



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

February, 9, 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

- **Whole-genome sequencing identified a cluster of SARS-CoV-2 infections that involved 14 patients and 38 staff members at Brigham and Women's Hospital in Boston. The cluster occurred despite infection prevention measures that included universal testing, mandatory surgical masks and eye protection, patient cohorting into negative pressure wards, free PCR testing for employees, and mandatory sick leave.** [More](#)
- **The B.1.1.7 variant (first identified in the UK) was detected in a sample collected from a University of Washington student on the Seattle campus in late January 2021.** [More](#)
- **Among over 170,000 hospitalized COVID-19 patients in the US discharged from April to October 2020, median charges to the patient were \$43,986 and costs to the hospital were \$12,046 per hospitalization.** [More](#)
- **While intent to receive COVID-19 vaccination among US adults in priority groups increased from 39% in September 2020 to 49% in December 2020, younger adults, women, non-Hispanic Black adults, adults living in nonmetropolitan areas, adults with less education and income, and those without health insurance continue to be less likely to intend to be vaccinated.** [More](#)

### Transmission

- *[Pre-print, not peer-reviewed]* Teachers were at 1.4-times the risk for developing SARS-CoV-2 infection compared to the general population of working-age adults, according to a population-based case-control study including all cases of adult COVID-19 in Scotland (n=83,817) during March 2020 to January 2021 and a random sample of matched controls (n=841,708). However, teachers and their household members were not at increased risk of COVID-19-associated hospitalization and were at lower risk of severe COVID-19. Healthcare workers were at 2.4-times the risk of infection, 1.8-times the risk of hospitalization, and 1.8-times the risk of severe disease.  
*Fenton et al. (Feb 8, 2021). Risk of Hospitalisation with COVID-19 among Teachers Compared to Healthcare Workers and Other Working-Age Adults. A Nationwide Case-Control Study. Pre-print downloaded Feb 9 from <https://doi.org/10.1101/2021.02.05.21251189>*
- Children (n=327) and staff (n=197) attending daycare centers in France during the lockdown from March to May 2020 had similar seroprevalence (4% and 7%, respectively) to a comparator group consisting of laboratory or administrative personnel not occupationally exposed to COVID-19 patients or children (5%). In addition, seropositive children were 7-times as likely to have been



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exposed to an adult household member with confirmed COVID-19 compared to seronegative children. The authors suggest that during the French lockdown, household transmission seems more likely than transmission within daycare centers. [EDITORIAL NOTE: It is also plausible that the association between child and household contact seroprevalence could be due to transmission from an infected child to a household contact].

Lachassinne et al. (2021). SARS-CoV-2 Transmission among Children and Staff in Daycare Centres during a Nationwide Lockdown in France: A Cross-Sectional, Multicentre, Seroprevalence Study. *The Lancet Child & Adolescent Health*. [https://doi.org/10.1016/S2352-4642\(21\)00024-9](https://doi.org/10.1016/S2352-4642(21)00024-9)

## Geographic Spread

- [Press release, not peer-reviewed] The B.1.1.7 variant (first described in the UK) was identified in a sample obtained from a University of Washington student in late January 2021. Genetic sequencing occurred as part of the [Husky Coronavirus Testing](#) program and was performed on February 8, 2021. The student is doing well and out of their isolation period. The student had a small number of close contacts and those people have been notified.

Gottlieb (Feb 9, 2021). UK coronavirus variant detected at the UW (Message to Seattle students and employees). Press release downloaded Feb 9 from

<https://www.washington.edu/coronavirus/2021/02/09/uk-coronavirus-variant-detected-at-the-uw-message-to-seattle-campus-students-and-employees>

- [Pre-print, not peer-reviewed] Genome sequencing combined with epidemiological and mobility data suggest show that SARS-COV-2 was likely introduced in Louisiana from a single source via domestic travel and was being locally spread prior to the Mardi Gras celebrations in February 2020. However, further evidence suggests that Mardi Gras was likely a superspreading event, based on the unusual lack of genetic diversity of SARS-CoV-2, which was similar to cruise ship outbreaks, and the markedly increased infection rate in New Orleans immediately following the event.

Zeller et al. (Feb 8, 2021). Emergence of an Early SARS-CoV-2 Epidemic in the United States. Pre-print downloaded Feb 9 from <https://doi.org/10.1101/2021.02.05.21251235>

## Vaccines and Immunity

- [Pre-print, not peer-reviewed] SARS-CoV-2 PCR positive samples collected from persons 12-28 days after receiving the first dose of the Pfizer vaccine had lower viral load concentrations compared to positive samples from non-vaccinated demographically matched persons (based on cycle threshold (Ct) counts to detect genes associated with SARS-CoV-2). The increase in Ct count corresponded to a 4-fold reduction in viral load, which the authors suggest could indicate a lower infectiousness following vaccination.

