

COVID-19 Resource Desk

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New Research

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Clinical Syndrome

1. **Patient-Reported Outcomes for Fully Vaccinated COVID-19 Patients Over 6 Weeks: The Experiences of Clinical Breakthrough Cases.** Vartanian K, Fish D, Gronowski B, Kenton N, Robicsek A. [Providence authors]. *Patient*. 2022 Nov 7:1-12. doi: 10.1007/s40271-022-00605-8. <https://doi.org/10.1007/s40271-022-00605-8>

The aim of this study was to describe the physical, mental, and social health PROs for fully vaccinated individuals who contracted COVID-19 over a 6-week period. Mean global physical and mental health T-scores increased over time and remained within one standard deviation of the population mean. At baseline, at least 40% of participants reported good health for all component questions except Fatigue (25%), and the proportion reporting good health increased over time for all questions, with the largest improvements in Fatigue (25.5 to 67.5%), Pain (59.1 to 82.8%), and Emotional Problems (42.3 to 62.5%). Over the first month, the greatest positive changes in individual recovery were observed for Fatigue (65.0%), Pain (53.0%), and Emotional Problems (41.1%); at least 30% of respondents reported no change in at least one category, and the greatest decreases were for Usual Social Activities (23.9%), Social Satisfaction (23.2%), and Mental Health (21.8%). This study provides an important step towards better understanding the impact of 'breakthrough' COVID-19 infections on clinically engaged, fully vaccinated patients' physical and mental health to improve support for their treatment and recovery.

2. **Variant-specific symptoms of COVID-19 in a study of 1,542,510 adults in England.** Whitaker M, et al. *Nat Commun*. 2022 Nov 11;13(1):6856. doi: 10.1038/s41467-022-34244-2. <https://doi.org/10.1038/s41467-022-34244-2>

The REal-time Assessment of Community Transmission -1 (REACT-1) study monitored the spread and clinical manifestation of SARS-CoV-2 among random samples of the population in England from 1 May 2020 to 31 March 2022. We show changing symptom profiles associated with the different variants over that period, with lower reporting of loss of sense of smell or taste for Omicron compared to previous variants, and higher reporting of cold-like and influenza-like symptoms, controlling for vaccination status. Contrary to the perception that recent variants have become successively milder, Omicron BA.2 was associated with reporting more symptoms, with greater disruption to daily activities, than BA.1. With restrictions lifted and routine testing limited in many countries, monitoring the changing symptom profiles associated with SARS-CoV-2 infection and effects on daily activities will become increasingly important.

Diagnosics & Screening

3. **Diagnostic accuracy of SARS-CoV-2 rapid antigen self-tests in asymptomatic individuals in the Omicron period: cross sectional study.** Venekamp RP et al. *Clin Microbiol Infect.* 2022 Nov 12:S1198-743X(22)00570-5. doi: 10.1016/j.cmi.2022.11.004.
<https://www.sciencedirect.com/science/article/pii/S1198743X22005705>

The sensitivities of three commonly used SARS-CoV-2 Ag-RDTs when used as self-tests in asymptomatic individuals in the Omicron period were very low. Ag-RDT self-testing in asymptomatic individuals may only detect the minority of infections at that point in time. Repeated self-testing in case of a negative self-test is advocated to improve the diagnostic yield, and individuals should be advised to re-test when symptoms develop.

Epidemiology & Public Health

4. **Analysis of COVID-19 Vaccination Status Among Parents of Hospitalized Children Younger Than 5 Years With SARS-CoV-2 Infection During the Delta and Omicron Waves.** Solignac F, et al. *JAMA Netw Open.* 2022 Nov 1;5(11):e2242295. doi: 10.1001/jamanetworkopen.2022.42295.
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2798506>

This cohort study uses COVID-19 Pediatric Observatory study data to analyze the vaccination status of parents with young children hospitalized for SARS-CoV-2 variants Delta and Omicron.

