

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

- **Transmission of SARS-CoV-2 increased rapidly at an Arkansas university within two weeks of the start of the 2020-2021 academic year, likely facilitated by congregate living settings and gatherings, particularly fraternity and sorority recruitment activities.** [More](#)
- **US counties with large colleges or universities with remote instruction experienced an 18% decrease in incidence of SARS-CoV-2, while university counties with in-person instruction experienced a 56% increase in incidence around the time that classes started in autumn 2020.** [More](#)
- **Among 154 contacts of people with COVID-19 who had a negative test result on specimens collected seven days after exposure and had a subsequent test within the next seven days, 152 (99%) remained negative and 2 (1%) had indeterminate results on the subsequent test.** [More](#)
- **A mathematical model estimates that 35% of SARS-CoV-2 transmission comes from presymptomatic individuals and 24% from individuals who are never symptomatic, suggesting that, on their own, strategies based on identifying and isolating symptomatic people will not control the pandemic.** [More](#)

### Transmission

- Transmission of SARS-CoV-2 increased rapidly at an Arkansas university within two weeks of the start of the 2020-2021 academic year, likely facilitated by on- and off-campus congregate living settings and activities. Just 5% of the 965 people with confirmed SARS-CoV-2 at the university attended classes in person, and less than 1% of the positive cases were among faculty or staff, suggesting that transmission likely occurred primarily outside the classroom. A network analysis identified 54 gatherings, 91% of which were associated with fraternities or sororities.

*Vang et al. (Jan 8, 2021). Participation in Fraternity and Sorority Activities and the Spread of COVID-19 Among Residential University Communities — Arkansas, August 21–September 5, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7001a5>*

- Rates of COVID-19 among nursing home residents and staff members increased during June and July 2020, reaching 11.5 cases per 1,000 resident-weeks in late July. After declines in August and September, rates increased again, reaching 23.2 cases per 1,000 resident-weeks in the week of November 22. Trends in reported COVID-19 cases among nursing home residents and staff members were similar to trends in the incidence of COVID-19 in surrounding communities. The authors suggest that increasing community rates of SARS-CoV-2 transmission might be associated with

transmission in nursing homes, and that staff at such facilities should monitor community transmission closely.

*Bagchi et al. (Jan 8, 2021). Rates of COVID-19 Among Residents and Staff Members in Nursing Homes — United States, May 25–November 22, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7002e2>*

## Geographic Spread

- US counties with large colleges or universities operating with remote instruction (n=22) experienced an 18% decrease in incidence of SARS-CoV-2, while university counties with in-person instruction (n=79) experienced a 56% increase in incidence, comparing the 21-day periods before and after classes started. Counties without large colleges or universities (n=3,009) experienced a 6% decrease in incidence during similar time frames in July and August of 2020. The authors point out that these trends might be especially important for colleges and universities in areas where transmission from students into the broader community could exacerbate existing disparities.

*Leidner et al. (Jan 8, 2021). Opening of Large Institutions of Higher Education and County-Level COVID-19 Incidence — United States, July 6–September 17, 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7001a4>*

## Testing and Treatment

- *[pre-print; not peer-reviewed]* A randomized trial of the IL-6 receptor antagonists tocilizumab and sarilumab showed better patient outcomes, including 90-day survival and time to discharge, in critically ill adult COVID-19 patients who were receiving respiratory or cardiovascular organ support in intensive care units. According to this preliminary report from the randomized trial, in-hospital mortality was 28% (98/350) for tocilizumab, 22% (10/45) for sarilumab, and 36% (142/397) among controls. The authors also found greater treatment effects for patients treated with either IL-6 receptor antagonist in combination with corticosteroids.

