

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

- **Compared to a 59% reduction in transmission with a 14-day quarantine period, a 7-day quarantine with a negative RT-PCR test or a negative antigen test on day 7 could reduce transmission by 54% and 50%, respectively.** [More](#)
- **National vaccination coverage for childhood vaccines was approximately 95% among kindergarteners in the 2019-20 school year, despite most schools shifting to virtual learning in the spring. However, the CDC cautions that disruptions caused by the pandemic are likely to reduce vaccination coverage for the 2020-21 school year.** [More](#)
- **Neutralizing activity of participants three weeks after receiving the first dose of the Pfizer vaccine was similar against the three key spike protein mutations in the B.1.1.7 variant, compared to the wild-type SARS-CoV-2 strain. However, neutralization titers were reduced up to 6-fold (median 3.85-fold) against a pseudovirus with the full set of 8 spike protein mutations present in the B.1.1.7 variant.** [More](#)
- **A nationwide survey of over 150,000 high school athletes found that COVID-19 incidence was lower among sports that were outdoor and non-contact, but similar between team versus individual sports. Face mask use was associated with a decreased incidence in girls' volleyball, boys' basketball, and girls' basketball.** [More](#)

### Non-Pharmaceutical Interventions

- *[pre-print, not peer reviewed]* Using a Bayesian model and data from the first epidemic wave of 20 countries (including the US) to examine the effectiveness of non-pharmaceutical interventions, event bans (canceling mass gatherings of >50 people) were associated with the highest reduction in the number of new SARS-CoV-2 infections. Event bans reduced new infections by 37%, followed by venue closures (18%) and school closures (17%). Stay-at-home orders were estimated to reduce new infections only by 4%.  
*Banholzer et al. (Jan 20, 2021). Estimating the Effects of Non-Pharmaceutical Interventions on the Number of New Infections with COVID-19 during the First Epidemic Wave. Pre-print downloaded Jan 21 from <https://doi.org/10.1101/2021.01.15.21249884>*
- *[pre-print, not peer reviewed]* A nationwide survey of 152,484 high school athletes found cumulative incidence of 1,682 COVID-19 cases per 100,000 athletes, corresponding to an incidence rate of 24.6 cases per 100,000 player-days between August and October 2020. Incidence was lower when sports were outdoors and non-contact but no differences were detected between team versus individual

sports. Face mask use was associated with a decreased incidence in girls' volleyball, boys' basketball, and girls' basketball.

*Watson et al. (Jan 20, 2021). The Association of COVID-19 Incidence with Sport and Face Mask Use in United States High School Athletes. Pre-print downloaded Jan 21 from <https://doi.org/10.1101/2021.01.19.21250116>*

## Geographic Spread

- Sequence analysis of 346 whole SARS-CoV-2 genomes collected from Italy suggest that up to 7 viral lineages were circulating in the country between February and April 2020. Two lineages likely originated from Italy, including the B.1 lineage that is hypothesized to have given rise to variants emerging from the UK and South Africa. Local transmission clusters were present within three lineages, which suggests that sustained community transmission was present before the first detected case in Italy on February 20, 2020.

*Alteri et al. (Jan 19, 2021). Genomic Epidemiology of SARS-CoV-2 Reveals Multiple Lineages and Early Spread of SARS-CoV-2 Infections in Lombardy, Italy. Nature Communications. <https://doi.org/10.1038/s41467-020-20688-x>*

- *[pre-print, not peer reviewed]* A novel SARS-CoV-2 strain, CAL.20C, emerging from Southern California, was detected through genome sequence analysis. The strain's increasing dominance has coincided with an increased positivity rate in that region. While first observed in July, CAL.20C accounted for 24% of cases by December 2020. CAL.20C is characterized by multiple mutations in the spike protein, similar to variants emerging from the UK and South Africa. Though predominant in Southern California, CAL.20C has been isolated in samples from New York and Washington DC.

*Zhang et al. (Jan 20, 2021). Emergence of a Novel SARS-CoV-2 Strain in Southern California USA. Pre-print downloaded Jan 21 from <https://doi.org/10.1101/2021.01.18.21249786>*

## Testing and Treatment

- A study among US adults (n=586) found high motivation for secondary distribution of COVID-19 self-testing kits, where at-risk/infected individuals distribute test kits to contacts in their social network. 90% of participants were motivated to distribute self-testing kits to contacts, 86% were motivated to self-test if given a kit from a potentially infected contact, and 83% were motivated to order a self-test kit online. Participants with above-average income and at least a college degree were 3 times as likely to be motivated to distribute self-test kits. Motivation to self-test after receiving a test kit from a potentially infected contact and motivation to order a self-test kit were both associated with above-average income and Hispanic ethnicity.

