



2019-nCoV Literature

Situation Report (Lit

Rep)

December 23, 2020

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 investigation of the transmission of the mutated 501Y strain of SARS-CoV-2 circulating in the United Kingdom (UK) suggests that it may be 75% more transmissible than the previous lineage, but there does not appear to be significant spread outside of the UK despite sporadic cases in Wales, Australia, Spain, and the US. [More](#)**
- **A randomized clinical trial found no evidence of efficacy for the neutralizing monoclonal antibody LY-CoV555 to treat patients hospitalized with COVID-19. [More](#)**
- **The Advisory Committee on Immunization Practices (ACIP) updated vaccine allocation recommendations to recommend that the COVID-19 vaccine be offered to people over the age of 75 and to non-health care frontline workers in Phase 1B, following the vaccination of health care personnel and long-term care facility residents in Phase 1A. [More](#)**
- **The mortality rate among COVID-19 patients in the US declined over the first few months of the pandemic, with better outcomes in hospitals when the prevalence of COVID-19 in their surrounding communities was lower. [More](#)**

### Geographic Spread

- *[pre-print; not peer-reviewed]* Leung et al. estimate that the SARS-CoV-2 lineage that has rapidly become the most dominant in the United Kingdom is 75% more transmissible than the previous lineage, potentially due to a mutation in the receptor binding domain of the spike protein. Their estimates suggest that the  $R_0$  for the mutated 501Y strain is about 1.75-times that of the unmutated 501N strain. They note that this variant does not appear to have spread significantly outside of the UK at this point, although sporadic spread of the mutation has occurred in Wales, Australia, Spain, and the United States without the variant becoming as dominant in those places. They also report that a new 501Y variant has emerged and spread rapidly in South Africa, but it appears to be genetically distinct from the UK variant, suggesting the importance of further epidemiological and genetic studies of each mutation.

*Leung et al. (Dec 22, 2020). Early Empirical Assessment of the N501Y Mutant Strains of SARS-CoV-2 in the United Kingdom October to November 2020. Pre-print downloaded Dec 23 from <https://doi.org/10.1101/2020.12.20.20248581>*

### Testing and Treatment

- A randomized clinical trial among patients hospitalized with COVID-19 that aimed to assess the effect of LY-CoV555, a neutralizing monoclonal antibody, was halted due to futility after 314 patients had



undergone infusion with either the antibody or a placebo. Patients who received the antibody infusion did not have better clinical outcomes at day five than those who received the placebo. The authors note that studies of other neutralizing monoclonal antibody treatments will continue to move forward and that their clinical benefit may differ from that of LY-CoV555.

*ACTIV-3/TICO LY-CoV555 Study Group. (Dec 22, 2020). A Neutralizing Monoclonal Antibody for Hospitalized Patients with Covid-19. New England Journal of Medicine. <https://doi.org/10.1056/NEJMoa2033130>*

- Testing for multiple biomarkers, as opposed to testing for a single antibody, increased the sensitivity of correctly identifying past SARS-CoV-2 infection. A multiplex serological assay was used to measure IgG and IgM antibody responses to seven SARS-CoV-2-specific antigens, two seasonal coronavirus antigens, and three non-coronavirus antigens. Antibodies were measured in serum samples collected up to 39 days after symptom onset from 215 adults with RT-PCR-confirmed COVID-19. The results suggest that IgG antibody levels to a single antigen can classify samples from individuals previously infected with SARS-CoV-2 with 92% sensitivity and 99% specificity. Measuring additional biomarkers with a multiplex assay can improve classification performance to 99% sensitivity and 99% specificity.

