

## COVID-19 Resource Desk

#54 | 5.1.21 to 5.7.21

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### New Research

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

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

#### Diagnostics & Screening

1. **Factors Associated with Access to and Timing of Coronavirus Testing Among US Adults after Onset of Febrile Illness.** Pletcher MJ, et al. *JAMA Netw Open.* 2021 May 3;4(5):e218500. doi: 10.1001/jamanetworkopen.2021.8500.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779419>  
Systematic underuse of coronavirus testing was observed in this cohort study through late October 2020, at the beginning of the winter COVID-19 surge, which may have contributed to preventable coronavirus transmission.

#### Epidemiology & Public Health

2. **Association between Income Inequality and County-Level COVID-19 Cases and Deaths in the US.** Tan AX, et al. *JAMA Netw Open.* 2021 May 3;4(5):e218799. doi: 10.1001/jamanetworkopen.2021.8799.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779417>  
This study suggests that income inequality within US counties was associated with more cases and deaths due to COVID-19 in the summer months of 2020. The COVID-19 pandemic has highlighted the vast disparities that exist in health outcomes owing to income inequality in the US. Targeted interventions should be focused on areas of income inequality to both flatten the curve and lessen the burden of inequality.
3. **Trends in Patient Characteristics and COVID-19 In-Hospital Mortality in the United States during the COVID-19 Pandemic.** Roth GA et al. *JAMA Netw Open.* 2021 May 3;4(5):e218828. doi: 10.1001/jamanetworkopen.2021.8828.  
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2779415>  
In this cohort study, high rates of in-hospital COVID-19 mortality among registry patients in March and April 2020 decreased by more than one-third by June and remained near that rate through November. This difference in mortality rates between the months of March and April and later months persisted even after adjusting for age, sex, medical history, and COVID-19 disease severity and did not appear to be associated with changes in the characteristics of patients being admitted.

4. **Risk Factors for Infection and Health Impacts of the Covid-19 Pandemic in People with Autoimmune Diseases.** Fitzgerald KC, et al. *Clin Infect Dis.* 2021 May 6:ciab407. doi: 10.1093/cid/ciab407. [http://fdslive.oup.com/www.oup.com/pdf/production\\_in\\_progress.pdf](http://fdslive.oup.com/www.oup.com/pdf/production_in_progress.pdf)  
Glucocorticoid exposure may increase risk of COVID-19 in people with autoimmune or inflammatory conditions. Disruption to healthcare and related services was common. Those with pandemic-related reduced income may be most vulnerable to care disruptions.  
\*see also [SARS-CoV-2 outbreak in immune-mediated inflammatory diseases: the Euro-COVIMID multicentre cross-sectional study](#). Saadoun D, et al. *Lancet Rheumatol.* 2021 Apr 28. doi: 10.1016/S2665-9913(21)00112-0.

### Healthcare Delivery & Healthcare Workers

5. **SARS-CoV-2 Seroprevalence among Healthcare Workers by Job Function and Work Location in a New York Inner-City Hospital.** Purswani MU, et al. *J Hosp Med.* 2021 May;16(5):282-289. doi: 10.12788/jhm.3627. <https://www.journalofhospitalmedicine.com/jhospmed/article/238678/hospital-medicine/sars-cov-2-seroprevalence-among-healthcare-workers-job>  
One-third of hospital-based HCWs were seropositive for SARS-CoV-2 by the end of the first wave in NYC. Seroprevalence differed by job function and work location, with the highest estimated risk for nurses and the emergency department, respectively. These findings support current nationwide policy prioritizing HCWs for receipt of newly authorized COVID-19 vaccines.

### Prognosis

6. **Frailty is associated with in-hospital mortality in older hospitalised COVID-19 patients in the Netherlands: the COVID-OLD study.** Blomaard LC et al. *Age Ageing.* 2021 May 5;50(3):631-640. doi: 10.1093/ageing/afab018. <https://academic.oup.com/ageing/article/50/3/631/6123578>  
The in-hospital mortality of older hospitalised COVID-19 patients in the Netherlands was 38%. Frailty was independently associated with higher in-hospital mortality, even though COVID-19 patients with frailty presented earlier to the hospital with less severe symptoms.
7. **Incidence, risk factors, clinical characteristics and outcomes of deep venous thrombosis in patients with COVID-19 attending the Emergency Department: results of the UMC-19-S8.** Spanish Investigators on Emergency Situations TeAm (SIESTA) network. *Eur J Emerg Med.* 2021 Jun 1;28(3):218-226. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8082992/>  
We identified 112 DVT in 74 814 patients with COVID-19 attending the ED. This relative frequency was similar than that observed in non-COVID patients. In COVID patients, the clinical characteristics associated with a higher risk of presenting DVT were older age and having a history of venous thromboembolism, recent surgery/immobilization and hypertension; chest pain and desaturation at ED arrival and some analytical disturbances were also more frequently seen, d-dimer >5000 ng/mL being the strongest. DVT was an unusual form of COVID presentation in COVID patients but was associated with a worse prognosis.

