2019-nCoV Literature Situation Report (Lit Rep)
March 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

- **Several studies in recent days have explored the possibility of antibody screening as an alternative or supplemental diagnostic test for COVID-19. Results have been largely promising, especially for combined RT-PCR and antibody testing.**
- **Closed environments have been tied to increased disease transmission, as evidenced by several COVID-19 outbreaks in places like hospitals, long-term care facilities, and cruise ships.**
- **A new hospital-based environmental hygiene study detected SARS-CoV-2 on surfaces and in air samples. Authors offer four key recommendations to improve infection control in hospitals.**
- **The time required for a patient to fully clear the SARS-CoV-2 virus is still under study, though new evidence suggests that certain therapeutic treatment options may delay full viral clearance.**

Transmission and Geographic Spread

- In Shenzhen, China, community and family transmission of COVID-19 are outpacing transmission from individuals with known exposures or travel history to Hubei province. An increase in pediatric cases may be attributable to more exposure opportunities due to community transmission. The authors discuss important strategies for reducing transmission, including early screening, diagnosis, isolation, and treatment, in addition to special considerations to prevent nosocomial infections.

  Liu et al. (Mar 3, 2020). Community Transmission of Severe Acute Respiratory Syndrome Coronavirus 2, Shenzhen, China, 2020. Emerging Infectious Diseases.
  https://doi.org/10.3201/eid2606.200239

- While current evidence points to probably asymptomatic transmission of COVID-19, the evidence is not entirely definitive. This case study did not find evidence of asymptomatic transmission after an epidemiologic assessment of a confirmed patient in Korea.

  Bae (Mar 2, 2020).A Chinese Case of COVID-19 Did Not Show Infectivity During the Incubation Period: Based on an Epidemiological Survey.
  https://www.jpmph.org/journal/view.php?doi=10.3961/jpmph.20.048

- Closed environments appear to contribute to secondary transmission of COVID-19 and also promote superspreading events. Declining incidence rates in China after social distancing was enforced further supports this conclusion.

Nishiura et al. (Mar 3, 2020). Closed environments facilitate secondary transmission of coronavirus disease 2019 (COVID-19). Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.02.28.20029272

Testing and Treatment

- Seroconversion was evaluated for 173 COVID-19 patients in China. Less than 40% of patients showed presence of antibodies during the first 7 days of illness, but this rapidly increased over subsequent days to 100% (Ab), 94.3% (IgM), and 79.8% (IgG). Combining RNA and antibody tests significantly improved diagnostic sensitivity, even in the first 7 days of illness. Higher Ab titer was also associated with increased illness severity.

  Zhao et al. (Mar 3, 2020). Antibody responses to SARS-CoV-2 in patients of novel coronavirus disease 2019. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.03.02.20030189

- A case series study found that fecal specimens were equally accurate in detecting SARS-CoV-2 compared to nucleic acid tests. Patients with positive stool samples did not exhibit gastrointestinal symptoms and presence of the virus in the stool was not associated with the severity of lung infection.

  Zhang et al. (Mar 3, 2020). Fecal specimen diagnosis 2019 Novel Coronavirus–Infected Pneumonia. Journal of Medical Virology. https://doi.org/10.1002/jmv.25742

- This study evaluated the use of RT-LAMP for diagnosing COVID-19. Sensitivity was similar to RT-PCR and specificity was 99%.

  Yang et al. (Mar 2, 2020). Rapid Detection of SARS-CoV-2 Using Reverse transcription RT-LAMP method. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.03.02.20030130

- This paper offers a review of current literature on laboratory considerations for testing for COVID-19 and descriptions of specific abnormalities used for diagnostic and prognostic decisions.

  Lippi and Plebani (Mar 3, 2020). Laboratory abnormalities in patients with COVID-2019 infection. CCLM. https://doi.org/10.1515/cclm-2020-0198

- A study of 57 patients, some with and some without confirmed COVID-19, was conducted to assess the accuracy and utility of IgM and IgG serological testing.

  Jia et al. (Mar 3, 2020). Clinical significance of IgM and IgG test for diagnosis of highly suspected COVID-19 infection. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.02.28.20029025

- Another study has drawn attention to the possibility of convalescent plasma as a treatment option for COVID-19, calling for further safety and efficacy testing.

  Chen et al. (Feb 27, 2020). Convalescent plasma as a potential therapy for COVID-19. Lancet Infect Dis. https://doi.org/10.1016/S1473-3099(20)30141-9

Clinical Characteristics and Health Care Setting

- Detectable serum SARS-CoV-2 viral load appears to be associated with increased illness severity. Inflammatory cytokine IL-6 levels were also 10 times higher among critically ill patients compared to other patients.

Chen et al. (Mar 3, 2020). Detectable serum SARS-CoV-2 viral load (RNAaemia) is closely associated with drastically elevated interleukin 6 (IL-6) level in critically ill COVID-19 patients. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.02.29.20029520

- Jiang et al describe a study of air and surface contamination in a Chinese hospital to evaluate environmental hygiene and to support improved infection control practices.

