Providence

COVID-19 Resource Desk

#110 | 6.5.2022 to 6.11.2022

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

Basic Science / Virology / Pre-clinical

Clinical Syndrome

1. **Clinical outcomes associated with SARS-CoV-2 Omicron (B.1.1.529) variant and BA.1/BA.1.1 or BA.2 subvariant infection in southern California.** Lewnard JA, et al. *Nat Med.* 2022 Jun 8. doi: 10.1038/s41591-022-01887-z. https://www.nature.com/articles/s41591-022-01887-z

Here we show that Omicron variant infections were associated with substantially reduced risk of progression to severe clinical outcomes relative to time-matched Delta variant infections within a large, integrated healthcare system in southern California. This reduced severity could not be explained by differential history of prior infection among cases with Omicron or Delta variant infection, and was starkest among cases not previously vaccinated against COVID-19. Infections with the Omicron BA.2 subvariant were not associated with differential risk of severe outcomes in comparison to BA.1/BA.1.1 subvariant infections. Lower risk of severe clinical outcomes among cases with Omicron variant infection should inform public health response amid establishment of the Omicron variant as the dominant SARS-CoV-2 lineage globally.

Epidemiology & Public Health

2. **COVID-19 Vaccination Coverage, by Race and Ethnicity - National Immunization Survey Adult COVID Module, United States, December 2020-November 2021.** Kriss JL, et al. *MMWR Morb Mortal Wkly* Rep. 2022 Jun 10;71(23):757-763. doi: 10.15585/mmwr.mm7123a2. https://www.cdc.gov/mmwr/volumes/71/wr/mm7123a2.htm?s_cid=mm7123a2_w

Some racial and ethnic minority groups have experienced disproportionately higher rates of COVID-19-related illness and mortality (1,2). Vaccination is highly effective in preventing severe COVID-19 illness and death (3), and equitable vaccination can reduce COVID-19-related disparities. CDC analyzed data from the National Immunization Survey Adult COVID Module (NIS-ACM), a random-digit-dialed cellular telephone survey of adults aged ≥18 years, to assess disparities in COVID-19 vaccination coverage by race and ethnicity among U.S. adults during December 2020-November 2021. Asian and non-Hispanic White (White) adults had the highest ≥1-dose COVID-19 vaccination coverage by the end of April 2021 (69.6% and 59.0%, respectively); ≥1-dose coverage was lower among Hispanic (47.3%), non-Hispanic Black or African American (Black) (46.3%), Native Hawaiian or other Pacific Islander (NH/OPI) (45.9%),

multiple or other race (42.6%), and American Indian or Alaska Native (AI/AN) (38.7%) adults. By the end of November 2021, national ≥1-dose COVID-19 vaccination coverage was similar for Black (78.2%), Hispanic (81.3%), NH/OPI (75.7%), and White adults (78.7%); however, coverage remained lower for AI/AN (61.8%) and multiple or other race (68.0%) adults. Booster doses of COVID-19 vaccine are now recommended for all adults (4), but disparities in booster dose coverage among the fully vaccinated have become apparent (5). Tailored efforts including community partnerships and trusted sources of information could be used to increase vaccination coverage among the groups with identified persistent disparities and can help achieve vaccination equity and prevent new disparities by race and ethnicity in booster dose coverage.

Healthcare Delivery & Healthcare Workers

3. **Pressure Injury Risk Assessment and Prevention in Patients With COVID-19 in the Intensive Care Unit.** Alderden J, et al. *AACN Adv Crit Care*. 2022 Jun 15;33(2):173-185. doi: 10.4037/aacnacc2022335. https://doi.org/10.4037/aacnacc2022335

A total of 1920 patients were included in the study sample, including 407 with COVID-19. Among the latter group, at least 1 hospital-acquired pressure injury developed in each of 120 patients (29%); of those, device-related pressure injury developed in 55 patients (46%). The Braden Scale score area under the receiver operating characteristic curve was 0.72 in patients without COVID-19 and 0.71 in patients with COVID-19, indicating fair to poor discrimination. Fragile skin and prone positioning during mechanical ventilatory support were risk factors for device-related pressure injury. Clinicians may consider incorporating factors not included in the Braden Scale (eg, oxygenation and perfusion) in routine risk assessment and should maintain vigilance in their efforts to protect patients with COVID-19 from device-related pressure injury.

