconfirmed COVID-19 Cases in a Local Area that Includes a Confidence Interval: A Case Study of Whatcom County Washington*. Pre-print downloaded May 6 from

<https://doi.org/10.1101/2020.04.30.20086181>

Testing and Treatment

- Alattar et al. report a case series from 25 patients who had severe COVID-19 and received tocilizumab therapy, an interleukin-6 inhibitor that may ameliorate the inflammatory manifestations. During the 14 days of follow-up, tocilizumab was associated with dramatic decline in inflammatory markers, radiological improvement, and reduced ventilator support requirements. However, the majority (92%) of patients experienced at least one adverse event. Adequately powered trials are needed to confirm efficacy.

Alattar et al. (May 5, 2020). *Tocilizumab for the Treatment of Severe COVID-19*. *Journal of medical virology*. <https://doi.org/10.1002/jmv.25964>

- Broder et al. compared the positive test agreement between the Roche cobas 6800 assay and the Cepheid GeneXpert Xpress SARS-CoV-2 assay. Thirty-five nasopharyngeal samples with low viral loads (cycle threshold values >30) from the cobas 6800 were run on the GeneXpert platform. The close agreement between the two tests conducted on samples with low viral concentration indicates that the two assays could be used interchangeable in accordance with testing algorithms.

Broder et al. (May 5, 2020). *Test Agreement Between Roche Cobas 6800 and Cepheid GeneXpert Xpress SARS-CoV-2 Assays at High Cycle Threshold Ranges*. Pre-print downloaded May 6 from <https://doi.org/10.1101/2020.05.05.078501>

Clinical Characteristics and Health Care Setting

- This paper reviews 64 studies examining the burden of SARS-CoV-2, SARS-CoV-1, and Middle Eastern respiratory syndrome (MERS)-CoV on health care workers (HCWs) and risk factors for infection. HCWs accounted for a significant proportion of coronavirus infections and commonly experienced depression, anxiety, and psychological distress during the outbreak. PPE use and infection control training are associated with decreased risk of infection. Certain exposures (e.g., involvement in intubations, direct patient contact, or contact with bodily secretions) are associated with increased risk of infection.

Chou et al. (May 5, 2020). *Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers: A Living Rapid Review*. *Annals of internal medicine*. <https://doi.org/10.7326/M20-1632>

- This retrospective study summarized clinical characteristics and outcomes of 52 cancer patients with COVID-19. Results show that the infection rate of SARS-COV-2 in cancer patients was higher than the general population. Lymphocyte levels were lower among patients with mild COVID-19 disease compared to severe/critical patients. D-dimer, C-reactive protein, procalcitonin, lactate dehydrogenase and interleukin-6 were significantly higher in severe/critical patients compared to mild patients. Cancer patients with COVID-19 showed deteriorating conditions and poor outcomes. *Yang et al. (May 5, 2020). Clinical characteristics and outcomes of cancer patients with COVID-19. Journal of Medical Virology. <https://doi.org/10.1002/jmv.25972>*

Mental Health and Personal Impact

- An online survey in the UK investigated behavioral differences between people who do and do not believe that they have had COVID-19. The survey indicates that there may be a high number of people who self-misdiagnosis, believing incorrectly that they have had COVID-19.
- Because those who believe they have had COVID-19 are more likely to think they are immune to COVID-19, they may contribute to transmission through non-adherence to social distancing measures. Clear communication to the public is regarding the importance of protective measures regardless of beliefs about prior infection. *Smith et al. (May 5, 2020). The impact of believing you have had COVID-19 on behaviour: Cross-sectional survey. Pre-print downloaded May 6 from <https://doi.org/10.1101/2020.04.30.20086223>*

Public Health Policy and Practice

- Bento et al. used internet search data from the US to examine information-seeking behaviors in responses to the public announcement of the first case of COVID-19 in a state. Across states, searches for information about COVID-19 increased immediately after the announcement, but the elevated level of attention was short-lived, even though it was followed by increasingly strong policy measures. Searches for information about community-level policies (e.g., quarantine, school closures, testing) or personal health strategies (e.g., masks, grocery delivery, over-the-counter medications) were not immediately triggered.
- These results correspond to a relatively early period in the epidemic when more comprehensive policy responses were not yet part of the public discourse. Further analysis should track evolving patterns of responses to new public information reports. *Bento et al. (May 4, 2020). Evidence from internet search data shows information-seeking responses to news of local COVID-19 cases. PNAS. <https://doi.org/10.1073/pnas.2005335117>*
- Chary et al. compared tweets from the Greater Boston Area discussing treating COVID-19 with house cleaners to calls to the Massachusetts and Rhode Island Poison Control Center (MARI PCC). Half of the spikes in calls to MARI PCC about cleaner ingestions were preceded 2-3 days earlier by tweets advocating ingesting or injecting bleach to cure COVID-19. These results implicate health misinformation on social media may lead to secondary harm. *Chary et al. (May 5, 2020). Geospatial Correlation Between COVID-19 Health Misinformation and Poisoning with Household Cleaners. Pre-print downloaded May 6 from <https://doi.org/10.1101/2020.04.30.20079657>*
- This online survey examined the association between knowledge of COVID-19 and participation in different behaviors in response to the COVID-19 pandemic in the US. Those with higher knowledge

of COVID-19 were less likely to purchasing more consumable goods, attending large gatherings, and using medical masks. Compared to Republicans, Democrats were less likely to attend large gatherings or use medical masks.

- A national, coordinated effort at pandemic response may produce better compliance with behavioral recommendations to address this public health emergency.

Clements. (May 5, 2020). Knowledge and Behaviors toward COVID-19 among U.S. Residents during the Early Days of the Pandemic: Online Questionnaire. JMIR public health and surveillance <https://doi.org/10.2196/19161>

Other Resources and Commentaries

- [A Novel Multi-ventilation Technique to Split Ventilators](#) – the BMJ (May 5)
- [Health Care Supply Chains: COVID-19 Challenges and Pressing Actions](#) – Annals of Internal Medicine (May 5)
- [Ethics of instantaneous contact tracing using mobile phone apps in the control of the COVID-19 pandemic](#) – Journal of Medical Ethics (May 4)
- [Understanding Observational Treatment Comparisons in the Setting of Coronavirus Disease 2019 \(COVID-19\)](#) – JAMA Cardiology (May 5)
- [A human monoclonal antibody blocking SARS-CoV-2 infection](#) – Nature Communications (May 4)
- [An Evidence Based Perspective on mRNA-SARS-CoV-2 Vaccine Development](#) – Medical Science Monitor (May 5)

Report prepared by the UW MetaCenter for Pandemic Preparedness and Global Health Security and the START Center in collaboration with and on behalf of WA DOH COVID-19 Incidence Management Team