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

Basic Science / Virology / Pre-clinical

1. **Lung cell entry, cell-cell fusion capacity, and neutralisation sensitivity of omicron sublineage BA.2.75.** Arora P et al. *Lancet Infect Dis*. 2022 Sep 15:S1473-3099(22)00591-6. doi: 10.1016/S1473-3099(22)00591-6. Online ahead of print. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00591-6/fulltext

We investigated the host cell entry and neutralisation sensitivity of BA.2.75 using pseudovirus particles (pp), which adequately model SARS-CoV-2 host cell entry and its neutralisation.4 Particles bearing BA.2.75 spike (BA.2.75pp) entered Calu-3 human lung cells more efficiently than BA.2pp (1·6× increase) but similarly to BA.4/BA.5pp and less efficiently than B.1pp, which represents the virus circulating early in the pandemic (January–May, 2020; 1·7× reduction).

Clinical Syndrome

2. **Association of COVID-19 With Major Arterial and Venous Thrombotic Diseases: A Population-Wide Cohort Study of 48 Million Adults in England and Wales.** Knight R et al. *Circulation*. 2022 Sep 20;146(12):892-906. doi: 10.1161/CIRCULATIONAHA.122.060785. Epub 2022 Sep 19. https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.122.060785

High relative incidence of vascular events soon after COVID-19 diagnosis declines more rapidly for arterial thromboses than VTEs. However, incidence remains elevated up to 49 weeks after COVID-19 diagnosis. These results support policies to prevent severe COVID-19 by means of COVID-19 vaccines, early review after discharge, risk factor control, and use of secondary preventive agents in high-risk patients.

Healthcare Delivery & Healthcare Workers

3. **Recommendations for the safety of hospitalised patients in the context of the COVID-19 pandemic: a scoping review.** Martins MS, Lourenção DCA, Pimentel RRDS, de Oliveira JM, Manganoti LTCN, Modesto RC, Silva MSDS, Dos Santos MJ. *BMJ Open*. 2022 Sep 19;12(9):e060182. doi: 10.1136/bmjopen-2021-060182. https://bmjopen.bmj.com/content/12/9/e060182

The recommendations mapped in this scoping review present the best practices produced so far and serve as a basis for planning and implementing good practices to ensure safe hospital care, during and after COVID-19. The engagement of everyone involved in the care of hospitalised patients is essential to consolidate the mapped recommendations and provide dignified, safe and quality care.

Prognosis

4. **Hospital Outcomes Among COVID-19 Hospitalizations With Myocarditis from the California State Inpatient Database.** Rubens M et al. *Am J Cardiol*. 2022 Sep 17:S0002-9149(22)00854-2. doi: 10.1016/j.amjcard.2022.08.009. Online ahead of print.
https://www.sciencedirect.com/science/article/pii/S0002914922008542

Many case reports have indicated that myocarditis could be a prognostic factor for predicting morbidity and mortality among patients with COVID-19. In this study, using a large database we examined the association between myocarditis among COVID-19 hospitalizations and in-hospital mortality and other adverse hospital outcomes.

Therapeutics

5. **Variation in survival in patients with Coronavirus Disease 2019 supported with extracorporeal membrane oxygenation: A multi-institutional analysis of 594 consecutive patients with Coronavirus Disease 2019 supported with extracorporeal membrane oxygenation at 49 hospitals within 21 states.** Jacobs JP, Stammers AH, St Louis JD, Tesdahl EA, Hayanga JWA, Morris RJ, Lee RC, Sestokas AK, Badhwar V, Weinstein S. *J Thorac Cardiovasc Surg*. 2022 May 15:S0022-5223(22)00526-8. doi: 10.1016/j.jtcvs.2022.05.002. Online ahead of print.
https://www.jtcvs.org/article/S0022-5223(22)00526-8/fulltext

Survival for patients with Coronavirus Disease 2019 supported with extracorporeal membrane oxygenation has fluctuated during the stages of the pandemic. Minimizing variability by adherence to best practices may refine the optimal use of extracorporeal membrane oxygenation in a pandemic response.

6. **Effect of Helmet Noninvasive Ventilation vs Usual Respiratory Support on Mortality Among Patients With Acute Hypoxemic Respiratory Failure Due to COVID-19: The HELMET-COVID Randomized Clinical Trial.** Arabi YM et al. *JAMA*. 2022 Sep 20;328(11):1063-1072. doi: 10.1001/jama.2022.15599.
https://jamanetwork.com/journals/jama/fullarticle/2796380

Results of this study suggest that helmet noninvasive ventilation did not significantly reduce 28-day mortality compared with usual respiratory support among patients with acute hypoxemic respiratory failure due to COVID-19 pneumonia. However, interpretation of the findings is limited by imprecision in the effect estimate, which does not exclude potentially clinically important benefit or harm.
TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT04477668.

