

COVID-19 Resource Desk

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New Research

*note, **PREPRINTS** have not undergone formal peer review

COVID-19 related publications by Providence caregivers – see [Digital Commons](#)

Clinical Syndrome

1. **Stroke among Patients Hospitalized with COVID-19: Results from the American Heart Association COVID-19 Cardiovascular Disease Registry.** Shakil SS et al. *Stroke*. 2021 Oct 27:STROKEAHA121035270. doi: 10.1161/STROKEAHA.121.035270.
<https://www.ahajournals.org/doi/abs/10.1161/STROKEAHA.121.035270>

Ischemic stroke risk did not vary by race. In contrast to the association between older age and death from COVID-19, ischemic stroke risk was the highest among middle-aged adults after adjusting for comorbidities and illness severity, suggesting a potential mechanism for ischemic stroke in COVID-19 independent of age-related atherosclerotic pathways.

Diagnostics & Screening

2. **Performance characteristics of the Abbott BinaxNOW SARS-CoV-2 antigen test in comparison to real-time RT-PCR and viral culture in community testing sites during November 2020.** Almendares O, et al. *J Clin Microbiol*. 2021 Oct 27:JCM0174221. doi: 10.1128/JCM.01742-21.
<https://journals.asm.org/doi/10.1128/JCM.01742-21>

Point-of-care antigen tests are an important tool for SARS-CoV-2 detection. Antigen tests are less sensitive than real-time reverse-transcriptase PCR (rRT-PCR). Data on the performance of the BinaxNOW antigen test compared to rRT-PCR and viral culture by symptom and known exposure status, timing during disease or exposure period and demographic variables are limited. During November 3rd-17th, 2020, we collected paired upper respiratory swab specimens to test for SARS-CoV-2 by rRT-PCR and Abbott BinaxNOW (BinaxNOW) antigen test at two community testing sites in Pima County, Arizona. We administered a questionnaire to capture symptoms, known exposure status and previous SARS-CoV-2 test results. Specimens positive by either test were analyzed by viral culture. Previously we showed overall BinaxNOW sensitivity was 52.5%. Here we showed BinaxNOW sensitivity increased to 65.7% among currently symptomatic individuals reporting a known exposure. BinaxNOW sensitivity was lower among participants with a known exposure and previously symptomatic (32.4%) or never symptomatic (47.1%) within 14 days of testing. Sensitivity was 71.1% in participants within a week of symptom onset. In participants with a known exposure, sensitivity was highest 8-10 days post-exposure (75%). The positive predictive value for recovery of virus in cell culture was

56.7% for BinaxNOW-positive and 35.4% for rRT-PCR-positive specimens. Result reporting time was 2.5 hours for BinaxNOW and 26 hours for rRT-PCR. Point-of-care antigen tests have a shorter turn-around time compared to laboratory-based nucleic acid amplification tests, which allows for more rapid identification of infected individuals. Antigen test sensitivity limitations are important to consider when developing a testing program.

