



2019-nCoV Literature Situation Report (Lit Rep) February 10, 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

- **Sera from individuals who had received the Pfizer/BioNTech vaccine showed equivalent neutralization against SARS-CoV-2 viruses engineered to include key mutations from variant strains emerging from the UK (69/70-deletion + N501Y + D614G) and South Africa (E484K + N501Y + D614G). The authors suggest this indicates a minimal impact of these mutations on neutralization by sera from vaccinated individuals, but the impact on vaccine efficacy is unknown. [More](#)**
- **Wearing a cloth mask over a medical procedure mask (double masking), or knotting the ear loops of a medical procedure mask, then tucking in and flattening the extra material near the face were found by the CDC in experiments to reduce exposure from simulated cough particles. [More](#)**
- **A systematic review and meta-analysis of SARS-CoV-2 transmission indicated that the highest transmission rates were within households, with a pooled secondary attack rate of 21%. The secondary attack rate increased when the duration of household exposure was longer than 5 days. [More](#)**

Non-Pharmaceutical Interventions

- The CDC found that fitting a cloth mask over a medical procedure mask (double masking), and knotting the ear loops of a medical procedure mask, then tucking in and flattening the extra material near the face substantially improves the efficacy of masks. In simulated coughing experiments, the unknotted medical procedure mask blocked 42% of the particles from a cough, the cloth mask blocked 44%, and double masking blocked 93% of the particles. The cloth mask plus medical mask or the knotted and tucked mask reduced the cumulative exposure of the unmasked receiver by 82% and 63%, respectively. When the source was unmasked and the receiver wore a double mask or the knotted and tucked mask, the receiver's cumulative exposure was reduced by 83% and 65%, respectively. When both source and receiver wore double masks or knotted and tucked masks, the cumulative exposure of the receiver was reduced by 96%.

Brooks et al. (Feb 10, 2021). Maximizing Fit for Cloth and Medical Procedure Masks to Improve Performance and Reduce SARS-CoV-2 Transmission and Exposure, 2021. MMWR.

<https://doi.org/10.15585/mmwr.mm7007e1>

Transmission

- A systematic review and meta-analysis indicated that the highest SARS-CoV-2 transmission rates were within households, with a pooled secondary attack rate (SAR) of 21%. SARs were significantly



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Updated 2/10/2021

higher when the duration of household exposure was longer than 5 days. SARs for contacts with family and friends were higher than those for low-risk casual contacts (6% vs. 1%). Estimates of SAR for asymptomatic index cases were about seven times lower than those for symptomatic index cases. There was some evidence for reduced transmission potential both from and to individuals under 20 years of age in the household context, but there were limited data to examine transmission in other settings like schools and workplaces.

Thompson et al. (Feb 9, 2021). SARS-CoV-2 Setting-Specific Transmission Rates: A Systematic Review and Meta-Analysis. Clinical Infectious Diseases. <https://doi.org/10.1093/cid/ciab100>

Testing and Treatment

- A cohort study of SARS-CoV-2 testing intensity (defined as number of weekly tests per 100,000 people) and epidemic intensity (defined as weekly test positivity) in Massachusetts from May 27 to October 14, 2020 showed that testing resources were disproportionately allocated to more affluent communities. In a multivariable model, the relative testing gap increased by 9% per week (aRR=1.09). Increasing levels of socioeconomic vulnerability were associated with increased testing gaps (aRR=1.35 per quartile). The presence of a large university student population was associated with decreased testing gaps (aRR=0.21).

Dryden-Peterson et al. (Feb 9, 2021). Disparities in SARS-CoV-2 Testing in Massachusetts During the COVID-19 Pandemic. JAMA Network Open.

<https://doi.org/10.1001/jamanetworkopen.2020.37067>

- Updates from a living systematic review and meta-analysis of remdesivir for adults with COVID-19 indicated that remdesivir likely results in little to no mortality difference (RR=0.93, n=4 randomized trials), but potentially improves the percentage recovered and may result in a small reduction in the proportion receiving ventilation (RR=0.71, n=3 randomized trials). Compared to a 10-day course for those not requiring ventilation at baseline (n=2 trials), the review found that a 5-day course may reduce mortality, the need for ventilation, and serious adverse events.

Kaka et al. (Feb 9, 2021). Major Update: Remdesivir for Adults With COVID-19. Annals of Internal Medicine. <https://doi.org/10.7326/M20-8148>

- Mice implanted with human lung tissue may serve as an effective animal model to investigate SARS-CoV-2 infection and to test potential treatments and preventive agents. A study of human lung-only mice (LoM) showed that this platform can be used to study SARS-CoV-2 infection *in vivo* in ways that allows direct comparison of outcomes between mice and humans, and that bat coronaviruses could replicate *in vivo* without virus adaptation. The study also explored the effects of EIDD-2801 (molnupiravir), an antiviral medication currently in phase II–III clinical trials, which was found to inhibit SARS-CoV-2 replication in human lung tissue, and prevented infection when administered as pre-exposure prophylaxis. EIDD-2801 reduced the number of infectious particles in lung tissue by 4.4 logs (>25,000 fold decrease) when treatment in the mice was initiated 24 hours post-exposure. Viral titers declined by 96% (1.5 logs) when treatment was started 48 hours post-exposure.