*Gordon et al. (Jan 7, 2021). Interleukin-6 Receptor Antagonists in Critically Ill Patients with Covid-19. Pre-print downloaded Jan 8 from <https://doi.org/10.1101/2021.01.07.21249390>*

- Following a policy change to shorten the duration of quarantine for people exposed to SARS-CoV-2 who remained asymptomatic and tested negative by PCR at day 7, an analysis did not identify any contacts who tested positive within the subsequent week. Among 940 contacts of people with COVID-19 who tested negative seven days after exposure, 154 (16%) had a subsequent test within days 8-14 after exposure; of these, 152 (99%) remained negative, and two (1%) had results that were indeterminate. The authors conclude that the analysis, conducted by the Vermont Department of Health, suggests that the state's policy of allowing asymptomatic contacts of known cases to end their quarantine after a negative PCR test on or after day seven after exposure was effective.

*Jones et al. (Jan 8, 2021). Assessment of Day-7 Postexposure Testing of Asymptomatic Contacts of COVID-19 Patients to Evaluate Early Release from Quarantine — Vermont, May–November 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7001a3>*

## Clinical Characteristics and Health Care Setting

- A dedicated COVID-19 specialty care unit at an acute care hospital in Florida reported four fungal infections with *Candida auris*, which is often resistant to several anti-fungal medications, in July 2020. An additional 35 patients were found to be colonized with *C. auris* during testing between August 4 and 18. During that time, investigators observed lapses in hand hygiene and opportunities for contamination of the base layer of PPE during removal of PPE and through direct contact with the patient care environment or potentially contaminated surfaces. The authors note that the COVID-19 pandemic has prompted some facilities to implement PPE conservation strategies and to use PPE in

non-routine ways, such as extended wear and reuse. They recommend that health care workers should continue to implement infection prevention practices intended to prevent transmission of other pathogens while caring for patients in a dedicated COVID-19 unit.

*Prestel and Anderson. (Jan 8, 2021). Candida Auris Outbreak in a COVID-19 Specialty Care Unit — Florida, July–August 2020. MMWR. <https://doi.org/10.15585/mmwr.mm7002e3>*

## Vaccines and Immunity

- *[pre-print, not peer-reviewed]* Sera from people vaccinated with the Pfizer-BioNTech mRNA vaccine (BNT162b2) (n=20) had equivalent neutralizing antibody titers to the SARS-CoV-2 strain on which the vaccine was based and a laboratory-developed SARS-CoV-2 strain carrying a N501Y substitution, which is one of the mutations associated with rapidly spreading variants in the United Kingdom and South Africa. The ratio of the 50% neutralization geometric mean titers of the sera against the Y501 virus to that against the N501 virus was 1.46, indicating no reduction in neutralization activity against the virus bearing the Y501 spike. The authors caution that the Y501 virus tested does not include all of the mutations in the spike protein that are found on the rapidly spreading strains in the UK and South Africa.

*Xie et al. (Jan 7, 2021). Neutralization of N501Y Mutant SARS-CoV-2 by BNT162b2 Vaccine-Elicited Sera. Pre-print downloaded Jan 8 from <https://www.biorxiv.org/content/10.1101/2021.01.07.425740v1>*

## Modeling and Prediction

- A mathematical model estimates that 59% of all transmission of SARS-CoV-2 comes from asymptomatic cases, suggesting that strategies based on identifying and isolating symptomatic people will not control the pandemic. The model estimates that 35% of SARS-CoV-2 transmission comes from presymptomatic individuals and 24% from individuals who never become symptomatic.

*Johansson et al. (Jan 7, 2021). SARS-CoV-2 Transmission From People Without COVID-19 Symptoms. JAMA Network Open. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2774707>*

- A model incorporating information from genome sequencing and other epidemiological data suggests that the SARS-CoV-2 mutant strain 501Y Variant 2, which became the dominant strain in England in November and December 2020, has an  $R_0$  1.75-times that of the 501N variant, meaning that it is 75% more transmissible. Because of limited genetic sequence data, the authors were not able to quantify the transmissibility of the South African 501Y variant.

