Providence

COVID-19 Resource Desk

#56 | 5.15.2021 to 5.21.2021

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. **Diverse Functional Autoantibodies in Patients with COVID-19.** Wang EY et al. *Nature.* 2021 May 19. doi: 10.1038/s41586-021-03631-y. https://www.nature.com/articles/s41586-021-03631-y
   We've found that COVID-19 patients exhibit dramatic increases in autoantibody reactivities compared to uninfected controls, with a high prevalence of autoantibodies against immunomodulatory proteins including cytokines, chemokines, complement components, and cell surface proteins. We established that these autoantibodies perturb immune function and impair virological control by inhibiting immunoreceptor signaling and by altering peripheral immune cell composition and found that murine surrogates of these autoantibodies exacerbate disease severity in a mouse model of SARS-CoV-2 infection. Analysis of autoantibodies against tissue-associated antigens revealed associations with specific clinical characteristics and disease severity. In summary, these findings implicate a pathological role for exoproteome-directed autoantibodies in COVID-19 with diverse impacts on immune functionality and associations with clinical outcomes.

Clinical Syndrome

2. **Characteristics Associated with Multisystem Inflammatory Syndrome Among Adults With SARS-CoV-2 Infection.** Davogustto GE, et al. *JAMA Netw Open.* 2021 May 3;4(5):e2110323. doi: 10.1001/jamanetworkopen.2021.10323.
   https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779957
   MIS in adults (MIS-A) has now been reported, leading to the publication of a working case definition by the Centers for Disease Control and Prevention. The patients with MIS-A identified in our cohort have a broader distribution of organ involvement and lower illness severity compared with those in previously published series. Most patients who met the MIS-A criteria were not identified as such by the primary clinical team. This study had some limitations. Our data likely underestimate the incidence of MIS-A because many patients with COVID-19–related admissions did not have routine comprehensive clinical and laboratory assessments to screen for this syndrome. These data suggest that, although uncommon, MIS-A has a more heterogeneous clinical presentation than previously appreciated and is commonly

underdiagnosed. Future investigations, including prospective enrollments, are necessary to improve the diagnostic and treatment approaches for patients with MIS-A.

Diagnostics & Screening

3. **Estimating the effectiveness of routine asymptomatic PCR testing at different frequencies for the detection of SARS-CoV-2 infections.** CMMID COVID-19 working group. *BMC Med*. 2021 Apr 27;19(1):106. doi: 10.1186/s12916-021-01982-x. https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-021-01982-x
Our results suggest that routine asymptomatic testing can enable detection of a high proportion of infected individuals early in their infection, provided that the testing is frequent and the time from testing to notification of results is sufficiently fast. We estimated that testing every other day would detect 57% (33-76%) of symptomatic cases prior to onset and 94% (75-99%) of asymptomatic cases within 7 days if test results were returned within a day.

Epidemiology & Public Health

4. **Effects of different types of written vaccination information on COVID-19 vaccine hesitancy in the UK (OCEANS-III): a single-blind, parallel-group, randomised controlled trial.** Freeman D, et al. *Lancet Public Health.* 2021 May 12:S2468-2667(21)00096-7. doi: 10.1016/S2468-2667(21)00096-7. https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00096-7/fulltext
In the approximately 10% of the population who are strongly hesitant about COVID-19 vaccines, provision of information on personal benefit reduces hesitancy to a greater extent than information on collective benefits. Where perception of risk from vaccines is most salient, decision making becomes centred on the personal. As such, messaging that stresses the counterbalancing personal benefits is likely to prove most effective. The messaging from this study could be used in public health communications. Going forwards, the study highlights the need for future health campaigns to engage with the public on the terrain that is most salient to them.

