



2019-nCoV Literature Situation Report (Lit Rep)

April 3, 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

- ☑ **Local health departments can potentially use sentinel surveillance to understand the level of community transmission of COVID-19.**
- ☑ **Data from the 2017 BRFSS indicate that 45% of U.S. adults have an underlying condition that could potentially increase their risk of complications from COVID-19.**
- ☑ **A study recommends using electronic personal protective equipment (ePPE) to protect staff and conserve PPE while providing rapid access to emergency care for suspected COVID-19 cases.**
- ☑ **Gargle lavage could be a safer and possibly more sensitive alternative or additional option for COVID-19 diagnosis.**

Non-Pharmaceutical Interventions

- To flatten the curve of COVID-19 among incarcerated populations, the article lists the following interventions: (1) releasing offenders who are least likely to commit additional crimes and suspend arresting for low-level crimes, (2) isolating and separating infected incarcerated people, (3) hospitalizing those who are seriously ill, and (4) identifying infected correctional staff and healthcare providers who are available to serve after recovery.

Akiyama et al. (Apr 2, 2020). Flattening the Curve for Incarcerated Populations — Covid-19 in Jails and Prisons. NEJM. <https://www.nejm.org/doi/full/10.1056/NEJMp2005687>

Transmission

- Findings from a group of 10 post-menopausal women with confirmed severe COVID-19 pneumonia from 1 hospital in Wuhan suggest that SARS-CoV-2 does not enter the vaginal fluid. This suggests that the likelihood of transmitting the virus to sexual partners through vaginal fluids may be low.

Qiu et al. (Apr 2, 2020). SARS-CoV-2 is not detectable in the vaginal fluid of women with severe COVID-19 infection. Clin Infect Dis. <https://doi.org/10.1093/cid/ciaa375>

- Lu et al conduct a detailed investigation of 3 family clusters with COVID-19 who had eaten at the same air-conditioned restaurant in China and conclude that the key factor for infection was the direction of the airflow and that droplet transmission was prompted by air-conditioned ventilation.

- To prevent spread of COVID-19 in restaurants, the article recommends strengthening temperature-monitoring surveillance, increasing the distance between tables, and improving ventilation.
Lu et al. (Apr 2, 2020). COVID-19 Outbreak Associated with Air Conditioning in Restaurant, Guangzhou, China, 2020. Emerg Infect Dis. <https://doi.org/10.3201/eid2607.200764>
- This study describes the public health investigation of the first mildly ill, non-hospitalized U.S. COVID-19 case and demonstrates that SARS-CoV-2 infection can cause mild illness and result in positive tests for up to 18 days after diagnosis, without evidence of transmission to close contacts. These findings might inform public health strategies to manage individuals with asymptomatic infection or mild illness.
Scott et al. (Apr 2, 2020). First Mildly Ill, Non-Hospitalized Case of Coronavirus Disease 2019 (COVID-19) Without Viral Transmission in the United States — Maricopa County, Arizona, 2020. Clin Infect Dis. <https://doi.org/10.1093/cid/ciaa374>
- The authors reviewed articles on a total of 31 pregnant women with COVID-19 up to March 4. They found no evidence for intrauterine transmission of COVID-19 from infected pregnant women to their fetuses. Mothers may be at increased risk for more severe respiratory complications.
- Mothers with known or suspected COVID-19 should adhere to standard and contact precautions during breastfeeding, as transmission could still occur through respiratory droplets during breastfeeding.
Karimi-Zarchi et al. (Apr 2, 2020). Vertical Transmission of Coronavirus Disease 19 (COVID-19) from Infected Pregnant Mothers to Neonates: A Review. Fetal and Ped Pathol. <https://doi.org/10.1080/15513815.2020.1747120>

Geographic Spread

- The authors estimated population-level case fatality rates (CFR) for 7 countries (U.S. included) and New York City, and analyzed the age-structure of confirmed cases and the age-specific case-fatality. They report that the age-structure of cases likely reflects differences in testing regimes and transmission trajectories, and age-specific CFRs could indicate worsening health outcomes of those infected with COVID-19
- An accurate assessment of differences in CFRs across countries and over time are crucial to determine appropriate containment and mitigation interventions, such as social confinement and mobility restrictions.
Dudel et al. (Mar 31, 2020). Monitoring trends and differences in COVID-19 case fatality rates using decomposition methods: Contributions of age structure and age-specific fatality. Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.31.20048397>
- Yao et al report a significant association between nitrogen dioxide (NO₂) exposure and R₀, suggesting that ambient NO₂ may contribute to the spread ability of COVID-19 in this ecological study. Previous studies have suggested that the increase spread ability from NO₂ might not be caused by increased susceptibility to infection but may result from effects of NO₂ on host defenses that prevent the spread of virus.
Yao et al. (Mar 31, 2020). Ambient nitrogen dioxide pollution and spread ability of COVID-19 in Chinese cities. Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.31.20048595>

Testing and Treatment

- Pizzorno et al provide new insights on SARS-CoV-2 biology, evidence on the antiviral efficacy of remdesivir, and the therapeutic potential of a virus-detected and a host-directed drug combination (e.g. remdesivir-diltiazem combination) as a probable option to respond to the current unmet medical need imposed by COVID-19.

