

COVID-19 Resource Desk

#136 | 12.11.2022 to 12.17.2022

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 factors for hospital-acquired infections during the SARS-CoV-2 pandemic.** Kwon JH, et al. *J Hosp Infect.* 2022 Dec 6:S0195-6701(22)00375-9. doi: 10.1016/j.jhin.2022.11.020. <https://doi.org/10.1016/j.jhin.2022.11.020>

Study cohort included 254,792 admissions, with HAIs occurring during 7,147 (2.8%) of admissions (1,661 blood, 3,407 urine, 2,626 respiratory). Patients with SARS-CoV-2 had increased risk of HAI, and this was one of the strongest risk factors for development of an HAI. Other risk factors for HAI included certain admitting services, chronic comorbidities, ICU stay during index admission, extremes of body mass index, hospital, and selected medications. Factors associated with decreased risk of HAI included year of admission (declined over the course of the study) and admitting service and medications. Risk factors for HAI were similar in sensitivity analyses that restricted to patients with diagnostic codes for pneumonia/upper respiratory infection and urinary tract infection.

2. **Trends in Risk Factors and Symptoms Associated With SARS-CoV-2 and Rhinovirus Test Positivity in King County, Washington, June 2020 to July 2022.** Hansen C, et al. *JAMA Netw Open.* 2022 Dec 1;5(12):e2245861. doi: 10.1001/jamanetworkopen.2022.45861. <https://doi.org/10.1001/jamanetworkopen.2022.45861>

In this case-control study of 23 498 symptomatic individuals, estimated risk factors and symptoms associated with SARS-CoV-2 infection changed over time. There was a shift in reported symptoms between the Delta and Omicron variants as well as reductions in the protection provided by vaccines. Racial and sociodemographic disparities persisted in the third year of SARS-CoV-2 circulation and were also present in rhinovirus infection. Trends in testing behavior and availability may influence these results.

3. **COVID-19 and Other Underlying Causes of Cancer Deaths - United States, January 2018-July 2022.** Henley SJ, et al. *MMWR Morb Mortal Wkly Rep.* 2022 Dec 16;71(50):1583-1588. doi: 10.15585/mmwr.mm7150a3. <https://doi.org/10.15585/mmwr.mm7150a3>

Among an average of approximately 13,000 weekly cancer deaths, the percentage with cancer as the underlying cause was 90% in 2018 and 2019, 88% in 2020, and 87% in 2021. The percentage of cancer deaths with COVID-19 as the underlying cause differed by time (2.0% overall in 2020 and 2.4% in 2021,

ranging from 0.2% to 7.2% by week), with higher percentages during peaks in the COVID-19 pandemic. The percentage of cancer deaths with COVID-19 as the underlying cause also differed by the characteristics examined, with higher percentages observed in 2021 among persons aged ≥ 65 years (2.4% among persons aged 65-74 years, 2.6% among persons aged 75-84 years, and 2.4% among persons aged ≥ 85 years); males (2.6%); persons categorized as non-Hispanic American Indian or Alaska Native (AI/AN) (3.4%), Hispanic or Latino (Hispanic) (3.2%), or non-Hispanic Black or African American (Black) (2.5%); and persons with hematologic cancers, including leukemia (7.4%), lymphoma (7.3%), and myeloma (5.8%). This report found differences by age, sex, race and ethnicity, and cancer type in the percentage of cancer deaths with COVID-19 as the underlying cause. These results might guide multicomponent COVID-19 prevention interventions and ongoing, cross-cutting efforts to reduce health disparities and address structural and social determinants of health among cancer survivors, which might help protect those at disproportionate and increased risk for death from COVID-19.

Prognosis

4. **Mortality and Major Adverse Cardiovascular Events in Hospitalized Patients With Atrial Fibrillation With COVID-19.** Wang L, et al. *Am J Cardiol.* 2022 Dec 8;189:41-48. doi: 10.1016/j.amjcard.2022.11.040. <https://doi.org/10.1016/j.amjcard.2022.11.040>

This multicenter retrospective analysis identified 2,732 patients with COVID-19 admitted between March and December 2020. Data points were manually reviewed in the patients' electronic health records. Multivariate logistic regression was used to assess if AF was associated with death or MACE. Patients with AF (6.4%) had an increased risk of mortality compared with those with sinus rhythm. Patients with NOAF had an increased risk of mortality compared with those with existing AF; the risk of MACE was comparable between NOAF and patients with existing AF ($p = 1$). AF during hospitalization with COVID-19 is associated with a higher risk of mortality and MACE. NOAF in patients with COVID-19 is associated with a higher risk of mortality but a similar risk of MACE compared with patients with existing AF.