Healthcare Delivery & Healthcare Workers

5. **Impact of COVID-19 RT-PCR testing of asymptomatic health care workers on absenteeism and hospital transmission during the pandemic.** Mendes ET et al. *Am J Infect Control.* 2022 Nov 11:S0196-6553(22)00786-6. doi: 10.1016/j.ajic.2022.10.014.
<https://www.sciencedirect.com/science/article/pii/S0196655322007866>

Testing and placing asymptomatic professionals on leave contributed to control strategy for COVID-19 transmission in the hospital environment, and in reducing positivity and absenteeism, which directly influences the quality of care and exposes professionals to an extra load of stress.

Survivorship & Rehabilitation

6. **Long COVID: Rapid Evidence Review.** Herman E, Shih E, Cheng A. *Am Fam Physician.* 2022 Nov;106(5):523-532. <https://www.aafp.org/pubs/afp/issues/2022/1100/longcovid.html>

Postacute sequelae of COVID-19, also known as long COVID, affects approximately 10% to 30% of the hundreds of millions of people who have had acute COVID-19. The Centers for Disease Control and Prevention defines long COVID as the presence of new, returning, or ongoing symptoms associated with acute COVID-19 that persist beyond 28 days. The diagnosis of long COVID can be based on a previous clinical diagnosis of COVID-19 and does not require a prior positive polymerase chain reaction or antigen test result to confirm infection. Patients with long COVID report a broad range of symptoms, including abdominal pain, anosmia, chest pain, cognitive impairment (brain fog), dizziness, dyspnea, fatigue, headache, insomnia, mood changes, palpitations, paresthesias, and postexertional malaise.

The presentation is variable, and symptoms can fluctuate or persist and relapse and remit. The diagnostic approach is to differentiate long COVID from acute sequelae of COVID-19, previous comorbidities, unmasking of preexisting health conditions, reinfections, new acute concerns, and complications of prolonged illness, hospitalization, or isolation. Many presenting symptoms of long COVID are commonly seen in a primary care practice, and management can be improved by using established treatment paradigms and supportive care. Although several medications have been suggested for the treatment of fatigue related to long COVID, the evidence for their use is currently lacking. Holistic treatment strategies for long COVID include discussion of pacing and energy conservation; individualized, symptom-guided, phased return to activity programs; maintaining adequate hydration and a healthy diet; and treatment of underlying medical conditions.

- 7. Post-COVID-19 Symptoms 2 Years After SARS-CoV-2 Infection Among Hospitalized vs Nonhospitalized Patients.** Fernández-de-Las-Peñas C et al. *JAMA Netw Open*. 2022 Nov 1;5(11):e2242106. doi: 10.1001/jamanetworkopen.2022.42106.

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2798446>

This cross-sectional study suggested the presence of at least 1 post-COVID-19 symptom in 59.7% of hospitalized patients and 67.5% of nonhospitalized patients 2 years after infection. Small differences in symptoms at onset of COVID-19 were identified between hospitalized and nonhospitalized patients. Post-COVID-19 symptoms were similar between hospitalized and nonhospitalized patients; however, lack of inclusion of uninfected controls limits the ability to assess the association of SARS-CoV-2 infection with overall and specific post-COVID-19 symptoms 2 years after acute infection. Future studies should include uninfected control populations.

- 8. Long-term kidney function recovery and mortality after COVID-19-associated acute kidney injury: An international multi-centre observational cohort study.** Tan BWL et al.

EClinicalMedicine. 2022 Nov 7;55:101724. doi: 10.1016/j.eclinm.2022.101724. eCollection 2023 Jan. <https://www.sciencedirect.com/science/article/pii/S2589537022004540>

COVID-19-associated AKI was associated with higher mortality, and severe COVID-19-associated AKI was associated with worse long-term post-AKI kidney function recovery.

FUNDING: Authors are supported by various funders, with full details stated in the acknowledgement section.

- 9. Incidence of Epilepsy and Seizures Over the First 6 Months After a COVID-19 Diagnosis: A Retrospective Cohort Study.** Taquet M, et al. *Neurology*. 2022 Nov

16:10.1212/WNL.0000000000201595. doi: 10.1212/WNL.0000000000201595.