*Bien-Gund et al. (Jan 20, 2021). Factors Associated With US Public Motivation to Use and Distribute COVID-19 Self-Tests. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.34001>*

- Among 91 pediatric COVID-19 patients (<18 years) admitted to a hospital in Hong Kong, SARS-CoV-2 viral loads from saliva correlated better with clinical and immunological profiles than viral loads from nasopharyngeal swabs (NPS). Patients with cough, sputum production, and headache had significantly higher saliva, but not NPS, viral loads. Higher saliva, but not NPS, viral loads were associated with total lymphopenia, CD3 and CD4 lymphopenia.

*Chua et al. (Jan 19, 2021). Saliva Viral Load Better Correlates with Clinical and Immunological Profiles in Children with Coronavirus Disease 2019. Emerging Microbes & Infections. <https://doi.org/10.1080/22221751.2021.1878937>*

- Comparison of paired nasopharyngeal swab (NPS) and saliva samples from 674 patients with suspected SARS-CoV-2 infection show that compared to NPS, saliva has a sensitivity of 52% and specificity of 92%. Saliva sensitivity and specificity increased to 92% and 99%, respectively, when the cycle threshold (Ct) was  $\leq 30$ . Ct values were significantly higher in saliva.  
*Trobajo-Sanmartín et al. (Jan 15, 2021). Self-Collection of Saliva Specimens as a Suitable Alternative to Nasopharyngeal Swabs for the Diagnosis of SARS-CoV-2 by RT-QPCR. Journal of Clinical Medicine. <https://doi.org/10.3390/jcm10020299>*

## Vaccines and Immunity

- In a study of 30 families with a documented COVID-19 index case, the SARS-CoV-2 seroprevalence based on IgG antibody results was similar among adults (59%) and children (52%), despite twice as many children being previously diagnosed with COVID-19. Seroprevalence was also similar among children  $<5$  (50%) and older than 5 years (54%).  
*Buonsenso et al. (Jan 20, 2021). Seroprevalence of Anti-SARS-CoV-2 IgG Antibodies in Children with Household Exposure to Adults with COVID-19: Preliminary Findings. Pediatric Pulmonology. <https://doi.org/10.1002/ppul.25280>*
- *[pre-print, not peer reviewed]* Sera from participants who received the first dose of the Pfizer vaccine BNT162b2 three weeks prior had no reduction in neutralizing activity against a pseudovirus with the three key spike protein mutations (N501Y, A570D, and 69/70 deletion) in the SARS-CoV-2 B.1.1.7 variant with higher transmission potential, compared to the wild-type SARS-CoV-2 strain. However, among 15 participants with neutralization activity three weeks after the Pfizer vaccine, 10 showed evidence of reduction in efficacy of antibodies against the B.1.1.7 mutant and neutralization titers were reduced up to 6-fold (median 3.85-fold) against the full set of 8 spike protein mutations present in the B.1.1.7 variant.  
*Collier et al. (Jan 20, 2021). Impact of SARS-CoV-2 B.1.1.7 Spike Variant on Neutralisation Potency of Sera from Individuals Vaccinated with Pfizer Vaccine BNT162b2. Pre-print downloaded Jan 21 from <https://doi.org/10.1101/2021.01.19.21249840>*

## Clinical Characteristics and Health Care Setting

- A retrospective cohort study among hospitalized COVID-19 patients (n=181) and patients with other respiratory viral infections (n=165) found similarly low rates of arterial or venous thrombotic events. However, clot waveform analysis parameters were significantly higher among severe than mild COVID-19 patients, suggesting increased risk for hypercoagulability. Patients in the ICU routinely received the thrombosis prevention measures of enoxaparin injections and pneumatic calf pumps, while preventive measures were not standardized among patients admitted to hospital ward units.  
*Tan et al. (Jan 19, 2021). Clinical and Laboratory Features of Hypercoagulability in COVID-19 and Other Respiratory Viral Infections amongst Predominantly Younger Adults with Few Comorbidities. Scientific Reports. <https://doi.org/10.1038/s41598-021-81166-y>*

## Modeling and Prediction

- A modeling study found that a shortened quarantine period combined with RT-PCR and antigen testing among SARS-CoV-2 exposed contacts could avert as much transmission as a 14-day quarantine period. In the baseline scenario where 67% of index cases adhere to self-isolation and 50% of exposed contacts adhere to quarantine, a 14-day quarantine period was estimated to reduce transmission by 59%. In the test case scenario with the same assumptions, a 7-day quarantine with a negative RT-PCR test or a negative antigen test on day 7 was estimated to reduce transmission by

54% and 50%, respectively. A 5-day quarantine with daily antigen testing with consistently negative test results could also reduce transmission by 50%. Further reduction in transmission can be gained by stricter adherence to isolation and quarantine measures.

