Providence

COVID-19 Resource Desk

#108 | 5.22.22 to 5.28.22

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

Clinical Syndrome

1. **Corticosteroids and superinfections in COVID-19 patients on invasive mechanical ventilation.** Søvik S, et al. *J Infect.* 2022 May 20:S0163-4453(22)00305-X. doi: 10.1016/j.jinf.2022.05.015. https://doi.org/10.1016/j.jinf.2022.05.015
In critically ill COVID-19 patients, dexamethasone as standard of care was strongly and independently associated with superinfections.

Epidemiology & Public Health

2. **Excess Mortality in Massachusetts During the Delta and Omicron Waves of COVID-19.** Faust JS, et al. *JAMA.* 2022 May 20. doi: 10.1001/jama.2022.8045. https://jamanetwork.com/journals/jama/fullarticle/2792738
More all-cause excess mortality occurred in Massachusetts during the first 8 weeks of the Omicron period than during the entire 23-week Delta period. Although numerically there were more excess deaths in older age groups, there was excess mortality in all adult age groups, as recorded in earlier waves, including in younger age groups. Moreover, the ratio of observed to expected all-cause deaths was similar in all age groups, and increased during the Omicron period compared with the Delta period.

3. **Early introduction and rise of the Omicron SARS-CoV-2 variant in highly vaccinated university populations.** Petros BA et al. Clin Infect Dis. 2022 May 25:ciac413. doi: 10.1093/cid/ciac413. Online ahead of print.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac413/6591846
CONCLUSIONS: We document the rapid takeover of the Omicron variant at IHEs, reaching near-fixation within the span of 9.5-12.5 days despite lower viral loads, on average, than the previously dominant Delta variant. These findings highlight the transmissibility of Omicron, its propensity to rapidly dominate small populations, and the ability of robust asymptomatic surveillance programs to offer early insights into the dynamics of pathogen arrival and spread.

Survivorship & Rehabilitation

4. **A multisystem, cardio-renal investigation of post-COVID-19 illness.** Morrow AJ, et al. *Nat Med.* 2022 May 23. doi: 10.1038/s41591-022-01837-9. https://doi.org/10.1038/s41591-022-01837-9

The illness trajectory of patients after hospitalization with COVID-19 includes persisting multisystem abnormalities and health impairments that could lead to substantial demand on healthcare services in the future.

5. **Post–COVID Conditions Among Adult COVID-19 Survivors Aged 18–64 and ≥65 Years — United States, March 2020–November 2021.** Bull-Otterson L, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 24 May 2022. DOI: http://dx.doi.org/10.15585/mmwr.mm7121e1

COVID-19 survivors have twice the risk for developing pulmonary embolism or respiratory conditions; one in five COVID-19 survivors aged 18–64 years and one in four survivors aged ≥65 years experienced at least one incident condition that might be attributable to previous COVID-19.

6. **Long COVID after breakthrough SARS-CoV-2 infection.** Al-Aly Z, et al. *Nat Med.* 2022 May 25. doi: 10.1038/s41591-022-01840-0. https://www.nature.com/articles/s41591-022-01840-0

In this study, we used the US Department of Veterans Affairs national healthcare databases to build a cohort of 33,940 individuals with BTI and several controls of people without evidence of SARS-CoV-2 infection. At 6 months after infection, we show that, beyond the first 30 days of illness, compared to contemporary controls, people with BTI exhibited a higher risk of death and incident post-acute sequelae, including cardiovascular, coagulation and hematologic, gastrointestinal, kidney, mental health, metabolic, musculoskeletal and neurologic disorders. The results were consistent in comparisons versus the historical and vaccinated controls. Altogether, the findings suggest that vaccination before infection confers only partial protection in the post-acute phase of the disease; hence, reliance on it as a sole mitigation strategy may not optimally reduce long-term health consequences of SARS-CoV-2 infection. The findings emphasize the need for continued optimization of strategies for primary prevention of BTI and will guide development of post-acute care pathways for people with BTI.

Therapeutics

7. **Baricitinib versus dexamethasone for adults hospitalised with COVID-19 (ACTT-4): a randomised, double-blind, double placebo-controlled trial.** Wolfe CR et al. Lancet Respir Med. 2022 May 23:S2213-2600(22)00088-1. doi: 10.1016/S2213-2600(22)00088-1. Online ahead of print.

https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(22)00088-1/fulltext

INTERPRETATION: In hospitalised patients with COVID-19 requiring supplemental oxygen by low-flow, high-flow, or non-invasive ventilation, baricitinib plus remdesivir and dexamethasone plus remdesivir resulted in similar mechanical ventilation-free survival by day 29, but dexamethasone was associated with significantly more adverse events, treatment-related adverse events, and severe or life-threatening adverse events. A more individually tailored choice of immunomodulation now appears possible, where side-effect profile, ease of administration, cost, and patient comorbidities can all be considered.