*Rosado et al. (Dec 23, 2020). Multiplex Assays for the Identification of Serological Signatures of SARS-CoV-2 Infection: An Antibody-Based Diagnostic and Machine Learning Study. The Lancet Microbe. [https://doi.org/10.1016/S2666-5247\(20\)30197-X](https://doi.org/10.1016/S2666-5247(20)30197-X)*

## Vaccines and Immunity

- The Advisory Committee on Immunization Practices (ACIP) now recommends that the COVID-19 vaccine be offered to people over the age of 75 and non-health care frontline workers in Phase 1B of the vaccine rollout. This is an update to recent vaccine allocation recommendations that suggested vaccinating health care personnel and long-term care facility residents against COVID-19 (Phase 1A). Phase 1B will cover approximately 49 million people. In Phase 1C, the committee suggests vaccinating people between 65 and 74, people between 16 and 64 with high-risk medical conditions, and essential workers not included in Phase 1B. In total, Phase 1C will cover approximately 129 million people. Phase 2 will include all people above the age of 16 not covered in previous phases, although ACIP will continue to monitor clinical trials in younger people in order to make recommendations for children under 16.

*Dooling et al. (Dec 22, 2020). The Advisory Committee on Immunization Practices' Updated Interim Recommendation for Allocation of COVID-19 Vaccine — United States, December 2020. MMWR. <https://doi.org/10.15585/mmwr.mm695152e2>*

- Choe et al. used four commercial immunoassays to measure SARS-CoV-2 antibodies from seven participants with asymptomatic SARS-CoV-2 infection and 51 patients with mildly symptomatic infections eight months after they tested positive by rt-PCR. For three of the four immunoassays used, seropositivity rates were high (69% to 91%). Antibody positivity differed significantly between the immunoassay methods, suggesting a possible explanation for previous studies' findings of waning humoral immunity in survivors of asymptomatic or mild COVID-19.
- Prolonged virus shedding was found to be associated with long-term antibody positivity, and factors associated with prolonged virus shedding include male sex, old age, severe illness at admission, and experiencing invasive mechanical ventilation. The authors suggest that the duration of virus shedding reflects the amount of humoral immune stimulation, even among people with asymptomatic or mildly symptomatic cases.

*Choe et al. (Mar 2021). Antibody Responses 8 Months after Asymptomatic or Mild SARS-CoV-2 Infection. Emerging Infectious Diseases. <https://doi.org/10.3201/eid2703.204543>*

- Using dual or triple primary endpoints that include SARS-CoV-2 infection, symptomatic infection and severe COVID-19 could speed up characterization and licensure of vaccines for SARS-CoV-2, according to models of placebo controlled-vaccine trials. The authors suggest that dual or triple primary endpoints could speed up the discovery, characterization, and licensure of effective vaccines by creating data that would allow for more rapid interim evaluations and more precise confidence intervals.

*Lin et al. (Dec 19, 2020). Evaluating the Efficacy of COVID-19 Vaccines. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciaa1863>*

- A prospective cohort study of 127 pregnant women found inefficient transplacental transfer of maternal SARS-CoV-2 specific antibodies and no evidence for prolonged viremia in either maternal or fetal circulation. No detectable viremia in maternal or cord blood was identified in 64 participants diagnosed with COVID-19 and no SARS-CoV-2 RNA was detected in 88 tested placentas. Among 77 mother-infant dyads in whom antibodies were quantified in cord blood and maternal circulation, the ratio of maternal to fetal SARS-CoV-2-specific IgG was lower than the maternal to fetal ratio of influenza A (hemagglutinin)-specific IgG, which the authors suggest reflects inefficient transfer.

*Edlow et al. (Dec 22, 2020). Assessment of Maternal and Neonatal SARS-CoV-2 Viral Load, Transplacental Antibody Transfer, and Placental Pathology in Pregnancies During the COVID-19 Pandemic. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.30455>*

### Clinical Characteristics and Health Care Setting

- COVID-19 mortality rates in the US declined among hospitalized patients over the first few months of the pandemic with better outcomes associated with low community prevalence of COVID-19, according to a retrospective cohort analysis. The authors constructed a cohort of 38,517 adults from a deidentified administrative database in patients admitted with COVID-19 from January 1 and June 30, 2020. They then calculated a risk-standardized event rate (RSER) for each hospital from a combination of 30-day in-hospital mortality and referral to hospice, adjusting for patient-level characteristics. They found that RSERs declined for almost all 955 hospitals in the dataset, but that large differences in RSERs between hospitals persisted and increased community burden was associated with increased RSER. The authors warn that hospital mortality outcomes may worsen as community burden of COVID-19 increases over the winter.