7. **Outcomes of Bebtelovimab Treatment is Comparable to Ritonavir-boosted Nirmatrelvir among High-Risk Patients with Coronavirus Disease-2019 during SARS-CoV-2 BA.2 Omicron**

Epoch. Razonable RR et al. *J Infect Dis*. 2022 Sep 17:jiac346. doi: 10.1093/infdis/jiac346. Online ahead of print.
https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiac346/6702534

The effectiveness of bebtelovimab in real-world settings has not been assessed. In this retrospective cohort study of 3,607 high-risk patients, bebtelovimab was used more commonly than nirmatrelvir-ritonavir for treatment of COVID-19 among older patients, immunosuppressed patients, and those with multiple comorbidities. Despite its use in highly comorbid patients, the rates of progression to severe disease after bebtelovimab (1.4%; 95% confidence interval: 1.2, 1.7) was not significantly different from nirmatrelvir-ritonavir treatment (1.2%; 95% confidence interval: 0.8, 1.5). Our findings support the emergency use authorization of bebtelovimab for treatment of COVID-19 during the Omicron epoch dominated by BA.2 and subvariants.

8. **Effectiveness of Molnupiravir in High Risk Patients: a Propensity Score Matched Analysis.** Najjar-Debbiny R, Gronich N, Weber G, Khoury J, Amar M, Stein N, Goldstein LH, Saliba W. *Clin Infect Dis*. 2022 Sep 20:ciac781. doi: 10.1093/cid/ciac781. Online ahead of print.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac781/6708264

This study suggests that in the era of omicron and in real life setting Molnupiravir might be effective in reducing the risk of severe COVID-19 and COVID-19 related mortality, particularly in specific subgroups.

Transmission / Infection Control

9. **Viral Cultures for Assessing Fomite Transmission of SARS-CoV-2: a Systematic Review and Meta-Analysis.** Onakpoya IJ, Heneghan CJ, Spencer EA, Brassey J, Rosca EC, Maltoni S, Plüddemann A, Evans DH, Conly JM, Jefferson T. *J Hosp Infect*. 2022 Sep 14:S0195-6701(22)00283-3. doi: 10.1016/j.jhin.2022.09.007. Online ahead of print.
https://www.journalofhospitalinfection.com/article/S0195-6701(22)00283-3/fulltext

The evidence from published studies suggests that replication-competent SARS-CoV-2 is present on fomites. Replication-competent SARS-CoV-2 is significantly more likely when the PCR Ct for clinical specimens and fomite samples is <30. Further studies should investigate the duration of infectiousness of SARS-CoV-2 and the frequency of transmission from fomites.

Vaccines / Immunology

10. **A randomized controlled trial of heterologous ChAdOx1 nCoV-19 and recombinant subunit vaccine MVC-COV1901 against COVID-19.** Chen CJ, Yang LY, Chang WY, Huang YC, Chiu CH, Shih SR, Huang CG, Huang KA. *Nat Commun*. 2022 Sep 17;13(1):5466. doi: 10.1038/s41467-022-33146-7.
https://www.nature.com/articles/s41467-022-33146-7

Heterologous prime-boost COVID-19 vaccine strategy may facilitate mass COVID-19 immunization. We reported early immunogenicity and safety outcomes of heterologous immunization with a viral vector vaccine (ChAdOx1) and a spike-2P subunit vaccine (MVC-COV1901) in a participant-blinded, randomized, non-inferiority trial (NCT05054621).

11. **A Bivalent Omicron-Containing Booster Vaccine against Covid-19.** Chalkias S et al. *N Engl J Med*. 2022 Sep 16. doi: 10.1056/NEJMoa2208343. Online ahead of print. https://www.nejm.org/doi/10.1056/NEJMoa2208343

The bivalent omicron-containing vaccine mRNA-1273.214 elicited neutralizing antibody responses against omicron that were superior to those with mRNA-1273, without evident safety concerns. (Funded by Moderna; ClinicalTrials.gov number, NCT04927065.).

