2019-nCoV Literature Situation Report (Lit Rep)

August 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

- **Viral shedding was similar between asymptomatic and symptomatic patients with SARS-CoV-2 infection in a South Korean cohort, with similar rates of conversion to a negative RT-PCR result over time. Most patients (75% asymptomatic vs. 70% symptomatic) had a negative RT-PCR test by 21 days after diagnosis.** More
- **Using data from a community-based SARS-CoV-2 testing site in Washington, DC, the infection rates were significantly higher among racial and ethnic minority children (30% among Black children, 46% among Hispanic children, 7% among white children) and among children with lower median family income.** More
- **Heart failure hospitalization rates declined during the state of emergency and shelter-in-place periods in a large community health system in Georgia.** More
- **5,523 (13%) healthcare workers at a large New York State health system who underwent SARS-CoV-2 antibody testing were seropositive. Those who reported a high suspicion that they had been exposed to the virus were significantly more likely to be seropositive.** More

Transmission

- Lee et al. examined viral shedding among asymptomatic (36%) and symptomatic (64%) patients with SARS-CoV-2 infection who were isolated in a community treatment center in South Korea (n=303) and found that viral loads did not differ significantly between the groups based on amplification of 3 viral genes (*RdRp, N, env*). During isolation, the proportion who converted to a negative RT-PCR test result was similar between asymptomatic and symptomatic patients (34% vs. 30% at day 14, 75% vs. 70% at day 21) without a statistically significant difference in time-to-conversion (median 17 days among asymptomatic v. 19.5 days among symptomatic patients, p-value = 0.07).

  Lee et al. (Aug 6, 2020). Clinical Course and Molecular Viral Shedding Among Asymptomatic and Symptomatic Patients With SARS-CoV-2 Infection in a Community Treatment Center in the Republic of Korea. JAMA Internal Medicine.
  https://doi.org/doi:10.1001/jamainternmed.2020.3862

- Komine-Aizawa et al. performed a narrative review summarizing evidence from pathological examinations of placental tissues in mothers with COVID-19, finding that these tissues are often infected with SARS-CoV-2 although fetuses are not always infected. They review potential

mechanisms for SARS-CoV-2 vertical transmission. The authors conclude that although placentas are susceptible to SARS-CoV-2 infection, they may partially protect fetuses.

Komine-Aizawa et al. (July 25, 2020). Placental Barrier against COVID-19. Placenta. https://doi.org/10.1016/j.placenta.2020.07.022

Testing and Treatment

- *[Preprint, not peer-reviewed]* Cooper et al. isolated CD4 and CD8 memory T cells specific to SARS-CoV-2 spike, nucleocapsid, and membrane antigens from convalescent plasma donors who had recovered from mild SARS-CoV-2 infection. They report that these T cells can be rapidly expanded to therapeutic doses while maintaining the desired central memory phenotype required for protective immune responses against severe COVID-19 infections.

  Cooper et al. (Aug 5, 2020). Rapid GMP-Compliant Expansion of SARS-CoV-2-Specific T Cells from Convalescent Donors for Use as an Allogeneic Cell Therapy for COVID-19. Pre-print downloaded Aug 6 from https://doi.org/10.1101/2020.08.05.237867

Clinical Characteristics and Health Care Setting

- Among 46,117 healthcare workers at a large New York State health system who underwent SARS-CoV-2 antibody testing, 13.7% were seropositive. In a multivariate analysis, high self-reported suspicion of virus exposure was associated with seropositivity (RR=1.2, 95%CI 1.2-1.3).
- Seropositivity was significantly lower among healthcare workers with no previous RT-PCR test result (9%, 3077/34251), compared to those with a prior RT-PCR test (34%, 2186/6078). Among individuals with a prior positive RT-PCR test result, 94% (2044/2186) were also seropositive. Among individuals with a prior negative RT-PCR test result, 90% (3490/3892) were also seronegative.

  Moscola et al. (Aug 6, 2020). Prevalence of SARS-CoV-2 Antibodies in Health Care Personnel in the New York City Area. JAMA. https://doi.org/10.1001/jama.2020.14765

- Joy et al. used data from a large cohort study in the UK to calculate the excess mortality from COVID-19. They estimated that the mortality risk between early January and mid-May 2020 was 1,089 per 100,000 person-years. The excess mortality rose steadily from late March to a peak in mid-April, after which it declined.

  Joy et al. (Aug 4, 2020). Excess Mortality from COVID-19 in an English Sentinel Network Population. The Lancet Infectious Diseases. https://doi.org/10.1016/S1473-3099(20)30632-0

- Zheng et al. conducted a meta-analysis of 14 eligible studies (n=410 patients) to estimate the risk of SARS-CoV-2 infection among children. The pooled proportion of asymptomatic infection was 41% (95%CI 24-57%), and the pooled proportion of infections associated with family or household infections was 84% (95% CI 76-90%). No differences by gender were observed.

  Zheng et al. (Aug 5, 2020). An Increasing Public Health Burden Arising from Children Infected with SARS-CoV2: A Systematic Review and Meta-Analysis. Pediatric Pulmonology. https://doi.org/10.1002/ppul.25008

- Goyal et al. performed a cross-sectional study of 1,000 children attending a community-based SARS-CoV-2 testing site from March 21-April 28, 2020 in Washington, DC and determined infection rates by race/ethnicity and estimated median family income (MFI). They found that the infection rates were significantly higher among racial and ethnic minority children (30% among non-Hispanic Black children, 46% among Hispanic children, 7% among non-Hispanic-white children) and among children

in less socioeconomically advantaged households (9% in 4th MFI quartile, 24% in 3rd quartile: 27% in 2nd quartile: 38% in 1st quartile).