*Asch et al. (Dec 22, 2020). Variation in US Hospital Mortality Rates for Patients Admitted With COVID-19 During the First 6 Months of the Pandemic. JAMA Internal Medicine. <https://doi.org/10.1001/jamainternmed.2020.8193>*

- A meta-analysis of laboratory confirmed COVID-19 in children under 5 years of age determined that children were frequently prescribed antibiotics and that the majority of the reported cases were children less than one year old. Bhuiyan et al. identified 65 studies of epidemiological and clinical characteristics of lab-confirmed COVID-19 infections in 1,214 children under age 5 published until June 4, 2020. Their meta-analysis estimates suggest that 50% of young COVID-19 cases were under one year old, 53% were male, 43% were asymptomatic, and 7% had severe disease that required intensive-care-unit admission. Although all the children in the study had a confirmed diagnosis of COVID-19, 71% were treated with antibiotics.

*Bhuiyan et al. (Dec 2020). Epidemiology of COVID-19 Infection in Young Children under Five Years: A Systematic Review and Meta-Analysis. Vaccine. <https://doi.org/10.1016/j.vaccine.2020.11.078>*

- *[pre-print; not peer-reviewed]* Among people recently admitted to the hospital with COVID-19 in the United Kingdom, there was a 19% reduction in the odds of mortality compared to the first wave of the epidemic. After adjusting for demographics, comorbidities, and illness severity, the authors compared the mortality observed during a four-week interval in March to a similar interval in August. They estimate that 22% of the observed reduction in mortality was mediated by changes in clinical practice, with an increasing proportion of non-invasive ventilation and increasing use of steroids. The fall in mortality was also partly accounted for by changes in case mix and illness severity and mortality remained consistently high among people who required invasive mechanical ventilation.

*Docherty et al. (Dec 22, 2020). Changes in UK Hospital Mortality in the First Wave of COVID-19 the ISARIC WHO Clinical Characterisation Protocol Prospective Multicentre Observational Cohort Study. Pre-print downloaded Dec 23 from <https://doi.org/10.1101/2020.12.19.20248559>*

## Modeling and Prediction

- In a modeling study that simulated adults living in shelters, daily symptom screening with PCR testing of individuals who had positive symptom screening and use of alternative care sites for COVID-19 management were associated with substantially reduced new cases and costs compared with other strategies. When community transmission surges, adding universal testing every two weeks was associated with a further reduction in cases without a high cost. The model excluded people who are experiencing homelessness as part of a family because of the additional complexities of modeling the dynamics within family shelters, as well as people experiencing unsheltered homelessness.

*Baggett et al. (Dec 22, 2020). Clinical Outcomes, Costs, and Cost-Effectiveness of Strategies for Adults Experiencing Sheltered Homelessness During the COVID-19 Pandemic. JAMA Network Open. <https://doi.org/10.1001/jamanetworkopen.2020.28195>*

## Public Health Policy and Practice

- In a randomized trial, participants who identified as Black and Latinx who were assigned to watch public health video messages recorded by a physician of the same race/ethnicity were less likely have knowledge gaps regarding COVID-19 when compared to those who were received messages delivered by race-discordant physicians. Participants were presented videos regarding the symptoms, preventive behaviors, and transmission of COVID-19 by either race-concordant (intervention) or discordant physicians (control) and information in the videos was further tailored based upon self-reported ethnicity. Participants who were presented information by culturally concordant physicians had greater knowledge about COVID (80.3% in the intervention group had no knowledge gap versus 73% in the control group). The study found no further effect of specifically tailoring the messages for either Black or Latinx participants and there were no statistically significant differences by sex within race or ethnicity.

