Providence

COVID-19 Resource Desk

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Prepared by System Library Services Retraction Watch

New Research

*note, **PREPRINTS** have not undergone formal peer review

COVID-19 related publications by Providence caregivers – see Digital Commons

Epidemiology & Public Health

1. **Severe acute respiratory coronavirus virus 2 (SARS-CoV-2) outbreaks in nursing homes involving residents who had completed a primary coronavirus disease 2019 (COVID-19) vaccine series-13 US jurisdictions, July-November 2021.** Wyatt Wilson W et al. *Infect Control Hosp Epidemiol.* 2023 Jan 16:1-5. doi: 10.1017/ice.2022.123. https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/abs/severe-acute-respiratory-coronavirus-virus-2-sarscov2-outbreaks-in-nursing-homes-involving-residents-who-had-completed-a-primary-coronavirus-disease-2019-covid19-vaccine-series13-us-jurisdictions-julynovember-2021/50319BF12E154EBDF382E75A5DE58B91

Among nursing home outbreaks of coronavirus disease 2019 (COVID-19) with ≥3 breakthrough infections when the predominant severe acute respiratory coronavirus virus 2 (SARS-CoV-2) variant circulating was the SARS-CoV-2 δ (delta) variant, fully vaccinated residents were 28% less likely to be infected than were unvaccinated residents. Once infected, they had approximately half the risk for all-cause hospitalization and all-cause death compared with unvaccinated infected residents.

2. **Reasons for Receiving or Not Receiving Bivalent COVID-19 Booster Vaccinations Among Adults - United States, November 1-December 10, 2022.** Sinclair AH, et al. *MMWR Morb Mortal Wkly Rep.* 2023 Jan 20;72(3):73-75. doi: 10.15585/mmwr.mm7203a5. https://www.cdc.gov/mmwr/volumes/72/wr/mm7203a5.htm?s_cid=mm7203a5_w

Bivalent COVID-19 booster vaccines, developed to protect against both ancestral and Omicron BA.4/BA.5 variants, are recommended to increase protection against SARS-CoV-2 infection and severe disease. However, relatively few eligible U.S. adults have received a bivalent booster dose, and reasons for low coverage are unclear. An opt-in Internet survey of 1,200 COVID-19-vaccinated U.S. adults was conducted to assess reasons for receiving or not receiving a bivalent booster dose. Participants could select multiple reasons from a list of suggested reasons to report why they had or had not received a bivalent booster dose. The most common reasons cited for not receiving the bivalent booster dose were lack of awareness of eligibility for vaccination (23.2%) or of vaccine availability (19.3%), and perceived immunity against infection (18.9%). After viewing information about eligibility and availability, 67.8% of participants who had not received the bivalent booster dose indicated that they

planned to do so; in a follow-up survey 1 month later, 28.6% of these participants reported having received the dose. Among those who had planned to receive the booster dose but had not yet done so, 82.6% still intended to do so. Participants who had still not received the booster dose most commonly reported being too busy to get vaccinated (35.6%). To help increase bivalent booster dose coverage, health care and public health professionals should use evidence-based strategies to convey information about booster vaccination recommendations and waning immunity, while also working to increase convenient access.

Survivorship & Rehabilitation

3. **A Systematic Review of Trials Currently Investigating Therapeutic Modalities for Post-Acute COVID-19 Syndrome and Registered on World Health Organization International Clinical Trials Platform.** Fawzy NA et al. *Clin Microbiol Infect.* 2023 Jan 12:S1198-743X(23)00009-5. doi: 10.1016/j.cmi.2023.01.007. https://www.sciencedirect.com/science/article/pii/S1198743X23000095

We identified 388 registered trials with a high degree of heterogeneity exploring 144 unique interventions for PACS. Most target general alleviation of symptoms. There is a need for further high-quality and methodologically robust PACS treatment trials conducted with standardization of outcomes while following WHO's recommendation for uniform evaluation and treatment.

4. **Persistent COVID-19 Symptoms at 6 Months After Onset and the Role of Vaccination Before or After SARS-CoV-2 Infection.** Richard SA et al. *JAMA Netw Open.* 2023 Jan 3;6(1):e2251360. doi: 10.1001/jamanetworkopen.2022.51360. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2800554

In this cohort study, more severe acute illness, a higher Charlson Comorbidity Index score, and being unvaccinated were associated with a higher risk of reporting COVID-19 symptoms lasting 28 days or more. Participants with COVID-19 were more likely to seek medical care for diabetes, pulmonary, neurological, and mental health-related illness for at least 6 months after onset compared with their pre-COVID baseline health care use patterns. These findings may inform the risk-benefit ratio of COVID-19 vaccination policy.