Levine-Tiefenbrun et al. (Feb 8, 2021). Decreased SARS-CoV-2 Viral Load Following Vaccination.

Pre-print downloaded Feb 9 from <https://doi.org/10.1101/2021.02.06.21251283>

- Among US adults in priority groups, intent to receive COVID-19 vaccination increased from 39% in September 2020 to 49% in December 2020, according to two separate nationally representative cross-sectional surveys conducted by the CDC (n=3,541 in September and n=2,033 in December). While vaccination non-intent also decreased from 38% to 32%, younger adults, women, non-Hispanic Black adults, adults living in nonmetropolitan areas, and adults with less education and income, and without health insurance continue to have the highest estimates of non-intent to

receive COVID-19 vaccination. More participants in the December survey reported safety concerns as a main reason for non-intent compared to the September survey (30% vs 23%), while fewer participants reported concerns that vaccines were developed too quickly (10% vs 22%).

*Nguyen et al. (Feb 9, 2021). COVID-19 Vaccination Intent, Perceptions, and Reasons for Not Vaccinating Among Groups Prioritized for Early Vaccination — United States, September and December 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7006e3>*

### Clinical Characteristics and Health Care Setting

- The overall rate of pregnancy complications was similar between SARS-CoV-2 infected and non-infected women in a population-based study in Spain (n=2,225). Pregnancy complications (miscarriage, preeclampsia, preterm delivery, perinatal death, small-for-gestational age, or neonatal admission) occurred in 43 (14%) of 317 SARS-CoV-2-infected women compared to 268 (14%) of 1,908 non-infected women. However, higher rates of preterm delivery (17% vs 7%) and intrapartum fetal distress (19% vs 9%) were observed among women with symptomatic infection compared to those with asymptomatic infection, while those with asymptomatic infection had similar rates to non-infected women. Among 143 SARS-CoV-2 positive pregnancies analyzed, 43% newborns were positive for IgG antibodies and no vertical transmission of SARS-CoV-2 was observed.

*Crovetto et al. (Feb 8, 2021). Impact of SARS-CoV-2 Infection on Pregnancy Outcomes: A Population-Based Study. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab104>*

- Despite mature infection control policies, a cluster of SARS-CoV-2 infections among 14 patients and 38 staff members at Brigham and Women's Hospital in Boston was confirmed using whole-genome sequencing. The index patient was admitted for an elective procedure and tested PCR-negative twice, then was removed from isolation and subsequently infected roommates and staff in the cluster. A case-control analysis of infected and non-infected staff member contacts suggests that being present while case patients received nebulizers, caring for patients who were short of breath and coughing, and spending more than 15 minutes exposed to case patients were risk factors for transmission. Infection prevention measures including universal testing, mandatory surgical masks and eye protection, patient cohorting into negative pressure wards, free PCR testing for employees and mandatory sick leave. Genome sequencing confirmed that 2 staff members were infected despite wearing surgical masks and eye protection.

*Klompas et al. (Feb 9, 2021). A SARS-CoV-2 Cluster in an Acute Care Hospital. Annals of Internal Medicine. <https://doi.org/10.7326/M20-7567>*

### Modeling and Prediction

- *[Pre-print, not peer-reviewed]* An existing transmission model calibrated to the UK (Covasim) calculated that a full national lockdown until April 2021, including school closures, could lower the effective reproduction number R below 1 by March 2021 when combined with a vaccination campaign capable of 200,000 daily doses targeted to elderly people. The model incorporated the presence of the B.1.1.7 variant and assumed a 95% vaccine efficacy. Partial lockdown scenarios with limited school reopening, such as only opening for exam critical years or using a two-weekly rotating system between primary and secondary schools would lead to more total number infections but would not increase R above 1. However, full reopening after April 2021 would increase R above 1 in all modelled scenarios.