*Alsan et al. (Dec 21, 2020). Comparison of Knowledge and Information-Seeking Behavior After General COVID-19 Public Health Messages and Messages Tailored for Black and Latinx Communities. Annals of Internal Medicine. <https://doi.org/10.7326/M20-6141>*

- During the COVID-19 pandemic, the caregivers of elders report experiencing adverse experiences previously established as risk factors for elder abuse. Persons responsible for the care of community-dwelling adults over the age of 60 report increasing financial hardship, greater worry about finances, heavier use of alcohol, increasing feelings of social isolation and loneliness, and greater physical, emotional, and financial costs of caregiving. The 433 caregivers who responded to the survey were more likely to be experiencing financial hardship than the 2,933 respondents who were not acting as caregivers. The limited racial and ethnic diversity of the study population means that results may underestimate the effect of the pandemic on racial and ethnic minority populations.

Makaroun et al. (Dec 21, 2020). Changes in Elder Abuse Risk Factors Reported by Caregivers of Older Adults During the COVID-19 Pandemic. *Journal of the American Geriatrics Society*. <https://doi.org/10.1111/jgs.17009>

## Other Resources and Commentaries

- [Covid-19: What have we learnt about the new variant in the UK?](#) – BMJ (Dec 23)
- [SARS-CoV-2 Variant – United Kingdom of Great Britain and Northern Ireland](#) – WHO (Dec 21)
- [Threat Perceptions and the Intention to Acquire Firearms](#) – Journal of Psychiatric Research (Dec 22)
- [A Crisp\(r\) New Perspective on SARS-CoV-2 Biology](#) – Cell (Dec 22)
- [The Lightning-Fast Quest for COVID Vaccines — and What It Means for Other Diseases](#) – Nature (Jan 7)
- [Decreased COVID-19 Mortality—A Cause for Optimism](#) – JAMA Internal Medicine (Dec 22)
- [Messages to Increase COVID-19 Knowledge in Communities of Color: What Matters Most?](#) – Annals of Internal Medicine (Dec 21)
- [Viral Targets for Vaccines against COVID-19](#) – Nature Reviews Immunology (Dec 18)
- [What’s Your Risk of Catching COVID? These Tools Help You to Find Out](#) – Nature (Jan 1)
- [Safety and Immunogenicity Clinical Trial of an Inactivated SARS-CoV-2 Vaccine BBV152 \(a Phase 2 Double-Blind Randomised Controlled Trial\) and the Persistence of Immune Responses from a Phase 1 Follow-up Report](#) – MedRxiv (Dec 22)
- [Key Criteria for the Ethical Acceptability of COVID-19 Human Challenge Studies: Report of a WHO Working Group](#) – Vaccine (Oct 17)
- [Uptake and Accuracy of the Diagnosis Code for COVID-19 Among US Hospitalizations](#) – JAMA (Dec 22)
- [Hospital Readmission Is Common Among COVID-19 Survivors](#) – JAMA (Dec 22)
- [College Campuses and COVID-19 Mitigation: Clinical and Economic Value](#) – Annals of Internal Medicine (Dec 21)
- [Susceptibility of Domestic Swine to Experimental Infection with Severe Acute Respiratory Syndrome Coronavirus 2](#) – Emerging Infectious Diseases (Jan 1)
- [A Systematic Review Assessing the Under-Representation of Elderly Adults in COVID-19 Trials](#) – BMC Geriatrics (Dec 22)
- [Calling for Pan-European Commitment for Rapid and Sustained Reduction in SARS-CoV-2 Infections](#) – The Lancet (Dec 22)
- [SARS-CoV-2 Candidate Vaccines - Composition, Mechanisms of Action and Stages of Clinical Development](#) – Allergy (Dec 22)
- [Structural Racism in the COVID-19 Pandemic: Moving Forward](#) – The American Journal of Bioethics (Dec 19)



- [Safety and Immunogenicity of a Recombinant Tandem-Repeat Dimeric RBD Protein Vaccine against COVID-19 in Adults Pooled Analysis of Two Randomized Double-Blind Placebo-Controlled Phase 1 and 2 Trials](#) – MedRxiv (Dec 22)

*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*