5. **Treating common and potentially modifiable symptoms of post-COVID-19 condition (long COVID) in adults.** Quinn KL, et al. *CMAJ.* 2023 Jan 17;195(2):E80-E81. doi: 10.1503/cmaj.220824. https://www.cmaj.ca/content/195/2/E80

Fatigue and postexertional malaise associated with long COVID should be treated with titrated structured activity and energy conservation strategies.

6. **Diagnosing post-COVID-19 condition (long COVID) in adults.** Quinn KL, et al. *CMAJ.* 2023 Jan 17;195(2):E78-E79. doi: 10.1503/cmaj.220818. https://www.cmaj.ca/content/195/2/E78

The World Health Organization used a Delphi consensus method that involved people with lived experience and clinicians to provide a case definition for long COVID: symptoms that linger beyond 3 months of a probable or confirmed SARS-CoV-2 infection, which last at least 2 months and cannot be explained by an alternative diagnosis. However, the sensitivity, specificity and positive and negative predictive value of definitive diagnostic criteria have yet to be determined.

7. **Assessing common and potentially modifiable symptoms of post-COVID-19 condition (long COVID) in adults.** Quinn KL, Razak F, Cheung AM. *CMAJ.* 2023 Jan 17;195(2):E76-E77. doi: 10.1503/cmaj.220823. https://www.cmaj.ca/content/195/2/E76

Fatigue is associated with diminished activity tolerance and postexertional malaise and symptom exacerbation. Providers should assess its frequency, severity, duration, impact, and alleviating and exacerbating factors (physical, cognitive and psychological), as well as sleep hygiene and effect on daily activities. To rule out other causes, a comprehensive history, physical examination and routine bloodwork including hemoglobin and thyroid-stimulating hormone are important.

Therapeutics

8. **Comparative outcomes of extracorporeal membrane oxygenation for COVID-19 delivered in experienced European centres during successive SARS-CoV-2 variant outbreaks (ECMO-SURGES): an international, multicentre, retrospective cohort study.** Schmidt M et al. *Lancet Respir Med.* 2023 Jan 11:S2213-2600(22)00438-6. doi: 10.1016/S2213-2600(22)00438-6. https://www.sciencedirect.com/science/article/pii/S2213260022004386

Although crude mortality did not differ between variants, adjusted risk of death was highest for patients treated with ECMO infected with the delta variant of SARS-CoV-2. The higher virulence and poorer outcomes associated with the delta strain might relate to higher viral load and increased inflammatory response syndrome in infected patients, reinforcing the need for a higher rate of vaccination in the population and updated selection criteria for ECMO, should a new and highly virulent strain of SARS-CoV-2 emerge in the future. Mortality was noticeably lower than in other large, multicentre series of patients who received ECMO for COVID-19, highlighting the need to concentrate resources at experienced centres.

9. **Efficacy and safety of selective serotonin reuptake inhibitors in COVID-19 management: A systematic review and meta-analysis.** Deng J, et al. *Clin Microbiol Infect.* 2023 Jan 16:S1198-743X(23)00032-0. doi:10.1016/j.cmi.2023.01.010. https://www.sciencedirect.com/science/article/pii/S1198743X23000320

Fluvoxamine remains a candidate pharmacotherapy for treating COVID-19 outpatients. Medium-dose fluvoxamine may be preferable over low-dose fluvoxamine.

Vaccines / Immunology

10. **Immunogenicity and safety in healthy adults of full dose versus half doses of COVID-19 vaccine (ChAdOx1-S or BNT162b2) or full-dose CoronaVac administered as a booster dose after priming with CoronaVac: a randomised, observer-masked, controlled trial in Indonesia.** BCOV21 study group. *Lancet Infect Dis.* 2023 Jan 11:S1473-3099(22)00800-3. doi: 10.1016/S1473-3099(22)00800-3. https://www.sciencedirect.com/science/article/pii/S1473309922008003

Geometric mean titre values between participants in the 6 to 9 months priming group and the 3 to less than 6 months priming group before the booster dose and between half-dose and full-dose groups 28 days before the booster were not significantly different for half-dose ChAdOx1-S, full-dose BNT162b2, and CoronaVac and were significantly different for full-dose ChAdOx1-S and half-dose BNT162b2.

Among individuals primed with CoronaVac, boosting with BNT162b2 (full dose or half dose) or ChAdOx1-S (full dose or half dose) produces substantially better immune responses than in those boosted with CoronaVac. Full-dose and half-dose boosting with either BNT162b2 or ChAdOx1-S produced similar responses. Heterologous booster with half-dose might be considered in adults primed with two doses of CoronaVac vaccine.
FUNDING: Ministry of Health, Indonesia.