Therapeutics

4. **Effect of Molnupiravir on Biomarkers, Respiratory Interventions, and Medical Services in COVID-19 : A Randomized, Placebo-Controlled Trial.** Johnson MG et al. *Ann Intern Med.* 2022 Jun 7. doi: 10.7326/M22-0729. https://www.acpjournals.org/doi/epdf/10.7326/M22-0729

Participants receiving molnupiravir showed faster normalization of CRP and Spo 2, with improvements observed on day 3 of therapy, compared with placebo. Molnupiravir-treated participants had a decreased need for respiratory interventions versus placebo-treated participants, with similar findings in participants who were hospitalized after randomization. Hospitalized participants who received molnupiravir were discharged a median of 3 days before those who received placebo. The findings suggest there are additional important clinical benefits of molnupiravir beyond reduction in hospitalization or death.

5. **Baricitinib in hospitalised patients with COVID-19: A meta-analysis of randomised controlled trials.** Selvaraj V, et al. *EClinicalMedicine*. 2022 Jul;49:101489. doi: 10.1016/j.eclinm.2022.101489. Epub 2022 Jun 3. https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(22)00219-X/fulltext

In hospitalised patients with COVID-19, baricitinib was associated with reduced 28-day mortality although there was not a statistically significant reduction in progression to IMV or ECMO. Baricitinib

used in conjunction with standard of care treatments is associated with improved mortality in hospitalised patients with COVID-19 disease.
FUNDING: None.

6. **Effect of Awake Prone Positioning on Endotracheal Intubation in Patients With COVID-19 and Acute Respiratory Failure: A Randomized Clinical Trial.** Alhazzani W et al. *JAMA*. 2022 Jun 7;327(21):2104-2113. doi: 10.1001/jama.2022.7993. https://jamanetwork.com/journals/jama/fullarticle/2792506

In patients with acute hypoxemic respiratory failure from COVID-19, prone positioning, compared with usual care without prone positioning, did not significantly reduce endotracheal intubation at 30 days. However, the effect size for the primary study outcome was imprecise and does not exclude a clinically important benefit.
TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT04350723.

Transmission / Infection Control

7. **Reducing SARS-CoV-2 in Shared Indoor Air.** Dowell D, et al. *JAMA*. 2022 Jun 7. doi: 10.1001/jama.2022.9970. https://jamanetwork.com/journals/jama/fullarticle/2793289

SARS-CoV-2 replicates in the respiratory tract and spreads through exhalation of infectious respiratory particles. The chances of transmission increase the longer an uninfected person stays in an enclosed space with an infected person. Infection can occur not only through short-range transmission of exhaled respiratory particles from an infectious person resulting in mucous membrane deposition or inhalation of exhaled respiratory particles by an uninfected person. Infection also can occur through long-range transmission from inhalation of infectious respiratory particles that remain suspended in air for longer periods (potentially after the infectious person is no longer present) and across longer distances (greater than a few meters).

Vaccines / Immunology

8. **Omicron-specific mRNA vaccination alone and as a heterologous booster against SARS-CoV-2.** Fang Z et al. *Nat Commun*. 2022 Jun 6;13(1):3250. doi: 10.1038/s41467-022-30878-4. https://www.nature.com/articles/s41467-022-30878-4

Our Omicron-specific LNP-mRNA vaccine elicits strong antibody response in vaccination-naïve mice. Mice that received two-dose WT LNP-mRNA show a > 40-fold reduction in neutralization potency against Omicron than WT two weeks post boost, which further reduce to background level after 3 months. The WT or Omicron LNP-mRNA booster increases the waning antibody response of WT LNP-mRNA vaccinated mice against Omicron by 40 fold at two weeks post injection. Interestingly, the heterologous Omicron booster elicits neutralizing titers 10-20 fold higher than the homologous WT booster against Omicron variant, with comparable titers against Delta variant. All three types of vaccination, including Omicron alone, WT booster and Omicron booster, elicit broad binding antibody responses against SARS-CoV-2 WA-1, Beta, Delta variants and SARS-CoV. These data provide direct assessments of an Omicron-specific mRNA vaccination in vivo, both alone and as a heterologous booster to WT mRNA vaccine.

