



2019-nCoV Literature

Situation Report (Lit

Rep)

January 6, 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 analysis combining seroprevalence data with reported cases estimated 46,910,006 SARS-CoV-2 total infections, 28,122,752 symptomatic infections, 956,174 hospitalizations, and 304,915 deaths occurred in the US through November 15, 2020. The authors estimate that 14% of Americans were infected with COVID-19 by mid-November. [More](#)**
- **Genomic analysis of viral SARS-CoV-2 isolates obtained during a mandatory quarantine period after a Dubai-to-New Zealand flight demonstrate clear evidence of in-flight transmission. [More](#)**
- **During December 14–23, 2020, 21 cases of anaphylaxis were reported after administration of a reported 1,893,360 first doses of the Pfizer-BioNTech COVID-19 vaccine (11.1 cases per million doses), including 17 in people with a documented history of allergies or allergic reactions. All 20 people for whom follow-up information was available recovered or were discharged home. [More](#)**
- **A study of SARS-CoV-2 seroprevalence in hospital workers in New Jersey found that healthcare workers at highest risk for infection included support staff and people from underrepresented minority populations, with and without patient care responsibilities. [More](#)**

Non-Pharmaceutical Interventions

- A study evaluating the effects of mandatory stay-at-home and business closure policies found that implementing any non-pharmaceutical intervention (NPI) was associated with significant reductions in case growth in 9 of 10 study countries, including South Korea and Sweden which only implemented less restrictive NPIs. After subtracting the epidemic and less restrictive NPI effects, the study found no clear, significant beneficial effect of more restrictive NPIs on case growth in any country.
Bendavid et al. (Jan 5, 2021). Assessing Mandatory Stay-at-Home and Business Closure Effects on the Spread of COVID-19. European Journal of Clinical Investigation. <https://doi.org/10.1111/eci.13484>
- Statewide stay-at-home policies had the strongest effect on reducing out-of-home mobility and increased the time people spent at home, according to a study employing difference-in-difference and event-study methodologies. Limits on restaurants and bars were the next highest ranked policy that increased presence at home. The other 4 policies assessed (limited stay-at-home orders, non-essential business closures, bans on large gatherings, school closure mandates) did not significantly reduce mobility.

Abouk and Heydari. (Jan 5, 2021). *The Immediate Effect of COVID-19 Policies on Social-Distancing Behavior in the United States*. *Public Health Reports*. <https://www.medrxiv.org/content/10.1101/2020.04.07.20057356v2>

Transmission

- Genomic analysis of viral SARS-CoV-2 isolates obtained during a mandatory quarantine period after a Dubai-to-New Zealand flight demonstrate clear evidence of in-flight transmission. Among 86 passengers on a flight that arrived on September 29, 7 individuals in managed isolation and quarantine (MIQ) had positive test results during the quarantine period. Passengers originated from 5 different countries before a layover in Dubai, and 5 had negative predeparture SARS-CoV-2 test results. All 7 SARS-CoV-2 genomes were genetically identical, except for a single mutation in 1 sample. Multiple instances of in-flight SARS-CoV-2 transmission were determined to be likely despite 4 of 7 of infected passengers reporting mask use. MIQ has been mandatory for citizens and permanent residents returning to New Zealand since March 2020.

Swadi et al. (Jan 5, 2021). *Genomic Evidence of In-Flight Transmission of SARS-CoV-2 Despite Predeparture Testing*. *Emerging Infectious Diseases*. <https://doi.org/10.3201/eid2703.204714>

Vaccines and Immunity

- [Pre-print, not-peer reviewed] A logistic regression model to predict COVID-19 case and death risk by age, race, and sex found that if the 17 demographic groups at highest risk of death from COVID-19 were prioritized for vaccination, it would require only 3.7% of the vaccine supply needed to vaccinate all the United States, and yet prevent 47% of COVID-19 deaths. Risk of death among nursing home residents (5200/100,000) was higher than the highest demographic risk group while risk of death in incarcerated people and health care workers was lower than demographic groups with the highest risk.