11. **7-month duration of SARS-CoV-2 mucosal immunoglobulin-A responses and protection.** Marking U et al. *Lancet Infect Dis*. 2023 Jan 11:S1473-3099(22)00834-9. doi: 10.1016/S1473-3099(22)00834-9. https://www.sciencedirect.com/science/article/pii/S1473309922008349

Mucosal immunity has a pivotal role in protection from respiratory viral infections.1 The current authors have showed substantial protection from omicron infection by high concentrations of nasal mucosal SARS-CoV-2 WT spike immunoglobulin-A (M-IgA) over a 4-week screening period.2 A sharp increase in M-IgA concentrations following BA.1 or BA.2 breakthrough infection in triple vaccinated health-care workers was also observed.2 Here, we present follow-up data with prospectively collected omicron infection rates and systemic and mucosal antibody concentrations from the same cohort (appendix pp 7–9, 12–14).

12. **BNT162b2 effectiveness against Delta and Omicron variants of SARS-CoV-2 in adolescents aged 12-17 years, by dosing interval and duration.** Ionescu IG, et al. *J Infect Dis*. 2023 Jan 16:jiad006. doi: 10.1093/infdis/jiad006. / https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiad006/6988115?login=false

In adolescents, two BNT162b2 doses provided strong and sustained protection against Delta but reduced and rapidly-waning VE against Omicron. Longer interval between first and second doses and a third dose marginally improved Omicron protection. Updated vaccine antigens, increased doses and/or dosing-intervals may improve adolescent VE against immunological-escape variants.

13. **Bivalent Omicron BA.1-Adapted BNT162b2 Booster in Adults Older than 55 Years.** Winokur P et al. *N Engl J Med.* 2023 Jan 19;388(3):214-227. doi: 10.1056/NEJMoa2213082. https://www.nejm.org/doi/10.1056/NEJMoa2213082

The candidate monovalent or bivalent omicron BA.1-adapted vaccines had a safety profile similar to that of BNT162b2 (30 µg), induced substantial neutralizing responses against ancestral and omicron BA.1 strains, and, to a lesser extent, neutralized BA.4, BA.5, and BA.2.75 strains. (Funded by BioNTech and Pfizer; ClinicalTrials.gov number, NCT04955626.).

14. **Substantial Neutralization Escape by SARS-CoV-2 Omicron Variants BQ.1.1 and XBB.1.** Miller J, et al. *N Engl J Med.* 2023 Jan 18. doi: 10.1056/NEJMc2214314. https://www.nejm.org/doi/10.1056/NEJMc2214314

We first assessed neutralizing antibody titers in 16 participants who had been vaccinated and boosted with the monovalent mRNA vaccine BNT162b2 (Pfizer–BioNTech) in 2021 (Table S1). After the booster, the median neutralizing antibody titer to the WA1/2020 strain was 45,695 and the titers to the BA.5, BF.7, BA.2.75.2, BQ.1.1, and XBB.1 variants were 887, 595, 387, 261, and 105, respectively (Figure 1B). The median neutralizing antibody titers to the BQ.1.1 and XBB.1 variants were lower than the median titer to BA.5 by factors of 3 and 8, respectively.

15. **Immune correlates analysis of the PREVENT-19 COVID-19 vaccine efficacy clinical trial.** Fong Y et al. *Nat Commun.* 2023 Jan 19;14(1):331. doi: 10.1038/s41467-022-35768-3. https://www.nature.com/articles/s41467-022-35768-3

In the PREVENT-19 phase 3 trial of the NVX-CoV2373 vaccine (NCT04611802), anti-spike binding IgG concentration (spike IgG), anti-RBD binding IgG concentration (RBD IgG), and pseudovirus 50% neutralizing antibody titer (nAb ID50) measured two weeks post-dose two are assessed as correlates of risk and as correlates of protection against COVID-19. Analyses are conducted in the U.S. cohort of baseline SARS-CoV-2 negative per-protocol participants using a case-cohort design that measures the markers from all 12 vaccine recipient breakthrough COVID-19 cases starting 7 days post antibody measurement and from 639 vaccine recipient non-cases. All markers are inversely associated with COVID-19 risk and directly associated with vaccine efficacy. In vaccine recipients with nAb ID50 titers of 50, 100, and 7230 international units (IU50)/ml, vaccine efficacy estimates are 75.7% (49.8%, 93.2%), 81.7% (66.3%, 93.2%), and 96.8% (88.3%, 99.3%). The results support potential cross-vaccine platform applications of these markers for guiding decisions about vaccine approval and use.

