Providence

COVID-19 Resource Desk

#135 | 12.04.2022 to 12.10.2022

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

1. **Viral dynamics during SARS-CoV-2 omicron infection highlight presymptomatic and asymptomatic infectiousness.** Jiang L, et al. *J Infect.* 2022 Nov 30:S0163-4453(22)00687-9. doi: 10.1016/j.jinf.2022.11.026. https://www.journalofinfection.com/article/S0163-4453(22)00687-9/fulltext

- Asymptomatic and symptomatic omicron infections had similar peak viral loads.
- Omicron viral loads peaked before symptom onset in 21% symptomatic infections.
- Public health interventions were associated with lower peak viral loads.

Epidemiology & Public Health

2. **Decline of RSV-specific antibodies during the COVID-19 pandemic.** den Hartog G, et al. *Lancet Infect Dis.* 2022 Dec 1:S1473-3099(22)00763-0. doi: 10.1016/S1473-3099(22)00763-0.

https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00763-0/fulltext

Data support the assumption that RSV-specific antibody concentrations declined during the COVID-19 pandemic in all age groups and are in line with a previous report showing decay of antibodies to RSV. We do not have data on RSV-specific antibody kinetics in our cohort before the pandemic and there are relatively large variations between individuals, so the effect on susceptibility to RSV is not clear yet. Antibodies to the F protein, especially in pre-fusion confirmation, have an important role in the neutralisation of RSV and were previously shown to correlate well with virus neutralisation. However, the degree to which virus neutralisation is affected and the exact correlation with immune protection are yet to be determined. Following this preliminary analysis, additional timepoints, including follow-up samples, are being investigated to support and extend these findings. In conclusion, monitoring changes in antibody concentrations could identify populations susceptible to RSV infection.

3. **COVID-19 Booster Dose Vaccination Coverage and Factors associated with Booster Vaccination among Adults, United States, March 2022.** Lu PJ, et al. *Emerg Infect Dis.* 2022 Dec 8;29(1). doi: 10.3201/eid2901.221151. https://wwwnc.cdc.gov/eid/article/29/1/22-1151_article

The Centers for Disease Control and Prevention recommends a COVID-19 vaccine booster dose for all persons >18 years of age. We analyzed data from the National Immunization Survey-Adult COVID

Module collected during February 27-March 26, 2022 to assess COVID-19 booster dose vaccination coverage among adults. We used multivariable logistic regression analysis to assess factors associated with vaccination. COVID-19 booster dose coverage among fully vaccinated adults increased from 25.7% in November 2021 to 63.4% in March 2022. Coverage was lower among non-Hispanic Black (52.7%), and Hispanic (55.5%) than non-Hispanic White adults (67.7%). Coverage was 67.4% among essential healthcare personnel, 62.2% among adults who had a disability, and 69.9% among adults who had medical conditions. Booster dose coverage was not optimal, and disparities by race/ethnicity and other factors are apparent in coverage uptake. Tailored strategies are needed to educate the public and reduce disparities in COVID-19 vaccination coverage.

Healthcare Delivery & Healthcare Workers

4. **Evaluation of Publication of COVID-19-Related Articles Initially Presented as Preprints.** Llor C, Moragas A, Maier M. *JAMA Netw Open.* 2022 Dec 1;5(12):e2245745. doi: 10.1001/jamanetworkopen.2022.45745.

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799314
This cross-sectional study evaluates subsequent journal publication of COVID-19–related articles initially posted as medRxiv preprints in 2020.

Survivorship & Rehabilitation

5. **Persistent olfactory dysfunction 2 years after onset of COVID-19.** Deng YK, et al. *J Infect.* 2022 Nov 29:S0163-4453(22)00684-3. doi: 10.1016/j.jinf.2022.11.024. https://www.journalofinfection.com/article/S0163-4453(22)00684-3/fulltext

There is a considerable portion of patients having persistent olfactory dysfunction 24 months after SARS-CoV-2 infection when evaluated by psychophysical tests, even for those without self-reported symptoms.

