



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

May 4, 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 transmission model based on CDC modeling tools found that in a pre-K-12 school setting in the US, layering mitigation strategies with contact tracing to produce a net effectiveness of 69% could result in a cumulative incidence of SARS-CoV-2 infection of less 0.9% over 6 months when community incidence is low. Across all scenarios of mitigation strategies and community incidence, hospitalizations did not exceed 0.5% of the school population. [More](#)**
- **People with evidence of prior SARS-CoV-2, based on the presence of anti-spike antibodies, had a 95% lower incidence of subsequently becoming infected (reinfections) compared to people with no history of SARS-CoV-2. These finds come from a study of 43,044 seropositive and 149,923 individuals in Qatar. [More](#)**

### Non-Pharmaceutical Interventions

- In a quality improvement study, median weekly face mask compliance among healthcare personnel (HCP) in a tertiary care center in Connecticut was higher (93% vs 82%) after implementation of a multimodal intervention developed from semi-structured interviews of HCP. No difference in face mask compliance was observed between COVID-19 and non-COVID-19 units. The intervention consisted of audit and passive feedback, active discussion, and increased communication from leadership.  
*Datta et al. (May 3, 2021). Increasing Facemask Compliance among Healthcare Personnel during the COVID-19 Pandemic. Infection Control & Hospital Epidemiology.*  
<https://doi.org/10.1017/ice.2021.205>
- Air sampling in residential rooms of COVID-19 patients (n=7) in Spain showed that 100% of samples were positive for SARS-CoV-2 RNA (cycle threshold (Ct) cutoff 41), but only 15% (1 of 7) of samples were positive after installation of a portable air cleaner (PAC) with a HEPA filter. Notably, the one positive sample after installation of a PAC was detected in a room larger than the PAC recommended specifications.  
*Rodríguez et al. (Apr 29, 2021). Are the Portable Air Cleaners (PAC) Really Effective to Terminate Airborne SARS-CoV-2? Science of The Total Environment.*  
<https://doi.org/10.1016/j.scitotenv.2021.147300>

## Transmission

- Among 397 individuals aged  $\leq 18$  years with confirmed COVID-19 during the first 3 waves in Hong Kong (January to December 2020), imported infections comprised 79% and 93% of all cases during the first and second wave, respectively, but domestic infections comprised 73% of all cases during the third wave. Overall among domestic infections, 91% had a known history of contact with an infected individual, of which 90% were family members. While schools were intermittently closed nationally during the study period, only 3 cases were associated with in-school transmission.

*Chua et al. (May 3, 2021). Clinical Characteristics and Transmission of COVID-19 in Children and Youths During 3 Waves of Outbreaks in Hong Kong. JAMA Network Open.*

<https://doi.org/10.1001/jamanetworkopen.2021.8824>

## Testing and Treatment

- In a study of 55 patients with SARS-CoV-2 PCR-positive nasopharyngeal (NPS) swabs, whole mouth fluid (WMF) samples had detectable SARS-CoV-2 RNA in 44 (80%) patients and had overall similar viral loads compared to NPS samples. Patients with severe disease course produced WMF samples with significantly higher virus copies. The authors suggest indicates that WMF, which is easier to collect, could be an alternative methods of diagnosing SARS-CoV-2 infections in individuals a highest risk of severe disease. Respiratory droplet (RD) samples had detectable RNA in 17 (31%) patients and had higher viral loads when sourced from patients with increased IL-6.

*Kannian et al. (Apr 30, 2021). Implications in the Quantification of SARS-CoV2 Copies in Concurrent Nasopharyngeal Swabs, Whole Mouth Fluid and Respiratory Droplets. Virus Research.*

<https://doi.org/10.1016/j.virusres.2021.198442>

- In a study of 2,679 US participants reporting new onset of fever from April 2020 to October 2020, only 17% indicated ever taking a SARS-CoV-2 test within 2 weeks of symptom onset, and only 12% indicated receiving a result. Among those who received a SARS-CoV-2 test result, only 21% received their test result within 7 days of febrile illness onset. The proportion of participants who received test results within 7 days of febrile illness was 10% during early April and rose to 24% by July, then only marginally increased to 26% by the end of the study in October at the start of the winter surge. Participants responded to daily surveys on COVID-19 symptoms and weekly surveys about COVID-19 testing. Estimates of time from onset to test were obtained using serial survey responses and time-to-event modeling.

