2019-nCoV Literature Situation Report (Lit Rep)

February 2, 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

- **Interim analysis of the phase 3 trial of the recombinant adenovirus (rAd)-based vaccine Gam-COVID-Vac (Sputnik V) (n=19,866) showed an efficacy of 91.6% (CI: 85.6%-95.2%) in preventing COVID-19 by 21 days after the first dose (the day of dose 2). The observed vaccine efficacy was >87% in all age and sex subgroups.** More
- **75% of the >641,000 COVID-19 monoclonal antibody therapies allocated by the Department of Health and Human Services to states and local territories were not administered as of January 6, 2021. A National Academies consultation suggests barriers could include limited evidence on clinical benefits and describes several allocation models addressing access and equity.** More

Non-Pharmaceutical Interventions

- Videos promoting mask use posted on the social media platform *TikTok* with the hashtag #WearAMask (n=100) received almost 10 times as many cumulative views as videos by the World Health Organization (WHO) to promote mask use (n=32). Most of the #WearAMask videos used humor and dance to garner almost 500 million views. In contrast, the WHO videos, of which 3 included humor and none included dance, only garnered over 57 million views.

  Basch et al. (Feb 2, 2021). Promoting Mask Use on TikTok: A Descriptive Study on Unconventional Approach to Public Health Education. JMIR Public Health and Surveillance. https://doi.org/10.2196/26392

Transmission

- COVID-19 cases were rare (0.13%) in a private school that reopened for in-person learning from October to December 2020, despite the school being in a red zone (the highest level of COVID-19 restrictions) in Brooklyn, New York. The school employed mandatory in-school SARS-CoV-2 testing using rt-PCR-confirmed nasopharyngeal swabs with a 48-72 hour turnaround time. A negative test was required for a student return to in-person learning.

  Smith-Norowitz et al. (Feb 1, 2021). Coronavirus Disease 2019 (COVID-19) Infection Rates in a Private School in Brooklyn, New York. Acta Paediatrica. https://pubmed.ncbi.nlm.nih.gov/33523495/

- *[Pre-print, not peer reviewed]* A probabilistic model based upon SARS-CoV-2 antibody and PCR test data from more than 9000 Utah households estimated a 35% household secondary attack rate. In contrast, the crude estimate for household attack rate unadjusted for serological test specificity was

15%. Given the high attack rate, the authors predict that the mean non-household transmissions per case must be <0.4 to avoid continued growth of the Utah epidemic. High variability in household transmission was also observed, which the authors suggest is consistent with transmission being driven by a few superspreading individuals.

Toth et al. (Feb 1, 2021). High Variability in Transmission of SARS-CoV-2 within Households and Implications for Control. Pre-print downloaded Feb 2 from https://doi.org/10.1101/2021.01.29.20248797

Testing and Treatment

- Around 75% of the 641,000 COVID-19 monoclonal antibody (mAb) therapies allocated by the Department of Health and Human Services to states and local territories were not administered in the period before January 6, 2021. As a response, a rapid consultation by the National Academies of Sciences, Engineering, and Medicine identified potential barriers, including the limited evidence on the clinical benefits, the time-sensitive requirements of mAb delivery, cost, and the lack of transfusion infrastructure to administer the mAb therapies. The consultation describes allocation models that address barriers to access and equitable distribution, and offers examples currently practiced in health systems in Pennsylvania and Massachusetts.

  Fineberg et al. (Jan 29, 2021). Rapid Expert Consultation on Allocating COVID-19 Monoclonal Antibody Therapies and Other Novel Therapeutics (January 29, 2021). National Academies of Sciences, Engineering, and Medicine. https://doi.org/10.17226/26063

Vaccines and Immunity

- Interim analysis of the randomized, double-blind, placebo-controlled phase 3 trial for the recombinant adenovirus (rAd)-based vaccine Gam-COVID-Vac (Sputnik V) (n=19,866) showed an efficacy of 91.6% (CI: 85.6%-95.2%) by 21 days after the first dose of vaccine (the day of dose 2). 16 of 14,964 (0.1%) people in the vaccine group developed COVID-19 compared to 62 of 4,902 (1.3%) people in the placebo group. Participants were required to be IgG/IgM negative at baseline for enrollment. Rates of disease onset were similar for the vaccine and placebo groups until about 16 to 18 days after the first dose.
- The observed vaccine efficacy was > 87% in all age and sex subgroups (60% male), and 91.8% in participants aged >60 years (11% of participants). 98.5% of participants were white, and the entire study was conducted in 25 hospitals and polyclinics in Moscow, Russia. 94% of reported adverse events were grade 1, with 0.3% and 0.4% of vaccine and placebo group experiencing serious adverse events, respectively.

  Logunov et al. (Feb 2, 2021). Articles Safety and Efficacy of an RAd26 and RAd5 Vector-Based Heterologous Prime-Boost COVID-19 Vaccine: An Interim Analysis of a Randomised Controlled Phase 3 Trial in Russia. The Lancet. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00234-8/fulltext

- *[Pre-print, not peer reviewed]* A mutation found in farm minks infected with SARS-CoV-2 (Y435F) was predicted to lead to reduced binding to the human ACE-2 receptor, and was experimentally shown to alter the affinity of convalescent polyclonal serum to the receptor binding domain (RBD). Using a modified ELISA assay, strong affinity to recombinant non-mutated RBD was detected in the serum of 14 out of the 21 IgG samples from convalescent patients, compared to only 2 of the 21 samples for Y435F RBD. Additionally, Y435F RBD was predicted to lower affinity compared with non-mutated RBD in four neutralizing monoclonal antibodies.