Epidemiology & Public Health

3. **Statins and SARS-CoV-2 Infection: Results of a Population-Based Prospective Cohort Study of 469 749 Adults from 2 Canadian Provinces.** McAlister FA et al. *J Am Heart Assoc.* 2021 Oct 23:e022330. doi: 10.1161/JAHA.121.022330.
<https://www.ahajournals.org/doi/full/10.1161/JAHA.121.022330>
Compared with statin nonusers, patients taking statins exhibit the same risk of testing positive for SARS-CoV-2 and those younger than 75 years exhibit similar outcomes within 30 days of a positive test. Patients older than 75 years with a positive SARS-CoV-2 test and who were taking statins had more emergency department visits and hospitalizations, but exhibited lower 30-day all-cause mortality risk.
4. **The association of opening K-12 schools with the spread of COVID-19 in the United States: County-level panel data analysis.** Chernozhukov V, et al. *Proc Natl Acad Sci U S A.* 2021 Oct 19;118(42):e2103420118. doi: 10.1073/pnas.2103420118.
<https://www.pnas.org/content/118/42/e2103420118>
This paper empirically examines how the opening of K-12 schools is associated with the spread of COVID-19 using county-level panel data in the United States. As preliminary evidence, our event-study analysis indicates that cases and deaths in counties with in-person or hybrid opening relative to those with remote opening substantially increased after the school opening date, especially for counties without any mask mandate for staff. Our main analysis uses a dynamic panel data model for case and death growth rates, where we control for dynamically evolving mitigation policies, past infection levels, and additive county-level and state-week "fixed" effects. This analysis shows that an increase in visits to both K-12 schools and colleges is associated with a subsequent increase in case and death growth rates. The estimates indicate that fully opening K-12 schools with in-person learning is associated with a 5 (SE = 2) percentage points increase in the growth rate of cases. We also find that the association of K-12 school visits or in-person school openings with case growth is stronger for counties that do not require staff to wear masks at schools. These findings support policies that promote masking and other precautionary measures at schools and giving vaccine priority to education workers.
5. **Severity of Disease Among Adults Hospitalized with Laboratory-Confirmed COVID-19 Before and During the Period of SARS-CoV-2 B.1.617.2 (Delta) Predominance - COVID-NET, 14 States, January-August 2021.** Taylor CA et al. *MMWR Morb Mortal Wkly Rep.* 2021 Oct 29;70(43):1513-1519. doi: 10.15585/mmwr.mm7043e1.
<https://www.cdc.gov/mmwr/volumes/70/wr/mm7043e1.htm>
Data from the CDC COVID-19-Associated Hospitalization Surveillance Network (COVID-NET), a population-based surveillance system for COVID-19-associated hospitalizations, were used to

examine trends in severe outcomes in adults aged ≥ 18 years hospitalized with laboratory-confirmed COVID-19 during periods before (January-June 2021) and during (July-August 2021) Delta variant predominance. COVID-19-associated hospitalization rates among all adults declined during January-June 2021 (pre-Delta period), before increasing during July-August 2021 (Delta period). Among sampled nonpregnant hospitalized COVID-19 patients with completed medical record abstraction and a discharge disposition during the pre-Delta period, the proportion of patients who were admitted to an intensive care unit (ICU), received invasive mechanical ventilation (IMV), or died while hospitalized did not significantly change from the pre-Delta period to the Delta period. The proportion of hospitalized COVID-19 patients who were aged 18-49 years significantly increased, from 24.7% (95% confidence interval [CI] = 23.2%-26.3%) of all hospitalizations in the pre-Delta period, to 35.8% (95% CI = 32.1%-39.5%, $p < 0.01$) during the Delta period. When examined by vaccination status, 71.8% of COVID-19-associated hospitalizations in the Delta period were in unvaccinated adults. Adults aged 18-49 years accounted for 43.6% (95% CI = 39.1%-48.2%) of all hospitalizations among unvaccinated adults during the Delta period. No difference was observed in ICU admission, receipt of IMV, or in-hospital death among nonpregnant hospitalized adults between the pre-Delta and Delta periods. However, the proportion of unvaccinated adults aged 18-49 years hospitalized with COVID-19 has increased as the Delta variant has become more predominant. Lower vaccination coverage in this age group likely contributed to the increase in hospitalized patients during the Delta period. COVID-19 vaccination is critical for all eligible adults, including those aged < 50 years who have relatively low vaccination rates compared with older adults.

Healthcare Delivery & Healthcare Workers

6. **Secondary Cases of Delta-Variant COVID-19 among Vaccinated Healthcare Workers with Breakthrough Infections is Rare.** Waldman SE et al. *Clin Infect Dis*. 2021 Oct 25:ciab916. doi: 10.1093/cid/ciab916. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab916/6409806>
A retrospective cohort study at four academic medical centers with high COVID-19 vaccination rates evaluated breakthrough SARS-CoV-2 Delta variant (B.1.617.2) infections in vaccinated healthcare workers. Few work-related secondary cases were identified. Breakthrough cases were largely due to unmasked social activities outside of work.
7. **Effectiveness of BNT162b2 mRNA COVID-19 vaccine against acquisitions of SARS-CoV-2 among health care workers in long-term care facilities: a prospective cohort study.** Muhsen K, et al. *Clin Infect Dis*. 2021 Oct 26:ciab918. doi: 10.1093/cid/ciab918. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab918/6410737>
At > 14 days post second dose, 40 vaccinated HCWs acquired SARS-CoV-2 (median follow-up, 66 days; cumulative incidence 0.6%) vs. 84 unvaccinated HCWs (median follow-up 43 days; cumulative incidence, 5.1%); HR=0.11 (95% CI 0.07, 0.17), unadjusted VE=89% (95% CI 83%, 93%). Adjusted VE beyond seven days and > 14 days post second dose were similar. The median PCR Cts targeting ORF1ab gene among 20 vaccinated and 40 unvaccinated HCWs was 32.0 vs. 26.7, respectively, $p=0.008$. VE following two doses of BNT162b2 against SARS-CoV-2