6. **Residual Lung Abnormalities Following COVID-19 Hospitalization: Interim Analysis of the UKILD Post-COVID Study.** Stewart I et al. *Am J Respir Crit Care Med.* 2022 Dec 1. doi: 10.1164/rccm.202203-0564OC. https://www.atsjournals.org/doi/10.1164/rccm.202203-0564OC

Residual lung abnormalities were estimated in up to 11% of people discharged following COVID-19 related hospitalization. Health services should monitor at-risk individuals to elucidate long-term functional implications.

7. **Post-covid medical complaints following infection with SARS-CoV-2 Omicron vs Delta variants.** Magnusson K, et al. *Nat Commun.* 2022 Nov 30;13(1):7363. doi: 10.1038/s41467-022-35240-2.

https://www.nature.com/articles/s41467-022-35240-2
The SARS-CoV-2 Omicron (B.1.1.529) variant has been associated with less severe acute disease, however, concerns remain as to whether long-term complaints persist to a similar extent as for earlier variants. Studying 1 323 145 persons aged 18-70 years living in Norway with and without SARS-CoV-2 infection in a prospective cohort study, we found that individuals infected with Omicron had a similar

risk of post-covid complaints (fatigue, cough, heart palpitations, shortness of breath and anxiety/depression) as individuals infected with Delta (B.1.617.2), from 14 to up to 126 days after testing positive, both in the acute (14 to 29 days), sub-acute (30 to 89 days) and chronic post-covid (≥90 days) phases. However, at ≥90 days after testing positive, individuals infected with Omicron had a lower risk of having any complaint (43 (95%CI = 14 to 72) fewer per 10,000), as well as a lower risk of musculoskeletal pain (23 (95%CI = 2-43) fewer per 10,000) than individuals infected with Delta. Our findings suggest that the acute and sub-acute burden of post-covid complaints on health services is similar for Omicron and Delta. The chronic burden may be lower for Omicron vs Delta when considering musculoskeletal pain, but not when considering other typical post-covid complaints.

Therapeutics

8. **Association of Remdesivir Treatment with Mortality Among Hospitalized Adults With COVID-19 in the United States.** Goldman JD, et al. **[Providence author].** *JAMA Netw Open.* 2022 Dec 1;5(12):e2244505. doi: 10.1001/jamanetworkopen.2022.44505. https://doi.org/10.1001/jamanetworkopen.2022.44505

In this retrospective cohort study using health insurance claims and hospital chargemaster data, remdesivir treatment was associated with a significantly reduced inpatient mortality overall among patients hospitalized with COVID-19. Results of this analysis using data collected during routine clinical practice and state-of-the-art methods complement results from randomized clinical trials. Future areas of research include assessing the association of remdesivir treatment with inpatient mortality during the circulation of different variants and relative to time from symptom onset.

9. **Inhaled Sargramostim (Recombinant Human Granulocyte-Macrophage Colony-Stimulating Factor) for COVID-19-Associated Acute Hypoxemia: Results of the Phase 2, Randomized, Open-Label Trial (iLeukPulm).** Byun T, et al. **[Providence author]**. *Mil Med.* 2022 Dec 2:usac362. doi: 10.1093/milmed/usac362. https://doi.org/10.1093/milmed/usac362

The addition of inhaled sargramostim to SOC improved P(A-a)O2, a measure of oxygenation, by day 6 in hospitalized patients with COVID-19-associated acute hypoxemia and was well tolerated. Inhaled sargramostim is delivered directly to the lung, minimizing systemic effects, and is simple to administer making it a feasible treatment option in patients in settings where other therapy routes may be difficult. Although proportionally lower rates of intubation and mortality were observed in sargramostim-treated patients, this study was insufficiently powered to demonstrate significant changes in these outcomes. However, the significant improvement in gas exchange with sargramostim shows this inhalational treatment enhances pulmonary efficiency in this severe respiratory illness. These data provide strong support for further evaluation of sargramostim in high-risk patients with COVID-19.

10. **No evidence of clinical efficacy of famotidine for the treatment of COVID-19 in a systematic review and meta-analysis.** Cheema HA, et al. *J Infect.* 2022 Nov 30:S0163-4453(22)00683-1. doi: 10.1016/j.jinf.2022.11.022.

https://www.journalofinfection.com/article/S0163-4453(22)00683-1/fulltext

- We assessed the effect of famotidine administration in COVID-19 patients.
- We included 10 studies out of which 3 were randomized controlled trials (RCTs).