9. **Analysis of Myocarditis Among 252 Million mRNA-1273 Recipients Worldwide.** Straus W, et al. *Clin Infect Dis.* 2022 Jun 6:ciac446. doi: 10.1093/cid/ciac446. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac446/6603291

During the study period, 3017 myocarditis/myopericarditis cases among 252 million mRNA-1273 recipients were reported to the Moderna global safety database. The overall reporting rate was 9.23 per 100,000 person-years, which was similar to the expected reference rate (9.0 cases per 100,000 person-years). When stratified by sex and age, observed rates were highest for males aged <40 years, particularly those 18-24 years (53.76 per 100,000 person-years), which was higher than expected. When considering only cases occurring within 7 days of a known dose, the observed rate was highest for males aged 18-24 years after dose 2 (4.23 per 100,000 doses administered). Myocarditis/myopericarditis rates were not higher than expected for the overall population of mRNA-1273 recipients but were higher than expected in males aged 18-24 years, with most cases occurring 7 days after dose 2.

10. **Nasal Spray of Neutralizing Monoclonal Antibody 35B5 Confers Potential Prophylaxis Against Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Variants of Concern (VOCs): A Small-scale Clinical Trial.** Lin Y et al. *Clin Infect Dis*. 2022 Jun 6:ciac448. doi: 10.1093/cid/ciac448. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac448/6603292

We enrolled 30 healthy volunteers who were nasally administrated with the modified 35B5 formulation. At 12, 24, 48 and 72 hours after nasal spray, the neutralization efficacy of nasal mucosal samples was assayed with pseudoviruses coated with SARS-CoV-2 Spike protein of the wild-type (WT), Alpha, Beta, Delta, or Omicron variants. The nasal mucosal samples collected within 24 hours after nasal spray effectively neutralized SARS-CoV-2 VOCs (including Delta and Omicron). Meanwhile, the protection efficacy was 60% effective and 20% effective at 48 and 72 hours after nasal spray, respectively.
CONCLUSIONS: A single nasal spray of 35B5 formation conveys 24-hour effective protection against SARS-CoV-2 VOCs, including the Alpha, Beta, Delta, or Omicron variants. Thus, 35B5 nasal spray might be potential in strengthening SARS-CoV-2 prevention, especially in the high-risk population.

11. **Outcomes of the SARS-CoV-2 omicron (B.1.1.529) variant outbreak among vaccinated and unvaccinated patients with cancer in Europe: results from the retrospective, multicentre, OnCovid registry study.** Pinato DJ et al. *Lancet Oncol*. 2022 Jun 2:S1470-2045(22)00273-X. doi: 10.1016/S1470-2045(22)00273-X. https://www.sciencedirect.com/science/article/pii/S147020452200273X

Despite time-dependent improvements in outcomes reported in the omicron phase compared with the earlier phases of the pandemic, patients with cancer remain highly susceptible to SARS-CoV-2 if they are not vaccinated against SARS-CoV-2. Our findings support universal vaccination of patients with cancer as a protective measure against morbidity and mortality from COVID-19.

12. **Effectiveness of mRNA vaccine boosters against infection with the SARS-CoV-2 omicron (B.1.1.529) variant in Spain: a nationwide cohort study.** Monge S et al. *Lancet Infect Dis*. 2022 Jun 2:S1473-3099(22)00292-4. doi: 10.1016/S1473-3099(22)00292-4. https://www.sciencedirect.com/science/article/pii/S1473309922002924

Booster mRNA vaccine-doses were moderately effective in preventing infection with the omicron variant of SARS-CoV-2 for over a month after administration, which indicates their suitability as a strategy to limit the health effects of COVID-19 in periods of omicron variant domination. Estimated effectiveness was higher for mRNA-1273 compared with BNT162b2 and increased with time between completed primary vaccination and booster.
FUNDING: None.

13. **mRNA (BNT162b2) COVID-19 vaccination increased risk of Bell's palsy: a nested case control and self-controlled case series study.** Wan EYF et al. *Clin Infect Dis.* 2022 Jun 8:ciac460. doi: 10.1093/cid/ciac460. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac460/6604461

A total of 54 individuals were newly diagnosed with Bell's palsy after BNT162b2 vaccinations. The incidence of Bell's palsy was 1.58 per 100,000 doses administered. There is an overall increased risk of Bell's palsy following BNT162b2 vaccination, particularly within the first 14 days after the second dose, but the absolute risk was very low.