acquisition in LTCF HCWs was high. The lower viral loads among SARS-CoV-2 positive HCWs suggests further reduction in transmission.

Prognosis

8. **Association Between COVID-19 Diagnosis and In-Hospital Mortality in Patients Hospitalized With ST-Segment Elevation Myocardial Infarction.** Saad M, et al. *JAMA*. October 29, 2021. doi:10.1001/jama.2021.18890
<https://jamanetwork.com/journals/jama/fullarticle/2785893?resultClick=1>
Among patients with out-of-hospital or in-hospital STEMI, a concomitant diagnosis of COVID-19 was significantly associated with higher rates of in-hospital mortality compared with patients without a diagnosis of COVID-19 from the past year. Further research is required to understand the potential mechanisms underlying this association.
9. **Evaluation of COVID-19 Mortality and Adverse Outcomes in US Patients with or Without Cancer.** Chavez-MacGregor M, et al. *JAMA Oncol*. 2021 Oct 28. doi: 10.1001/jamaoncol.2021.5148.
<https://jamanetwork.com/journals/jamaoncology/fullarticle/2785677>
This cohort study found that patients with recent cancer treatment and COVID-19 had a significantly higher risk of adverse outcomes, and patients with no recent cancer treatment had similar outcomes to those without cancer. The findings have risk stratification and resource use implications for patients, clinicians, and health systems.

Survivorship & Rehabilitation

10. **Short-term and Long-term Rates of Postacute Sequelae of SARS-CoV-2 Infection: A Systematic Review.** Groff D et al. *JAMA Netw Open*. 2021 Oct 1;4(10):e2128568. doi: 10.1001/jamanetworkopen.2021.28568.
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2784918>
In this systematic review, more than half of COVID-19 survivors experienced PASC 6 months after recovery. The most common PASC involved functional mobility impairments, pulmonary abnormalities, and mental health disorders. These long-term PASC effects occur on a scale that could overwhelm existing health care capacity, particularly in low- and middle-income countries.

Therapeutics

11. **Effect of early treatment with fluvoxamine on risk of emergency care and hospitalisation among patients with COVID-19: the TOGETHER randomised, platform clinical trial.** Reis G et al. *Lancet Glob Health* 2021 Oct 27. doi: [https://doi.org/10.1016/S2214-109X\(21\)00448-4](https://doi.org/10.1016/S2214-109X(21)00448-4)
[https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00448-4/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00448-4/fulltext)
Treatment with fluvoxamine (100 mg twice daily for 10 days) among high-risk outpatients with early diagnosed COVID-19 reduced the need for hospitalisation defined as retention in a COVID-19 emergency setting or transfer to a tertiary hospital.

12. **Early Treatment for Covid-19 with SARS-CoV-2 Neutralizing Antibody Sotrovimab.** Gupta A et al. *N Engl J Med.* 2021 Oct 27. doi: 10.1056/NEJMoa2107934.

<https://www.nejm.org/doi/full/10.1056/NEJMoa2107934>

In this prespecified interim analysis, which included an intention-to-treat population of 583 patients (291 in the sotrovimab group and 292 in the placebo group), 3 patients (1%) in the sotrovimab group, as compared with 21 patients (7%) in the placebo group, had disease progression leading to hospitalization or death (relative risk reduction, 85%; 97.24% confidence interval, 44 to 96; $P = 0.002$). In the placebo group, 5 patients were admitted to the intensive care unit, including 1 who died by day 29. Safety was assessed in 868 patients (430 in the sotrovimab group and 438 in the placebo group). Adverse events were reported by 17% of the patients in the sotrovimab group and 19% of those in the placebo group; serious adverse events were less common with sotrovimab than with placebo (in 2% and 6% of the patients, respectively). Among high-risk patients with mild-to-moderate Covid-19, sotrovimab reduced the risk of disease progression. No safety signals were identified.