12. **SARS-CoV-2 Vaccination Safety in Guillain-Barré Syndrome, Chronic Inflammatory Demyelinating Polyneuropathy, and Multifocal Motor Neuropath.** Baars AE et al. *Neurology*. 2022 Sep 20:10.1212/WNL.0000000000201376. doi: 10.1212/WNL.0000000000201376. Online ahead of print. https://n.neurology.org/content/early/2022/09/20/WNL.0000000000201376

We found no increased risk of GBS recurrence, and a low to negligible risk of worsening of CIDP or MMN related symptoms following SARS-CoV-2 vaccination. Based on our data, SARS-CoV-2 vaccination in patients with these immune-mediated neuropathies appears to be safe.

13. **Comparative effectiveness of BNT162b2 and mRNA-1273 booster dose after BNT162b2 primary vaccination against the Omicron variants: A retrospective cohort study using large-scale population-based registries in Japan.** Ono S, Michihata N, Yamana H, Uemura K, Ono Y, Jo T, Yasunaga H. *Clin Infect Dis*. 2022 Sep 18:ciac763. doi: 10.1093/cid/ciac763. Online ahead of print. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac763/6696997

Both homologous and heterologous vaccinations are effective against Omicron variants. In the head-to-head comparison, the effect was stronger in people who received heterologous vaccination than in those who received homologous vaccination. These findings may help improve logistics and decision making in future vaccination programs.

14. **Impact of SARS-CoV-2 vaccination and booster on COVID-19 symptom severity over time in the COVID-OUT trial.** Boulware DR et al. *Clin Infect Dis*. 2022 Sep 17:ciac772. doi: 10.1093/cid/ciac772. Online ahead of print. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac772/6702474

SARS-CoV-2 vaccine-boosted participants had the least severe symptoms during COVID-19 which abated the quickest over time.

15. **Associations of Immunogenicity and Reactogenicity After SARS-CoV-2 mRNA-1273 Vaccine in COVE and TeenCOVE Trials.** Siangphoe U et al. *Clin Infect Dis*. 2022 Sep 20:ciac780. doi: 10.1093/cid/ciac780. Online ahead of print. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac780/6708263

These data show an association of systemic ARs with increased nAb titers following a second mRNA-1273 injection. While these data indicate systemic ARs are associated with increased antibody titers, high nAb titers were observed in participants after both injections, consistent with the immunogenicity and efficacy in these trials. These results add to the body of evidence regarding the relationship of immunogenicity and reactogenicity and can contribute toward the design of future mRNA vaccines.

16. **IL-1RA Antibodies in Myocarditis after SARS-CoV-2 Vaccination.** Thurner L et al. *N Engl J Med*. 2022 Sep 21. doi: 10.1056/NEJMc2205667. Online ahead of print. https://www.nejm.org/doi/10.1056/NEJMc2205667

In this study, we evaluated the prevalence of antibodies neutralizing IL-1RA and progranulin, which inhibits tumor necrosis factor signaling, in 69 patients (14 to 79 years of age) who had clinically suspected myocarditis after SARS-CoV-2 vaccination. A total of 61 patients underwent endomyocardial biopsy.

17. **Restoration of neutralization activity against Omicrons BA.2 and BA.5 in older adults and individuals with risk factors following the 4th-dose of SARS-CoV-2 BNT162b2 vaccine.** Amano M, Otsu S, Ichikawa Y, Higashi-Kuwata N, Matsushita S, Shimada S, Mitsuya H. *J Infect Dis*. 2022 Sep 22:jiac393. doi: 10.1093/infdis/jiac393. Online ahead of print. https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiac393/6711120

Here, we determined the effects of consecutive 4 BNT162b2 doses on neutralizing activity 7 in sera from participants aged ≥60-years and those with risk factors against SARS-CoV2 Wuhan 8 and 2 Omicron sublineages, and analyzed longitudinal changes of neutralization activity pre- and post-2nd~4th 9 BNT162b2 doses in a prospective study over 490 days.

18. **Effectiveness of mRNA-1273 vaccine booster against COVID-19 in immunocompetent adults.** Florea A, Sy LS, Qian L, Ackerson BK, Luo Y, Tubert JE, Lee GS, Ku JH, Bruxvoort KJ, Talarico CA, Qiu S, Tian Y, Tseng HF. *Clin Infect Dis*. 2022 Sep 22:ciac785. doi: 10.1093/cid/ciac785. Online ahead of print. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac785/6711079

CONCLUSIONS: Among immunocompetent adults, the mRNA-1273 booster conferred additional protection against SARS-CoV-2 infection and severe COVID-19 disease compared to the 2-dose mRNA-1273 primary series during periods of Delta and Omicron predominance.