5. **Modeling of Future COVID-19 Cases, Hospitalizations, and Deaths, by Vaccination Rates and Nonpharmaceutical Intervention Scenarios - United States, April-September 2021.** Borchering RK et al. *MMWR Morb Mortal Wkly Rep*. 2021 May 14;70(19):719-724. doi: 10.15585/mmwr.mm7019e3. https://www.cdc.gov/mmwr/volumes/70/wr/mm7019e3.htm
To provide long-term projections of potential trends in COVID-19 cases, hospitalizations, and deaths, COVID-19 Scenario Modeling Hub teams used a multiple-model approach comprising six models to assess the potential course of COVID-19 in the United States across four scenarios with different vaccination coverage rates and effectiveness estimates and strength and implementation of nonpharmaceutical interventions (NPIs) over a 6-month period (April-September 2021) using data available through March 27, 2021. Among the four scenarios, an accelerated decline in NPI adherence (which encapsulates NPI mandates and population behavior) was shown to undermine vaccination-related gains over the subsequent 2-3 months and, in combination with increased transmissibility of new variants, could lead to surges in

cases, hospitalizations, and deaths. A sharp decline in cases was projected by July 2021, with a faster decline in the high-vaccination scenarios. High vaccination rates and compliance with public health prevention measures are essential to control the COVID-19 pandemic and to prevent surges in hospitalizations and deaths in the coming months.

6. **The impact of primary care supported shielding on the risk of mortality in people vulnerable to COVID-19: English sentinel network matched cohort study.** Zarif A, et al. *J Infect.* 2021 May 15:S0163-4453(21)00220-6. doi: 10.1016/j.jinf.2021.04.033.
https://www.sciencedirect.com/science/article/pii/S0163445321002206
To mitigate risk of mortality from COVID-19, the UK government recommended 'shielding' of vulnerable people through self-isolation for 12 weeks. Shielding halved the risk of mortality for 21 days. Mortality risk became higher across the remainder of the shielding period, rising to two-and-a-half times greater post-shielding. Shielding may be beneficial in the next wave of COVID-19.

7. **Assessment of the Association of Vitamin D Level with SARS-CoV-2 Seropositivity among Working-Age Adults.** Li Y, Tong CH, Bare LA, Devlin JJ. *JAMA Netw Open*. 2021 May 3;4(5):e2111634. doi: 10.1001/jamanetworkopen.2021.11634.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779952
In this cohort study, SARS-CoV-2 seropositivity was not associated with low levels of vitamin D independently of other risk factors.

8. **Disparities in COVID-19 Vaccination Coverage between Urban and Rural Counties - United States, December 14, 2020-April 10, 2021.** Murthy BP et al. *MMWR Morb Mortal Wkly Rep.* 2021 May 21;70(20):759-764. doi: 10.15585/mmwr.mm7020e3.
https://www.cdc.gov/mmwr/volumes/70/wr/mm7020e3.htm?s_cid=mm7020e3_x
Approximately 60 million persons in the United States live in rural counties, representing almost one fifth (19.3%) of the population. Adult COVID-19 vaccination coverage was lower in rural counties (38.9%) than in urban counties (45.7%) overall and among adults aged 18-64 years (29.1% rural, 37.7% urban), those aged ≥65 years (67.6% rural, 76.1% urban), women (41.7% rural, 48.4% urban), and men (35.3% rural, 41.9% urban).

9. **Novel Canine Coronavirus Isolated from a Hospitalized Pneumonia Patient, East Malaysia.** Vlasova AN, et al. *Clin Infect Dis*. 2021 May 20:ciab456. doi: 10.1093/cid/ciab456.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab456/6278597
This is the first report of a novel canine-feline recombinant alphacoronavirus isolated from a human pneumonia patient. If confirmed as a pathogen, it may represent the eighth unique coronavirus known to cause disease in humans. Our findings underscore the public health threat of animal CoVs and a need to conduct better surveillance for them.

10. **Excess deaths associated with covid-19 pandemic in 2020: age and sex disaggregated time series analysis in 29 high income countries.** Islam N, et al. *BMJ*. 2021 May 19;373:n1137. doi: 10.1136/bmj.n1137. https://www.bmj.com/content/373/bmj.n1137

Approximately one million excess deaths occurred in 2020 in 29 high income countries. Age standardised excess death rates were higher in men than women in almost all countries. Excess deaths substantially exceeded reported deaths from covid-19 in many countries, indicating that determining the full impact of the pandemic on mortality requires assessment of excess deaths. Many countries had lower deaths than expected in children <15 years. Sex inequality in mortality widened further in most countries in 2020.

