



2019-nCoV Literature

Situation Report (Lit

Rep)

January 26, 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

- **An outbreak of SARS-CoV-2 associated with a Florida high school wrestling tournament in December 2020 had an attack rate of at least 30% and a secondary attack rate of at least 9%. Among contacts, household members had the highest attack rate (at least 30%) and test positivity rate (60%).** [More](#)
- **Limited COVID-19 spread was observed from August to November 2020 in 17 rural K-12 schools in Wood County, Wisconsin that reopened with in-person instruction and infection mitigation measures in place. Only 7 student cases and no staff cases were linked to in-school transmission out of 191 cases identified in 5,530 students and staff. The case rate among students and staff was lower than the county case rate (3,453 vs 5,466 per 100,000).** [More](#)
- **Transmission of SARS-CoV-2 is believed to have occurred following brief exposure to an infected individual (<15 minutes of cumulative interaction within 6 feet) among 7 cases in a 41-case outbreak within the National Football League in September. Some of these brief interactions included high-risk behavior, such as unmasked meetings in small rooms while eating.** [More](#)

Non-Pharmaceutical Interventions

- Despite widespread community transmission, limited COVID-19 spread was observed from August to November 2020 in 17 rural K-12 schools in Wood County, Wisconsin that reopened with in-person instruction and several infection mitigation measures. Schools implemented physical distancing among students and staff, established groups of 11-20 students, and had a 92% reported mask adherence among students. Among 191 cases identified in 5,530 students and staff, there were 7 student cases and 0 staff cases linked to in-school transmission. The case rate among students and staff was lower than the county case rate (3,453 vs 5,466 per 100,000). An estimated 12% of Wood County's children were attending school virtually.
Falk et al. (Jan 26, 2021). COVID-19 Cases and Transmission in 17 K–12 Schools — Wood County, Wisconsin, August 31–November 29, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7004e3>
- *[Pre-print, not peer-reviewed]* Analysis of more than 140,000 contacts of over 40,000 SARS-CoV-2 positive cases in Ireland from May to December 2020 showed that the number of contacts per case varied across specific populations and trended with implementation of government interventions. The number of contacts per case was highest among those aged 18-24 years and lowest among those >65 years. The number of contacts per case increased after stay-at-home orders were lifted in

May from a minimum of 2 to a peak of 6, then fell back to 2.6 at the beginning of Level 5 restrictions in October.

McAloon et al. (Jan 25, 2021). *Numbers of Close Contacts of Individuals Infected with SARS-CoV-2 and Their Association with Government Intervention Strategies*. Pre-print downloaded Jan 26 from <https://doi.org/10.1101/2021.01.20.21250109>

- [Pre-print, not peer-reviewed] Testing of symptomatic students combined with a random subset of asymptomatic students at the University of Pittsburgh demonstrated a prevalence SARS-CoV-2 infection of 0.4% and a case rate of 232 per 10,000 students, comparable to the case rates of other public urban institutions that implemented mass-testing. The authors suggest that targeted testing, combined with a focus on behavioral mitigation and communication, could achieve a similar but less resource-intensive degree of virus control compared to mass testing.

O'Donnell et al. (Jan 25, 2021). *SARS-CoV-2 Control on a Large Urban College Campus Without Mass Testing*. Pre-print downloaded Jan 26 from <https://doi.org/10.1101/2021.01.21.21249825>

Transmission

- An outbreak arising from a Florida high school wrestling tournament in December 2020 had an attack rate of at least 30% (38 of 126 tournament attendees who were tested) and a secondary attack rate of at least 9% (41 of 441 close contacts of the 38 COVID-19 patients). Among contacts, household members had the highest attack rate (at least 30%), test positivity rate (60%), and odds of receiving a positive test result (OR=2.7). The outbreak resulted in an estimated loss of 1,700 in-person school days due to isolation and quarantine of patients and contacts, and the death of one adult contact aged >50 years. At the time of the tournament, the county in which 7 out of 10 participating high school teams were located had a 14-day cumulative COVID-19 incidence in the highest category of transmission risk for SARS-CoV-2 (363 per 100,000), according to CDC classification.