*Quilty et al. (Jan 20, 2021). Quarantine and Testing Strategies in Contact Tracing for SARS-CoV-2: A Modelling Study. The Lancet Public Health. [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(20\)30308-X/fulltext#%20](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(20)30308-X/fulltext#%20)*

## Public Health Policy and Practice

- A cross-sectional ecologic analysis using US county-level data found that counties with higher income inequality and a higher proportion of Black or Hispanic residents had higher COVID-19 incidence and mortality. Each 1% increase in county-level income inequality, proportion of Black residents, and proportion of Hispanic residents corresponded to 2%, 1.9%, and 2.4% higher incidence and 3%, 2.6%, and 1.9% higher mortality, respectively. No state-level political characteristics were associated with incidence or mortality. Incidence was on average 32% lower in counties in states with Medicaid expansion than those without.

*Liao and De Maio. (Jan 20, 2021). Association of Social and Economic Inequality With Coronavirus Disease 2019 Incidence and Mortality Across US Counties. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.34578>*

- National vaccination coverage among US kindergarteners was high for the 2019-20 school year, despite most schools shifting to virtual learning in the spring due to the COVID-19 pandemic. Vaccination coverage for state-required number of doses of DTaP, MMR, and varicella (chickenpox) was 94.9%, 95.2%, and 94.8%, respectively. The exemption rate was 2.5%, and only 2.3% were not up-to-date for MMR and without vaccine exemptions. However, CDC authors caution that disruptions caused by the pandemic are likely to reduce vaccination coverage for the 2020-21 school year.

*Seither et al. (Jan 22, 2021). Vaccination Coverage with Selected Vaccines and Exemption Rates Among Children in Kindergarten — United States, 2019–20 School Year. MMWR. Morbidity and Mortality Weekly Report. <https://doi.org/10.15585/mmwr.mm7003a2>*

## Other Resources and Commentaries

- [The World Needs a Single Naming System for Coronavirus Variants](#) – Nature (Jan 21)
- [Converting the Maybes: Crucial for a Successful COVID-19 Vaccination Strategy](#) – PLOS ONE (Jan 20)
- [The COVID-19 Pandemic and the 2020 US Presidential Election](#) – Journal of Population Economics (Jan 15)
- [Monoclonal Antibodies to Disrupt Progression of Early Covid-19 Infection](#) – New England Journal of Medicine (Jan 21)
- [Associations of Government-Mandated Closures and Restrictions With Aggregate Mobility Trends and SARS-CoV-2 Infections in Nigeria](#) – JAMA Network Open (Jan 20)
- [Understanding How Race, Ethnicity, and Gender Shape Mask-Wearing Adherence During the COVID-19 Pandemic: Evidence from the COVID Impact Survey](#) – Journal of Racial and Ethnic Health Disparities (Jan 19)
- [Who Goes First? Government Leaders and Prioritization of SARS-CoV-2 Vaccines](#) – New England Journal of Medicine (Jan 20)

- [Rogue Antibodies Could Be Driving Severe COVID-19](#) – Nature (Jan 19)
- [Looking beyond COVID-19 Vaccine Phase 3 Trials](#) – Nature Medicine (Jan 19)
- [Vaccinating Children against Covid-19 — The Lessons of Measles](#) – New England Journal of Medicine (Jan 20)
- [Covid-19: WHO and China Acted Too Slowly in Early Days of Pandemic, Says Report](#) – BMJ (Jan 19)
- [Covid-19: Assess the Effects of Extending Pfizer Vaccine Dosing Interval, Expert Urges](#) – BMJ (Jan 19)
- [Audio Interview: An International Look at Covid-19](#) – New England Journal of Medicine (Jan 21)
- [What We Know about Covid-19 Reinfection so Far](#) – BMJ (Jan 19)
- [Covid-19 Vaccine Injuries — Preventing Inequities in Compensation](#) – New England Journal of Medicine (Jan 20)

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