# 2019-nCoV Literature Situation Report (Lit Rep)

## June 5, 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

- **According to the CDC, non-pharmaceutical interventions successfully contained SARS-CoV-2 among recruits in a Basic Military Training setting at a US Air Force base.**
- **Children in a household with a person with COVID-19 were less likely than adults to acquire SARS-CoV-2 infection.**
- **Rates of arrest and pre-trial detention are associated with higher area-level COVID-19 rates in Chicago.**
- **Universal screening of hospital patients in Seattle found 10% of those with symptoms were SARS-CoV-2 positive compared to 1% among asymptomatic individuals.**
- **Among pediatric patients in Seattle, Philadelphia, and Houston, 1% were SARS-CoV-2 positive and 50% of these had symptoms.**
- **The number of patients admitted to Veterans Affairs (VA) inpatient facilities for common emergencies decreased by 41% between March 11 and April 21 compared to the previous 6 weeks.**

## Non-Pharmaceutical Interventions

- Seven weeks of non-pharmaceutical interventions (quarantine, social distancing, early screening of trainees, isolation, monitored reentry for cases) among recruits in a Basic Military Training setting at a US Air Force Base successfully contained SARS-CoV-2. Only 5 out of over 10,000 trainees tested positive, and 3 were contacts of the first case.

  *Marcus et al. (June 5, 2020). COVID-19 Monitoring and Response Among U.S. Air Force Basic Military Trainees - Texas, March-April 2020. MMWR. Morbidity and Mortality Weekly Report.* https://doi.org/10.15585/mmwr.mm6922e2

## Transmission

- *[pre-print, not peer reviewed]* A composite measure of neighborhood infection risk in New York City is associated with neighborhood social disadvantage and capacity to socially isolate (estimated by subway usage data), after adjusting for testing data.

  *Carrion et al. (June 4, 2020). Assessing Capacity to Social Distance and Neighborhood-Level Health Disparities during the COVID-19 Pandemic. Pre-print downloaded June 5 from https://doi.org/10.1101/2020.06.02.20120790*

- Among 13 family clusters in a city in Israel, after removing the index case, 58% of adults became SARS-CoV-2 positive by PCR compared to 33% of children 5-17 years and 12% of children less than 5 years of age. Children appeared to play a smaller role in transmission of SARS-CoV-2 than adults.
  *Somekh et al. (June 1, 2020). The Role of Children in the Dynamics of Intra Family Coronavirus 2019 Spread in Densely Populated Area. Pediatric Infectious Disease Journal.* https://doi.org/10.1097/INF.0000000000002783

- Among 30 quarantined people with RT-PCR-confirmed SARS-CoV-2 infection, nearly half (43%) were asymptomatic and asymptomatic individuals were less likely to test positive in follow-up tests than those with symptoms of COVID-19, indicating faster viral clearance.
  *Chau et al. (June 4, 2020). The Natural History and Transmission Potential of Asymptomatic SARS-CoV-2 Infection. Clinical Infectious Diseases.* https://doi.org/10.1093/cid/ciaa711

- Reinhart and Chen found that zip codes in Chicago with higher rates of arrest and released jail inmates had higher rates of SARS-CoV-2 infection, even after adjustment for race and poverty. The authors propose that arrest and pre-trial detention practices may contribute to SARS-CoV-2 spread.
  *Reinhart and Chen. (June 4, 2020). Incarceration And Its Disseminations: COVID-19 Pandemic Lessons From Chicago's Cook County Jail. Health Affairs.* https://doi.org/10.1377/hlthaff.2020.00652

## Testing and Treatment

- Universal screening of patients prior to admission or a surgical or aerosol-generating procedure in the University of Washington hospital system was instituted on April 13, 2020. Since that time, 10% of patients with COVID-19 symptoms were SARS-CoV-2 positive compared to fewer than 1% of asymptomatic individuals.
  *Mays et al. (June 3, 2020). Pre-Procedural Surveillance Testing for SARS-CoV-2 in an Asymptomatic Population in the Seattle Region Shows Low Rates of Positivity. Journal of Clinical Microbiology.* https://doi.org/10.1128/JCM.01193-20

- Universal pre-operative screening for SARS-CoV-2 infection at the Children's Hospital of Philadelphia, Texas Children's Hospital, and Seattle Children's Hospital from March 26-April 22, 2020 found that 0.93% of children were positive, ranging from 0.22% to 2.65% across these hospitals. Fifty percent of positive children had symptoms and 20% had known exposure. Increasing age and emergency status of procedure were positively associated with SARS-CoV-2 infection.
  *Lin et al. (June 4, 2020). Incidence of COVID-19 in Pediatric Surgical Patients Among 3 US Children's Hospitals. JAMA Surgery.* https://doi.org/10.1001/jamasurg.2020.2588

## Clinical Characteristics and Health Care Setting

- Among pregnant or immediately postpartum women with COVID-19 symptoms or an epidemiologic link to a case, women of self-reported Hispanic ethnicity were disproportionately represented (60%, vs 18% in the population). Hispanic women were no more likely than non-Hispanic women to be hospitalized, but they were more likely to be admitted to the ICU and to be intubated.
  *Goldfarb et al. (June 2, 2020). Prevalence and Severity of Coronavirus Disease 2019 (COVID-19) Illness in Symptomatic Pregnant and Postpartum Women Stratified by Hispanic Ethnicity. Obstetrics & Gynecology.* https://doi.org/10.1097/AOG.0000000000004005

- Among 70 COVID-19 patients and patients who had recovered, all had detectable neutralizing anti-SARS-CoV-2 antibodies by 20 days of symptom onset. The study found that neutralizing antibodies were detected in COVID-19 patients even in the early stages of the disease. Older patients and those with more severe symptoms had higher levels of antibodies.