Healthcare Delivery & Healthcare Workers

11. **Outpatient Management of Patients With COVID-19: Multicenter Prospective Validation of the HOME-CoV Rule to safely discharge patients.** Douillet D et al. *Chest*. 2021 May 15:S0012-3692(21)00899-0. doi: 10.1016/j.chest.2021.05.008. https://journal.chestnet.org/article/S0012-3692(21)00899-0/fulltext
A large proportion of ED patients with probable or confirmed COVID-19 have a negative HOME-CoV rule and can be safely treated at home with a very low risk of complication.

Prognosis

12. **Characteristics, management, and prognosis of elderly patients with COVID-19 admitted in the ICU during the first wave: insights from the COVID-ICU study: prognosis of COVID-19 elderly critically ill patients in the ICU.** COVID-ICU investigators. *Ann Intensive Care.* 2021 May 14;11(1):77. doi: 10.1186/s13613-021-00861-1.
https://annalsofintensivecare.springeropen.com/articles/10.1186/s13613-021-00861-1
Patients over 70 years old represented more than a quarter of the COVID-19 population admitted in the participating ICUs during the first wave. Overall Day-90 mortality was 46% and reached 67% among the 193 patients over 80 years old. Mortality was higher in older patients, diabetics, and those with a lower PaO2/FiO2 ratio upon admission, cardiovascular dysfunction, and a shorter time between first symptoms and ICU admission.

13. **Increased peripheral blood neutrophil activation phenotypes and NETosis in critically ill COVID-19 patients: a case series and review of the literature.** Masso-Silva JA et al. *Clin Infect Dis.* 2021 May 14:ciab437. doi: 10.1093/cid/ciab437. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab437/6275596
Literature to date demonstrates compelling evidence of increased neutrophils in the circulation and lungs of COVID-19 patients. importantly, neutrophil quantity and activation correlates with severity of disease. Similarly, our data shows that circulating neutrophils in COVID-19 exhibit an activated phenotype with enhanced NETosis and oxidative burst.

14. **Factors Associated with Readmission in the US Following Hospitalization with COVID-19.** Verna EC, et al. *Clin Infect Dis.* 2021 May 20:ciab464. doi: 10.1093/cid/ciab464.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab464/6279074
Among a large US population of patients hospitalized with COVID-19, readmission was associated with certain comorbidities and acute conditions during first hospitalization. Readmitted patients were more likely to have diabetes, hypertension, cardiovascular disease

(CVD), chronic kidney disease (CKD) vs those not readmitted and to present on first admission with acute kidney injury, congestive heart failure, and cardiomyopathy.

Survivorship & Rehabilitation

15. **Post-acute sequelae of SARS-CoV-2 infection: Caring for the 'long-haulers'.** Vehar S, et al. *Cleve Clin J Med.* 2021 May 3;88(5):267-272. doi: 10.3949/ccjm.88a.21010. https://www.ccjm.org/content/88/5/267
An estimated 10% of COVID-19 survivors continue to experience symptoms several weeks to months after the appearance of initial symptoms, a condition termed post-acute sequelae of SARS-CoV-2 infection (PASC). These patients, also called "long-haulers," most commonly report protracted symptoms of fatigue, cough, dyspnea, chest tightness, difficulty concentrating, arthralgia, olfactory dysfunction, and headache. While age, comorbid medical conditions, and COVID-19 severity are risk factors, young and previously healthy individuals with mild COVID-19 are also at risk. Recognition of symptoms, evaluation, supportive treatment, and attention to medical comorbidities are the cornerstones of medical management.