• Famotidine does not reduce mortality or hasten recovery in COVID-19 patients.
• Large-scale RCTs are needed to investigate its efficacy.

11. **Mechanical Circulatory Support in Patients With COVID-19 Presenting with Myocardial Infarction.** Guddeti RR et al. *Am J Cardiol.* 2022 Nov 11;187:76-83. doi: 10.1016/j.amjcard.2022.09.030. https://www.sciencedirect.com/science/article/pii/S000291492201058X

Patients with COVID-19+ with STEMI requiring MCS have very high in-hospital mortality, likely related to the significantly higher pulmonary involvement compared with patients with COVID-19- with STEMI requiring MCS.

12. **Efficacy and Safety of Pacritinib vs Placebo for Patients with Severe COVID-19: A Phase 2 Randomized Clinical Trial.** Cafardi J et al. *JAMA Netw Open.* 2022 Dec 1;5(12):e2242918. doi: 10.1001/jamanetworkopen.2022.42918.

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799198

The study did not meet its primary end point in patients with severe COVID-19. Subgroup analyses may indicate specific populations with hyperinflammation that could benefit from pacritinib, although further clinical trials would be needed to confirm these effects.
TRIAL REGISTRATION: ClinicalTrials.gov Identifier: NCT04404361.

13. **Sex, Racial, and Ethnic Representation in COVID-19 Clinical Trials: A Systematic Review and Meta-analysis.** Xiao H, et al. *JAMA Intern Med.* 2022 Dec 5. doi: 10.1001/jamainternmed.2022.5600. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2799224

In this systematic review and meta-analysis, aggregate differences in representation for several demographic groups in COVID-19 prevention and treatment trials in the US were found. Strategies to better ensure diverse representation in COVID-19 studies are needed, especially for prevention trials.

14. **Association of Glucose-Lowering Drugs with Outcomes in Patients with Diabetes Before Hospitalization for COVID-19: A Systematic Review and Network Meta-analysis.** Zhu Z, et al. *JAMA Netw Open*. 2022 Dec 1;5(12):e2244652. doi: 10.1001/jamanetworkopen.2022.44652.

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799219

These findings suggest that the use of an SGLT-2i before COVID-19 infection is associated with lower COVID-19-related adverse outcomes. In addition to SGLT-2is, glucagon-like peptide-1 receptor agonists and metformin were also associated with relatively low risk of adverse outcomes.

15. **Incidence of Viral Rebound After Treatment with Nirmatrelvir-Ritonavir and Molnupiravir.** Wong GL, et al. *JAMA Netw Open.* 2022 Dec 1;5(12):e2245086. doi: 10.1001/jamanetworkopen.2022.45086.

https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799218

In this cohort study, viral rebound was uncommon in patients taking molnupiravir or nirmatrelvir-ritonavir and was not associated with increased risk of mortality. Given these findings, novel oral antivirals should be considered as a treatment for more patients with COVID-19 in the early phase of the infection.

16. **Efficacy and safety of ensitrelvir in patients with mild-to-moderate COVID-19: the phase 2b part of a randomized, placebo-controlled, phase 2/3 study.** Mukae, H. et al. *Clin Infect Dis.* 2022 Dec 7:ciac933. doi: 10.1093/cid/ciac933. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac933/6881001

A total of 341 patients (ensitrelvir 125 mg group, 114; ensitrelvir 250 mg group, 116; and placebo group, 111; male, 53.5%-64.9%; mean age, 35.3-37.3 years) were included in the efficacy analyses. The change from baseline in the SARS-CoV-2 titer on day 4 was significantly greater with both ensitrelvir doses than with placebo (differences from placebo: -0.41 log10 50% tissue-culture infectious dose/mL, $P < 0.0001$ for both). The total score of the 12 COVID-19 symptoms did not show a significant difference between the ensitrelvir groups and placebo group. The time-weighted average change from baseline up to 120 hours was significantly greater with ensitrelvir versus placebo in several subtotal scores, including acute symptoms and respiratory symptoms. Most adverse events were mild in severity.
CONCLUSIONS: Ensitrelvir treatment demonstrated a favorable antiviral efficacy and potential clinical benefit with an acceptable safety profile.