Vaccines / Immunology

8. **Safety and immunogenicity of Nanocovax, a SARS-CoV-2 recombinant spike protein vaccine: Interim results of a double-blind, randomised controlled phase 1 and 2 trial.** Nguyen TP, et al. *Lancet Reg Health West Pac.* 2022 May 16;24:100474. doi: 10.1016/j.lanwpc.2022.100474. https://doi.org/10.1016/j.lanwpc.2022.100474

Up to day 90, Nanocovax was found to be safe, well tolerated, and induced robust immune responses.

9. **A Longitudinal Study of COVID-19 Sequelae and Immunity: Baseline Findings.** Sneller MC, et al. *Ann Intern Med.* 2022 May 24. doi: 10.7326/M21-4905. https://doi.org/10.7326/m21-4905

A high burden of persistent symptoms was observed in persons after COVID-19. Extensive diagnostic evaluation revealed no specific cause of reported symptoms in most cases. Antibody levels were highly variable after COVID-19.

10. **Short term, relative effectiveness of four doses versus three doses of BNT162b2 vaccine in people aged 60 years and older in Israel: retrospective, test negative, case-control study.** Gazit S, et al. *BMJ.* 2022 May 24;377:e071113. doi: 10.1136/bmj-2022-071113. https://www.bmj.com/content/377/bmj-2022-071113

CONCLUSIONS: A fourth dose of the BNT162b2 vaccine appears to have provided additional protection against both SARS-CoV-2 infection and severe covid-19 disease relative to three vaccine doses. However, relative effectiveness of the fourth dose against infection appears to wane sooner than that of the third dose.

11. **Understanding 'hybrid immunity': comparison and predictors of humoral immune responses to SARS-CoV-2 infection and COVID-19 vaccines.** Epsi NJ et al. *Clin Infect Dis.* 2022 May 24:ciac392. doi: 10.1093/cid/ciac392. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac392/6591282

CONCLUSIONS: Vaccine-receipt elicited higher anti-spike-IgG responses than infection-alone, although IgG levels waned faster in those vaccinated (compared to infection-alone). Vaccine-after-infection elicits a greater humoral response compared to vaccine or infection alone; and the timing, but not disease severity, of prior infection predicted these post-vaccination IgG responses. While differences between groups were small in magnitude, these results offer insights into vaccine immunogenicity variations that may help inform vaccination timing strategies.

12. **Effectiveness of Homologous and Heterologous Covid-19 Boosters against Omicron.** Accorsi EK, et al. *N Engl J Med*. 2022 May 25. doi: 10.1056/NEJMc2203165. https://www.nejm.org/doi/10.1056/NEJMc2203165

We performed a test-negative, case–control analysis to assess the effectiveness of four vaccination regimens against symptomatic infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) during a period when omicron was the predominant circulating variant: a single priming dose of Ad26.COV2.S, a single priming dose of Ad26.COV2.S plus a booster dose of Ad26.COV2.S (Ad26.COV2.S/Ad26.COV2.S), a single priming dose of Ad26.COV2.S plus a booster dose of mRNA vaccine (Ad26.COV2.S/mRNA), and two priming doses of an mRNA vaccine plus a booster dose of

mRNA vaccine (mRNA/mRNA/mRNA). In the regimens that included an mRNA vaccine, either the BNT162b2 vaccine (Pfizer–BioNTech) or the mRNA-1273 vaccine (Moderna) was used.

13. **Protection and Waning of Natural and Hybrid Immunity to SARS-CoV-2.** Goldberg Y, et al. *N Engl J Med.* 2022 May 25. doi: 10.1056/NEJMoa2118946. https://www.nejm.org/doi/10.1056/NEJMoa2118946

Among persons who had been previously infected with SARS-CoV-2 (regardless of whether they had received any dose of vaccine or whether they had received one dose before or after infection), protection against reinfection decreased as the time increased since the last immunity-conferring event; however, this protection was higher than that conferred after the same time had elapsed since receipt of a second dose of vaccine among previously uninfected persons. A single dose of vaccine after infection reinforced protection against reinfection.