16. **Population-based estimates of post-acute sequelae of SARS-CoV-2 infection (PASC) prevalence and characteristics.** Hirschtick JL, et al. *Clin Infect Dis.* 2021 May 19:ciab408. doi: 10.1093/cid/ciab408. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab408/6276644
The analytic sample (n=593) was predominantly female (56.1%), aged 45 and older (68.2%), and Non-Hispanic White (46.3%) or Black (34.8%). 30- and 60-day COVID-19 were highly prevalent (52.5% and 35.0%), even among non-hospitalized respondents (43.7% and 26.9%) and respondents reporting mild symptoms (29.2% and 24.5%). Respondents reporting very severe symptoms had 2.25 times higher prevalence of 30-day COVID-19 and 1.71 times higher prevalence of 60-day COVID-19. PASC is highly prevalent among cases reporting severe initial symptoms, and, to a lesser extent, cases reporting mild and moderate symptoms.

17. **Risk of clinical sequelae after the acute phase of SARS-CoV-2 infection: retrospective cohort study.** Daugherty SE, et al. *BMJ.* 2021 May 19;373:n1098. doi: 10.1136/bmj.n1098. https://www.bmj.com/content/373/bmj.n1098
14% of adults aged ≤65 who were infected with SARS-CoV-2 had at least one new type of clinical sequelae that required medical care after the acute phase of the illness. The results indicate the excess risk of developing new clinical sequelae after the acute phase of SARS-CoV-2 infection, including specific types of sequelae less commonly seen in other viral illnesses. Although individuals who were older, had pre-existing conditions, and were admitted to hospital because of covid-19 were at greatest excess risk, younger adults (aged ≤50), those with no pre-existing conditions, or those not admitted to hospital for covid-19 also had an increased risk of developing new clinical sequelae. The greater risk for incident sequelae after the acute phase of SARS-CoV-2 infection is relevant for healthcare planning.

Therapeutics

18. **Anakinra in hospitalized non-intubated patients with coronavirus disease 2019: a systematic review and meta-analysis.** Barkas F, et al. *Rheumatology (Oxford).* 2021 May 17:keab447. doi: 10.1093/rheumatology/keab447. https://academic.oup.com/rheumatology/advance-article/doi/10.1093/rheumatology/keab447/6276997
Nine studies (n = 1,119) were eligible for inclusion in the present meta-analysis. Available evidence shows that treatment with anakinra reduces both the need for invasive mechanical ventilation and mortality risk of hospitalized non-intubated patients with COVID-19 without increasing the risk of adverse events. Confirmation of efficacy and safety requires randomized placebo-controlled trials.

19. **Evaluation of the effectiveness and safety of adding ivermectin to treatment in severe COVID-19 patients.** Okumuş N, et al. *BMC Infect Dis*. 2021 May 4;21(1):411. doi: 10.1186/s12879-021-06104-9. https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-021-06104-9
According to the findings obtained, ivermectin can provide an increase in clinical recovery, improvement in prognostic laboratory parameters and a decrease in mortality rates even when used in patients with severe COVID-19. Consequently, ivermectin should be considered as an alternative drug that can be used in the treatment of COVID-19 disease or as an additional option to existing protocols.

20. **Convalescent plasma in patients admitted to hospital with COVID-19 (RECOVERY): a randomised controlled, open-label, platform trial.** RECOVERY Collaborative Group. *Lancet*. 2021 May 14:S0140-6736(21)00897-7. doi: 10.1016/S0140-6736(21)00897-7. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00897-7/fulltext
In patients hospitalised with COVID-19, high-titre convalescent plasma did not improve survival or other prespecified clinical outcomes.

21. **Cytokine adsorption in patients with severe COVID-19 pneumonia requiring extracorporeal membrane oxygenation (CYCOV): a single centre, open-label, randomised, controlled trial.** Supady A, et al. *Lancet Respir Med*. 2021 May 14:S2213-2600(21)00177-6. doi: 10.1016/S2213-2600(21)00177-6. https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(21)00177-6/fulltext
Early initiation of cytokine adsorption in patients with severe COVID-19 and venovenous ECMO did not reduce serum IL-6 and had a negative effect on survival. Cytokine adsorption should not be used during the first days of ECMO support in COVID-19.