Survivorship & Rehabilitation

5. **Molecular states during acute COVID-19 reveal distinct etiologies of long-term sequelae.** Yuan, Dan, et al. [Providence author]. *Nat Med.* 2022 Dec 8. doi: 10.1038/s41591-022-02107-4. <https://doi.org/10.1038/s41591-022-02107-4>

Post-acute sequelae of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection are debilitating, clinically heterogeneous and of unknown molecular etiology. A transcriptome-wide investigation was performed in 165 acutely infected hospitalized individuals who were followed clinically into the post-acute period. Distinct gene expression signatures of post-acute sequelae were already present in whole blood during acute infection, with innate and adaptive immune cells implicated in different symptoms. Two clusters of sequelae exhibited divergent plasma-cell-associated gene expression patterns. In one cluster, sequelae associated with higher expression of immunoglobulin-related genes in an anti-spike antibody titer-dependent manner. In the other, sequelae associated independently of these titers with lower expression of immunoglobulin-related genes, indicating lower non-specific antibody production in individuals with these sequelae. This relationship between lower total immunoglobulins and sequelae was validated in an external cohort.

Altogether, multiple etiologies of post-acute sequelae were already detectable during SARS-CoV-2 infection, directly linking these sequelae with the acute host response to the virus and providing early insights into their development.

- 6. Prevalence of post-COVID Condition 12 Weeks after Omicron Infection Compared to Negative Controls and Association with Vaccination Status.** CoviCare Study team. *Clin Infect Dis*. 2022 Dec 15:ciac947. doi: 10.1093/cid/ciac947. <https://doi.org/10.1093/cid/ciac947>

Overall, 11.7% of Omicron cases had symptoms 12 weeks after the infection compared to 10.4% of individuals who tested negative during the same period, and symptoms were much less common in vaccinated vs non-vaccinated individuals with Omicron infection (9.7% vs 18.1%). There were no significant differences in functional impairment at 12 weeks between Omicron cases and negative controls even after adjusting for multiple potential confounders. The differential prevalence of post-COVID symptoms and functional impairment attributed to Omicron BA.1 and BA.2 infection is low when compared to negative controls. Vaccination is associated with lower prevalence of post-COVID symptoms.

Therapeutics

- 7. Efficacy and Safety of Pacritinib vs Placebo for Patients with Severe COVID-19: A Phase 2 Randomized Clinical Trial.** Park, David, et al. [Providence author]. *JAMA Netw Open*. 2022 Dec 1;5(12):e2242918. doi: 10.1001/jamanetworkopen.2022.42918. <https://doi.org/10.1001/jamanetworkopen.2022.42918>

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.

- 8. Nirmatrelvir Plus Ritonavir for Early COVID-19 in a Large U.S. Health System : A Population-Based Cohort Study.** Dryden-Peterson S, et al. *Ann Intern Med*. 2022 Dec 13. doi: 10.7326/M22-2141. <https://www.acpjournals.org/doi/10.7326/M22-2141>

The overall risk for hospitalization or death was already low (1%) after an outpatient diagnosis of COVID-19, but nirmatrelvir plus ritonavir reduced this risk further.

PRIMARY FUNDING SOURCE: National Institutes of Health.

Transmission / Infection Control

- 9. The need for systematic quality controls in implementing N95 reprocessing and sterilization.** N95 Taskforce. *J Hosp Infect*. 2022 Dec 12:S0195-6701(22)00379-6. doi: 10.1016/j.jhin.2022.11.023. <https://doi.org/10.1016/j.jhin.2022.11.023>

This study demonstrates the successful quality control implementation for N95 disinfection and highlights the importance of real-world clinical testing beyond laboratory conditions.

Vaccines / Immunology

10. **Reduced immunogenicity of BNT162b2 booster vaccination in combination with a tetravalent influenza vaccination: results of a prospective cohort study in 838 health workers.** Radner H et al. *Clin Microbiol Infect.* 2022 Dec 9:S1198-743X(22)00612-7. doi: 10.1016/j.cmi.2022.12.008. <https://www.sciencedirect.com/science/article/pii/S1198743X22006127>

While no safety concerns occurred, our study provides evidence on reduced immunogenicity of a BNT162b2 booster vaccination in combination with a tetravalent influenza vaccine. Further studies investigating new influenza variants as well as potential differences vaccine effectiveness are needed.

11. **Safety and Immunogenicity of a Bivalent SARS-CoV-2 Protein Booster Vaccine, SCTV01C in Adults Previously Vaccinated with Inactivated Vaccine: A Randomized, Double-blind, Placebo-controlled Phase 1/2 Clinical Trial.** Hannawi S, et al. *J Infect.* 2022 Dec 9:S0163-4453(22)00693-4. doi: 10.1016/j.jinf.2022.12.003.