McDonald et al. (Dec 24, 2020). *A Method for Prioritizing Risk Groups for Early SARS-CoV-2 Vaccination, By the Numbers*. Pre-print downloaded Jan 6 from <https://doi.org/10.1101/2020.12.18.20248504>

- [Pre-print, not-peer reviewed] Utilizing an age-stratified mathematical model, a study of vaccine allocation strategy suggested that maintaining current social distancing interventions and speedy vaccine deployment were important, and the optimal allocation of vaccine depends on the single-dose efficacy (SDE). If SDE is high, single-dose vaccination would be the optimal use of vaccine under most scenarios considered and could prevent up to 48% more deaths than a strategy allocating vaccine to the high-risk (older age groups) first. If SDE is low or medium, mixed vaccination campaigns with one and two doses of vaccine are best.

Matrajt et al. (Jan 5, 2021). *Optimizing Vaccine Allocation for COVID-19 Vaccines Critical Role of Single-Dose Vaccination*. Pre-print downloaded Jan 6 from <https://doi.org/10.1101/2020.12.31.20249099>

- A longitudinal SARS-CoV-2 seroprevalence study of healthcare workers in the United Kingdom found peak IgG antibody levels to SARS-CoV-2 nucleocapsid was 24 days following the first positive PCR test with a mean antibody half-life of 85 days. Antibodies waned faster in younger adults and those without symptoms. Anti-spike IgG levels remained stably detected after a positive result in 94% of individuals at 180 days. Higher maximum observed anti-nucleocapsid titers were associated with longer estimated antibody half-lives. Increasing age, Asian ethnicity and prior self-reported symptoms were independently associated with higher maximum anti-nucleocapsid levels; increasing age and a positive PCR test undertaken for symptoms were associated with longer anti-nucleocapsid half-lives.

Lumley et al. (Jan 6, 2021). *The Duration, Dynamics and Determinants of SARS-CoV-2 Antibody Responses in Individual Healthcare Workers*. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciab004>

Clinical Characteristics and Health Care Setting

- [Pre-print, not-peer reviewed] In a cohort of 154 hospitalized patients, salivary viral load showed a superior ability over nasopharyngeal viral load to predict mortality over time (AUC=0.90). Salivary viral load was positively associated with COVID-19 inflammatory markers and type 1 immune response cytokines and higher viral loads strongly correlated with depletion of platelets, lymphocytes, and effector T cell subsets. Salivary viral load was also correlated with established risk factors for poor clinical outcomes in COVID-19 disease. Anti-spike and anti-receptor binding domain IgG levels were negatively correlated with saliva viral load.

Silva et al. (Jan 6, 2021). *Saliva Viral Load Is a Dynamic Unifying Correlate of COVID-19 Severity and Mortality*. Pre-print downloaded Jan 6 from <https://doi.org/10.1101/2021.01.04.21249236>

- A study of SARS-CoV-2 seroprevalence in hospital workers in New Jersey found that healthcare workers at highest risk for infection included support staff and people from underrepresented minority populations, with and without patient care responsibilities. The proportion of participants testing positive was highest for phlebotomists (23.9%), maintenance/housekeeping (17.3%), dining/food services (16.9%), and interpersonal/support roles (13.7%) despite lower levels of direct patient care duties. Positivity rates were lower among doctors (7.2%) and nurses (9.1%). After adjusting for job role and patient care responsibilities and other factors, Black and Latinx workers had 2-fold increased odds of a positive test compared with white workers.