## Survivorship & Rehabilitation

8. **Persistent Post-COVID-19 Interstitial Lung Disease. An Observational Study of Corticosteroid Treatment.** Myall KJ, et al. *Ann Am Thorac Soc.* 2021 May;18(5):799-806. doi: 10.1513/AnnalsATS.202008-1002OC.  
<https://www.atsjournals.org/doi/10.1513/AnnalsATS.202008-1002OC>  
Following SARS-CoV-2 pneumonitis, a cohort of patients are left with both radiological inflammatory lung disease and persistent physiological and functional deficit. Early treatment with corticosteroids was well tolerated and associated with rapid and significant improvement. These preliminary data should inform further study into the natural history and potential treatment for patients with persistent inflammatory ILD following SARS-CoV-2 infection.
9. **3-month, 6-month, 9-month, and 12-month respiratory outcomes in patients following COVID-19-related hospitalisation: a prospective study.** Wu X, et al. *Lancet.* May 05, 2021 DOI:[https://doi.org/10.1016/S2213-2600\(21\)00174-0](https://doi.org/10.1016/S2213-2600(21)00174-0)  
[https://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(21\)00174-0/fulltext](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(21)00174-0/fulltext)  
In most patients who recovered from severe COVID-19, dyspnoea scores and exercise capacity improved over time; however, in a subgroup of patients at 12 months we found evidence of persistent physiological and radiographic change. Multivariate logistic regression showed increasing odds of impaired DLCO associated with female sex and radiological abnormalities were associated with peak HRCT pneumonia scores during hospitalisation.

## Therapeutics

10. **Prone Positioning of Nonintubated Patients with Coronavirus Disease 2019-A Systematic Review and Meta-Analysis.** Ponnappa Reddy M, et al. *Crit Care Med.* 2021 Apr 30. doi: 10.1097/CCM.0000000000005086.  
[https://journals.lww.com/ccmjournal/Abstract/9000/Prone\\_Positioning\\_of\\_Nonintubated\\_Patients\\_With.95232.aspx](https://journals.lww.com/ccmjournal/Abstract/9000/Prone_Positioning_of_Nonintubated_Patients_With.95232.aspx)  
Despite the significant variability in frequency and duration of prone positioning and respiratory supports applied, prone positioning was associated with improvement in oxygenation variables without any reported serious adverse events. The results are limited by a lack of controls and adjustments for confounders. Whether this improvement in oxygenation results in meaningful patient-centered outcomes such as reduced intubation or mortality rates requires testing in well-designed randomized clinical trials.
11. **IL-6 inhibition in the treatment of COVID-19: A meta-analysis and meta-regression.** Tharmarajah E, et al. *J Infect.* 2021 May;82(5):178-185. doi: 10.1016/j.jinf.2021.03.008. Epub 2021 Mar 18. <https://www.sciencedirect.com/science/article/pii/S0163445321001250>  
IL-6 inhibition is associated with clinically meaningful improvements in outcomes for patients admitted with COVID-19. Long-term benefits of IL-6 inhibition, its effectiveness across healthcare systems, and implications for differing standards of care are currently unknown.

## Transmission / Infection Control

12. **Characterization of Aerosol Generation during Various Intensities of Exercise.** Sajgalik P, et al. *Chest*. 2021 May 3:S0012-3692(21)00768-6. doi: 10.1016/j.chest.2021.04.041.  
<https://www.sciencedirect.com/science/article/pii/S0012369221007686?via%3Dihub>  
Our data suggest exercise testing is an aerosol generating procedure and, by extension, other activities involving exercise intensities at or above 50% of HRR. Results can guide recommendations for safety of exercise testing and other indoor exercise activities.
13. **Discontinuation of Isolation Precautions for COVID-19 Patients.** Anderson L, et al. *Infect Control Hosp Epidemiol*. 2021 May 3:1-9. doi: 10.1017/ice.2021.188.  
<https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/discontinuation-of-isolation-precautions-for-covid19-patients/2647E00126F5C7DD2FF7BD2DB9837842>  
Appropriate implementation of transmission-based precautions is critical to preventing SARS-CoV-2 transmission between patients and healthcare workers. Healthcare workers caring for patients with confirmed or suspect COVID-19 should wear an NIOSH-approved N95 or equivalent or higher-level respirator, gown, gloves, and eye protection. Given uncertainty regarding how long patients with COVID-19 remain infectious, it remains unclear when the discontinuation of transmission-based precautions is appropriate.