<https://www.sciencedirect.com/science/article/pii/S0163445322006934>

Herein, with this Phase 1/2 safety and immunogenicity clinical trial, we assessed a novel SARS-CoV-2 bivalent vaccine, SCTV01C, given as a heterologous booster for people who had previously received the primary series of an inactivated vaccine. The data showed that SCTV01C was well tolerated with reactogenicity profile that was comparable to that of inactivated vaccines, and induced substantial neutralizing antibody responses to Delta and Omicron variants.

12. **Immunogenicity and efficacy of fourth BNT162b2 and mRNA1273 COVID-19 vaccine doses; three months follow-up.** Canetti M, et al. *Nat Commun.* 2022 Dec 13;13(1):7711. doi: 10.1038/s41467-022-35480-2. <https://doi.org/10.1038/s41467-022-35480-2>

We report a three-month follow-up of 700 participants in a fourth vaccine dose study, comparing BNT162b2 and mRNA1273, administered four months after a third BNT162b2 dose. The primary outcomes are the levels of IgG, neutralizing antibodies, and microneutralization and the secondary outcomes are the levels of IgA and T cell activation, and clinical outcomes of SARS-CoV-2 infection and substantial symptomatic disease. Waning of the immune response is evident during follow-up, with an 11% and 21% multiplicative decay per week of IgG and neutralizing antibodies, respectively, in the mRNA1273 group, and of 14% and 26%, respectively, in the BNT162b2 group. Direct neutralization of Omicron variants is low relative to ancestral strains. Cumulatively over the study period, both vaccines show little efficacy against infection but were highly efficacious against substantial symptomatic disease

Women & Children

13. **Impact of the COVID-19 Vaccination Program on case incidence, emergency department visits, and hospital admissions among children aged 5-17 Years during the Delta and Omicron Periods-United States, December 2020 to April 2022.** Topf KG, et al. *PLoS One.* 2022 Dec 9;17(12):e0276409. doi: 10.1371/journal.pone.0276409. <https://doi.org/10.1371/journal.pone.0276409>

COVID-19 vaccines were associated with lower case incidence, emergency department visits and hospital admissions among children during the Delta period but the association was weaker during the Omicron period. Pediatric COVID-19 vaccination should be promoted as part of a program to decrease

COVID-19 impact among children; however, vaccine effectiveness may be limited when available vaccines do not match circulating viral variants.

14. **Prevalence of SARS-CoV-2 and Influenza Coinfection and Clinical Characteristics Among Children and Adolescents Aged <18 Years Who Were Hospitalized or Died with Influenza - United States, 2021-22 Influenza Season.** Adams K, et al. *MMWR Morb Mortal Wkly Rep.* 2022 Dec 16;71(50):1589-1596. doi: 10.15585/mmwr.mm7150a4.
<https://doi.org/10.15585/mmwr.mm7150a4>

This report describes characteristics and prevalence of laboratory-confirmed influenza virus and SARS-CoV-2 coinfections among patients aged <18 years who had been hospitalized or died with influenza as reported to three CDC surveillance platforms during the 2021-22 influenza season. Data from two Respiratory Virus Hospitalizations Surveillance Network (RESP-NET) platforms (October 1, 2021-April 30, 2022), and notifiable pediatric deaths associated with influenza virus and SARS-CoV-2 coinfection (October 3, 2021-October 1, 2022) were analyzed. SARS-CoV-2 coinfections occurred in 6% (32 of 575) of pediatric influenza-associated hospitalizations and in 16% (seven of 44) of pediatric influenza-associated deaths. Compared with patients without coinfection, a higher proportion of those hospitalized with coinfection received invasive mechanical ventilation (4% versus 13%; $p = 0.03$) and bilevel positive airway pressure or continuous positive airway pressure (BiPAP/CPAP) (6% versus 16%; $p = 0.05$). Among seven coinfecting patients who died, none had completed influenza vaccination, and only one received influenza antivirals.

Commentary

[BA.2 and BA.5 omicron differ immunologically from both BA.1 omicron and pre-omicron variants.](#)

Rössler A, et al. *Nat Commun.* 2022 Dec 13;13(1):7701. doi: 10.1038/s41467-022-35312-3.

If you would like to receive a **customized COVID-19 Topic Alert** related to your specialty or area of interest, would like a **literature search** conducted, or have difficulty **accessing** any of the above articles please contact us at librarian@providence.org

Find previous weeks [here](#).