Vaccines / Immunology

13. **Laboratory-Confirmed COVID-19 Among Adults Hospitalized with COVID-19–Like Illness with Infection-Induced or mRNA Vaccine-Induced SARS-CoV-2 Immunity — Nine States, January–September 2021.** Bozio CH, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 29 October 2021. DOI: <http://dx.doi.org/10.15585/mmwr.mm7044e1>

Among COVID-19–like illness hospitalizations among adults aged ≥ 18 years whose previous infection or vaccination occurred 90–179 days earlier, the adjusted odds of laboratory-confirmed COVID-19 among unvaccinated adults with previous SARS-CoV-2 infection were 5.49-fold higher than the odds among fully vaccinated recipients of an mRNA COVID-19 vaccine who had no previous documented infection. All eligible persons should be vaccinated against COVID-19 as soon as possible, including unvaccinated persons previously infected with SARS-CoV-2.

14. **mRNA Vaccine-Elicited SARS-CoV-2-Specific T cells Persist at 6 Months and Recognize the Delta Variant.** Woldemeskel BA, et al. *Clin Infect Dis.* 2021 Oct 25:ciab915. doi: 10.1093/cid/ciab915. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab915/6409907>

Little is known about the decay kinetics of COVID-19 vaccine-elicited SARS-CoV-2 specific T cells. In this study we show a modest decline in the frequency of these T cells at 6 months and demonstrate robust expansion in response to antigen and recognition of spike peptides from the delta variant.

15. **Effectiveness of heterologous ChAdOx1 nCoV-19 and mRNA prime-boost vaccination against symptomatic Covid-19 infection in Sweden: A nationwide cohort study.** Nordström P, et al. *Lancet Reg Health Eur.* 2021 Oct 18:100249. doi: 10.1016/j.lanepe.2021.100249. [https://www.thelancet.com/journals/lanep/article/PIIS2666-7762\(21\)00235-0/fulltext](https://www.thelancet.com/journals/lanep/article/PIIS2666-7762(21)00235-0/fulltext)

The findings of this study suggest that the use of heterologous ChAdOx1 nCoV-19 and mRNA prime-boost vaccination is an effective alternative to increase population immunity against

Covid-19, including against the Delta variant which dominated the confirmed cases during the study period. These findings could have important implications for vaccination strategies and logistics, and consequently in the battle against the Covid-19 pandemic.

16. **Effectiveness of Pfizer-BioNTech mRNA Vaccination against COVID-19 Hospitalization among Persons Aged 12-18 Years - United States, June-September 2021.** Olson SM et al. *MMWR Morb Mortal Wkly Rep.* 2021 Oct 22;70(42):1483-1488. doi: 10.15585/mmwr.mm7042e1.
<https://www.cdc.gov/mmwr/volumes/70/wr/mm7042e1.htm>

In a test-negative, case-control study at 19 pediatric hospitals in 16 states during June 1-September 30, 2021, the effectiveness of 2 doses of Pfizer-BioNTech vaccine against COVID-19 hospitalization was assessed among children and adolescents aged 12-18 years. Among 464 hospitalized persons aged 12-18 years (179 case-patients and 285 controls), the median age was 15 years, 72% had at least one underlying condition, including obesity, and 68% attended in-person school. Effectiveness of 2 doses of Pfizer-BioNTech vaccine against COVID-19 hospitalization was 93% (95% CI = 83%-97%), during the period when B.1.617.2 (Delta) was the predominant variant. This evaluation demonstrated that 2 doses of Pfizer-BioNTech vaccine are highly effective at preventing COVID-19 hospitalization among persons aged 12-18 years and reinforces the importance of vaccination to protect U.S. youths against severe COVID-19.