22. **Effect of aspirin on short-term outcomes in hospitalized patients with COVID-19.** Sahai A et al. *Vasc Med.* 2021 May 19:1358863X211012754. doi: 10.1177/1358863X211012754. https://onlinelibrary.wiley.com/doi/full/10.1002/jmv.27053
We aimed to determine if the antiplatelet effect of aspirin may mitigate risk of myocardial infarction, cerebrovascular accident, and venous thromboembolism in COVID-19. We evaluated 22,072 symptomatic patients tested for COVID-19. Propensity-matched analyses were performed to determine if treatment with aspirin or nonsteroidal anti-inflammatory drugs

(NSAIDs) affected thrombotic outcomes in COVID-19. Neither aspirin nor NSAIDs affected mortality in COVID-19. Thus, aspirin does not appear to prevent thrombosis and death in COVID-19.

23. **Clinical Impact of the Early Use of Monoclonal Antibody LY-CoV555 (Bamlanivimab) on Mortality and Hospitalization among Elderly Nursing Home Patients: A Multicenter Retrospective Study.** Alam MM, et al. *Cureus.* 2021 May 10;13(5):e14933. doi: 10.7759/cureus.14933. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8109198/
Early treatment with monoclonal antibody LY-CoV555 is associated with decreased mortality among high-risk patients with mild-to-moderate COVID-19 infection in LTCFs. Although not statistically significant, there was a trend towards a lower risk of hospitalization in patients treated with LY-CoV555.

24. **Convalescent plasma or hyperimmune immunoglobulin for people with COVID-19: a living systematic review.** *Cochrane Database Syst Rev.* 2021 May 20;5:CD013600. doi: 10.1002/14651858.CD013600.pub4.
https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013600.pub4/full
We have high certainty in the evidence that convalescent plasma for the treatment of individuals with moderate to severe disease does not reduce mortality and has little to no impact on measures of clinical improvement. We are uncertain about the adverse effects of convalescent plasma. While major efforts to conduct research on COVID-19 are being made, heterogeneous reporting of outcomes is still problematic. There are 100 ongoing studies and 33 studies reporting in a study registry as being completed or terminated. Publication of ongoing studies might resolve some of the uncertainties around hyperimmune immunoglobulin therapy for people with any disease severity, and convalescent plasma therapy for people with asymptomatic or mild disease.

Transmission / Infection Control

25. **Face masks effectively limit the probability of SARS-CoV-2 transmission.** Cheng Y, et al. *Science* 20 May 2021:eabg6296DOI: 10.1126/science.abg6296
https://science.sciencemag.org/content/early/2021/05/19/science.abg6296
Airborne transmission by droplets and aerosols is important for the spread of viruses. Face masks are a well-established preventive measure, but their effectiveness for mitigating SARS-CoV-2 transmission is still under debate. We show that variations in mask efficacy can be explained by different regimes of virus abundance and related to population-average infection probability and reproduction number. For SARS-CoV-2, the viral load of infectious individuals can vary by orders of magnitude. We find that most environments and contacts are under conditions of low virus abundance (virus-limited) where surgical masks are effective at preventing virus spread. More advanced masks and other protective equipment are required in potentially virus-rich indoor environments including medical centers and hospitals. Masks are particularly effective in combination with other preventive measures like ventilation and distancing.

26. **Estimation of Transmission of COVID-19 in Simulated Nursing Homes with Frequent Testing and Immunity-Based Staffing.** Holmdahl I, et al. *JAMA Netw Open*. 2021 May 3;4(5):e2110071. doi: 10.1001/jamanetworkopen.2021.10071.
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779870
Increasing the frequency of screening testing of all residents and staff, or even staff alone, in nursing homes may reduce outbreaks in this high-risk setting. Immunity-based staffing may further reduce spread at little or no additional cost and becomes particularly important when daily testing is not feasible.

27. **Mask Use and Ventilation Improvements to Reduce COVID-19 Incidence in Elementary Schools — Georgia, November 16–December 11, 2020.** Gettings J, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 21 May 2021. DOI: http://dx.doi.org/10.15585/mmwr.mm7021e1
COVID-19 incidence was 37% lower in schools that required teachers and staff members to use masks and 39% lower in schools that improved ventilation. Ventilation strategies associated with lower school incidence included dilution methods alone (35% lower incidence) or in combination with filtration methods (48% lower incidence).

