

2019-nCoV Literature Situation Report (Lit Rep) February 11, 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

- **Approximately 65% of nearly 4,000 students participating in a web survey in October 2020 reported wearing masks all the time when in classrooms, hallways, or stairwells. Mask use was lower in other indoor spaces, such as restrooms and cafeterias (when not eating), and lowest in outdoor spaces such as outside school property. [More](#)**
- **Interpersonal contact in the San Francisco Bay area was reduced by 82% in March 2020, and 60% in September 2020 compared to pre-pandemic levels. Male respondents under 45 reported the highest frequency of interpersonal contact. [More](#)**
- **The clinical course of SARS-CoV-2 infection appears similar among children infected with the B.1.1.7 variant when compared to the original strain, according to an analysis of two cohorts of children admitted to King's College Hospital for COVID-19. [More](#)**

Non-Pharmaceutical Interventions

- Interpersonal contact in the San Francisco Bay area was reduced by 82% in March 2020 and by 60% in September 2020, compared to pre-pandemic levels, according to analysis of a series of self-reported contact surveys. The reduction in contact corresponded to a 73% reduction in R_0 in March and a 36% reduction in September. While contact frequencies were highest among Black and Hispanic respondents initially, white respondents had the highest contact frequency by September. Male respondents under 45 reported the highest contact frequency. Pre-pandemic levels were estimated from contact patterns of a probability sample of US Facebook users in 2015.

Feehan and Mahmud. (Feb 9, 2021). Quantifying Population Contact Patterns in the United States during the COVID-19 Pandemic. Nature Communications.

<https://doi.org/10.1038/s41467-021-20990-2>

- Among a sample of 3,953 middle and high school students participating in a Falcon-CDC Foundation cross-sectional web panel survey in October 2020, approximately 65% reported that fellow students wore a mask “all the time” in the classroom, hallways, and stairwells. Lower frequencies were reported for other indoor settings, including school buses (42%), restrooms (40%), and the cafeteria when not eating (36%). Reported mask use was lowest in outdoor settings (extracurricular activities 28%, outside school property 25%).

Arvelo et al. (Feb 12, 2021). COVID-19 Stats: Percentage of Middle and High School Students Aged 13–21 Years Attending In-Person Classes Who Reported Observing Fellow Students

Transmission

- SARS-CoV-2 RNA was not detected by RT-qPCR in breast milk samples (n=37) collected from 18 women following COVID-19 diagnosis. Breast milk was collected on average 12.0 +/- 8.9 days after onset of signs and/or symptoms. In contrast, 76% and 80% of samples contained anti-SARS-CoV-2 IgA and IgG, respectively, and 62% of samples neutralized SARS-CoV-2 in vitro. Only 8 of 70 breast skin swabs contained viral RNA, one of which was a conclusive positive result.
Pace et al. (Feb 9, 2021). Characterization of SARS-CoV-2 RNA, Antibodies, and Neutralizing Capacity in Milk Produced by Women with COVID-19. MBio.
<https://doi.org/10.1128/mBio.03192-20>
- A novel variant of SARS-CoV-2 called “CAL.20C” was identified in Southern California and emerged contemporaneously with a local surge in cases. The authors define the variant on the basis of three mutations in the S-protein (S13I; W152C; and L452R) which differentiate the subclade from the 20C clade currently predominant in North America. The functional effect of these mutations on infectivity and clinical outcomes of people infected with the CAL.20C strain has yet to be determined.
Zhang et al. (Feb 11, 2021). Emergence of a Novel SARS-CoV-2 Variant in Southern California. JAMA. <https://doi.org/10.1001/jama.2021.1612>

Geographic Spread

- A novel SARS-CoV-2 strain was detected in 4 travelers flying from Brazil to Japan on January 2, 2021. Whole genome sequencing suggests the variant descends from the P.1 lineage with 12 nonsynonymous mutations in the receptor-binding domain (RBD) of the spike protein, including the K417T, E484K, and N501Y mutations also present in the B.1.1.7 and B.1.351 variants. Three travelers remained asymptomatic, while one experienced symptomatic COVID-19 infection.
Fujino et al. (Feb 10, 2021). Novel SARS-CoV-2 Variant Identified in Travelers from Brazil to Japan. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2704.210138>
- An imported case of the P.1 SARS-CoV-2 variant (also known as the B.1.1.28 or 20J/501Y.V3 variant) was detected in an asymptomatic passenger traveling on an indirect flight from Brazil to Italy on January 17, 2021. The case patient and his family received PCR-negative results at the departure airport in Brazil, and was tested on January 21, 4 days after arriving in Italy.
Maggi et al. (Feb 10, 2021). Imported SARS-COV-2 Variant P.1 Detected in Traveler Returning from Brazil to Italy. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2704.210183>

Testing and Treatment

- *[Pre-print, not peer reviewed]* Analysis of 40 Spanish wastewater samples obtained between April and October 2020 identified three variants with mutations in the spike protein not previously detected elsewhere and 7 non-synonymous spike protein mutations not previously detected in Spain. Three of these 7 mutations have been found at low frequencies in sequencing of genomes from clinical samples in Spain.