Hayashi et al. (Feb 1, 2021). Effect of RBD (Y453F) Mutation in Spike Glycoprotein of SARS-CoV-2 on Neutralizing IgG Affinity. Pre-print downloaded Feb 2 from https://doi.org/10.1101/2021.01.28.21250577

Clinical Characteristics and Health Care Setting

- *[Pre-print, not peer reviewed]* Patient to healthcare worker (HCW) transmission could be rare, according to viral sequencing of 32 SARS-CoV-2 infection clusters involving 96 HCWs in the Upper Midwest. Using 140 possible patient contacts, only 4% of HCW infections were clearly traced to a patient source. In comparison, 10% could be traced to a coworker, 12.5% could be traced to a patient-employee cluster, and 60.4% could not be linked to a patient or coworker. The authors suggest that a majority of the HCW infections occurred in the outside community.

  Braun et al. (Feb 1, 2021). Viral Sequencing Reveals US Healthcare Personnel Rarely Become Infected with SARS-CoV-2 through Patient Contact. Pre-print downloaded Feb 2 from https://doi.org/10.1101/2021.01.28.21250421

- *[Pre-print, not peer reviewed]* Long-term vitamin D nutritional status does not causally affect susceptibility to SARS-CoV-2 infection or more severe COVID-19 disease course, according to a two-sample Mendelian randomization study of a European cohort. No elevation in the risk of COVID infection, hospitalization, or progression to severe COVID-19 was associated with serum vitamin D status in the cohort of 18,000 COVID-19 cases and 1.4 million controls from the UK Biobank and SUNLIGHT Consortium that used single nucleotide polymorphisms to predict differences in long-term serum vitamin D levels.

  Patchen et al. (Feb 1, 2021). Genetically Predicted Serum Vitamin D and COVID-19 a Mendelian Randomization Study. Pre-print downloaded Feb 2 from https://doi.org/10.1101/2021.01.29.21250759

Modeling and Prediction

- *[Pre-print, not peer reviewed]* A transmission model calibrated to COVID-19 hospital admissions, ICU admissions, and deaths in New York City suggests that the introduction of a 56% more transmissible variant could triple the peak in infections, hospitalizations, and deaths and more than double cumulative infections, hospitalizations, and deaths by the end of February 2021. For vaccination to offset the variant's effects, at least 100,000 doses per day by January 15 or 150,000 per day by January 21 would be needed. Prioritization of those aged 65+ years old and essential workers would yield a higher number of lives saved per vaccine dose, though only if vaccine delivery bottlenecks caused by prioritization did not exceed 1/3 of maximum possible vaccination speed.

  Kim et al. (Feb 1, 2021). Under What Circumstances Could Vaccination Offset the Harm from a More Transmissible Variant of SARS-COV-2 in NYC Trade-Offs Regarding Prioritization and Speed of Vaccination. Pre-print downloaded Feb 2 from https://www.medrxiv.org/content/10.1101/2021.01.29.21250710v1

Other Resources and Commentaries

- Game Theory to Enhance Stock Management of Personal Protective Equipment (PPE 2021) during the COVID-19 Outbreak. – PloS One (Feb 1 2021)
- Protective Face Masks through Centuries, from XVII Century Plague Doctors to Current Health Care Professionals Managing the COVID-19 Pandemic. – Acta Bio-Medica (July 16 2020)
- Covid-19: WHO Warns against "Vaccine Nationalism" or Face Further Virus Mutations – BMJ (Feb 1 2021)

- Sputnik V COVID-19 Vaccine Candidate Appears Safe and Effective – The Lancet (Feb 2 2021)
- What Do We Know about the Antibody Responses to SARS-CoV-2? – Immunobiology (Jan 23 2021)
- Covid-19: Novavax Vaccine Efficacy Is 86% against UK Variant and 60% against South African Variant – BMJ (Feb 1 2021)
- Testing out of Quarantine – MedRxiv (Feb 1 2021)
- Single Dose Vaccination in Healthcare Workers Previously Infected with SARS-CoV-2 – MedRxiv (Feb 1 2021)
- Covid-19: AstraZeneca Vaccine Is Approved in EU with No Upper Age Limit. – BMJ () (Feb 1 2021)
- Social Justice in Pandemic Immunization Policy: We're All in This Together. – Nursing Ethics (Feb 1 2021)
- Preparing for COVID-19 Vaccination: A Call to Action for Clinicians on Immunization Information Systems – Annals of Internal Medicine (Feb 2 2021)
- Public Attitudes About COVID-19 in Response to President Trump's Social Media Posts – JAMA Network Open (Feb 1 2021)
- PCR Assay to Enhance Global Surveillance for SARS-CoV-2 Variants of Concern – MedRxiv (Feb 1 2021)
- Mitigating Inequities and Saving Lives with ICU Triage during the COVID-19 Pandemic. – American Journal of Respiratory and Critical Care Medicine (Feb 1 2021)
- SARS-CoV-2 Evolution and Vaccines: Cause for Concern? – The Lancet. Respiratory Medicine (Jan 29 2021)
- Lessons from a Successful Public Health Response to COVID-19 in a New South Wales Residential Aged Care Facility, 2020 – Australian and New Zealand Journal of Public Health (Feb 1 2021)

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