*Leung et al. (Jan 7, 2021). Early Transmissibility Assessment of the N501Y Mutant Strains of SARS-CoV-2 in the United Kingdom, October to November 2020. Eurosurveillance. <https://doi.org/10.2807/1560-7917.ES.2020.26.1.2002106>*

## Public Health Policy and Practice

- Agle et al. found that believing misinformation about SARS-CoV-2 may not keep people from simultaneously believing in the scientifically accepted explanation for the novel virus's origins. Among a sample of 660 US-based users of Mechanical Turk (MTurk), 70% of people believed the scientific consensus about the virus originating in animals and rejected related conspiracy theories. However, around 8% of people surveyed thought that theories about lab development of the virus or the expansion of 5G networks, the idea that Bill Gates caused the pandemic in order to expand vaccination programs, and the claim that the risks of COVID-19 have been exaggerated to restrict liberties in the US are all equally as plausible as the scientific consensus. Trust in science in general was a strong predictor for accurate current COVID-19 beliefs.

Agley and Xiao. (Dec 7, 2021). *Misinformation about COVID-19: Evidence for Differential Latent Profiles and a Strong Association with Trust in Science*. *BMC Public Health*. <https://doi.org/10.1186/s12889-020-10103-x>

- Results from an analysis of 13,324 nasopharyngeal swabs collected at a single hospital in Arizona between January 1, 2017, and July 31, 2020, found a significant reduction in the detection of respiratory viruses other than SARS-CoV-2, coinciding with the implementation of distancing and masking policies during the COVID-19 pandemic. The average monthly positivity rate for the months between April and July declined from 25% for 2017–2019 to 2% in the same period of 2020. However, it is not clear what proportions of the observed declines in testing and positivity were due to non-pharmaceutical interventions, since the COVID-19 pandemic may also be causing reluctance to seek medical care.

Freeman et al. (Jan 1, 2021). *Effectiveness of Physical Distancing: Staying 6 Feet Over to Put Respiratory Viruses 6 Feet Under*. *Mayo Clinic Proceedings*. <https://doi.org/10.1016/j.mayocp.2020.10.040>

### Other Resources and Commentaries

- [Stable Interaction Of The UK B.1.1.7 Lineage SARS-CoV-2 S1 Spike N501Y Mutant With ACE2 Revealed By Molecular Dynamics Simulation](#) – BioRxiv (Jan 7)
- [Integrated Vaccination and Non-Pharmaceutical Interventions Based Strategies in Ontario Canada as a Case Study a Mathematical Modeling Study](#) – MedRxiv (Jan 8)
- [Psychological Impacts from COVID-19 among University Students: Risk Factors across Seven States in the United States](#) – PLOS ONE (Jan 7)
- [COVID-19-Neutralizing Antibodies Predict Disease Severity and Survival](#) – Cell (Dec 15)
- [Early COVID-19 Successes in Skilled Nursing Facilities in San Francisco](#) – Journal of the American Geriatrics Society (Dec 8)
- [Setting the Agenda for Reproductive and Maternal Health in the Era of COVID-19: Lessons from a Cruel and Radical Teacher](#) – Maternal and Child Health Journal (Jan 7)
- [Can a COVID-19 Vaccine Live up to Americans' Expectations? A Conjoint Analysis of How Vaccine Characteristics Influence Vaccination Intentions](#) – Social Science & Medicine (Jan 4)
- [Mobility-Guided Estimation of Covid-19 Transmission Rates](#) – American Journal Of Epidemiology (Jan 8)
- [Persistent Poor Health Post-COVID-19 Is Not Associated with Respiratory Complications or Initial Disease Severity](#) – Annals of the American Thoracic Society (Jan 8)
- [A Multi-Mechanism Approach Reduces Length of Stay in the ICU for Severe COVID-19 Patients](#) – PLOS ONE (Jan 7)
- [Diagnostic Value of Patient-Reported and Clinically Tested Olfactory Dysfunction in a Population Screened for COVID-19](#) – JAMA Otolaryngology-- Head & Neck Surgery (Jan 7)
- [Economic and Behavioral Influencers of Vaccination and Antimicrobial Use](#) – Frontiers in Public Health (Dec 21)
- [The Value of Decreasing the Duration of the Infectious Period of Severe Acute Respiratory Syndrome Coronavirus 2 \(SARS-CoV-2\) Infection](#) – PLOS Computational Biology (Jan 7)

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