Perez-Cataluna et al. (Feb 10, 2021). *Detection Of Genomic Variants Of SARS-CoV-2 Circulating In Wastewater By High-Throughput Sequencing*. Pre-print downloaded Feb 11 from <https://doi.org/10.1101/2021.02.08.21251355>

- [Pre-print, not peer reviewed] SARS-CoV-2 serosurveillance using remnant samples from routine blood draws in two major hospital networks in San Francisco estimated a seroprevalence of 4.2% in the period between March and June 2020. Seroprevalence was higher among those who were uninsured; individuals identifying as Hispanic, Black, or African; males; and individuals who experience homelessness. Seroprevalence estimates were comparable to previous community-based surveys.

Routledge et al. (Feb 4, 2021). *Citywide Serosurveillance of the Initial SARS-CoV-2 Outbreak in San Francisco*. Pre-print downloaded Feb 11 from <https://doi.org/10.21203/rs.3.rs-180966/v1>

- A large serosurvey in England (REACT-2 Study) estimated the nationwide seroprevalence of SARS-CoV-2 to be 6%, corresponding to an estimated 3.4 million people with prior infection. Seroprevalence was determined from a representative cohort of over 100,000 adults (>18 years old). Prevalence was 2- to 3-fold higher among healthcare workers compared with non-essential workers, and higher among Black or South Asian adults compared to white adults, although age- and sex-specific infection fatality ratios were similar across ethnicities.

Ward et al. (Feb 10, 2021). *SARS-CoV-2 Antibody Prevalence in England Following the First Peak of the Pandemic*. *Nature Communications*. <https://doi.org/10.1038/s41467-021-21237-w>

Vaccines and Immunity

- An academic hospital in Virginia reported a 25% decrease in health care worker (HCW) SARS-CoV-2 infections 6 days after beginning employee immunizations. Vaccines included both the Pfizer vaccine initiated on December 12, 2020 and the Moderna vaccine initiated on December 28, 2020. After achieving 60% vaccination coverage of the 1st dose, infections decreased by 50%. Other infection control measures were concurrently implemented with vaccination, including limiting visitors, stricter mask and face shield policies among employees, and adjustments to improve physical distancing.

Dunbar et al. (Feb 10, 2021). *Impact of COVID-19 Vaccination Program on Healthcare Worker Infections in an Academic Hospital*. *Infection Control & Hospital Epidemiology*. <https://doi.org/10.1017/ice.2021.62>

- In a longitudinal study of 25 convalescent SARS-CoV-2 positive patients, approximately 65% of patients had detectable T cell responses 3-4 months post-symptom onset (PSO) despite all patients seroconverting. All patients had detectable IgG against the nucleocapsid (N) and spike (S) protein as well as detectable IgG and IgM responses against the receptor-binding domain (RBD); all patients also produced neutralizing antibodies (nAbs) by 14 days PSO. Peak antibody levels were observed 15-30 days PSO, with IgG and nAb levels detected up to 3-4 months PSO and IgM levels declining much more rapidly.

Jiang et al. (Feb 9, 2021). *Lasting Antibody and T Cell Responses to SARS-CoV-2 in COVID-19 Patients Three Months after Infection*. *Nature Communications*. <https://doi.org/10.1038/s41467-021-21155-x>

Clinical Characteristics and Health Care Setting

- Among 49 passengers traveling from Uruguay to Australia on a cruise ship with high COVID-19 incidence in April 2020, 42% were asymptomatic and only 15% of symptomatic cases reported fever. Serial respiratory and rectal swabs were positive for 10% and 5% of participants, respectively, after a median of 3 weeks post-symptom onset. The authors suggest that in a similarly closed setting, true COVID-19 incidence could be almost double what is suggested by symptom-based screening.

Bailie et al. (Feb 10, 2021). Symptoms and Laboratory Manifestations of Mild COVID-19 in a Repatriated Cruise Ship Cohort. Epidemiology and Infection.

<https://doi.org/10.1017/S0950268821000315>

- The clinical course of SARS-CoV-2 infection among children may be similar when infection occurs with the B.1.1.7 variant versus the original strain, according to an analysis of two cohorts of children admitted to King's College Hospital for COVID-19. The B.1.1.7. variant accounted for ~70% of SARS-CoV-2 infections in London by January 2021 and the two cohorts were identified from March to May 2020 (n=20) and November to January 2021 (n=60). The cohorts did not differ in age, proportion of comorbidities, proportion of patients of minority ethnic background, or deprivation score.

Brookman et al. (Feb 10, 2021). Effect of the New SARS-CoV-2 Variant B.1.1.7 on Children and Young People. The Lancet Child & Adolescent Health.