  Jiang et al. (Mar 2, 2020). Clinical Data on Hospital Environmental Hygiene Monitoring and Medical Staff Protection during the Coronavirus Disease 2019 Outbreak. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.02.25.20028043

- This paper offers recommendations for laboratory safety and disinfection methods for use in histotechnology processes.

  Henwood (Mar 1, 2020). Coronavirus disinfection in histopathology. Journal of Histotechnology. https://doi.org/10.1080/01478885.2020.1734718

- RT-PCR results for biological samples of 66 recovering COVID-19 patients were used to evaluate SARS-CoV-2 clearance time and influencing factors. Viral clearance in stool samples was delayed compared to oropharyngeal swabs. Furthermore, this delay was pronounced among patients who were treated with corticosteroids, suggesting that treatment with corticosteroids should be considered with caution.

  Ling et al. (Feb 28, 2020). The persistence and clearance of viral RNA in 2019 novel coronavirus disease survivors. Chinese Medical Journal. https://journals.lww.com/cmj/Abstract/publishahead/Persistence_and_clearance_of_viral_RNA_in_2019.99362.aspx

- The authors describe the case of a 30-week pregnant COVID-19 patient who underwent emergency cesarean section and delivered a healthy baby with no COVID-19 infection.

  Wang et al. (Feb 28, 2020). A case of 2019 Novel Coronavirus in a pregnant woman with preterm delivery. Clinical Infectious Diseases. https://doi.org/10.1093/cid/ciaa200

Mental Health and Personal Impact

- An estimated 220 million children have experienced home confinement in China during the COVID-19 outbreak. China has implemented its emergency home schooling plan, and courses online and via TV are available to mitigate some of the educational impact on children.
- While there can be some benefits to home confinement, including more family interaction and communication, PTSD symptoms have been shown to be 4 times higher among children who experience quarantine, while confinement can also yield decreased physical activity, increased screen time, and poor food choices.
- The authors encourage local professionals to help develop social networks and materials for families, and encourage psychologists and social workers to provide psychological support and assistance for children and families.

  Wang et al. (Mar 3, 2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. The Lancet. https://doi.org/10.1016/S0140-6736(20)30547-X

- Li et al gathered information on vicarious traumatization (VT) of frontline and non-frontline nurses and compared it to VT of the general public. VT symptoms include appetite changes, fatigue, sleep disturbance, difficulty with focus, irritability, numbness, fear, and despair. All three groups have

experienced VT under the spread of COVID-19, with the general public reporting VT most frequently compared to both nurse groups. Frontline nurses reported lower VT than other nurses.

- The authors hypothesize that differences in VT were related to length of clinical experience, more knowledge about the disease, and access to information. The authors recommend early intervention for VT and psychological stress and transparent communication as primary methods of mitigating the stress.

  Li et al. (Mar 2, 2020). Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. Pre-print downloaded Mar 3 from https://doi.org/10.1101/2020.02.29.20029322

Public Health Policy and Practice

- In this MMWR, authors describe active monitoring in the US of people with confirmed exposures to COVID-19 patients.

  Burke et al. (Mar 3, 2020). Active Monitoring of Persons Exposed to Patients with Confirmed COVID-19 — United States, January–February 2020. http://dx.doi.org/10.15585/mmwr.mm6909e1

Other Resources

In 2009, the American Journal of Public Health published a special supplement on pandemic influenza preparedness in vulnerable populations. Articles covered a broad range of communities and may be informative for COVID-19 preparedness and response efforts.

- Protecting Vulnerable Populations From Pandemic Influenza in the United States: **A Strategic Imperative**
- Effective Health **Risk Communication** About Pandemic Influenza for Vulnerable Populations
- Pandemic Influenza Preparedness and Response Among **Immigrants and Refugees**
- Pandemic Influenza Planning: Addressing the Needs of **Children**
- Pandemic Influenza and Farmworkers: The Effects of **Employment, Social, and Economic Factor**s
- Role of the **Primary Care** Safety Net in Pandemic Influenza
- Pandemic Influenza and **Pregnant Women**: Summary of a Meeting of Experts
- Protection of **Racial/Ethnic Minority** Populations During an Influenza Pandemic
- Pandemic Influenza: Implications for **Programs Controlling for HIV Infection, Tuberculosis, and Chronic Viral Hepatitis**
- Pandemic Influenza Preparedness and Vulnerable Populations in **Tribal Communities**
- Preparing for and Responding to Pandemic Influenza: Implications for **People With Disabilities**
- Pandemic Influenza Preparedness and Response Among **Public-Housing Residents, Single-Parent Families, and Low-Income Populations**
- Protecting Home **Health Care Workers**: A Challenge to Pandemic Influenza Preparedness Planning