16. **SARS-CoV-2 infection-induced immunity reduces rates of reinfection and hospitalization caused by the Delta or Omicron variants.** de La Vega MA PhD et al. *Emerg Microbes Infect.* 2023 Jan 19:2169198. doi: 10.1080/22221751.2023.2169198. https://www.tandfonline.com/doi/full/10.1080/22221751.2023.2169198

We conducted an observational, retrospective analysis of aggregated data from all patients who tested positive for SARS-CoV-2 during the waves caused by the Delta and Omicron variants, stratified based on their known previous infection and vaccination status, throughout the University of Texas Medical Branch (UTMB) network. Next, the immunity statuses within each medical parameter were compared to naïve individuals for the effective decrease of occurrence. Lastly, we conducted studies using mice and pre-pandemic human samples for IgG responses to viral nucleocapsid compared to spike protein toward showing a functional component supportive of the medical data results in relation to the immunity types. During the Delta and Omicron waves, both infection-induced and hybrid immunities were associated with a trend of equal or greater decrease of occurrence than vaccine-induced immunity in hospitalizations, intensive care unit admissions, and deaths in comparison to those without pre-existing immunity, with hybrid immunity often trending with the greatest decrease. Compared to individuals without pre-existing immunity, those vaccinated against SARS-CoV-2 had a significantly reduced incidence of COVID-19, as well as all subsequent medical parameters. Though vaccination best reduces health risks associated with initial infection toward acquiring immunity, our findings suggest infection-induced immunity is as or more effective than vaccination in reducing the severity of reinfection from the Delta or Omicron variants, which should inform public health response at pandemic onset, particularly when triaging towards the allotment of in-demand vaccinations.

Women & Children

17. **Coronavirus Disease 2019 (COVID-19) Vaccination in Pregnancy.** Prabhu M, Riley LE. *Obstet Gynecol.* 2023 Jan 17. doi: 10.1097/AOG.0000000000005100. https://journals.lww.com/greenjournal/Fulltext/9900/Coronavirus_Disease_2019__COVID_19_Vaccination_in.676.aspx

SARS-CoV-2 infection in pregnancy is associated with significant maternal morbidity and mortality, and its risks can be mitigated with COVID-19 vaccination. Vaccination against COVID-19 in pregnancy results in protection against both maternal and neonatal SARS-CoV-2 infection, as well as maternal critical illness. Vaccination during pregnancy is safe, with no documented risks of pregnancy loss, preterm delivery, congenital anomalies, or other adverse perinatal outcomes. For these reasons, COVID-19 vaccination is recommended in pregnancy by the Centers for Disease Control and Prevention, the American College of Obstetricians and Gynecologists, and the Society for Maternal-Fetal Medicine, as well as other national and international professional organizations. In this review, we will summarize the published literature demonstrating the benefit and safety of these vaccines.

18. **Safety and Efficacy of Coronavirus Disease 2019 (COVID-19) mRNA Vaccines During Lactation.** Shook LL, Edlow AG. *Obstet Gynecol.* 2023 Jan 9. doi: 10.1097/AOG.0000000000005093. https://journals.lww.com/greenjournal/Fulltext/9900/Safety_and_Efficacy_of_Coronavirus_Disease_2019.674.aspx

In this review, we summarize the data on the safety and side-effect profile of coronavirus disease 2019 (COVID-19) vaccines during lactation to date, review what is known about mRNA vaccine components in breast milk, and discuss the efficacy of COVID-19 vaccines in providing immune protection for the breastfeeding infant. The Centers for Disease Control and Prevention and the American College of Obstetricians and Gynecologists recommend that lactating individuals receive COVID-19 mRNA vaccines and stay up to date on booster doses, including the bivalent COVID-19 booster. The lack of serious side effects in mothers or infants across numerous large studies and registries of COVID-19 vaccination in pregnancy and lactation is reassuring. Although small quantities of mRNA may be transiently detectable in breast milk after maternal vaccination, there are no data demonstrating that vaccine mRNA can survive the infant gastrointestinal tract and no evidence that breast milk from lactating individuals who have received a COVID-19 mRNA vaccine can cause harm to breastfeeding infants. In contrast, numerous studies demonstrate that the breast milk of vaccinated individuals contains severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-specific functional antibodies and T cells, which benefit the breastfeeding infant's developing immune system. Transfer of SARS-CoV-2-specific antibodies from mother to infant is highest when vaccination occurs during pregnancy compared with lactation, because the breastfeeding infant receives both long-lasting antibodies through the placenta and breast-milk antibodies through breast milk. With clear data demonstrating efficacy and safety and no data demonstrating harm to mother or infant after COVID-19 vaccine administration during lactation, any recommendations to avoid vaccination while breastfeeding or to withhold breast milk from the infant for any period of time after vaccination are not supported by available evidence.

FDA / CDC / NIH / WHO Updates

CDC and FDA Identify Preliminary COVID-19 Vaccine Safety Signal for Persons Aged 65 Years and Older

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