Barrett et al. (Dec 1, 2020). *Risk Factors for Severe Acute Respiratory Syndrome Coronavirus 2 Infection in Hospital Workers: Results From a Screening Study in New Jersey, United States in Spring 2020*. *Open Forum Infectious Diseases*. <https://doi.org/10.1093/ofid/ofaa534>

Public Health Policy and Practice

- Providing maps with COVID-19 case information did not improve public knowledge, risk perception, or reported intent to adhere to health guidelines according to results from a survey study. Participants were randomized to receive 1 of 6 maps (or no map) containing information on COVID-19 cases and scored on scales on total/per capita cases (score range 0-1), risk perception (score range 1-7), and willingness to adhere to guidelines (score range 0-100) with higher scores indicating more knowledge, higher perception of risk, greater intent to adhere to guidelines. Compared with participants who viewed a map, not viewing a map was associated with greater knowledge about total cases (mean score 0.60 vs 0.55). Respondents who saw a map had lower societal risk perceptions, with more optimism that the pandemic would be better in 2 weeks, compared with those who did not see a map (3.77 vs 4.02). Overall, respondents reported high willingness to adhere to COVID-19 guidelines (86.33), and scores were not significantly different by map provision or type.

Thorpe et al. (Jan 6, 2021). *Exposure to Common Geographic COVID-19 Prevalence Maps and Public Knowledge, Risk Perceptions, and Behavioral Intentions*. *JAMA Network Open*. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774639>

- Monitoring by the Vaccine Adverse Event Reporting System detected 21 cases of anaphylaxis after administration of 1,893,360 first doses of the Pfizer-BioNTech COVID-19 vaccine (11.1 cases per million doses); 71% of these occurred within 15 minutes of vaccination. 17 of 21 anaphylaxis episodes were among persons with a documented history of allergies or allergic reactions, 7 of whom had a history of anaphylaxis. All 20 people with follow-up information available recovered or

were discharged home. The CDC COVID-19 response team recommends that locations administering COVID-19 vaccines have supplies available to manage anaphylaxis, implement post-vaccination observation periods, and immediately treat suspected cases of anaphylaxis with intramuscular injection of epinephrine.

CDC COVID-19 Response Team. (2021). Allergic Reactions Including Anaphylaxis After Receipt of the First Dose of Pfizer-BioNTech COVID-19 Vaccine — United States, December 14 – 23, 2020. MMWR. Morbidity and Mortality Weekly Report. <https://www.cdc.gov/mmwr/volumes/70/wr/mm7002e1.htm>

- A cross-sectional study using data from both public health surveillance records of reported COVID-19 cases and seroprevalence surveys found that an estimated 46,910,006 SARS-CoV-2 infections, 28,122,752 symptomatic infections, 956,174 hospitalizations, and 304,915 deaths occurred in the US through November 15, 2020. The authors note that 14% of the US population was infected with SARS-CoV-2 by mid-November, and SARS-CoV-2 disease burden may be much larger than reported COVID-19 cases due to underreporting.

Angulo et al. (Jan 5, 2021). Estimation of US SARS-CoV-2 Infections, Symptomatic Infections, Hospitalizations, and Deaths Using Seroprevalence Surveys. JAMA Network Open. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774584>

Other Resources and Commentaries

- [Covid-19: Vaccine brands can be mixed in “extremely rare occasions,” says Public Health England](#) – BMJ (Jan 4 2020)
- [Fast inactivation of SARS-CoV-2 by UV-C and ozone exposure on different materials](#) – Emerging Microbes & Infections (Jan 5 2020)
- [The COVID-19 Pandemic Vulnerability Index \(PVI\) Dashboard: Monitoring County-Level Vulnerability Using Visualization, Statistical Modeling, and Machine Learning](#) – Environmental Health Perspectives (Jan 5 2020)
- [Sorting Out Whether Vitamin D Deficiency Raises COVID-19 Risk](#) – JAMA (Jan 6 2020)
- [A 7-Point Action Agenda to End the COVID-19 Pandemic for President-elect Biden](#) – JAMA (Jan 5 2020)
- [Beyond past due: data to guide US school reopenings](#) – Nature (Jan 5 2020)
- [Neutralizing antibody titres in SARS-CoV-2 infections](#) – Nature Communications (Jan 4 2020)
- [SARS-CoV-2 seroprevalence survey estimates are affected by anti-nucleocapsid antibody decline](#) – The Journal of Infectious Diseases (Jan 5 2020)
- [New variant of SARS-CoV-2 in UK causes surge of COVID-19](#) – The Lancet Respiratory Medicine (Jan 6 2020)

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