Providence

COVID-19 Resource Desk

#104 | 4.24.2022 to 4.30.2022

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

Epidemiology & Public Health

1. **Risk of hospitalisation associated with infection with SARS-CoV-2 omicron variant versus delta variant in Denmark: an observational cohort study.** Bager P et al. *Lancet Infect Dis.* 2022 Apr 22:S1473-3099(22)00154-2. doi: 10.1016/S1473-3099(22)00154-2. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00154-2/fulltext

We found a significantly lower risk of hospitalisation with omicron infection compared with delta infection among both vaccinated and unvaccinated individuals, suggesting an inherent reduced severity of omicron. Our results could guide modelling of the effect of the ongoing global omicron wave and thus health-care system preparedness.

2. **Seroprevalence of Infection-Induced SARS-CoV-2 Antibodies — United States, September 2021–February 2022.** Clarke KE, et al. *MMWR Morb Mortal Wkly Rep* 2022;71. DOI: http://dx.doi.org/10.15585/mmwr.mm7117e3

In December 2021, the B.1.1.529 (Omicron) variant of SARS-CoV-2, the virus that causes COVID-19, became predominant in the United States. Subsequently, national COVID-19 case rates peaked at their highest recorded levels. Traditional methods of disease surveillance do not capture all COVID-19 cases because some are asymptomatic, not diagnosed, or not reported; therefore, the proportion of the population with SARS-CoV-2 antibodies (i.e., seroprevalence) can improve understanding of population-level incidence of COVID-19. This report uses data from CDC's national commercial laboratory seroprevalence study and the 2018 American Community Survey to examine U.S. trends in infection-induced SARS-CoV-2 seroprevalence during September 2021–February 2022, by age group.

3. **Epidemiology and Management of ST-Segment-Elevation Myocardial Infarction in Patients With COVID-19: A Report from the American Heart Association COVID-19 Cardiovascular Disease Registry.** Bhatt AS et al. *J Am Heart Assoc.* 2022 Apr 26:e024451. doi: 10.1161/JAHA.121.024451. https://www.ahajournals.org/doi/10.1161/JAHA.121.024451

STEMI in hospitalized patients with COVID-19 is rare but associated with poor in-hospital outcomes. Rates of coronary angiography and primary reperfusion were low in this population of patients with STEMI and COVID-19. Adaptations of systems of care to ensure timely contemporary treatment for this population are needed.

Prognosis

4. **External validation of the 4C Mortality Score for hospitalised patients with COVID-19 in the RECOVER network.** Gordon AJ, et al. *BMJ Open.* 2022 Apr 21;12(4):e054700. doi: 10.1136/bmjopen-2021-054700. https://bmjopen.bmj.com/content/12/4/e054700.long

We independently validated 4C Score as predicting risk of 30-day mortality in hospitalised SARS-CoV-2+ patients. We recommend dropping the CRP component of the score and using our recalibrated mortality risk estimates.

Survivorship & Rehabilitation

5. **Clinical characteristics with inflammation profiling of long COVID and association with 1-year recovery following hospitalisation in the UK: a prospective observational study.** PHOSP-COVID Collaborative Group. *Lancet Respir Med.* 2022 Apr 22:S2213-2600(22)00127-8. doi: 10.1016/S2213-2600(22)00127-8. https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(22)00127-8/fulltext

The sequelae of a hospital admission with COVID-19 were substantial 1 year after discharge across a range of health domains, with the minority in our cohort feeling fully recovered. Patient-perceived health-related quality of life was reduced at 1 year compared with before hospital admission. Systematic inflammation and obesity are potential treatable traits that warrant further investigation in clinical trials.

Therapeutics

6. **Lack of efficacy for sotrovimab use in patients with COVID-19: A meta-analysis.** Ao G, et al. *J Infect.* 2022 Apr 21:S0163-4453(22)00210-9. doi: 10.1016/j.jinf.2022.04.027. https://www.journalofinfection.com/article/S0163-4453(22)00210-9/fulltext

Sotrovimab is a neutralizing monoclonal antibody targeting the conserved epitope on the spike protein receptor of SARS-CoV-2. It was granted emergency use authorization by the United States Food and Drug Administration in May 2021 with several countries closely following suit. Given as a single 500 mg IV infusion, sotrovimab inhibits the fusion of viral and cell membranes to decrease viral internalization. In addition, it was reported that the Omicron spike was resistant against most therapeutic antibodies but remained susceptible to inhibition by sotrovimab. However, on March 25, 2022, the FDA revised the authorization for sotrovimab to limit its use for the treatment of COVID-19 in certain U.S. regions with high frequency of the omicron BA.2 subvariant. Currently, there were a few studies that evaluated the effect of sotrovimab on clinical outcomes in patients with mildto-moderate COVID-19. Thus, we aim to perform a meta-analysis to evaluate the effect of sotrovimab in patients with COVID-19.