Vaccines / Immunology

28. **BNT162b2 mRNA vaccination did not prevent an outbreak of SARS COV-2 variant 501Y.V2 in an elderly nursing home but reduced transmission and disease severity.** Bailly B, et al. *Clin Infect Dis.* 2021 May 16:ciab446. doi: 10.1093/cid/ciab446.
https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab446/6276392?rss=1
We report an outbreak of SARS-CoV-2 501Y.V2 in a nursing home. All non-vaccinated residents (5/5) versus half of those vaccinated with BNT162b2 (13/26) were infected. Two of 13 vaccinated versus 4 of 5 non-vaccinated residents presented severe disease. BNT162b2 did not prevent the outbreak, but reduced transmission and disease severity.

29. **Heterologous prime-boost COVID-19 vaccination: initial reactogenicity data.** Com-COV Study Group. *Lancet.* 2021 May 12:S0140-6736(21)01115-6. doi: 10.1016/S0140-6736(21)01115-6.
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01115-6/fulltext
In this interim safety analysis, we found an increase in systemic reactogenicity after the boost dose reported by participants in heterologous vaccine schedules in comparison to homologous vaccine schedules, and this was accompanied by increased paracetamol usage. Of note, these data were obtained in participants aged 50 years and older, and reactogenicity might be higher in younger age groups for whom a mixed vaccination schedule is being advocated in Germany, France, Sweden, Norway, and Denmark. Pending availability of a more complete safety dataset and immunogenicity results for heterologous prime-boost schedules (to be reported shortly), these data suggest that the two heterologous vaccine schedules in this trial might have some short-term disadvantages. Routine prophylactic use of paracetamol after immunisation could help mitigate these.

30. **Heterologous vaccination regimens with self-amplifying RNA and adenoviral COVID vaccines induce robust immune responses in mice.** Spencer AJ, et al. *Nat Commun.* 2021 May

17;12(1):2893. doi: 10.1038/s41467-021-23173-1. https://www.nature.com/articles/s41467-021-23173-1
We present a detailed description of the immune response, in mice, following vaccination with a self-amplifying RNA (saRNA) vaccine and an adenoviral vectored vaccine (ChAdOx1 nCoV-19/AZD1222) against SARS-CoV-2. We demonstrate that antibody responses are higher in two-dose heterologous vaccination regimens than single-dose regimens. Neutralising titres after heterologous prime-boost were at least comparable or higher than the titres measured after homologous prime boost vaccination with viral vectors. Importantly, the cellular immune response after a heterologous regimen is dominated by cytotoxic T cells and Th1+ CD4 T cells, which is superior to the response induced in homologous vaccination regimens in mice. These results underpin the need for clinical trials to investigate the immunogenicity of heterologous regimens with alternate vaccine technologies.

31. **Effectiveness of the Pfizer-BioNTech and Oxford-AstraZeneca vaccines on covid-19 related symptoms, hospital admissions, and mortality in older adults in England: test negative case-control study.** Lopez Bernal J, et al. *BMJ*. 2021 May 13;373:n1088. doi: 10.1136/bmj.n1088. https://www.bmj.com/content/373/bmj.n1088
Vaccination with either one dose of BNT162b2 or ChAdOx1-S was associated with a significant reduction in symptomatic covid-19 in older adults, and with further protection against severe disease. Both vaccines showed similar effects. Protection was maintained for the duration of follow-up (>6 weeks). A second dose of BNT162b2 was associated with further protection against symptomatic disease. A clear effect of the vaccines against the B.1.1.7 variant was found.

32. **The effectiveness of the TWO-DOSE BNT162b2 vaccine: analysis of real-world data.** Chodick G, et al. *Clin Infect Dis.* 2021 May 17:ciab438. doi: 10.1093/cid/ciab438. https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab438/6276888
Data of 1,178,597 individuals vaccinated with BNT162b2 were analyzed. The vaccine effectiveness in preventing infection was 90% and 94% against COVID-19. Among immunosuppressed patients, vaccine effectiveness against infection was 71%. The effectiveness of the BNT162b2 vaccine is comparable to the one reported in the phase III clinical trial.