*Pletcher et al. (May 3, 2021). Factors Associated With Access to and Timing of Coronavirus Testing Among US Adults After Onset of Febrile Illness. JAMA Network Open.*

<https://doi.org/10.1001/jamanetworkopen.2021.8500>

## Vaccines and Immunity

- Incidence of SARS-CoV-2 infection was 95% lower among persons with prior SARS-CoV-2 infection, indicated by seropositivity, in a cohort study in Qatar. In the study, 129 of 43,044 seropositive persons (0.3%) followed for a median of 16 weeks had at least one positive PCR test supported by evidence of reinfection at least 14 days after their first antibody-positive test, corresponding to an estimated incidence of reinfection of 0.66 cases per 10,000 person weeks. By contrast, 3,185 of 149,923 (2.1%) persons seronegative at baseline followed for a median of 17 weeks had at least one positive PCR, corresponding to 14 cases per 10,000 person-weeks.

Abu-Raddad et al. (May 27, 2021). SARS-CoV-2 antibody-positivity protects against reinfection for at least seven months with 95% efficacy. *EClinicalMedicine*.

<https://doi.org/10.1016/j.eclinm.2021.100861>

- [Pre-print, not peer-reviewed] A study using two standardized, functional assays to measure memory T cell immunity to SARS-CoV-2 found that individuals vaccinated with the COVID-19 mRNA vaccines (n=29) mounted a more robust T cell response than convalescent patients (n=19) or healthy controls with no prior infection (n=25). The assay was based upon the “Quantiferon Gold” test for tuberculosis and measured secreted interferon gamma. T cell responses among vaccinated individuals to variants of concern B.1.1.7, B.1.351, and B.1.1.248 were detected but diminished, with median responses lower though not statistically significant among those receiving the Pfizer-BioNTech vaccine than the Moderna vaccine.

Gallagher et al. (May 3, 2021). SARS-CoV-2 T-Cell Immunity to Variants of Concern Following Vaccination. Pre-print downloaded May 4 from <https://doi.org/10.1101/2021.05.03.442455>

- A series of 5 cases of herpes zoster reactivation were observed among a healthcare worker cohort in Spain that received at least the first dose of the Pfizer-BioNTech vaccine (n=3,707) over a period of four weeks. Three patients presented with herpes zoster after the first dose, while two presented after the second dose. All patients were young, healthy adults with no blood count abnormalities. Compared to a background herpes zoster incidence of 249-359 cases per 100,000 person-years, the incidence in this case series would correspond to 1,995 cases per 100,000 person-years.

Rodríguez-Jiménez et al. (Apr 17, 2021). Varicella-Zoster Virus Reactivation after SARS-Cov2 BNT162b2 MRNA Vaccination: Report of Five Cases. *JAAD Case Reports*.

<https://doi.org/10.1016/j.jdcr.2021.04.014>

### Clinical Characteristics and Health Care Setting

- [Pre-print, not peer-reviewed] In an *in vitro* human organoid system, the SARS-CoV-2 B.1.1.7 variant was shown to produce higher levels of infectious virus late in infection and higher replicative fitness in human airway, alveolar, and intestinal organoid models compared to the ancestral strain.

Lamers et al. (May 3, 2021). Human Organoid Systems Reveal *In Vitro* Correlates of Fitness for SARS-CoV-2 B.1.1.7. Pre-print downloaded May 4 from

<https://doi.org/10.1101/2021.05.03.441080>

### Modeling and Prediction

- A transmission model of a pre-K-12 US school setting found that even in the context of low community incidence of SARS-CoV-2, mitigation strategies and contact tracing with a net effectiveness of 27% could result in 75% of the school population being infected within 6 months. The model is based on the CDC COVIDTracer modeling tool. Improving mitigation strategies to be 69% effective could result in less than 0.9% of the school population being infected. Even in this scenario, substantial importation from a community with high incidence could result in infections in up to 20% of the school population. Across all scenarios of mitigation strategies and community incidence, hospitalizations did not exceed 0.5% of the school population.