[https://doi.org/10.1016/S2352-4642\(21\)00030-4](https://doi.org/10.1016/S2352-4642(21)00030-4)

- COVID-19-associated deaths in the US were higher in nursing homes with greater proportions of non-white residents, according to a cross-sectional survey involving 13,312 nursing homes. Nursing homes with the lowest quintile proportion of white residents (<60%) had 4 more deaths on average from January to September 2020, corresponding to 3.3-fold higher deaths than those with the highest quintile proportion of white residents (>97%) (mean deaths per facility 5.6 vs 1.7, respectively). After adjustment for the number of certified beds and county-level COVID-19 prevalence, nursing homes with the lowest quintile of white residents had 1 more death on average compared to those with the highest quintile of white residents.

Gorges and Konetzka. (Feb 10, 2021). Factors Associated With Racial Differences in Deaths Among Nursing Home Residents With COVID-19 Infection in the US. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2020.37431>

Modeling and Prediction

- A model calibrated to US nursing homes suggests that 54% SARS-CoV-2 infections could be prevented by instituting weekly testing with a 2-day turnaround for all staff and residents immediately following detection of an index case (i.e. outbreak testing). Increasing the frequency of testing and reducing the turnaround to daily testing with immediate results could further prevent up to 92% of infections, even if the diagnostic test only had 50% sensitivity. Addition of testing every three days during periods when no cases are detected (i.e. non-outbreak testing) could prevent up to 8% of infections. Combining both outbreak and non-outbreak testing could prevent up to 97% of infections.

See et al. (Feb 10, 2021). Modeling Effectiveness of Testing Strategies to Prevent COVID-19 in Nursing Homes —United States, 2020. Clinical Infectious Diseases.

<https://doi.org/10.1093/cid/ciab110>

Public Health Policy and Practice

- A cross-sectional study of 150 community colleges and universities in the New York City metropolitan area found that institutes of higher education did not provide information on COVID-19 uniformly or comprehensively. 83% of institutions reported testing data to the campus community, of which 63% released the data bi-weekly. Larger institutions (>10,000 students) were more likely than smaller institutions (≥5000 students) to provide information on their websites on how to access COVID-19 testing.

Basch et al. (Feb 10, 2021). Information About COVID-19 Testing on College Websites in the New York City Metropolitan Area. Journal of Community Health. <https://doi.org/10.1007/s10900-021-00970-9>

Other Resources and Commentaries

- [Experts Discuss COVID-19—Vaccine Doses, Virus Variants, and More](#) – JAMA (Feb 10)
- [Researchers Investigate What COVID-19 Does to the Heart.](#) – JAMA (Feb 10)
- [Priorities for Alcohol Use Disorder Treatment and Prevention During COVID-19’s Second Wave](#) – American Journal of Public Health (Feb 10)
- [Involving Pregnant Individuals in Clinical Research on COVID-19 Vaccines](#) – JAMA (Feb 10)
- [Black, Indigenous, People of Color, and International Students: Experiences and Resolutions Beyond COVID-19](#) – American Journal of Public Health (Feb 10)
- [The Impact of Epidemiology on Prenatal and Fertility Care during the COVID-19 Pandemic](#) – American Journal of Epidemiology (Feb 10)
- [Exhaled Aerosol Increases with COVID-19 Infection, Age, and Obesity](#) – Proceedings of the National Academy of Sciences (Jan 12)
- [Enhancing the WHO’s Proposed Framework for Distributing COVID-19 Vaccines Among Countries.](#) – American Journal of Public Health (Feb 10)
- [Preparing the Public Health Workforce for the Post-COVID-19 Era.](#) – American Journal of Public Health (Feb 10)
- [SARS-CoV-2: An Update on Genomics, Risk Assessment, Potential Therapeutics and Vaccine Development.](#) – International Journal of Environmental Research and Public Health (Feb 8)
- [Why It Is Important to Develop an Effective and Safe Pediatric COVID-19 Vaccine.](#) – Vaccines (Feb 5)
- [Biases in Evaluating the Safety and Effectiveness of Drugs for Covid-19: Designing Real-World Evidence Studies](#) – American Journal of Epidemiology (Feb 10)
- [Providing Ethical and Humane Care to Hospitalized, Incarcerated Patients With COVID-19.](#) – The American Journal of Hospice & Palliative Care (Feb 10)
- [Precision Public Health Matters: An International Assessment of Communication, Preparedness, and Coordination for Successful COVID-19 Responses](#) – American Journal of Public Health (Feb 10)
- [Evidence for SARS-CoV-2 Related Coronaviruses Circulating in Bats and Pangolins in Southeast Asia.](#) – Nature Communications (Feb 9)
- [COVID-19 in the Middle East and North Africa Region: An Urgent Call for Reliable, Disaggregated and Openly Shared Data](#) – BMJ Global Health (Feb 9)
- [Severe Reinfection with South African SARS-CoV-2 Variant 501Y.V2: A Case Report](#) – Clinical Infectious Diseases (Feb 10)

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



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