Pizzorno et al. (Mar 31, 2020). Characterization and treatment of SARS-CoV-2 in nasal and bronchial human airway epithelia. Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.31.017889>

- Saito et al report a case in which gargle lavage samples yielded positive PCR and oropharyngeal swabs results. Gargle lavages may be a safer and potentially more sensitive alternative to oropharyngeal swabs, as gargle lavage can be done by patients themselves.

Saito et al. (Apr 2, 2020). Gargle lavage as a safe and sensitive alternative to swab samples to diagnose COVID-19: a case report in Japan. Clin Infect Dis. <https://doi.org/10.1093/cid/ciaa377>

Clinical Characteristics and Health Care Setting

- 2017 national BRFSS data indicates that 45% of adults in the US are at potentially heightened risk of complications from COVID-19 due to having at least 1 of 6 co-morbidities (cardiovascular disease, chronic obstructive pulmonary disease, diabetes, asthma, hypertension, and cancer excluding skin).
- While these rates increase with age group to about 80% among those 70 years or older, 53% of those at heightened risk of complications are younger than 60 years of age.

Adams et al. (Mar 30, 2020). Population based estimates of comorbidities affecting risk for complications from COVID-19 in the US. Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.30.20043919>

Public Health Policy and Practice

- This paper explores the influence of information diffusion on the spread of COVID-19 in China based on modelling and finds that the dissemination of epidemic and self-protection information reduces disease spread.
- The authors emphasize the importance of releasing timely and accurate information in the prevention and control of the epidemic, but also acknowledge that excessive and inaccurate information can have negative effects. They put forward recommendations in information dissemination.

Lin et al. (Mar 31, 2020). Research on the Influence of Information Diffusion on the Transmission of the Novel Coronavirus (COVID-19). Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.31.20048439>

- The survey results in this study indicate that while knowledge about COVID-19 is generally high in the U.S., there are differences in knowledge and behaviors based on age, sex, education, income, race, and political party affiliation.
- A national, coordinated effort at pandemic response may ensure better compliance with behavioral recommendations to address this public health emergency.

Clements (Mar 31, 2020). Knowledge and behaviors toward COVID-19 among U.S. residents during the early days of the pandemic. Pre-print downloaded Apr 3 from <https://doi.org/10.1101/2020.03.31.20048967>

- Turer et al recommend using electronic personal protective equipment (ePPE) - an approach that uses telemedicine tools to perform electronic medical screening, in order to protect staff and conserve PPE while providing rapid access to emergency care for suspected COVID-19 cases.
Turer et al. (Apr 2, 2020). Electronic Personal Protective Equipment: A Strategy to Protect Emergency Department Providers in the Age of COVID-19. Jour of the Amer Med Informatics Assoc. <https://doi.org/10.1093/jamia/ocaa048>
- Local health departments can potentially use sentinel surveillance to understand the level of community transmission of COVID-19 and better guide the selection and implementation of community mitigation measures; as demonstrated by Santa Clara County, CA.
Zwald et al. (Apr 3, 2020). Rapid Sentinel Surveillance for COVID-19 — Santa Clara County, California, March 2020. MMWR. <http://dx.doi.org/10.15585/mmwr.mm6914e3external>
- This MMWR highlights that symptom-based screening might not identify SARS-CoV-2 infections in independent and assisted living facility residents.
- These findings underscore the importance of SARS-CoV-2 mitigation measures, including social distancing, visitor restriction, resident and staff member testing, exclusion of ill staff members, and enhanced disinfection and hygiene practices, which are consistent with current CDC guidance for preventing transmission of COVID-19 in independent and assisted living communities.
Roxby et al. (Apr 3, 2020). Detection of SARS-CoV-2 Among Residents and Staff Members of an Independent and Assisted Living Community for Older Adults — Seattle, Washington, 2020. MMWR. <http://dx.doi.org/10.15585/mmwr.mm6914e2external>

Other Resources and Commentaries

- [Coronavirus disease 2019 \(COVID-19\): a clinical update](#) – Front Med (Apr 2)
- [Peer-to-Peer Contact Tracing: A Privacy-Preserving Smartphone Application](#) – JMIR (Mar 27)
 - Yasaka et al propose a smartphone-based contact tracing method as a novel solution that protects privacy while demonstrating the potential to suppress an epidemic.
- [Early advice on managing children with cancer during the COVID-19 pandemic and a call for sharing experiences](#) – Pediatric Blood & Cancer (Apr 2)
- [An Epidemic in the Midst of a Pandemic: Opioid Use Disorder and COVID-19](#) – Annals of Internal Med (Apr 2)
- [Mobile field hospitals, an effective way of dealing with COVID-19 in China: sharing our experience](#) – BioSci Trends (Apr 1)
- [Preventive Behaviors Conveyed on YouTube to Mitigate Transmission of COVID-19: Cross-Sectional Study](#) – JMIR (Apr 2)