17. **Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection.** Patone M et al. *Nat Med.* 2021 Oct 25. doi: 10.1038/s41591-021-01556-7.
<https://www.nature.com/articles/s41591-021-01556-7>

We undertook a self-controlled case series study to investigate hospital admissions from neurological complications in the 28 days after a first dose of ChAdOx1nCoV-19 (n = 20,417,752) or BNT162b2 (n = 12,134,782), and after a SARS-CoV-2-positive test (n = 2,005,280). There was an increased risk of Guillain-Barré syndrome (incidence rate ratio (IRR), 2.90; 95% confidence interval (CI): 2.15-3.92 at 15-21 days after vaccination) and Bell's palsy (IRR, 1.29; 95% CI: 1.08-1.56 at 15-21 days) with ChAdOx1nCoV-19. There was an increased risk of hemorrhagic stroke (IRR, 1.38; 95% CI: 1.12-1.71 at 15-21 days) with BNT162b2. An independent Scottish cohort provided further support for the association between ChAdOx1nCoV and Guillain-Barré syndrome (IRR, 2.32; 95% CI: 1.08-5.02 at 1-28 days). There was a substantially higher risk of all neurological outcomes in the 28 days after a positive SARS-CoV-2 test including Guillain-Barré syndrome (IRR, 5.25; 95% CI: 3.00-9.18). Overall, we estimated 38 excess cases of Guillain-Barré syndrome per 10 million people receiving ChAdOx1nCoV-19 and 145 excess cases per 10 million people after a positive SARS-CoV-2 test. In summary, although we find an increased risk of neurological complications in those who received COVID-19 vaccines, the risk of these complications is greater following a positive SARS-CoV-2 test.

18. **Waning Immunity after the BNT162b2 Vaccine in Israel.** Goldberg Y et al. *N Engl J Med.* 2021 Oct 27. doi: 10.1056/NEJMoa2114228.
<https://www.nejm.org/doi/full/10.1056/NEJMoa2114228>

Among persons 60 years of age or older, the rate of infection in the July 11-31 period was higher among persons who became fully vaccinated in January 2021 (when they were first eligible) than among those fully vaccinated 2 months later, in March (rate ratio, 1.6; 95%

confidence interval [CI], 1.3 to 2.0). Among persons 40 to 59 years of age, the rate ratio for infection among those fully vaccinated in February (when they were first eligible), as compared with 2 months later, in April, was 1.7 (95% CI, 1.4 to 2.1). Among persons 16 to 39 years of age, the rate ratio for infection among those fully vaccinated in March (when they were first eligible), as compared with 2 months later, in May, was 1.6 (95% CI, 1.3 to 2.0). The rate ratio for severe disease among persons fully vaccinated in the month when they were first eligible, as compared with those fully vaccinated in March, was 1.8 (95% CI, 1.1 to 2.9) among persons 60 years of age or older and 2.2 (95% CI, 0.6 to 7.7) among those 40 to 59 years of age; owing to small numbers, the rate ratio could not be calculated among persons 16 to 39 years of age. These findings indicate that immunity against the delta variant of SARS-CoV-2 waned in all age groups a few months after receipt of the second dose of vaccine.

19. Association of Self-reported High-Risk Allergy History with Allergy Symptoms after COVID-19 Vaccination. Li L, Robinson LB, Patel R, et al. *JAMA Netw Open*. 2021;4(10):e2131034.

doi:10.1001/jamanetworkopen.2021.31034

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2785466>

In this cohort study of 52 998 health care employees, self-reported high-risk allergy history was associated with an increased risk of self-reported allergic reactions after mRNA COVID-19 vaccination. Most of the reported allergy symptoms, however, did not impede the completion of the 2-dose vaccine protocol.

20. COVID-19 Vaccination and Non-COVID-19 Mortality Risk - Seven Integrated Health Care Organizations, United States, December 14, 2020-July 31, 2021. Xu S et al. *MMWR Morb Mortal Wkly Rep*. 2021 Oct 29;70(43):1520-1524. doi: 10.15585/mmwr.mm7043e2.

doi: 10.15585/mmwr.mm7043e2.