33. **Arterial events, venous thromboembolism, thrombocytopenia, and bleeding after vaccination with Oxford-AstraZeneca ChAdOx1-S in Denmark and Norway: population based cohort study.** Pottegård A, et al. *BMJ*. 2021 May 5;373:n1114. doi: 10.1136/bmj.n1114. https://www.bmj.com/content/373/bmj.n1114
Among recipients of ChAdOx1-S, increased rates of venous thromboembolic events, including cerebral venous thrombosis, were observed. For the remaining safety outcomes, results were largely reassuring, with slightly higher rates of thrombocytopenia/coagulation disorders and bleeding, which could be influenced by increased surveillance of vaccine recipients. The absolute risks of venous thromboembolic events were, however, small, and the findings should be interpreted in the light of the proven beneficial effects of the vaccine, the context of the given country, and the limitations to the generalisability of the study findings.

34. **Comparison of Circulating Immune Cells Profiles and Kinetics between Coronavirus Disease 2019 and Bacterial Sepsis.** de Roquetaillade C, et al. *Crit Care Med*. 2021 May 18. doi: 10.1097/CCM.0000000000005088. https://journals.lww.com/ccmjournal/Abstract/9000/Comparison_of_Circulating_Immune_Cells_Profiles.95220.aspx
Circulating immune cells profile differs between mild and severe coronavirus disease 2019 patients. Severe coronavirus disease 2019 is associated with a unique immune profile as compared with sepsis. Several immune features are associated with outcome. Thus, immune monitoring of coronavirus disease 2019 might be of help for patient management.

35. **Thrombocytopenia including immune thrombocytopenia after receipt of mRNA COVID-19 vaccines reported to the Vaccine Adverse Event Reporting System (VAERS).** Welsh KJ, et al. *Vaccine.* 2021 Apr 30:S0264-410X(21)00524-7. doi: 10.1016/j.vaccine.2021.04.054. https://www.sciencedirect.com/science/article/pii/S0264410X21005247
Fifteen cases of thrombocytopenia were identified among 18,841,309 doses of Pfizer-BioNTech COVID-19 Vaccine and 13 cases among 16,260,102 doses of Moderna COVID-19 Vaccine. Based on an annual incidence rate of 3.3 ITP cases per 100,000 adults, the observed number of all thrombocytopenia cases, which includes ITP, following administration of mRNA COVID-19 vaccines is not greater than the number of ITP cases expected.

36. **Serial SARS-CoV-2 Receptor-Binding Domain Antibody Responses in Patients Receiving Dialysis.** Anand S, et al. *Ann Intern Med*. 2021 May 18. doi: 10.7326/M21-0256. https://www.acpjournals.org/doi/10.7326/M21-0256
Despite impaired immunity, most seropositive patients receiving dialysis maintained RBD antibody levels over 6 months. A slow and continual decline in median antibody levels over time was seen, but no indication that subgroups with impaired immunity had a shorter-lived humoral response was found.

37. **Dynamics of anti-SARS-CoV-2 IgG antibodies post-COVID-19 in a Brazilian Amazon population.** Bichara CDA, et al. *BMC Infect Dis*. 2021 May 15;21(1):443. doi: 10.1186/s12879-021-06156-x. https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-021-06156-x
The results of the present study show a high frequency of loss of anti-SARS-CoV-2 IgG antibodies within 3 months after COVID-19 diagnosis in the Brazilian Amazon.