  *Wang et al. (June 4, 2020). Neutralizing Antibodies Responses to SARS-CoV-2 in COVID-19 Inpatients and Convalescent Patients. Clinical Infectious Diseases.* https://doi.org/10.1093/cid/ciaa721

- Thirteen out of 1,673 recovered COVID-19 patients under mandatory 2-week quarantine in Wuhan, China were reported to relapse, characterized by mild symptoms, positive PCR results, and chest CT results consistent with COVID-19. All were hospitalized, but none were admitted to the ICU. The remaining 1,660 did not have COVID-19 symptoms and no lung lesions on CT, but it is not clear if they received PCR testing.

  *Luo et al. (June 1, 2020). A Follow-up Study of Recovered Patients with COVID-19 in Wuhan, China. International Journal of Infectious Diseases.* https://doi.org/10.1016/j.ijid.2020.05.119

- Out of 537 out-of-hospital cardiac arrests in Seattle and King County from February 26-April 15, 2020, COVID-19 (laboratory-confirmed or COVID-19 like illness) was diagnosed in 5% of cases that occurred in homes, 11% of cases that occurred in nursing homes, and in no cases that occurred in public places. The authors conclude that delaying bystander CPR to put on PPE should only be considered if prevalence of COVID-19 is high.

  *Sayre et al. (June 4, 2020). Prevalence of COVID-19 in Out-of-Hospital Cardiac Arrest: Implications for Bystander CPR. Circulation.* https://doi.org/10.1161/CIRCULATIONAHA.120.048951

- Among a pre-established cohort, the number of patients admitted to Veterans Affairs (VA) inpatient facilities for 6 common emergency conditions declined 41% between March 11 and April 21, 2020 compared with the previous 6 weeks, with no similar decline in 2019. The authors conclude that a decrease of this size likely reflects avoidance of hospitals rather than decreased incidence due to declines in elective surgeries, reduced transmission of other pathogens, lower pollution levels, or other potential explanations.

  *Baum and Schwartz. (2020). Admissions to Veterans Affairs Hospitals for Emergency Conditions During the COVID-19 Pandemic. JAMA Network Open.* https://jamanetwork.com/journals/jama/fullarticle/2767061

- Over one third of healthcare workers who had been fit tested for an N95 respirator in the last 1-2 years failed repeat fit testing. Increased number of shifts worn, increased donnings/doffings, and increased hours worn were all associated with a greater likelihood of fit test failure.

  *Degesys et al. (June 4, 2020). Correlation Between N95 Extended Use and Reuse and Fit Failure in an Emergency Department. JAMA.* https://doi.org/10.1001/jama.2020.9843

- A meta-analysis of randomized trials found that among patients with acute hypoxemic respiratory failure, treatment with helmet or facemask non-invasive ventilation was associated with a lower risk of all-cause mortality and intubation compared to standard oxygen therapy alone.

  *Ferreyro et al. (June 4, 2020). Association of Noninvasive Oxygenation Strategies With All-Cause Mortality in Adults With Acute Hypoxemic Respiratory Failure. JAMA.* https://doi.org/10.1001/jama.2020.9524

## Mental Health and Personal Impact

- Symptoms of depression, anxiety, and stress were common among healthcare workers responding to an online survey. High depression and anxiety scores were associated with being female, young, and single; having less work experience, doing frontline work, and increased weekly working hours. Having a child was associated with lower scores.

  *Elbay et al. (May 27, 2020). Depression, Anxiety, Stress Levels of Physicians and Associated Factors in Covid-19 Pandemics. Psychiatry Research.* https://doi.org/10.1016/j.psychres.2020.113130

## Other Resources and Commentaries

- Cheng et al. (June 1, 2020). Using Machine Learning to Predict ICU Transfer in Hospitalized COVID-19 Patients. Journal of Clinical Medicine.—Journal of Clinical Medicine (June 2)
- Increasing Host Cellular Receptor—Angiotensin-Converting Enzyme 2 (ACE2) Expression by Coronavirus may Facilitate 2019-nCoV (or SARS-CoV-2) Infection – Journal of Medical Virology (June 4)
- Making Decisions in a COVID-19 World – JAMA (June 4)
- Structural Proteins in Severe Acute Respiratory Syndrome Coronavirus-2 – Archives of Medical Research (May 25)
- Sustained Suppression – Nature Biomedical Engineering (May 13)
- Visualizing Speech-Generated Oral Fluid Droplets with Laser Light Scattering – New England Journal of Medicine (May 21)
- Thinking of Risk in the Era of COVID-19 – JAMA (June 4)
- On setting expectations for a SARS-CoV-2 Vaccine – Clinical Infectious Diseases (June 4)
- Policy Solutions for Reversing the Color-blind Public Health Response to COVID-19 in the US – JAMA (June 4)
- Physical distancing, face masks, and eye protection for prevention of COVID-19 – Lancet (June 1)
- Responding to the COVID-19 Pandemic: The Need for a Structurally Competent Health Care System – JAMA (June 4)
- Alternatives to Invasive Ventilation in the COVID-19 Pandemic – JAMA (June 4)
- Acute myocardial injury: a novel clinical pattern in children with COVID-19 – Lancet Child & Adolescent Health (June 1)

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