



## 2019-nCoV Literature Situation Report (Lit Rep)

May 21, 2021

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

- ❑ **A large retrospective cohort study of US adults aged 18-65 enrolled in commercial insurance found that 14% of individuals with SARS-CoV-2 infection, 9% of persons without SARS-CoV-2 infection and 13% of persons with a non-COVID viral lower respiratory tract illness developed  $\geq 1$  new clinical sequela after the acute phase of disease. [More](#)**
- ❑ **An analysis of 2020 US county-level data on COVID-19 and all-cause mortality found that 17% of excess deaths were attributed to a cause other than COVID-19, suggesting that direct COVID-19 death counts may substantially underestimate total excess mortality due to COVID-19. [More](#)**
- ❑ **An analysis of COVID-19 incidence within K-5 public schools in Georgia (N=169 schools, 91,893 students) found that incidence was 37% lower in schools that required teachers and staff to wear masks and 39% lower in schools that improved ventilation. [More](#)**

### Non-Pharmaceutical Interventions

- An analysis of COVID-19 state closure orders found that although these policies led to decreases in consumer spending, business revenue, and employment, they accounted for a small proportion of observed decreases in these outcomes in the early months of the pandemic. The analysis used a difference-in-difference model to examine geographic and temporal variation in these closure orders and controlled for state-level COVID-19 incidence and deaths. The authors suggest that economic outcomes likely are influenced by individual perceptions of COVID-19 risk.

*Dunphy et al. (May 13, 2021). The Impact of Covid-19 State Closure Orders on Consumer Spending, Employment, and Business Revenue. Journal of Public Health Management and Practice. <https://doi.org/10.1097/PHH.0000000000001376>*

### Transmission

- An analysis of COVID-19 incidence in K-5 public schools in Georgia (N=169 schools, 91,893 students) found that incidence was 37% lower in schools that required teachers and staff to wear masks and 39% lower in schools that improved ventilation. Incorporating ventilation strategies to dilute airborne particles (opening windows and doors and/or using fans) was associated with a 35% lower incidence of COVID-19, while dilution strategies in combination with filtration methods (use of HEPA filtration with or without purification using UV irradiation) were associated with a 48% lower incidence of COVID-19.



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Gettings et al. (May 21, 2021). *Mask Use and Ventilation Improvements to Reduce COVID-19 Incidence in Elementary Schools — Georgia, November 16–December 11, 2020*. *MMWR. Morbidity and Mortality Weekly Report*. <https://doi.org/10.15585/mmwr.mm7021e1>

## Geographic Spread

- [Pre-print, not peer-reviewed] Investigators described the emergence and spread of a novel SARS-CoV-2 variant of interest (B.1.1.519) in Mexico with mutations T478L, P681H, and T732A in the spike protein. Out of 2,692 SARS-CoV-2 samples analyzed for genomic sequence between March 1, 2020 and March 21, 2021, 37.8% were B.1.1.519. The variant was not detected prior to October 2020, but by February 2021, it comprised 73.6% of samples analyzed and was present in samples from all 24 Mexican states. The authors note that there is no evidence to-date of an association with increased transmission, virulence, reinfection rates, or changes in vaccine effectiveness, but urge continued genomic surveillance to assess the possible impact of this and future variants.

Rodriguez-Maldonado et al. (May 20, 2021). *Emergence and Spread of the Potential Variant of Interest (VOI) B.1.1.519 Predominantly Present in Mexico*. Pre-print downloaded May 21 from <https://doi.org/10.1101/2021.05.18.21255620>

## Testing and Treatment

- An evaluation of a novel multiplex, mutation-specific PCR-based assay on 247 SARS-CoV-2 positive samples found 100% concordance for strain typing of variants B.1.1.7 and P.1 compared to whole genome sequencing methods. This method detects five variants of concern and three variants of interest, including the B.1.526.1 variant emerging in the Eastern US. The assay can be run in real-time, produces results within several hours, and is less costly than whole genome sequencing. The authors suggest this test could allow for an expansion of genomic surveillance to detect and monitor emerging variants of concern.

Wang et al. (May 19, 2021). *Mutation-Specific SARS-CoV-2 PCR Screen: Rapid and Accurate Detection of Variants of Concern and the Identification of a Newly Emerging Variant with Spike L452R Mutation*. *Journal of Clinical Microbiology*. <https://doi.org/10.1128/JCM.00926-21>

- An evaluation of two high school COVID-19 testing programs implemented in Utah to support continuation of in-person instruction and extracurricular activities found that the programs saved an estimated 109,952 in-person instruction student-days and supported continuation of extracurricular activities. One program implemented SARS-CoV-2 testing every 14 days for participation in extracurricular activities, and the other implemented school-wide testing when the school crossed an outbreak threshold as an alternative to switching to remote instruction. However, the impact of the testing program on COVID-19 transmission in schools was not assessed in this study.