38. **Interim Estimates of Vaccine Effectiveness of Pfizer-BioNTech and Moderna COVID-19 Vaccines among Health Care Personnel - 33 U.S. Sites, January-March 2021.** Pilishvili T et al. *MMWR Morb Mortal Wkly Rep.* 2021 May 21;70(20):753-758. doi: 10.15585/mmwr.mm7020e2. https://www.cdc.gov/mmwr/volumes/70/wr/mm7020e2.htm
Interim analyses indicated that the vaccine effectiveness (VE) of a single dose (measured 14 days after the first dose through 6 days after the second dose) was 82%, adjusted for age, race/ethnicity, and underlying medical conditions. The adjusted VE of 2 doses (measured ≥7 days after the second dose) was 94%. VE of partial (1-dose) and complete (2-dose) vaccination in this population is comparable to that reported from clinical trials and recent observational

studies, supporting the effectiveness of mRNA COVID-19 vaccines against symptomatic disease in adults, with strong 2-dose protection.

Women & Children

39. **COVID-19 Testing to Sustain In-Person Instruction and Extracurricular Activities in High Schools — Utah, November 2020–March 2021.** Lanier WA, et al. *MMWR Morb Mortal Wkly Rep*. ePub: 21 May 2021. DOI: http://dx.doi.org/10.15585/mmwr.mm7021e2
Utah implemented two high school COVID-19 testing programs to sustain in-person instruction and extracurricular activities. During November 30, 2020–March 20, 2021, among 59,552 students who received testing, 1,886 (3.2%) had a positive result. These programs facilitated the completion of approximately 95% of high school extracurricular competition events and saved an estimated 109,752 in-person instruction student-days. School-based COVID-19 testing should be considered part of a comprehensive prevention strategy to identify SARS-CoV-2 infections in schools and sustain in-person instruction and extracurricular activities.

40. **Compassionate Use of Remdesivir in Children with Severe COVID-19.** Goldman DL, et al. *Pediatrics*. 2021 May;147(5):e2020047803. doi: 10.1542/peds.2020-047803. https://pediatrics.aappublications.org/content/147/5/e2020047803
Among 77 children treated with remdesivir for severe COVID-19, most recovered and the rate of serious adverse events was low. At baseline, 90% of children required supplemental oxygen and 51% required invasive ventilation. By day 28 of follow-up, 88% of patients had a decreased oxygen-support requirement, 83% recovered, and 73% were discharged. Among children requiring invasive ventilation at baseline, 90% were extubated, 80% recovered, and 67% were discharged. There were 4 deaths, of which 3 were attributed to COVID-19.

41. **Efficient maternal to neonatal transfer of antibodies against SARS-CoV-2 and BNT162b2 mRNA COVID-19 vaccine.** Beharier O et al. *J Clin Invest*. 2021 May 20:150319. doi: 10.1172/JCI150319. https://www.jci.org/articles/view/150319
BNT162b2 mRNA vaccine elicits strong maternal humoral IgG response (Anti-S and RBD) that crosses the placenta barrier and approaches maternal titers in the fetus within 15 days following the first dose. Maternal to neonatal anti-COVID-19 antibodies ratio did not differ when comparing sensitization (vaccine vs. infection). IgG transfer rate was significantly lower for third-trimester as compared to second trimester infection. Lastly, fetal IgM response was detected in 5 neonates, all in the infected group.

GUIDELINES & CONSENSUS STATEMENTS

Pediatric Infectious Disease Group (GPIP) position paper on the immune debt of the COVID-19 pandemic in childhood, how can we fill the immunity gap? Cohen R, et al. *Infect Dis Now.* 2021 May 12:S2666-9919(21)00112-3. doi: 10.1016/j.idnow.2021.05.004.

The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine in Adolescents Aged 12-15 Years - United States, May 2021. Wallace M et al. *MMWR Morb Mortal Wkly Rep*. 2021 May 21;70(20):749-752. doi: 10.15585/mmwr.mm7020e1.

FDA / CDC / NIH / WHO Updates

FDA Advises Against Use of SARS-CoV-2 Antibody Test Results to Evaluate Immunity or Protection From COVID-19, Including After Vaccination

FDA Authorizes Longer Time for Refrigerator Storage of Thawed Pfizer-BioNTech COVID-19 Vaccine Prior to Dilution, Making Vaccine More Widely Available

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Commentary

Investigate the origins of COVID-19. Bloom JD et al. *Science*. 2021 May 14;372(6543):694. doi: 10.1126/science.abj0016.

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