Atherstone et al. (Jan 26, 2021). *SARS-CoV-2 Transmission Associated with High School Wrestling Tournaments — Florida, December 2020–January 2021*. *MMWR*. <https://doi.org/10.15585/mmwr.mm7004e4>

- Investigation of a cluster of 41 SARS-CoV-2 infections that occurred within the National Football League in late September 2020 identified at least 7 cases of infection where transmission likely occurred during <15 minutes of cumulative interaction within 6 feet of an infected individual, as confirmed by wearable tracking devices. Interviews revealed that some of these brief interactions included high-risk behavior, such as unmasked meetings in small rooms while eating. These findings led to a revised high-risk contact definition that included ascertainment of mask use and setting in addition to duration of exposure and proximity as well as implementation of stricter protocols.

Mack et al. (Jan 25, 2021). *Implementation and Evolution of Mitigation Measures, Testing, and Contact Tracing in the National Football League, August 9–November 21, 2020*. *MMWR. Morbidity and Mortality Weekly Report*. <https://doi.org/10.15585/mmwr.mm7004e2>

Testing and Treatment

- [Pre-print, not peer-reviewed] Trends in the detection of SARS-CoV-2 RNA in wastewater appeared to precede trends in clinically confirmed cases in Minnesota during the summer 2020 wave. Viral RNA was detected in municipal wastewater influent continually for 20 weeks in cities ranging from 500 to 1 million people. Statewide data showed that trends in clinically confirmed cases lagged behind viral RNA levels in wastewater by 15-17 days, while at the regional level it lagged behind by 4-20 days.

Melvin et al. (Jan 25, 2021). Predictive Power of SARS-CoV-2 Wastewater Surveillance for Diverse Populations across a Large Geographical Range. Pre-print downloaded Jan 26 from <https://doi.org/10.1101/2021.01.23.21250376>

Vaccines and Immunity

- [Pre-print, not peer-reviewed] A longitudinal study of 101 blood samples from 32 people recovering from COVID-19 found that memory B cells for anti-receptor binding domain (RBD) IgG antibodies increase over time and persist for up to 8 months post-symptom onset. Detectable IgG and sustained Fc-effector activity in plasma was also observed up to 8 months, despite IgG levels decaying over time. In contrast, levels of RBD-specific IgM memory B cells and IgM antibodies waned much more rapidly than their IgG counterparts.

Anand et al. (Jan 25, 2021). Longitudinal Analysis of Humoral Immunity against SARS-CoV-2 Spike in Convalescent Individuals up to 8 Months Post-Symptom Onset. Pre-print downloaded Jan 26 from <https://doi.org/10.1101/2021.01.25.428097>

Clinical Characteristics and Health Care Setting

- A retrospective cohort study in the US (n=262 women with symptomatic COVID-19) found that compared to non-pregnant women, pregnant women were at significantly increased risk of developing severe COVID-19. After adjusting for ethnicity and insurance status, pregnant patients were between 3.6 and 5.7 times as likely to have severe disease, depending on the criteria used to define severe disease.

Oakes et al. (Jan 22, 2021). Pregnancy as a Risk Factor for Severe Coronavirus 2019 (COVID-19) Disease Using Standardized Clinical Criteria. American Journal of Obstetrics & Gynecology MFM. <https://doi.org/10.1016/j.ajogmf.2021.100319>

Modeling and Prediction

- [Pre-print, not peer-reviewed] A pandemic influenza model with COVID-19 parameters applied to a nursing home setting showed that the attack rate was more sensitive to identification and isolation of asymptomatic cases than implementation of non-pharmaceutical interventions (NPIs). Varying NPI levels from baseline to rigorous measures had no significant effect on attack rate in a scenario without isolation of asymptomatic cases, whereas NPI scenarios showed large reductions in attack rate when used in conjunction with 90% isolation (up to 43% reduction). Hospitalizations, ICU admissions, and mortality rate were all reduced as the attack rate fell.

Schmidt et al. (Jan 25, 2021). Using Non-Pharmaceutical Interventions and High Isolation of Asymptomatic Carriers to Contain the Spread of SARS-CoV-2 in Nursing Homes. Pre-print downloaded Jan 26 from <https://doi.org/10.1101/2021.01.22.21249308>

Public Health Policy and Practice

- A report from the National Association of County and City Health Officials' 2019 National Profile of Local Health Departments (LHDs) study shows that over half of LHDs had stagnant funding from the 2018 and 2019 fiscal years. Additionally, LHDs experienced a 16% decrease in full-time employees from 2008 to 2019, while the total number of employees decreased by 17%. Despite 67% of LHDs responding to an all-hazards event in 2019, only 7% of LHDs experienced an increase in emergency preparedness funding, while 62% reported stagnant funding.