Miller et al. (Apr 30, 2021). Modeling the Transmission of Covid-19. *Journal of Public Health Management and Practice*. <https://doi.org/10.1097/PHH.0000000000001373>

## Public Health Policy and Practice

- Among 350 women admitted for delivery at a safety net hospital in Maricopa County, Arizona in July 2020, women with refugee status (n=45) had a 2-fold higher prevalence of PCR-positive SARS-CoV-2 infection compared to nonrefugee patients (18% vs 9%).

*Johnson-Agbakwu et al. (Mar 21, 2021). Severe Acute Respiratory Syndrome Coronavirus 2: A Canary in the Coal Mine for Public Safety Net Hospitals. AJOG Global Reports.*

<https://doi.org/10.1016/j.xagr.2021.100009>

## Other Resources and Commentaries

- [A Data Driven Approach for Prioritizing COVID-19 Vaccinations in the Midwestern United States](#) – Online Journal of Public Health Informatics (Mar 21)
- [Stratifying Deterioration Risk by Acuity at Admission Offers Triage Insights for Coronavirus Disease 2019 Patients](#) – Critical Care Explorations (Apr 5)
- [StayHome: A FHIR-Native Mobile COVID-19 Symptom Tracker and Public Health Reporting Tool](#) – Online Journal of Public Health Informatics (Mar 21)
- [The Complexity of Co-Infections in the Era of COVID-19](#) – SN Comprehensive Clinical Medicine (Apr 23)
- [Family Medicine Provision of Online Medication Abortion in Three US States during COVID-19](#) – Contraception (Apr)
- [Analysis of the Potential Impact of Durability, Timing, and Transmission Blocking of COVID-19 Vaccine on Morbidity and Mortality](#) – EClinicalMedicine (May)
- [Retrospective Detection of SARS-CoV-2 in Symptomatic Patients Prior to Widespread Diagnostic Testing in Southern California](#) – Clinical Infectious Diseases (May 3)
- [Disease-Drug and Drug-Drug Interaction in COVID-19: Risk and Assessment](#) – Biomedicine & Pharmacotherapy (July)
- [Prevalence and Mortality Due to COVID-19 in HIV Co-Infected Population: A Systematic Review and Meta-Analysis](#) – Infectious Diseases and Therapy (May 3)
- [Nationally Representative Sample Shows an Increase in Domestic Conflict Early in the COVID-19 Pandemic](#) – Disaster Medicine and Public Health Preparedness (May 3)
- [An Overview of Current COVID-19 Vaccine Platforms](#) – Computational and Structural Biotechnology Journal (Apr)
- [Effective Screening Strategies for Detection of Asymptomatic COVID-19 Travelers at Airport Quarantine Stations: Exploratory Findings in Japan](#) – Global Health & Medicine (Apr)
- [Revitalizing Adolescent Health Behavior After the COVID-19 Pandemic](#) – JAMA Pediatrics (May 3)
- [Trends in Patient Characteristics and COVID-19 In-Hospital Mortality in the United States During the COVID-19 Pandemic](#) – JAMA Network Open (May 3)
- [In Suspected SARS-CoV-2, Rapid Antigen Detection Tests Had 67% to 73% Sensitivity and 98% to 100% Specificity](#) – Annals of Internal Medicine (May 4)
- [Saliva and Nasopharyngeal Samples Have Similar Sensitivity for Detecting SARS-CoV-2](#) – Annals of Internal Medicine (May 4)
- [In Adults, NSAID Use vs. Nonuse in the Past 4 Mo Was Not Linked to Increased Risk for COVID-19–Related Mortality](#) – Annals of Internal Medicine (May 4)
- [The Associations Between Sociodemographic Characteristics and Trust in Physician With Immunization Service Use in U.S. Chinese Older Adults](#) – Research on Aging (May 3)
- [The Landscape of Circulating Platelet Aggregates in COVID-19](#) – medRxiv (May 3)

*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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