<https://n.neurology.org/content/early/2022/11/16/WNL.0000000000201595>

The incidence of new seizures or epilepsy diagnoses in the six months following COVID-19 was low overall, but higher than in matched patients with influenza. This difference was more marked in people who were not hospitalized, highlighting the risk of epilepsy and seizures even in those with less severe infection. Children appear at particular risk of seizures and epilepsy after COVID-19 providing another motivation to prevent COVID-19 infection in pediatric populations. That the varying time of peak risk related to hospitalization and age may provide clues as to the underlying mechanisms of COVID-associated seizures and epilepsy.

Therapeutics

10. **Twice-Daily Oral Zinc in the Treatment of Patients With Coronavirus Disease 2019: A Randomized Double-Blind Controlled Trial.** Ben Abdallah S, et al. *Clin Infect Dis.* 2022 Nov 4:ciac807. doi: 10.1093/cid/ciac807. <https://doi.org/10.1093/cid/ciac807>

Our results showed that, in COVID-19 patients, oral zinc can decrease 30-day death, ICU admission rate and can shorten symptom duration.

11. **Cardiovascular outcomes after tixagevimab and cilgavimab use for pre-exposure prophylaxis against COVID-19: a population-based propensity-matched cohort study.** Birabaharan M, et al. *Clin Infect Dis.* 2022 Nov 16:ciac894. doi: 10.1093/cid/ciac894. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciac894/6830248>

Tixagevimab and cilgavimab treatment was associated with higher rates of cardiovascular events in a post-hoc analysis of a phase 3 trial. In this large population-based propensity-matched study, we found no increased risk of cardiovascular events up to 90 days after tixagevimab and cilgavimab administration, including in patients with pre-existing cardiovascular disease.

12. **Comparative effectiveness of sotrovimab and molnupiravir for prevention of severe covid-19 outcomes in patients in the community: observational cohort study with the OpenSAFELY platform.** Zheng B et al. *BMJ.* 2022 Nov 16;379:e071932. doi: 10.1136/bmj-2022-071932. <https://www.bmj.com/content/379/bmj-2022-071932>

In routine care of adult patients in England with covid-19 in the community, at high risk of severe outcomes from covid-19, those who received sotrovimab were at lower risk of severe outcomes of covid-19 than those treated with molnupiravir.

13. **Angiotensin receptor blockers for the treatment of covid-19: pragmatic, adaptive, multicentre, phase 3, randomised controlled trial.** Jardine MJ et al. *BMJ.* 2022 Nov 16;379:e072175. doi: 10.1136/bmj-2022-072175. <https://www.bmj.com/content/379/bmj-2022-072175>

In patients admitted to hospital for covid-19, mostly with mild disease, not requiring oxygen, no evidence of benefit, based on disease severity score, was found for treatment with angiotensin receptor blockers, using predominantly 40 mg/day of telmisartan.

TRIAL REGISTRATION: ClinicalTrials.gov NCT04394117.

Transmission / Infection Control

14. **Viral contamination on the surfaces of the personal protective equipment among healthcare professionals working in COVID-19 wards: a single-center prospective, observational study.** Peng LH et al. *Am J Infect Control.* 2022 Nov 11:S0196-6553(22)00787-8. doi: 10.1016/j.ajic.2022.10.017. <https://www.sciencedirect.com/science/article/pii/S0196655322007878>

SARS-CoV-2 can attach to the surfaces of the PPE of healthcare professionals working in a designated hospital, especially the soles of shoes and undisinfecting gloves. Shoe soles had the highest SARS-CoV-2 loads among all tested PPE items.

- 15. Low transmission of SARS-CoV-2 derived from children in family clusters: An observational study of family households in the Barcelona Metropolitan Area, Spain.** Mele-Casas M et al. *PLoS One*. 2022 Nov 17;17(11):e0277754. doi: 10.1371/journal.pone.0277754. eCollection 2022. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0277754>

Children may not be the main drivers of the infection in household transmission clusters in the study population. A prolonged positive PCR could be associated with higher transmissibility.