7. **Do Corticosteroids Reduce Mortality or Progression to Severe Disease for Non-Oxygen Requiring Patients Infected With COVID-19?** Nikolla DA, Forehand BR. *Ann Emerg Med.* 2022 Apr 20:S0196-0644(22)00107-X. doi: 10.1016/j.annemergmed.2022.02.005. https://www.annemergmed.com/article/S0196-0644(22)00107-X/fulltext

In patients infected with COVID-19 not requiring supplemental oxygen, systemic corticosteroids are associated with a small increase in mortality and progression to severe disease.

8. **Estimated Health Outcomes and Costs of COVID-19 Prophylaxis With Monoclonal Antibodies Among Unvaccinated Household Contacts in the US.** Flaxman AD, et al. *JAMA Netw Open.* 2022 Apr 1;5(4):e228632. doi: 10.1001/jamanetworkopen.2022.8632. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2791451

In this modeling study of a simulated US population, a mAb PEP for COVID-19 program was estimated to improve health outcomes and reduce costs. In the setting of a susceptible variant of SARS-CoV-2, health system and public health actors would have an opportunity to improve health and reduce net payer costs through COVID-19 PEP with mAbs.

Vaccines / Immunology

9. **Comparing COVID-19-related hospitalization rates among individuals with infection-induced and vaccine-induced immunity in Israel.** Waxman JG, et al. *Nat Commun.* 2022 Apr 22;13(1):2202. doi: 10.1038/s41467-022-29858-5. https://www.nature.com/articles/s41467-022-29858-5

With the COVID-19 pandemic ongoing, accurate assessment of population immunity and the effectiveness of booster and enhancer vaccine doses is critical. We compare COVID-19-related hospitalization incidence rates in 2,412,755 individuals across four exposure levels: non-recent vaccine immunity (two BNT162b2 COVID-19 vaccine doses five or more months prior), boosted vaccine immunity (three BNT162b2 doses), infection-induced immunity (previous COVID-19 without a subsequent BNT162b2 dose), and enhanced infection-induced immunity (previous COVID-19 with a subsequent BNT162b2 dose). Rates, adjusted for potential demographic, clinical and health-seeking-behavior confounders, were assessed from July-November 2021 when the Delta variant was predominant. Compared with non-recent vaccine immunity, COVID-19-related hospitalization incidence rates were reduced by 89% (87-91%) for boosted vaccine immunity, 66% (50-77%) for infection-induced immunity and 75% (61-83%) for enhanced infection-induced immunity. We demonstrate that infection-induced immunity (enhanced or not) provides more protection against COVID-19-related hospitalization than non-recent vaccine immunity, but less protection than booster vaccination. Additionally, our results suggest that vaccinating individuals with infection-induced immunity further enhances their protection.

10. **Durability of BNT162b2 vaccine against hospital and emergency department admissions due to the omicron and delta variants in a large health system in the USA: a test-negative case-control study.** Tartof SY, et al. *Lancet Respir Med.* 2022 Apr 22:S2213-2600(22)00101-1. doi: 10.1016/S2213-2600(22)00101-1. https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(22)00101-1/fulltext

Three doses of BNT162b2 conferred high protection against hospital and emergency department admission due to both the delta and omicron variants in the first 3 months after vaccination. However, 3 months after receipt of a third dose, waning was apparent against SARS-CoV-2 outcomes due to the omicron variant, including hospital admission. Additional doses of current, adapted, or novel COVD-19 vaccines might be needed to maintain high levels of protection against subsequent waves of SARS-CoV-2 caused by the omicron variant or future variants with similar escape potential.

11. **Severity of omicron variant of concern and effectiveness of vaccine boosters against symptomatic disease in Scotland (EAVE II): a national cohort study with nested test-negative design.** EAVE II Collaborators. *Lancet Infect Dis.* 2022 Apr 22:S1473-3099(22)00141-4. doi: 10.1016/S1473-3099(22)00141-4. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00141-4/fulltext

These early national data suggest that omicron is associated with a two-thirds reduction in the risk of COVID-19 hospitalisation compared with delta. Although offering the greatest protection against delta, the booster dose of vaccination offers substantial additional protection against the risk of symptomatic COVID-19 for omicron compared with 25 weeks or more after the second vaccine dose.