14. **Cross-neutralization of Omicron BA.1 against BA.2 and BA.3 SARS-CoV-2.** Zou J, Kurhade C, Xia H, Liu M, Xie X, Ren P, Shi PY. Nat Commun. 2022 May 26;13(1):2956. doi: 10.1038/s41467-022-30580-5.

https://www.nature.com/articles/s41467-022-30580-5

The Omicron SARS-CoV-2 has several distinct sublineages, among which sublineage BA.1 is responsible for the initial Omicron surge and is now being replaced by BA.2 worldwide, whereas BA.3 is currently at a low frequency. The ongoing BA.1-to-BA.2 replacement underscores the importance to understand the cross-neutralization among the three Omicron sublineages. Here we test the neutralization of BA.1-infected human sera against BA.2, BA.3, and USA/WA1-2020 (a strain isolated in late January 2020). The BA.1-infected sera neutralize BA.1, BA.2, BA.3, and USA/WA1-2020 SARS-CoV-2s with geometric mean titers (GMTs) of 445, 107, 102, and 16, respectively. Thus, the neutralizing GMTs against heterologous BA.2, BA.3, and USA/WA1-2020 are 4.2-, 4.4-, and 28.4-fold lower than the GMT against homologous BA.1, respectively. These findings have implications in COVID-19 vaccine strategy.

15. **Vaccine effectiveness against COVID-19 breakthrough infections in patients with cancer (UKCCEP): a population-based test-negative case-control study.** Lee LYW et al. Lancet Oncol. 2022 May 18:S1470-2045(22)00202-9. doi: 10.1016/S1470-2045(22)00202-9. Online ahead of print.

https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(22)00202-9/fulltext

INTERPRETATION: COVID-19 vaccination is effective for individuals with cancer, conferring varying levels of protection against breakthrough infections. However, vaccine effectiveness is lower in patients with cancer than in the general population. COVID-19 vaccination for patients with cancer should be used in conjunction with non-pharmacological strategies and community-based antiviral treatment programmes to reduce the risk that COVID-19 poses to patients with cancer.
FUNDING: University of Oxford, University of Southampton, University of Birmingham, Department of Health and Social Care, and Blood Cancer UK.

16. **Heterologous ChAdOx1/BNT162b2 vaccination induces stronger immune response than homologous ChAdOx1 vaccination: The pragmatic, multi-center, three-arm, partially randomized HEVACC trial.** Bánki Z et al. EBioMedicine. 2022 May 23;80:104073. doi: 10.1016/j.ebiom.2022.104073. Online ahead of print.

https://www.thelancet.com/journals/ebiom/article/PIIS2352-3964(22)00254-7/fulltext
INTERPRETATION: This study clearly shows the immunogenicity and safety of heterologous AZ/BNT vaccination and encourages further studies on heterologous vaccination schedules.
FUNDING: This work was supported by the Medical University of Innsbruck, and partially funded by NIAID contracts No. 75N9301900065, 75N93021C00016, and 75N93019C00051.

17. **Relative Virulence of SARS-CoV-2 Among Vaccinated and Unvaccinated Individuals Hospitalized with SARS-CoV-2.** Grima AA, Murison KR, Simmons AE, Tuite AR, Fisman DN. Clin Infect Dis. 2022 May 25:ciac412. doi: 10.1093/cid/ciac412. Online ahead of print.

https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac412/6591845
INTERPRETATION: We identified decreased virulence of SARS-CoV-2 infections in vaccinated individuals, even when vaccines failed to prevent infection sufficiently severe to cause hospitalization. Even with diminished efficacy of vaccines against infection with novel VOCs, vaccines remain an important tool for reduction of ICU admission and mortality.

Women & Children

18. **Comparison of influenza and COVID-19-associated hospitalizations among children < 18 years old in the United States-FluSurv-NET (October-April 2017-2021) and COVID-NET (October 2020-September 2021).** Delahoy MJ, et al. *Clin Infect Dis.* 2022 May 20:ciac388. doi: 10.1093/cid/ciac388. https://doi.org/10.1093/cid/ciac388

In the setting of extensive mitigation measures during the COVID-19 pandemic, the annual COVID-19-associated hospitalization rate during 2020-2021 was higher among adolescents and similar or lower among children <12 years old compared with influenza during the three seasons before the COVID-19 pandemic. COVID-19 adds substantially to the existing burden of pediatric hospitalizations and severe outcomes caused by influenza and other respiratory viruses.

GUIDELINES & CONSENSUS STATEMENTS

Surgical Triage and Timing for Patients with COVID: A Guidance Statement from the Society of Thoracic Surgeons. Grant MC, et al. *Ann Thorac Surg.* 2022 May 17:S0003-4975(22)00706-8. doi: 10.1016/j.athoracsur.2022.05.001.

FDA / CDC / NIH / WHO Updates

CDC: COVID-19 Rebound After Paxlovid Treatment (cdc.gov)

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