Alford et al. (Mar 2021). Prioritization of Public Health Emergency Preparedness Funding Among Local Health Departments Preceding the COVID-19 Pandemic: Findings From NACCHO's 2019 National Profile of Local Health Departments. Journal of Public Health Management and Practice. <https://doi.org/10.1097/PHH.0000000000001338>

- Monitoring of public perceptions during the first 3 months of the COVID-19 pandemic in the Netherlands found that respondents believed the risks associated with COVID-19 to be considerable, were positive about mitigation measures, trusted in information and response from authorities, and reported widespread adoption of protective measures. Differences in perception were mostly driven by factors such as respondents' age and health condition. Respondents consisted of roughly 11,000 residents participating across 6 repeat surveys, with an oversampling of persons aged >65 years.
de Vries et al. (Jan 25, 2021). Dynamic Public Perceptions of the Coronavirus Disease Crisis, the Netherlands, 2020. Emerging Infectious Diseases. <https://pubmed.ncbi.nlm.nih.gov/33493429>
- Greater pack-years of smoking was associated with worse COVID-19 outcomes in a cohort of 7,102 SARS-CoV-2 positive patients with full smoking information. Patients who smoked between 10-30 pack years had 1.4-times the odds of hospitalization compared to never smokers, while patients who smoked more than 30 pack-years had 2.3 -times the odds of hospitalization and almost a 2-fold increase in odds of death. Adjusting for comorbidities weakened the association of smoking with adverse outcomes, as the association between cumulative smoking and adverse COVID-19 outcomes is likely mediated in part by comorbidities. Similar odds ratios were seen in both current and former smokers.
Lowe et al. (Jan 25, 2021). Association of Smoking and Cumulative Pack-Year Exposure With COVID-19 Outcomes in the Cleveland Clinic COVID-19 Registry. JAMA Internal Medicine. <https://doi.org/10.1001/jamainternmed.2020.8360>
- Infection rates for influenza and rhinovirus or enterovirus were significantly lower during March 25 to July 31, 2020 compared to the same time period during the past 5 years, according to a cohort study in California that included over 45,000 tests for the viral respiratory infections. This significant drop in infection rates coincided with implementation of shelter-in-place orders on March 19, 2020. Influenza infection rates decreased by 93%, while rhinovirus or enterovirus infection rates decreased by 81%. In contrast, infection rates for the portions of the 2020 respiratory virus season prior to March 25th were similar to rates for the same period over the past 5 years (30.4 vs 33.7 positive results per 100 tests).
Partridge et al. (Jan 25, 2021). Evaluation of Seasonal Respiratory Virus Activity Before and After the Statewide COVID-19 Shelter-in-Place Order in Northern California. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.35281>

Other Resources and Commentaries

- [Using an Ecological and Biological Framing for an Anti-Racist Covid-19 Approach](#) – MedRxiv (Jan 25)
- [Taking the Long View: COVID-19 Priorities for the Biden Administration](#) – Journal of Health Politics, Policy and Law (Jan 22)
- [Making Sense of Contradictory Evidence in Covid-19 Trials](#) – Clinical Infectious Diseases (Jan 25)
- [A Short Discussion About The SARS-CoV-2 MRNA-1273 Vaccine](#) – International Journal of Infectious Diseases (Jan 22)
- [COVID-19 and the Moral Imagination](#) – The Lancet (Jan 22)
- [Comparing Analytical Methods to Detect SARS-CoV-2 in Wastewater](#) – The Science of the Total Environment (Dec 8)
- [Inclusion of Pregnant and Lactating Persons in COVID-19 Vaccination Efforts](#) – Annals of Internal Medicine (Jan 26)
- [Do Not Repeat Mistakes from HIV in COVID-19 Response](#) – The Lancet HIV (Jan 22)
- [Launching a Saliva-Based SARS-CoV-2 Surveillance Testing Program on a University Campus](#) – MedRxiv (Jan 25)

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



ALLIANCE for
PANDEMIC PREPAREDNESS
UNIVERSITY of WASHINGTON



START CENTER
STRATEGIC ANALYSIS, RESEARCH & TRAINING CENTER

Updated 1/26/2021