Lanier et al. (May 21, 2021). *COVID-19 Testing to Sustain In-Person Instruction and Extracurricular Activities in High Schools — Utah, November 2020–March 2021*. *MMWR. Morbidity and Mortality Weekly Report*. <https://doi.org/10.15585/mmwr.mm7021e2>

## Vaccines and Immunity

- A multicenter study of pregnant persons in Israel (N=213) found that the Pfizer-BioNTech vaccine elicited strong maternal IgG response and produced similar IgG titers in the fetus 15 days after the first dose. Among study participants who were infected with SARS-CoV-2 during pregnancy, those infected in the third trimester had lower rates of antibody transfer across the placenta compared to

those infected in their second trimester. The authors suggest these results support vaccination during pregnancy to protect the pregnant person and fetus from SARS-CoV-2 infection.

*Beharier et al. (May 20, 2021). Efficient Maternal to Neonatal Transfer of Antibodies against SARS-CoV-2 and BNT162b2 MRNA COVID-19 Vaccine. Journal of Clinical Investigation.*

<https://doi.org/10.1172/JCI150319>

- *[Pre-print, not peer-reviewed]* An in-vitro study of neutralizing antibody response to the B.617.1 variant found that the variant was 6.8-fold more resistant to neutralization by sera from persons previously infected with SARS-CoV-2 (N=24) and individuals vaccinated with either the Pfizer-BioNTech (N=10) or Moderna (N=15) vaccines compared to a wild type strain. However, 79% of serum samples from persons previously infected with SARS-CoV-2 and all those from vaccinated persons were still able to neutralize the virus, suggesting that mRNA vaccines will remain effective against this variant.

*Edara et al. (May 10, 2021). Infection and Vaccine-Induced Neutralizing Antibody Responses to the SARS-CoV-2 B.1.617.1 Variant. Pre-print downloaded May 21 from: The Preprint Server for Biology. <https://doi.org/10.1101/2021.05.09.443299>*

- A longitudinal cohort study of Australian adults (N=32) and children (N=22) with SARS-CoV-2 infection who were asymptomatic or had mild symptoms detected similar levels of specific IgG antibodies 6 months after infection in both children and adults. There was no significant difference in geometric mean antibody concentration from 43 to 195 days after infection, suggesting durable humoral immune response. The authors caution that these results do not include other components of immune response such as cellular and mucosal immunity.

*Toh et al. (May 2021). Persistence of SARS-CoV-2-Specific IgG in Children 6 Months After Infection, Australia. Emerging Infectious Diseases.*

[https://wwwnc.cdc.gov/eid/article/27/8/21-0965\\_article](https://wwwnc.cdc.gov/eid/article/27/8/21-0965_article)

## Clinical Characteristics and Health Care Setting

- A large retrospective cohort study of US adults aged 18-65 enrolled in commercial insurance (N=9,247,505) found that 14% of individuals with documented SARS-CoV-2 infection developed at least 1 new clinical sequela requiring medical care after the acute phase of COVID-19 disease. In comparison, 9% of persons without SARS-CoV-2 infection and 13% of persons with a non-COVID related lower respiratory tract illness (influenza, non-bacterial pneumonia, bronchitis, or COPD with lower respiratory infection) developed clinical sequelae. The risk for incident sequelae increased with age, pre-existing conditions, and hospitalization for the acute COVID-19 episode.

*Daugherty et al. (May 19, 2021). Risk of Clinical Sequelae after the Acute Phase of SARS-CoV-2 Infection: Retrospective Cohort Study. BMJ. <https://doi.org/10.1136/bmj.n1098>*

- A retrospective cohort study of persons hospitalized for COVID-19 between February and June 2020 in the US (N=29,659) found that 3.6% were readmitted within 30 days of their initial hospitalization and 12.3% died during their second hospitalization. The rate of readmission was highest within 10 days of discharge from the initial hospitalization. Persons readmitted were significantly more likely to have comorbidities (diabetes, hypertension, cardiovascular disease, or chronic kidney disease), present with more severe COVID-19 disease, be >60 years of age, and have a shorter length of initial stay. The authors suggest that persons with these risk factors receive additional interventions to improve post-hospitalization outcomes.