14. **Effectiveness of the Ad26.COV2.S (Johnson & Johnson) COVID-19 Vaccine for Preventing COVID-19 Hospitalizations and Progression to High Disease Severity in the United States.** Lewis NM et al. *Clin Infect Dis.* 2022 Jun 8:ciac439. doi: 10.1093/cid/ciac439. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac439/6604454

The Ad26.COV2.S COVID-19 vaccine reduced the risk of COVID-19 hospitalization by 72% among immunocompetent adults without waning through 6 months post-vaccination. After hospitalization for COVID-19, vaccinated immunocompetent patients were less likely to require IMV or die compared to unvaccinated immunocompetent patients.

15. **Immunogenicity of a third dose of BNT162b2 to ancestral SARS-CoV-2 & Omicron variant in adults who received two doses of inactivated vaccine.** Leung NHL et al. *Clin Infect Dis.* 2022 Jun 8:ciac458. doi: 10.1093/cid/ciac458. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac458/6604400

A third dose of COVID-19 vaccination with an mRNA vaccine substantially improved antibody levels against the ancestral virus and the Omicron variant with well-tolerated safety profile, in adults who had received two doses of inactivated vaccine 6 months earlier.

16. **Analysis of Postvaccination Breakthrough COVID-19 Infections Among Adults with HIV in the United States.** Coburn SB et al. *JAMA Netw Open.* 2022 Jun 1;5(6):e2215934. doi: 10.1001/jamanetworkopen.2022.15934. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793102

In this study, COVID-19 vaccination, especially with an additional dose, was effective against infection with SARS-CoV-2 strains circulating through December 31, 2021. PWH had an increased risk of breakthrough infections compared with PWoH. Expansion of recommendations for additional vaccine doses to all PWH should be considered.

Women & Children

17. **Neurodevelopmental Outcomes at 1 Year in Infants of Mothers Who Tested Positive for SARS-CoV-2 During Pregnancy.** Edlow AG, et al. *JAMA Netw Open*. 2022 Jun 1;5(6):e2215787. doi: 10.1001/jamanetworkopen.2022.15787. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2793178

The cohort included 7772 live births (7466 pregnancies, 96% singleton, 222 births to SARS-CoV-2 positive mothers), with mean (SD) maternal age of 32.9 (5.0) years; offspring were 9.9% Asian (772), 8.4% Black (656), and 69.0% White (5363); 15.1% (1134) were of Hispanic ethnicity. Preterm delivery was more likely among exposed mothers: 14.4% (32) vs 8.7% (654) (P = .003). Maternal SARS-CoV-2 positivity during pregnancy was associated with greater rate of neurodevelopmental diagnoses in unadjusted models (odds ratio [OR], 2.17 [95% CI, 1.24-3.79]; P = .006) as well as those adjusted for race, ethnicity, insurance status, offspring sex, maternal age, and preterm status (adjusted OR, 1.86 [95% CI, 1.03-3.36]; P = .04). Third-trimester infection was associated with effects of larger magnitude (adjusted OR, 2.34 [95% CI, 1.23-4.44]; P = .01). This cohort study of SARS-CoV-2 exposure in utero found preliminary evidence that maternal SARS-CoV-2 may be associated with neurodevelopmental sequelae in some offspring. Prospective studies with longer follow-up duration will be required to exclude confounding and confirm these associations.

GUIDELINES & CONSENSUS STATEMENTS

AAPM&R Long COVID Cardiovascular Complications Guidance Statement Released

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FDA / CDC / NIH / WHO Updates

FDA - PAXLOVID Patient Eligibility Screening Checklist Tool for Prescribers

FDA Advisory Committee Recommends Emergency Use Authorization of Novavax COVID-19 Vaccine for People Aged 18 Years and Older

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Commentary & Press Releases

MODERNA ANNOUNCES OMICRON-CONTAINING BIVALENT BOOSTER CANDIDATE MRNA-1273.214 DEMONSTRATES SUPERIOR ANTIBODY RESPONSE AGAINST OMICRON

Biden Administration Announces Operational Plan for COVID-19 Vaccinations for Children Under 5

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