- 16. Perception of Local COVID-19 Transmission and Use of Preventive Behaviors Among Adults with Recent SARS-CoV-2 Infection - Illinois and Michigan, June 1-July 31, 2022.** Czeisler MÉ, et al. *MMWR Morb Mortal Wkly Rep*. 2022 Nov 18;71(46):1471-1478. doi: 10.15585/mmwr.mm7146a2.

https://www.cdc.gov/mmwr/volumes/71/wr/mm7146a2.htm?s_cid=mm7146a2_w

During the early stages of the COVID-19 pandemic, use of preventive behaviors was associated with perceived risk for contracting SARS-CoV-2 infection. Over time, perceived risk has declined along with waning COVID-19-related media coverage. The extent to which communities continue to be aware of local COVID-19 transmission levels and are implementing recommended preventive behaviors is unknown. During June 1-July 31, 2022, health departments in DuPage County, Illinois and metropolitan Detroit, Michigan surveyed a combined total of 4,934 adults who had received a positive test result for SARS-CoV-2 during the preceding 3 weeks. The association between awareness of local COVID-19 transmission and use of preventive behaviors and practices was assessed, both in response to perceived local COVID-19 transmission levels and specifically during the 2 weeks preceding SARS-CoV-2 testing. Both areas had experienced sustained high COVID-19 transmission during the study interval as categorized by CDC COVID-19 transmission levels. Overall, 702 (14%) respondents perceived local COVID-19 transmission levels as high, 987 (20%) as substantial, 1,902 (39%) as moderate, and 581 (12%) as low; 789 (16%) reported they did not know. Adjusting for geographic area, age, gender identity, and combined race and ethnicity, respondents who perceived local COVID-19 transmission levels as high were more likely to report having made behavioral changes because of the level of COVID-19 transmission in their area, including wearing a mask in public, limiting travel, and avoiding crowded places or events. Continued monitoring of public perceptions of local COVID-19 levels and developing a better understanding of their influence on the use of preventive behaviors can guide COVID-19 communication strategies and policy making during and beyond the pandemic.

Vaccines / Immunology

- 17. The Association Between Pre-Booster Vaccination Antibody Levels and the Risk of SARS-CoV-2 Infection.** Barda N, et al. *Clin Infect Dis*. 2022 Nov 11:ciac886. doi: 10.1093/cid/ciac886. <https://doi.org/10.1093/cid/ciac886>

The correlation between Anti-SARS-CoV-2 antibody levels and infection was reported. Here, we estimated the role of pre-fourth-dose levels using data from 1,098 health-care-workers. The risk of infection was reduced by 46% (95% CI: 29-59%) with a 10-fold increase in pre-booster levels. Pre-booster antibody levels could be used to optimally time boosters.

18. Third primary SARS-CoV-2 mRNA vaccines enhance antibody responses in most patients with haematological malignancies. Cook LB et al. *Nat Commun*. 2022 Nov 14;13(1):6922. doi: 10.1038/s41467-022-34657-z. <https://www.nature.com/articles/s41467-022-34657-z>

SARS-CoV-2 infection, and resulting disease, COVID-19, has a high mortality amongst patients with haematological malignancies. Global vaccine rollouts have reduced hospitalisations and deaths, but vaccine efficacy in patients with haematological malignancies is known to be reduced. The UK-strategy offered a third, mRNA-based, vaccine as an extension to the primary course in these patients. The MARCH database is a retrospective observational study of serological responses in patients with blood disorders. Here we present data on 381 patients with haematological malignancies. By comparison with healthy controls, we report suboptimal responses following two primary vaccines, with significantly enhanced responses following the third primary dose. These responses however are heterogeneous and determined by haematological malignancy sub-type and therapy. We identify a group of patients with continued suboptimal vaccine responses who may benefit from additional doses, prophylactic extended half-life neutralising monoclonal therapies (nMAB) or prompt nMAB treatment in the event of SARS-CoV-2 infection.