Wahl et al. (Feb 9, 2021). SARS-CoV-2 Infection Is Effectively Treated and Prevented by EIDD-2801. Nature. <https://doi.org/10.1038/s41586-021-03312-w>

Vaccines and Immunity

- Human sera from 20 participants who received both doses of the Pfizer/BioNTech vaccine showed equivalent neutralization titers (with differences of four-fold or less) between wild type and variants strains of SARS-CoV-2 viruses that were engineered to contain spike proteins from recently emerged

variants. The combinations of mutations included N501Y (present in variants emerging from the UK and South Africa), 69/70-deletion + N501Y + D614G (first described in the UK), and E484K + N501Y + D614G (first described in South Africa). Neutralization geometric mean titers (GMTs) against the three variant strains were 0.8- to 1.5-fold that of the GMTs against parental virus, suggesting small impacts of these mutations on neutralization by sera from vaccinated individuals. The authors note a limitation that the engineered viruses do not contain the full set of mutations present in the variants. [EDITORIAL NOTE: This manuscript was summarized previously as a pre-print on January 28.]

Xie et al. (Feb 8, 2021). Neutralization of SARS-CoV-2 Spike 69/70 Deletion, E484K and N501Y Variants by BNT162b2 Vaccine-Elicited Sera. *Nature Medicine*. <https://doi.org/10.1038/s41591-021-01270-4>

- Findings from a cross-sectional survey conducted in October 2020 among firefighters and EMTs (n=3,169) showed that 48% of respondents expressed high acceptability of a future COVID-19 vaccine, while 24% reported that they were unsure and 28% reported low acceptability. Groups with greater odds of reporting low acceptability (relative to the high acceptability group) included individuals aged 30–39 (OR=3.6), those who identified as Black (OR=3.60) or Hispanic/Latinx (OR=2.4), those who had some college education (OR=2.1, relative to high school diploma), were married (OR=1.7), or of current rank firefighter/EMS (OR=2.2, relative to rank of chief).

Caban-Martinez et al. (Jan 28, 2021). COVID-19 Vaccine Acceptability among U.S. Firefighters and Emergency Medical Services Workers. *Journal of Occupational & Environmental Medicine*. <https://doi.org/10.1097/JOM.0000000000002152>

- Among children’s hospital clinical and non-clinical staff (n=4,448) who responded to an electronic survey on the first day of the hospital’s administration of the Pfizer/BioNTech COVID-19 vaccine, the majority of respondents (60%) reported they would definitely receive the vaccine, and 9% had already received the vaccine. Vaccine hesitancy was reported among 19% of respondents, and was more prevalent among those who identified as female, Black, and/or Hispanic/Latinx, non-clinical staff, and those with high-risk medical conditions or lower concern for severe COVID-19.

Kocielek et al. (Feb 9, 2021). Coronavirus Disease 2019 Vaccine Hesitancy among Children’s Hospital Staff: A Single-Center Survey. *Infection Control & Hospital Epidemiology*. <https://doi.org/10.1017/ice.2021.58>

- Findings from focus groups conducted in July and August, 2020 among Black barbershop and salon owners (n=24) living in areas of higher COVID-19 prevalence showed that COVID-19 vaccine hesitancy was high due to mistrust in the medical establishment, concerns regarding the speed of vaccine development, a perception of lack of data on side effects, fear of the vaccine causing infection, and a political environment of racial injustice. A recommendation to take the vaccine from a trusted health care provider was identified as a facilitator of willingness to be vaccinated.

Momplaisir et al. (Feb 9, 2021). Understanding Drivers of COVID-19 Vaccine Hesitancy Among Blacks. *Clinical Infectious Diseases*. <https://doi.org/10.1093/cid/ciab102>

- [Pre-print, not peer-reviewed] An analysis of data from the Israeli Ministry of Health showed that by February 6, 2021, 45% of the Israeli population had received a first dose of the Pfizer/BioNTech vaccine or had recovered from COVID-19 and 30% had received both doses or recovered from COVID-19. The proportions among those age 60 or over were 90% and 80%, respectively. In mid-January, the number of COVID-19 cases and hospitalization began declining, with larger decreases

observed among older individuals, a trend that was more evident in early-vaccinated compared to late-vaccinated cities and was not observed in the previous lockdown.

Rossman et al. (Feb 9, 2021). *Patterns of COVID-19 Pandemic Dynamics Following Deployment of a Broad National Immunization Program*. Pre-print downloaded Feb 10 from <https://doi.org/10.1101/2021.02.08.21251325>

Clinical Characteristics and Health Care Setting

- A systematic review of cerebrospinal fluid (CSF) testing for potential viral neuroinvasion in patients with COVID-19 showed that among 303 patients who had CSF SARS-CoV-2 PCR testing, 16 (5%) were positive, and 75% of these positive patients were hospitalized due to neurological symptoms. The authors concluded that detection of SARS-CoV-2 in CSF via PCR is rare, and neurological complications associated with SARS-CoV-2 are likely not related to direct neuroinvasion.