12. **Effectiveness of a second BNT162b2 booster vaccine against hospitalization and death from COVID-19 in adults aged over 60 years.** Arbel R, et al. *Nat Med*. 2022 Apr 25. doi: 10.1038/s41591-022-01832-0. https://www.nature.com/articles/s41591-022-01832-0

This retrospective cohort study included all members of Clalit Health Services, aged 60 to 100 years, who were eligible for the second-booster on January 3, 2022. Hospitalizations and mortality due to COVID-19 among participants who received the second-booster were compared with participants who received one booster dose. Cox proportional-hazards regression models with time-dependent covariates were used to estimate the association between the second-booster and hospitalizations and death due to COVID-19 while adjusting for demographic factors and coexisting illnesses. A total of 563,465 participants met the eligibility criteria. Of those, 328,597 (58%) received a second-booster dose during the 40-day study period. Hospitalizations due to COVID-19 occurred in 270 of the second-booster recipients and in 550 participants who received one booster dose (adjusted hazard ratio 0.36; 95% confidence interval (CI): 0.31 to 0.43). Death due to COVID-19 occurred in 92 second-booster recipients and in 232 participants who received one booster dose (adjusted hazard ratio 0.22; 95% CI 0.17 to 0.28). This study demonstrates a substantial reduction in hospitalizations and deaths due to Covid-19 conferred by a second-booster in Israeli adults aged 60 years and over.

13. **Risk of Appendicitis After mRNA COVID-19 Vaccination in a Danish Population.** Kildegaard H, et al. *JAMA Intern Med.* 2022 Apr 25. doi: 10.1001/jamainternmed.2022.1222. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2791667

Appendicitis has been reported as a potential adverse event after immunization with mRNA-based COVID-19 vaccines, based on trial data, adverse event report data, and observational data. We evaluated the risk of appendicitis after receiving an mRNA COVID-19 vaccination and after diagnosis of SARS-CoV-2 infection compared with the risk of appendicitis in unvaccinated individuals.

14. **Incidence of Guillain-Barré Syndrome After COVID-19 Vaccination in the Vaccine Safety Datalink.** Hanson KE et al. *JAMA Netw Open*. 2022 Apr 1;5(4):e228879. doi:10.1001/jamanetworkopen.2022.8879. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2791533

The unadjusted incidence rate per 100 000 person-years in the 1 to 21 days after mRNA vaccines was 1.3 and the adjusted RR in the 1 to 21 vs 22 to 42 days following mRNA vaccines was 0.56. In this cohort study of COVID-19 vaccines, the incidence of GBS was elevated after receiving the Ad.26.COV2.S vaccine. Surveillance is ongoing.

15. **US Evaluation of Axillary Lymphadenopathy Following COVID-19 Vaccination: A Prospective Longitudinal Study.** Ha SM, et al. *Radiology.* 2022 Apr 26:220543. doi: 10.1148/radiol.220543. https://pubs.rsna.org/doi/10.1148/radiol.220543

COVID-19 vaccine-associated axillary lymphadenopathy frequently persisted over 6 weeks on US. Lymphadenopathy should be interpreted considering vaccine type and time elapsed since vaccination. Follow-up US examination at least 12 weeks after vaccination may be reasonable, particularly for recipients of the mRNA vaccine.

16. **Coronavirus Disease 2019 (COVID-19) Vaccine Boosting in Previously Infected or Vaccinated Individuals.** Shrestha NK, et al. *Clin Infect Dis*. 2022 Apr 27:ciac327. doi: 10.1093/cid/ciac327. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac327/6574819

Administering a COVID-19 vaccine not designed for the Omicron variant, >6 months after prior infection or vaccination, protects against Omicron variant infection in those previously infected or vaccinated. There is no evidence of an advantage to administering more than 1 dose of vaccine to previously infected persons.

17. **Effectiveness of mRNA-based vaccines during the emergence of SARS-CoV-2 Omicron variant.** Sharma A, et al. *Clin Infect Dis.* 2022 Apr 27:ciac325. doi: 10.1093/cid/ciac325. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac325/6574744

BNT162b2 and mRNA-1273 were effective against COVID-19 following emergence of Omicron variant. A third dose provided additional protection over the primary series.

Women & Children

18. **Comparison of Multisystem Inflammatory Syndrome in Children-Related Myocarditis, Classic Viral Myocarditis, and COVID-19 Vaccine-Related Myocarditis in Children.** Patel T, et al. *J Am Heart Assoc.* 2022 Apr 27:e024393. doi: 10.1161/JAHA.121.024393. https://www.ahajournals.org/doi/10.1161/JAHA.121.024393

Compared with classic myocarditis, those with MIS-C myocarditis had better clinical outcomes, including rapid recovery of cardiac function. Patients with vaccine-related myocarditis had prompt resolution of symptoms and improvement of cardiac function.

GUIDELINES & CONSENSUS STATEMENTS

American College of Rheumatology Guidance for COVID-19 Vaccination in Patients With Rheumatic and Musculoskeletal Diseases: Version 4. Curtis JR et al. *Arthritis Rheumatol.* 2022 May;74(5):e21-e36. doi: 10.1002/art.42109.

FDA / CDC / NIH / WHO Updates

CDC Clinical Care Information for COVID-19, updated April 29, 2022.

NIH Covid-19 Treatment Guidelines, several updates released April 29, 2022.

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