19. Comparative Risk of Myocarditis/Pericarditis Following Second Doses of BNT162b2 and mRNA-1273 Coronavirus Vaccines. Canadian Immunization Research Network (CIRN) Provincial Collaborative Network (PCN) Investigators. *J Am Coll Cardiol*. 2022 Nov 15;80(20):1900-1908. doi: 10.1016/j.jacc.2022.08.799. <https://www.sciencedirect.com/science/article/pii/S0735109722068243>

Myocarditis/pericarditis following mRNA COVID-19 vaccines is rare, but we observed a 2- to 3-fold higher odds among individuals who received mRNA-1273 vs BNT162b2. The rate of myocarditis following mRNA-1273 receipt is highest among younger men (age 18-39 years) and does not seem to be present at older ages. Our findings may have policy implications regarding the choice of vaccine offered.

20. Assessment of Herpes Zoster Risk Among Recipients of COVID-19 Vaccine. Akpandak I, et al. *JAMA Netw Open*. 2022 Nov 1;5(11):e2242240. doi: 10.1001/jamanetworkopen.2022.42240. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2798504>

In this study, there was no association found between COVID-19 vaccination and an increased risk of herpes zoster infection, which may help to address concerns about the safety profile of the COVID-19 vaccines among patients and clinicians.

Women & Children

21. Coronavirus Disease 2019 (COVID-19)-Related Stress and Menstrual Changes. Anto-Ocrah M, et al. *Obstet Gynecol*. 2022 Oct 27. doi: 10.1097/AOG.0000000000005010. <https://doi.org/10.1097/aog.0000000000005010>

High COVID-19-related stress is associated with significant changes in menstrual cycle length, alterations in period duration, and increased intermenstrual spotting as compared with before the pandemic. Given that menstrual health is frequently an indicator of women's overall well-being, clinicians, researchers, and public health officials must consider the association between COVID-19-related stress and menstrual disturbances.

22. Safety and immunogenicity following a homologous booster dose of CoronaVac in children and adolescents. Wang L, et al. *Nat Commun.* 2022 Nov 14;13(1):6952. doi: 10.1038/s41467-022-34280-y. <https://www.nature.com/articles/s41467-022-34280-y>

Data on safety and immunity elicited by a third booster dose of inactivated COVID-19 vaccine in children and adolescents are scarce. Here we conducted a study based on a double-blind, randomised, placebo-controlled phase 2 clinical trial (NCT04551547) to assess the safety and immunogenicity of a third dose of CoronaVac. In this study, 384 participants in the vaccine group were assigned to two cohorts. One received the third dose at a 10-months interval (cohort 1) and the other one at a 12-months interval (cohort 2). The primary endpoint is safety and immunogenicity following a third dose of CoronaVac. The secondary endpoint is antibody persistence following the primary two-dose schedule. Severities of local and systemic adverse reactions reported within 28 days after dose 3 were mild and moderate in both cohorts. A third dose of CoronaVac increased GMTs to 681.0 (95%CI: 545.2-850.7) in cohort 1 and 745.2 (95%CI: 577.0-962.3) in cohort 2. Seropositivity rates against the prototype were 100% on day 28 after dose 3. Seropositivity rates against the Omicron variant were 90.6% (cohort 1) and 91.5% (cohort 2). A homologous booster dose of CoronaVac is safe and induces a significant neutralising antibody levels increase in children and adolescents.

23. Monoclonal Antibodies for Treatment of SARS-CoV-2 Infection During Pregnancy : A Cohort Study. UPMC Magee Monoclonal Antibody Treatment Group. *Ann Intern Med.* 2022 Nov 15. doi: 10.7326/M22-1329. <https://www.acpjournals.org/doi/10.7326/M22-1329>

In pregnant persons with mild to moderate COVID-19, adverse events after mAb treatment were mild and rare. There was no difference in obstetric-associated safety outcomes between mAb treatment and no treatment among persons who delivered. There was no difference in 28-day COVID-19-associated outcomes and non-COVID-19-related hospital admissions for mAb treatment compared with no mAb treatment in a propensity score-matched cohort.