Transmission / Infection Control

17. **Risk of transmission of COVID-19 from healthcare workers returning to work after a 5-day isolation, and kinetics of shedding of viable SARS-CoV-2 variant B.1.1.529 (Omicron).** Jung J et al. *J Hosp Infect.* 2022 Nov 29:S0195-6701(22)00366-8. doi: 10.1016/j.jhin.2022.11.012. https://www.journalofhospitalinfection.com/article/S0195-6701(22)00366-8/fulltext

Our data suggest that the residual risk of virus transmission after 5 days of isolation following diagnosis or symptom onset is low.

18. **Measurement of SARS-CoV-2 in air and on surfaces in Scottish hospitals.** Loh M et al. *J Hosp Infect.* 2022 Dec 3:S0195-6701(22)00373-5. doi: 10.1016/j.jhin.2022.11.019. https://www.journalofhospitalinfection.com/article/S0195-6701(22)00373-5/fulltext

Non-patient areas of the hospital may pose risks for infection transmission and further attention should be paid to these areas. Standardization of sampling methods will improve understanding of levels of environmental contamination. The pandemic has demonstrated a need to review and act upon the challenges of older hospital buildings meeting current ventilation guidance.

Vaccines / Immunology

19. **Effectiveness and Duration of Protection of a Fourth Dose of COVID-19 mRNA Vaccine among Long-Term Care Residents in Ontario, Canada.** Grewal R, et al. *J Infect Dis.* 2022 Dec 3:jiac468. doi: 10.1093/infdis/jiac468.

https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiac468/6867854

We estimated the effectiveness of a fourth dose of mRNA COVID-19 vaccine against Omicron infections and severe outcomes over time among long-term care residents in Ontario, Canada. Fourth doses provide additional protection against Omicron-related outcomes, but the protection wanes over time, with more waning seen against infection than severe outcomes.

20. **Myopericarditis After COVID-19 mRNA Vaccination Among Adolescents and Young Adults: A Systematic Review and Meta-analysis.** Yasuhara J, et al. *JAMA Pediatr.* 2022 Dec 5. doi: 10.1001/jamapediatrics.2022.4768.

https://jamanetwork.com/journals/jamapediatrics/fullarticle/2798866

This systematic review and meta-analysis found low incidence rate and largely favorable early outcomes of COVID-19 mRNA vaccine-associated myopericarditis in adolescents and young adults from a wide range of populations. These findings are reassuring but continued follow-up is warranted.

21. **Timing of last COVID-19 vaccine dose and SARS-CoV-2 breakthrough infections in fully (boosted) vaccinated healthcare personnel.** Maltezou HC et al. *J Hosp Infect*. 2022 Dec 3:S0195-6701(22)00370-X. doi: 10.1016/j.jhin.2022.11.016.

https://www.journalofhospitalinfection.com/article/S0195-6701(22)00370-X/fulltext

CONCLUSION: SARS-CoV-2 breakthrough infections are common among fully (boosted) vaccinated HCP. However, full COVID-19 vaccination offered considerable protection against hospitalization. Our findings may contribute to defining the optimal timing for booster vaccinations. More efficient COVID-19 vaccines that will also confer protection against SARS-CoV-2 infection are urgently needed.

22. **Low neutralization of SARS-CoV-2 Omicron BA.2.75.2, BQ.1.1, and XBB.1 by parental mRNA vaccine or a BA.5-bivalent booster.** Kurhade C, et al. *Nat Med*. 2022 Dec 6. doi: 10.1038/s41591-022-02162-x.

https://www.nature.com/articles/s41591-022-02162-x

The newly emerged SARS-CoV-2 Omicron sublineages, including the BA.2-derived BA.2.75.2 and the BA.5-derived BQ.1.1 and XBB.1, have accumulated additional spike mutations that may affect vaccine effectiveness. Here we report neutralizing activities of three human serum panels collected from individuals 23-94 days after dose 4 of a parental mRNA vaccine, 14-32 days after a BA.5-bivalent-booster from individuals with 2-4 previous doses of parental mRNA vaccine, or 15-32 days after a BA.5-bivalent-booster from individuals with previous SARS-CoV-2 infection and 2-4 doses of parental mRNA vaccine. The results showed that a BA.5-bivalent-booster elicited a high neutralizing titer against BA.4/5 measured at 14- to 32-day post-boost; however, the BA.5-bivalent-booster did not produce robust neutralization against the newly emerged BA.2.75.2, BQ.1.1, or XBB.1. Previous infection significantly enhanced the magnitude and breadth of BA.5-bivalent-booster-elicited neutralization. Our data support a vaccine update strategy that future boosters should match newly emerged circulating SARS-CoV-2 variants.