Goyal et al. (Aug 1, 2020). Racial/Ethnic and Socioeconomic Disparities of SARS-CoV-2 Infection Among Children. Pediatrics. https://doi.org/10.1542/peds.2020-009951

Mental Health and Personal Impact

- Kim et al. conducted a cross-sectional telephone survey among patients with pre-existing alcohol disorders (n=182) in London 2 months after lockdown started in the UK. During lockdown, 43 (24%) reported an increase and 34 (19%) reported a decrease in their alcohol intake as assessed by AUDIT score. In a subset of 69 (38%) patients who were abstinent before lockdown, 12 (17%) relapsed during lockdown. Mean AUDIT score within the relapse group was 16 (SD 10), representing a 226% mean increase with a mean weekly consumption of 49 units (SD 63) during lockdown.

  Kim et al. (Aug 4, 2020). Effect of COVID-19 Lockdown on Alcohol Consumption in Patients with Pre-Existing Alcohol Use Disorder. The Lancet Gastroenterology & Hepatology. https://doi.org/10.1016/S2468-1253(20)30251-X

Public Health Policy and Practice

- Steinberg et al. reported an outbreak of COVID-19 among employees at a meat processing facility in South Dakota during March 16–April 25, 2020. A total of 929 (26%) employees and 210 (9%) of their contacts were diagnosed with COVID-19. Two employees died. The highest attack rates occurred among employees who worked <6 feet from one another on the production line.

  Steinberg et al. (Aug 7, 2020). COVID-19 Outbreak Among Employees at a Meat Processing Facility — South Dakota, March–April 2020. MMWR. https://doi.org/10.15585/mmwr.mm6931a2

- Ling et al. collected data at a large, community health system in Georgia from February 1-June 12, 2020 and describe a decrease in heart failure hospitalizations during the emergency declaration and shelter-in-place periods, followed by a return to a level similar to baseline after the reopening. These data were compared to the same period in 2019 (Jan 31 to June 12).
- The weekly hospitalization admission rate for heart failure during weeks 1-5 (prior to emergency declaration) were comparable (27.4/week in 2019 vs. 28.2/week in 2020). During the state of emergency and shelter-in-place (weeks 6-14), the mean rate of admissions fell by 37% from 33.2/week in 2019 to 21.1/week in 2020 ($p<0.001$). From weeks 15-19, two weeks after the reopening, the rate returned to a similar level (28.4/week in 2019 vs. 29.8/week in 2020).

  Ling et al. (Aug 2, 2020). Lifting COVID-19 Shelter-in-Place Restrictions: Impact on Heart Failure Hospitalizations in Northeast Georgia. Journal of Cardiac Failure. https://doi.org/10.1016/j.cardfail.2020.07.017

Other Resources and Commentaries

- Executive Dysfunction in COVID-19 Patients – Diabetes & Metabolic Syndrome (July 22)
- SeroTracker: A Global SARS-CoV-2 Seroprevalence Dashboard – The Lancet Infectious Diseases (Aug 4)
- Vertical Transmission of SARS-CoV-2 (COVID-19): Are Hypotheses More than Evidences? – American Journal of Perinatology (Aug 5)
- Why Contact Tracing Efforts Have Failed to Curb COVID-19 Transmission in Much of the U.S – Clinical Infectious Diseases (Aug 6)

- SARS-CoV-2 Jumping the Species Barrier: Zoonotic Lessons from SARS, MERS and Recent Advances to Combat This Pandemic Virus – Travel Medicine and Infectious Disease (Aug 2)
- Disaster Psychiatry and Homelessness: Creating a Mental Health COVID-19 Response – The Lancet Psychiatry (Aug 4)
- ACE2 Isoform Diversity Predicts the Host Susceptibility of SARS-CoV-2 – Transboundary and Emerging Diseases (Aug 5)
- The Color of COVID-19: Structural Racism and the Pandemic's Disproportionate Impact on Older Racial and Ethnic Minorities – The Journals of Gerontology (Aug 5)
- Morbidity in the COVID-19 Era: Ethanol Intoxication Secondary to Hand Sanitiser Ingestion – Journal of Paediatrics and Child Health (Aug 5)
- Attacks on Public Health Officials During COVID-19 – JAMA (Aug 5)
- Improving Appropriate Use of Medical Masks for COVID-19 Prevention: The Role of Face Mask Containers – The American Journal of Tropical Medicine and Hygiene (Aug 4)
- Recovery From Severe COVID-19: Leveraging the Lessons of Survival From Sepsis– JAMA (Aug 5)
- Prognosis of COVID-19 in Patients with Breast Cancer: A Protocol for Systematic Review and Meta-Analysis – Medicine (July 31)
- Partitioning the Curve - Interstate Travel Restrictions During the Covid-19 Pandemic – NEJM (Aug 5)
- Tracing the COVID-19 Virus: A Health Belief Model Approach to the Adoption of a Contact Tracing App. (Preprint) – JMIR Public Health and Surveillance (May 22)

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