PRIMARY FUNDING SOURCE: No funding was received for this study.

24. Effectiveness of a third BNT162b2 mRNA COVID-19 vaccination during pregnancy: a national observational study in Israel. Guedalia J et al. *Nat Commun.* 2022 Nov 15;13(1):6961. doi: 10.1038/s41467-022-34605-x. <https://www.nature.com/articles/s41467-022-34605-x>

The Centers for Disease Control (CDC) recommend a third dose of COVID-19 vaccine for pregnant women, although data regarding effectiveness during pregnancy are lacking. This national, population-based, historical cohort study of pregnant women in Israel, delivering between August 1, 2021 and March 22, 2022, aims to analyze and compare the third and second doses' vaccine effectiveness in preventing COVID-19-related hospitalizations during pregnancy during two COVID-19 waves (Delta variant in the summer of 2021 and Omicron, BA.1, variant in the winter of 2022). Time-dependent Cox proportional-hazards regression models estimate the hazard ratios (HR) and 95% confidence intervals (CI) for COVID-related outcomes according to vaccine dose, and vaccine effectiveness as 1-HR. Study includes 82,659 and 33,303 pregnant women from the Delta and Omicron waves, respectively. Compared with the second dose, the third dose effectively prevents overall hospitalizations with SARS-CoV-2 infections, with estimated effectiveness of 92% (95% CI 83-96%) during Delta, and enhances protection against significant disease during Omicron, with effectiveness of 92% (95% CI 26-99%), and 48% (95% CI 37-57%) effectiveness against hospitalization overall. A third dose of the BNT162b2 mRNA

COVID-19 vaccine during pregnancy, given at least 5 months after the second vaccine dose, enhances protection against adverse COVID-19-related outcomes.

25. Postdischarge Glucocorticoid Use and Clinical Outcomes of Multisystem Inflammatory Syndrome in Children. Son MBF et al. *JAMA Netw Open*. 2022 Nov 1;5(11):e2241622. doi: 10.1001/jamanetworkopen.2022.41622.

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2798319>

In this multicenter cohort of patients with MIS-C and cardiovascular dysfunction, postdischarge glucocorticoid treatment was often prolonged, but clinical outcomes were similar in patients prescribed shorter courses. Outpatient weight gain was common. Readmission was infrequent, with none for cardiovascular dysfunction. These findings suggest that strategies are needed to optimize postdischarge glucocorticoid courses for patients with MIS-C.

26. Sociodemographic Variation in Early Uptake of COVID-19 Vaccine and Parental Intent and Attitudes Toward Vaccination of Children Aged 6 Months-4 Years - United States, July 1-29, 2022. Santibanez TA, et al. *MMWR Morb Mortal Wkly Rep*. 2022 Nov 18;71(46):1479-1484. doi: 10.15585/mmwr.mm7146a3.

https://www.cdc.gov/mmwr/volumes/71/wr/mm7146a3.htm?s_cid=mm7146a3_w

Among children aged 6 months-4 years, 3.5% were vaccinated; 59.3% were unvaccinated, but the parent was open to vaccination; and 37.2% were unvaccinated, and the parent was reluctant to vaccinate their child. Openness to vaccination was higher among parents of Hispanic or Latino (Hispanic) (66.2%), non-Hispanic Black or African American (Black) (61.1%), and non-Hispanic Asian (Asian) (83.1%) children than among parents of non-Hispanic White (White) (52.9%) children and lower among parents of children in rural areas (45.8%) than among parents of children in urban areas (64.1%). Parental confidence in COVID-19 vaccine safety and receipt of a provider recommendation for COVID-19 vaccination were lower among unvaccinated than vaccinated children. COVID-19 vaccine recommendations from a health care provider, along with dissemination of information about the safety of COVID-19 vaccine by trusted persons, could increase vaccination coverage among young children.

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