## Modeling and Prediction

- A modeling study found that high coverage of a test-trace-quarantine approach to COVID-19 containment could be sufficient for epidemic control even under a return to full workplace capacity and community mobility in a setting with low vaccine coverage. This approach involves regularly testing people with COVID-19 symptoms, identifying and testing potentially exposed contacts, and placing them in quarantine if necessary. However, the model assumed schools would remain closed and current levels of mask usage could be maintained. Model inputs were derived from Seattle-area demographic, mobility, and epidemiologic data from January – June 2020. The authors also found that reducing population mobility by 40% could achieve epidemic control despite relatively low testing and tracing.

Kerr et al. (Dec 20, 2021). Controlling COVID-19 via Test-Trace-Quarantine. *Nature Communications*. <https://doi.org/10.1038/s41467-021-23276-9>

## Public Health Policy and Practice

- A retrospective cohort study of Kaiser Permanente Georgia members with laboratory-confirmed COVID-19 (N=5,712) found Black (OR=1.4) and Hispanic (OR=1.6) members had higher odds of hospitalization, but not mortality, compared to white and Asian members. Additionally, a higher proportion of members diagnosed with COVID-19 were Black or Hispanic, compared to white or Asian (58% vs 9%). However, Asian patients had the highest rates of ICU admission and mechanical ventilation. Among all patients, age, living in a zip code with high unemployment, having a comorbidity, and physical inactivity were associated with higher odds of hospitalization.  
Lobelo et al. (May 19, 2021). *Clinical, Behavioural and Social Factors Associated with Racial Disparities in COVID-19 Patients from an Integrated Healthcare System in Georgia: A Retrospective Cohort Study*. *BMJ Open*. <https://doi.org/10.1136/bmjopen-2020-044052>
- An ecological, cross-sectional analysis of 2020 US county-level (N=2,096) National Center for Health Statistics data on COVID-19 and all-cause mortality found that direct COVID-19 death counts substantially underestimated total excess mortality attributable to COVID-19. The authors calculated total excess deaths as the proportion of deaths that occurred beyond the expected number of deaths based on data from prior years. Of excess deaths, 17% were attributable to a direct cause other than COVID-19. The proportions of these excess non-COVID deaths were higher in counties with lower socioeconomic status, higher prevalence of comorbidities, more Black and Hispanic residents, and counties in the US South and West.  
Stokes et al. (May 2021). *COVID-19 and Excess Mortality in the United States: A County-Level Analysis*. *PLoS Medicine*. <https://doi.org/10.1371/journal.pmed.1003571>
- A time series study of excess deaths in 29 high income countries (including the US) found that nearly 1 million excess deaths occurred in 2020. These excess deaths exceed officially reported deaths from COVID-19 in many countries, suggesting that analysis of excess deaths is needed to determine the full impact of the pandemic on mortality. Many countries had lower deaths than expected in children <15 years of age, while age-standardized excess death rates were higher in men than women in almost all countries. Only New Zealand had lower overall mortality than expected.

*Islam et al. (May 19, 2021). Excess Deaths Associated with Covid-19 Pandemic in 2020: Age and Sex Disaggregated Time Series Analysis in 29 High Income Countries. BMJ.*  
<https://doi.org/10.1136/bmj.n1137>

## Other Resources and Commentaries

- [Mix-and-Match COVID Vaccines Trigger Potent Immune Response](#) -- Nature (May 19)
- [Measuring the Impact of Covid-19](#) -- BMJ (May 19)
- [The New York State SARS-CoV-2 Testing Consortium: Regional Communication in Response to the COVID-19 Pandemic](#) -- Academic Pathology (2021)
- [Syndromic Surveillance of COVID-19 Using Crowdsourced Data](#) -- The Lancet Regional Health - Western Pacific (Nov 2020)
- [Knowledge Brokering on Infectious Diseases for Public Health](#) -- Canada Communicable Disease Report (Mar 31)
- [An Academic–Health Department Community Partnership to Expand Disease Investigation and Contact Tracing Capacity and Efficiency During the COVID-19 Pandemic](#) -- Journal of Public Health Management and Practice (May 13)
- [Analyzing the Vast Coronavirus Literature with CoronaCentral](#) -- Proceedings of the National Academy of Sciences (June 8)
- [US CDC’s Unexpected Change of Stance on Mask Use](#) -- The Lancet Microbe (May 21)
- [FOCUS Forecasting COVID-19 in the United States](#) -- MedRxiv (May 20)
- [Clinical Features and Outcomes of COVID-19 in Older Adults: A Systematic Review and Meta-Analysis](#) -- BMC Geriatrics (May)
- [Disposable Masks Release Microplastics to the Aqueous Environment with Exacerbation by Natural Weathering](#) -- Journal of Hazardous Materials (May)

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