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

- Of the 121 SARS-CoV-2 associated deaths in the US among people <21 years old reported to the CDC by July 31, 70% were 10-20 years old and 10% were infants. People age <21 years made up 0.08% of all SARS-CoV-2 associated deaths. More
- Genomic analysis shows that SARS-CoV-2 infections in Washington State during February and March 2020 were likely derived from a single introduction in late January or early February. More
- Analysis of SARS-CoV-2 infections in a German school setting found that only 6 out of 137 (4%) index cases went on to infect other students, resulting in total of 11 secondary infections among students. The authors suggest that with infection control measures in place, child-to-child transmission in schools is low. More
- Compared to routine surveillance, contact tracing events ("surge testing") identified a much larger proportion (72%) of the positive SARS-CoV-2 cases among residents and staff in homeless shelters across King County in Washington State. More

Transmission

- An analysis of 453 SARS-CoV-2 genomes collected during February and March 2020 in Washington State found that SARS-CoV-2 infections during that time period were derived from a single introduction in late January or early February 2020 that spread undetected before community surveillance was implemented.
  
  
  https://doi.org/10.1126/science.abc0523

- A German study analyzed new SARS-CoV-2 infections among children ages 0-19 years old from the time of school reopening through summer holiday (May to August 2020). A total of 137 index cases were identified who attended school or childcare settings for at least 1 day in their infectious period and among these, 6 (4%) index cases infected at least one additional student, with a total of 11 secondary infections among students.
  
  *Ehrhardt et al. (Sept 10, 2020). Transmission of SARS-CoV-2 in Children Aged 0 to 19 Years in Childcare Facilities and Schools after Their Reopening in May 2020, Baden-Württemberg, Germany. Eurosurveillance.*
  
  https://doi.org/10.2807/1560-7917.ES.2020.25.36.2001587

- A cross-sectional study in April 2020 of asymptomatic healthcare workers (n=545) in the UK found a 2.4% point prevalence of SARS-CoV-2, and 24.4% seroprevalence. Those who reported prior symptomatic illness had higher seroprevalence and greater antibody responses. Healthcare workers
who were Black, Asian or minority ethnicity were more likely to be seropositive (OR=1.9), while those who worked in the ICU were less likely to be seropositive (OR=0.3).


Testing and Treatment

- Contact tracing events ("surge testing") identified a much larger proportion of the positive SARS-CoV-2 cases among residents and staff in homeless shelters across King County (Washington State) compared to routine surveillance. Among 29 SARS-CoV-2 positive cases identified from 1,434 encounters of shelter residents and staff in homeless shelters, 72% of cases were detected during "surge testing". Individuals who were 60 years or older more were more likely to test positive (45% vs 16%) and 86% of positive cases slept in a communal space.


- A 10-specimen manual pooling algorithm was the optimal pool size for surveillance of asymptomatic healthcare workers. Das et al. found that pool sizes up to 10 were able to detect positive samples with a threshold of cycle time (Ct) <36. An evaluation of this approach included 700 pools (7,000 total samples) and found eight positive pools, with every positive pool yielding only one positive specimen upon deconvolution in a population with an estimated prevalence of 0.1%.


- A systematic review found that the estimated cumulative proportion of recurrent RNA positivity in recovered COVID-19 patients was 12% (95% CI: 12-13%), ranging from 7-23% across studies and with follow-up testing between 1 and 60 days.


Clinical Characteristics and Health Care Setting

- Older age, male sex, and being Black or African American were significantly associated with mortality from COVID-19 across different age groups in a retrospective cohort study of patients age 18-90 years in the US (n=31,461). Comorbidities associated with higher odds of death varied across age groups and included heart attack history, congestive heart failure, dementia, chronic pulmonary disease, liver disease, renal disease, and metastatic tumors.


- Elevated fasting blood glucose (≥ 7.0 mmol/L), an indicator of pre-diabetes, was associated with COVID-19 mortality (HR=2.2), independent of diabetes history, in a Chinese cohort of 941 hospitalized patients. The authors conclude fasting blood glucose could be used to screen high-risk patients.
Mental Health and Personal Impact

- A study among parents in the US (n=1,003) identified greater suicide risk among people reporting stress from COVID-19, with a perceived burden to others as a mediating factor. Responses such as attempting to suppress unpleasant experiences, getting caught up in negative thoughts, or being on "autopilot" (collectively termed psychological inflexibility) intensified the pathway to greater suicide risk. The majority of participants were women (73%) and 82% were white.


Modeling and Prediction

- In a model considering asymptomatic, presymptomatic, and symptomatic transmission, the level of viral shedding was found to have the greatest impact on the total number of infections, followed by the probability of social distancing and individually initiated social isolation given a threshold number of infected contacts.


- In an SEIR model of a COVID-10 outbreak in a large US jail system, Puglisi et al. found that within 30 days, 6% of prisoners and 8% of staff will have symptomatic infections, predicting 5,695 cases, among whom there would be 3,388 symptomatic infections, 474 hospitalizations, and 34 deaths.


Public Health Policy and Practice

- A total of 121 SARS-CoV-2-associated deaths among people younger than 21 years of age had been reported to the CDC by July 31, 2020, accounting for 0.08% of all deaths due to COVID-19. Of these 121 deaths, 70% of were among those 10-20 years old and 10% were among infants. 78% of deaths were among members of racial and ethnic minority groups, and 33% of deaths occurred outside of a hospital. The authors conclude that these results imply the need for ongoing surveillance for infants, children, and adolescents as schools reopen.


- Increasing case counts of SARS-CoV-2 during June 2020 were associated at the US county level with being a metropolitan area (250,000-1 million population), having a higher percentage of Black residents, and a 10-point or greater Republican victory in 2016.
Other Resources and Commentaries

- ‘We Didn’t Model That People Would Go to a Party If They Tested Positive’ – Nature (Sept 11)
- Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19: Serologic Testing – Clinical Infectious Diseases (Sept 12)
- Online Experimentation during COVID-19 Secondary School Closures: Teaching Methods and Student Perceptions – Journal of Chemical Education (Sept 8)
- Early Insights from Statistical and Mathematical Modeling of Key Epidemiologic Parameters of COVID-19 – Emerging Infectious Diseases (Sept 11, 2020)
- Last-Resort Strategies during Mask Shortages: Optimal Design Features of Cloth Masks and Decontamination of Disposable Masks during the COVID-19 Pandemic – BMJ Open Respiratory Research (Sept 10)
- Fairly Prioritizing Groups for Access to COVID-19 Vaccines – JAMA (Sept 10)
- Spatial Heterogeneity Can Lead to Substantial Local Variations in COVID-19 Timing and Severity – Proceedings of the National Academy of Sciences (Sept 10)
- Structural Vulnerability to COVID-19 among Latinx Communities in the United States – Clinical Infectious Diseases (Sept 11)
- Rural Telehealth Use during the COVID-19 Pandemic: How Long-Term Infrastructure Commitment May Support Rural Health Care Systems Resilience – Journal of Agromedicine (Sept 12)
- Covid19: Unless One Gets Everyone to Act, Policies May Be Ineffective or Even Backfire – PLOS ONE (Sept 11)
- Rapid Return of Children in Residential Care to Family as a Result of COVID-19: Scope, Challenges, and Recommendations – Child Abuse & Neglect (Sept 4)