<https://www.cdc.gov/mmwr/volumes/70/wr/mm7043e2.htm>

By September 21, 2021, an estimated 182 million persons in the United States were fully vaccinated against COVID-19.* Clinical trials indicate that Pfizer-BioNTech (BNT162b2), Moderna (mRNA-1273), and Janssen (Johnson & Johnson; Ad.26.COV2.S) vaccines are effective and generally well tolerated (1-3). However, daily vaccination rates have declined approximately 78% since April 13, 2021†; vaccine safety concerns have contributed to vaccine hesitancy (4). A cohort study of 19,625 nursing home residents found that those who received an mRNA vaccine (Pfizer-BioNTech or Moderna) had lower all-cause mortality than did unvaccinated residents (5), but no studies comparing mortality rates within the general population of vaccinated and unvaccinated persons have been conducted. To assess mortality not associated with COVID-19 (non-COVID-19 mortality) after COVID-19 vaccination in a general population setting, a cohort study was conducted during December 2020-July 2021 among approximately 11 million persons enrolled in seven Vaccine Safety Datalink (VSD) sites.§ After standardizing mortality rates by age and sex, this study found that COVID-19 vaccine recipients had lower non-COVID-19 mortality than did unvaccinated persons. After adjusting for demographic characteristics and VSD site, this study found that adjusted relative risk (aRR) of non-COVID-19 mortality for the Pfizer-BioNTech vaccine was 0.41 (95% confidence interval [CI] = 0.38-0.44) after dose 1 and 0.34 (95% CI = 0.33-0.36) after dose 2. The aRRs of non-COVID-19 mortality for the Moderna vaccine were 0.34 (95% CI = 0.32-0.37) after dose 1 and 0.31 (95% CI = 0.30-0.33) after dose 2. The aRR after receipt of the Janssen vaccine was 0.54 (95% CI = 0.49-

0.59). There is no increased risk for mortality among COVID-19 vaccine recipients. This finding reinforces the safety profile of currently approved COVID-19 vaccines in the United States.

Women & Children

21. **Fertility rates and birth outcomes after ChAdOx1 nCoV-19 (AZD1222) vaccination.** Oxford COVID Vaccine Trial Group. *Lancet*. 2021 Oct 21:S0140-6736(21)02282-0. doi: 10.1016/S0140-6736(21)02282-0. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)02282-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)02282-0/fulltext)

Fears of adverse effects of COVID-19 vaccination on fertility have affected vaccine uptake in some communities. Despite the absence of supporting evidence for such a risk, low biological plausibility, and preliminary data supporting the safety of mRNA vaccines in pregnancy, this claim has become widespread, and it has been challenged by WHO. Vaccine hesitancy during pregnancy, or among women of childbearing age, could have substantial public health consequences because infection with SARS-CoV-2 during pregnancy is a risk factor for severe maternal illness and complications.

22. **Risk Factors for Severe COVID-19 in Children.** Woodruff RC et al. *Pediatrics*. 2021 Oct 22:e2021053418. doi: 10.1542/peds.2021-053418. <https://pediatrics.aappublications.org/content/early/2021/10/21/peds.2021-053418>
- Using data from 2,293 hospitalized children with laboratory-confirmed SARS-CoV-2 infection in 14 states during March 2020–May 2021, we found that specific underlying conditions were associated with increased risk of severe COVID-19, and these varied by age group.

23. **SARS-CoV-2 and pregnancy outcomes under universal and non-universal testing in Sweden: register-based nationwide cohort study.** Stephansson O et al. *BJOG*. 2021 Oct 27. doi: 10.1111/1471-0528.16990. <https://obgyn.onlinelibrary.wiley.com/doi/10.1111/1471-0528.16990>

Testing policy and timing of test positivity impact associations between SARS-CoV-2 positivity and pregnancy outcomes. Under non-universal testing, women with complications near delivery are more likely to be tested than women without complications, thereby inflating any association with adverse pregnancy outcomes compared to findings under universal testing.

FDA / CDC / NIH / WHO Updates

[FDA Authorizes Pfizer-BioNTech COVID-19 Vaccine for Emergency Use in Children 5 through 11 Years of Age](#). October 29, 2021.

NIH – Covid-19 Treatment Guidelines – [Influenza vaccine in people with Covid-19](#). October 27, 2021

Commentary / Blog posts

[CDC–NIH Initiative Provides Free COVID-19 Rapid Home Tests In North Carolina, Tennessee.](#) Health Affairs Blog, October 27, 2021

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