23. **Prognosis of Myocarditis Developing After mRNA COVID-19 Vaccination Compared with Viral Myocarditis.** Lai FTT, et al. *J Am Coll Cardiol.* 2022 Dec 13;80(24):2255-2265. doi: 10.1016/j.jacc.2022.09.049.

https://www.sciencedirect.com/science/article/pii/S0735109722071078

This study found a significantly lower rate of mortality among individuals with myocarditis after mRNA vaccination compared with those with viral infection-related myocarditis. Prognosis of this iatrogenic condition may be less severe than naturally acquired viral infection-related myocarditis.

24. **Effect of hybrid immunity and bivalent booster vaccination on omicron sublineage neutralisation.** Hoffmann M, et al. *Lancet Infect Dis*. 2022 Dec 5:S1473-3099(22)00792-7. doi: 10.1016/S1473-3099(22)00792-7.
https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(22)00792-7/fulltext
We compared neutralisation of BA.1, BA.4 and BA.5 (identical S proteins, BA.4-5), BA.4.6, and the emerging omicron sublineages BA.2.75.2 (circulating mainly in India), BJ.1 (parental lineage of the currently expanding XBB recombinant), and BQ.1.1 (the incidence of which is increasing in the USA and Europe). We tested neutralisation by antibodies that were induced upon triple vaccination, vaccination and breakthrough infection during the BA.1 and BA.2 wave or BA.5 wave in Germany, triple vaccination plus monovalent or bivalent mRNA booster vaccination, or triple vaccination plus breakthrough infection (BA.1 and BA.2 wave) and a bivalent mRNA booster vaccination.

25. **Infections, Hospitalizations, and Deaths Among US Nursing Home Residents With vs Without a SARS-CoV-2 Vaccine Booster.** McConeghy KW et al. *JAMA Netw Open.* 2022 Dec 1;5(12):e2245417. doi: 10.1001/jamanetworkopen.2022.45417.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2799266
In this study, during a period in which both the Delta and Omicron variants were circulating, SARS-CoV-2 booster vaccination was associated with significant reductions in SARS-CoV-2 infections, hospitalizations, and the combined end point of hospitalization or death among residents of 2 US nursing home systems. These findings suggest that administration of vaccine boosters to nursing home residents may have an important role in preventing COVID-19-associated morbidity and mortality.

26. **The effectiveness of coronavirus disease 2019 (COVID-19) vaccine in the prevention of post–COVID-19 conditions: A systematic literature review and meta-analysis.** Marra A et al. *Antimicrobial Stewardship & Healthcare Epidemiology*, 2(1), E192. doi:10.1017/ash.2022.336
https://www.cambridge.org/core/journals/antimicrobial-stewardship-and-healthcare-epidemiology/article/effectiveness-of-coronavirus-disease-2019-covid19-vaccine-in-the-prevention-of-postcovid19-conditions-a-systematic-literature-review-and-metaanalysis/0AD0EDEC8C9CC9DF455752E32D73147B
COVID-19 vaccination both before and after having COVID-19 significantly decreased post–COVID-19 conditions for the circulating variants during the study period although vaccine effectiveness was low.

Women & Children

27. **Is the risk of still and preterm birth affected by the timing of symptomatic SARS-CoV-2 infection during pregnancy? - Data from the CRONOS Network, Germany.** CRONOS Network. *Am J Obstet Gynecol.* 2022 Nov 29:S0002-9378(22)02207-4. doi: 10.1016/j.ajog.2022.11.1301.
https://www.ajog.org/article/S0002-9378(22)02207-4/pdf
The risk for preterm birth and stillbirth after symptomatic Sars-CoV-2 in pregnancy is increased especially after early infection and within the first 4 weeks after infection.

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