Lewis et al. (Jan 10, 2021). *Cerebrospinal Fluid in COVID-19: A Systematic Review of the Literature*. *Journal of the Neurological Sciences*. <https://doi.org/10.1016/j.jns.2021.117316>

- An observational cohort study among pregnant patients (n=1,219 patients, 47% asymptomatic, 27% mild illness, 14% moderate, 8% severe, and 4% critical) who tested positive for SARS-CoV-2 found that pregnant patients with severe-critical COVID-19 were at higher risk of perinatal complications compared to those with mild or asymptomatic infection, including 6% incidence of venous thromboembolism among those with severe-critical illness compared with 0.2% in mild-moderate and 0% in asymptomatic. In adjusted analyses, severe-critical COVID-19 was associated with increased risk of cesarean birth (aRR=1.6), hypertensive disorders of pregnancy (aRR=1.6), and preterm delivery (aRR=3.5) compared to women with asymptomatic SARS-CoV-2 infection.

Metz et al. (Feb 8, 2021). *Disease Severity and Perinatal Outcomes of Pregnant Patients With Coronavirus Disease 2019 (COVID-19)*. *Obstetrics and Gynecology*. <https://pubmed.ncbi.nlm.nih.gov/33560778>

Mental Health and Personal Impact

- A prospective study exploring whether emotion regulation strategies predicted later post-traumatic stress symptoms (PTSS) related to the COVID-19 pandemic among American Indians (n=210) found that those who exhibited greater emotion regulation were less likely to develop PTSS, while those with higher expressive suppression scores were more likely to develop PTSS. These associations were independent of age, sex, income, reservation status, alcohol use, anxiety, and depression.

Tyra et al. (Feb 9, 2021). *Emotion Regulation Strategies Predict PTSS During the COVID-19 Pandemic in an American Indian Population*. *International Journal of Behavioral Medicine*. <https://doi.org/10.1007/s12529-021-09964-2>

Public Health Policy and Practice

- Opioid treatment programs in Oregon saw a reduction in medication dosing visits and an increase in take-home doses dispensed following a relaxation of restrictions on take-home medication dosing that were intended to slow the spread of SARS-CoV-2. During the pre-SARS-CoV-2 period (February and early March 2020), patients made a mean of 16 visits per month to opioid treatment programs, with 6 take-home doses per patient per month. Following the policy change, medication visits declined 33% and take-home medication increased 97% with a mean of 10 visits per patient and a mean of 11 take-homes per patient.

McIlveen et al. (Feb 5, 2021). Reduction in Oregon's Medication Dosing Visits After the SARS-CoV-2 Relaxation of Restrictions on Take-Home Medication. *Journal of Addiction Medicine*.
<https://pubmed.ncbi.nlm.nih.gov/33560697>

Other Resources and Commentaries

- [Business Continuity in the COVID-19 Emergency: A Framework of Actions Undertaken by World-Leading Companies](#) – Business Horizons (Feb 4)
- [COVID-19 May Affect Male Fertility but Is Not Sexually Transmitted: A Systematic Review](#) – F&S Reviews (Jan 25)
- [COVID-19 VACCINE-ASSOCIATED ANAPHYLAXIS: A STATEMENT OF THE WORLD ALLERGY ORGANIZATION ANAPHYLAXIS COMMITTEE](#) – World Allergy Organization Journal (Jan 26)
- [Covid-19: South Africa Pauses Use of Oxford Vaccine after Study Casts Doubt on Efficacy against Variant](#) – BMJ (Feb 8)
- [Did People's Behavior after Receiving Negative COVID-19 Tests Contribute to the Spread?](#) – Journal of Public Health (Feb 8)
- [CRISPR-Based COVID-19 Smartphone Test in Development](#) – JAMA (Feb 9)
- [Should Remdesivir Be Used for the Treatment of Patients With COVID-19? Rapid, Living Practice Points From the American College of Physicians \(Version 2\)](#) – Annals of Internal Medicine (Feb 9)
- [Predicting COVID-19 Outcomes in Emergency Department Patients](#) – JAMA (Feb 9)
- [Perceived Discrimination and Mental Health among the Chinese Diaspora during COVID-19](#) – Asian Journal of Psychiatry (Mar 2)
- [General Determination of Causation between Covid-19 Vaccines and Possible Adverse Events](#) – Vaccine (Jan 29)
- [Examination of Patient Characteristics and Hydroxychloroquine Use Based on the US Food and Drug Administration's Recommendation: A Cross-Sectional Analysis in New York](#) – BMJ Open (Feb 8)
- [The Relations between Age, Face Mask Perceptions and Face Mask Wearing](#) – Journal Of Public Health (Feb 10)
- [Sharpening Our Public Health Lens: Advancing Im/Migrant Health Equity during COVID-19 and Beyond](#) – International Journal for Equity in Health (Dec 8)
- [Accelerated Overdose Deaths Linked With COVID-19](#) – JAMA (Feb 9)

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