Panovska-Griffiths et al. (Feb 9, 2021). *Modelling the Impact of Reopening Schools in Early 2021 in the Presence of the New SARS-CoV-2 Variant and with Roll-out of Vaccination against COVID-19*. Pre-print downloaded Feb 9 from <https://doi.org/10.1101/2021.02.07.21251287>

- [Pre-print, not peer-reviewed] A transmission model calibrated to the US population suggests that implementing weekly home-based SARS-CoV-2 antigen testing could avert 4 million infections and 19,000 deaths over 60 days while being cost-effective. While a scenario with testing could cost up to \$21.5 billion, lower inpatient costs and fewer workdays lost could offset the costs and yield an incremental cost per death averted of \$1.1 million (for reference, the commonly accepted willingness-to-pay values per statistical life saved are between \$5-17 million).

Paltiel et al. (Feb 8, 2021). *Clinical and Economic Impact of Widespread Rapid Testing to Decrease SARS-CoV-2 Transmission*. Pre-print downloaded Feb 9 from <https://doi.org/10.1101/2021.02.06.21251270>

## Public Health Policy and Practice

- The overall median charges for hospitalization due to COVID-19 in the United States was \$43,986 per hospitalization, while the overall median cost incurred by hospitals was \$12,046. The analysis utilized the COVID-19 data from the Premiere Healthcare Database to identify 170,000 hospitalizations from April to October 2020, representing approximately 20% of all hospitalizations in the US. The median age of hospitalized patients was 63 years, 51% were male, 22% were admitted to the ICU, 17% received invasive mechanical ventilation (IMV), the median hospital length-of-stay (LOS) was 5 days, and in-hospital mortality was 14%. Median hospital charges and costs were higher for patients with longer LOS, in older age groups, those requiring ICU or IMV, and those with Medicare.

Di Fusco et al. (Feb 8, 2021). *Health Outcomes and Economic Burden of Hospitalized COVID-19 Patients in the United States*. *Journal of Medical Economics*. <https://pubmed.ncbi.nlm.nih.gov/33555956>

- Race was the strongest predictor of having a positive SARS-CoV-2 test in a retrospective cohort of 91,212 adults undergoing testing for SARS-CoV-2. In a multivariate model that incorporated age, sex, neighborhood deprivation index and race, race had the biggest contribution (80%) to the likelihood of infection. While adjusted testing rates among non-white persons were marginally higher compared with white persons, infection rates were significantly higher. For African American persons, Hispanic persons, Asian persons, and persons of other/unknown race, risk of infection was 2-fold, 4-fold, 2-fold and 2-fold higher compared to white persons, respectively. The cohort was drawn from the Kaiser integrated health care system.

Escobar et al. (Feb 9, 2021). *Racial Disparities in COVID-19 Testing and Outcomes*. *Annals of Internal Medicine*. <https://doi.org/10.7326/M20-6979>

## Other Resources and Commentaries

- [COVID-19 Vaccination in Pregnant and Lactating Women](#) – JAMA (Feb 8)
- [COVID-19 and Homelessness: When Crises Intersect](#) – The Lancet Public Health (Feb 5)
- [Mandatory Coronavirus Disease 2019 Vaccine for Children?](#) – JAMA Pediatrics (Feb 8)
- [Mandatory Coronavirus Disease 2019 Vaccine for Children?—Reply](#) – JAMA Pediatrics (Feb 8)

- [Older Adults with Limited English Proficiency Need Equitable COVID -19 Vaccine Access](#) – Journal of the American Geriatrics Society (Feb 8)
- [INCLUSIVE HEALTH MODELING COVID-19 IN CORRECTIONAL FACILITIES AND COMMUNITIES](#) – MedRxiv (Feb 8)
- [Engagement with COVID-19 Public Health Measures in the United States A Cross-Sectional Social Media Analysis from June to November 2020](#) – MedRxiv (Feb 8)
- [Addressing Mistrust About COVID-19 Vaccines Among Patients of Color](#) – Annals of Internal Medicine (Feb 9)
- [Pregnancy, Postpartum Care, and COVID-19 Vaccination in 2021](#) – JAMA (Feb 8)
- [SARS-CoV-2 and Indoor/Outdoor Air Samples: A Methodological Approach to Have Consistent and Comparable Results](#) – Environmental Research (Feb 6)
- [Public Health Interventions, Epidemic Growth, and Regional Variation of the 1918 Influenza Pandemic Outbreak in a Swiss Canton and Its Greater Regions](#) – Annals of Internal Medicine (Feb 9)
- [Understanding the determinants of acceptance of COVID-19 vaccines: a challenge in a fast-moving situation](#) – The Lancet Public Health (Feb 5)

*Report prepared by the UW Alliance for Pandemic Preparedness and Global Health Security and the START Center in collaboration with and on behalf of WA DOH COVID-19 Incident Management Team*