## Vaccines / Immunology

14. **Asymptomatic and Symptomatic SARS-CoV-2 Infections After BNT162b2 Vaccination in a Routinely Screened Workforce.** Tang L, et al. *JAMA*. 2021 May 6. doi: 10.1001/jama.2021.6564.  
<https://jamanetwork.com/journals/jama/fullarticle/2779854>  
This study found an association between vaccination with BNT162b2 in hospital employees and a decreased risk of symptomatic and asymptomatic infections with SARS-CoV-2. Between December 17, 2020, and March 20, 2021, 3052 (58.5%) workers received at least 1 BNT162b2 dose, and 2776 (53.2%) received 2 doses; 2165 (41.5%) were unvaccinated. Among vaccinated employees, 51 tested positive for SARS-CoV-2 during follow-up (41 before and 10 after the second dose); 29 (56.9%) were diagnosed through asymptomatic screening. Among unvaccinated employees, 185 tested positive and 79 (42.7%) were asymptomatic.  
\*see also [Association Between Vaccination with BNT162b2 and Incidence of Symptomatic and Asymptomatic SARS-CoV-2 Infections Among Health Care Workers](#). *JAMA*. 2021 May 6. doi: 10.1001/jama.2021.7152.
15. **Safety and immunogenicity of one versus two doses of the COVID-19 vaccine BNT162b2 for patients with cancer: interim analysis of a prospective observational study.** Monin L et al. *Lancet Oncol*. 2021 Apr 27:S1470-2045(21)00213-8. doi: 10.1016/S1470-2045(21)00213-8.  
[https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045\(21\)00213-8/fulltext](https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(21)00213-8/fulltext)  
In patients with cancer, one dose of the BNT162b2 vaccine yields poor efficacy. Immunogenicity increased significantly in patients with solid cancer within 2 weeks of a vaccine boost at day 21

after the first dose. These data support prioritisation of patients with cancer for an early (day 21) second dose of the BNT162b2 vaccine.

16. **Efficacy of NVX-CoV2373 Covid-19 Vaccine against the B.1.351 Variant.** Shinde V et al. *N Engl J Med.* 2021 May 5. doi: 10.1056/NEJMoa2103055.

<https://www.nejm.org/doi/full/10.1056/NEJMoa2103055>

The NVX-CoV2373 vaccine was efficacious in preventing Covid-19, with higher vaccine efficacy observed among HIV-negative participants. Most infections were caused by the B.1.351 variant.

17. **Effectiveness of the BNT162b2 Covid-19 Vaccine against the B.1.1.7 and B.1.351 Variants.**

National Study Group for COVID-19 Vaccination. *N Engl J Med.* 2021 May 5. doi:

10.1056/NEJMc2104974. <https://www.nejm.org/doi/full/10.1056/NEJMc2104974>

The messenger RNA vaccine BNT162b2 (Pfizer–BioNTech) has 95% efficacy against coronavirus disease 2019 (Covid-19). Qatar launched a mass immunization campaign with this vaccine on December 21, 2020. As of March 31, 2021, a total of 385,853 persons had received at least one vaccine dose and 265,410 had completed the two doses. Vaccination scale-up occurred as Qatar was undergoing its second and third waves of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, which were triggered by expansion of the B.1.1.7 variant (starting in mid-January 2021) and the B.1.351 variant (starting in mid-February 2021). The B.1.1.7 wave peaked during the first week of March, and the rapid expansion of B.1.351 started in mid-March and continues to the present day. Viral genome sequencing conducted from February 23 through March 18 indicated that 50.0% of cases of Covid-19 in Qatar were caused by B.1.351 and 44.5% were caused by B.1.1.7. Nearly all cases in which virus was sequenced after March 7 were caused by either B.1.351 or B.1.1.7.

18. **Antibody Response to 2-Dose SARS-CoV-2 mRNA Vaccine Series in Solid Organ Transplant Recipients.** Boyarsky BJ, et al. *JAMA.* 2021 May 5. doi: 10.1001/jama.2021.7489.

<https://jamanetwork.com/journals/jama/fullarticle/2779852>

In this study of the humoral response to 2 doses of mRNA SARS-CoV-2 vaccine among solid organ transplant recipients, the majority had detectable antibody responses after the second dose, although participants without a response after dose 1 had generally low antibody levels. Poor humoral response was persistently associated with use of antimetabolite immunosuppression. Although no threshold has been established for protective immunity, antibody levels were well below that which has been observed in immunocompetent vaccinees.

19. **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;373:n1114 05 May 2021. doi:

<https://doi.org/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.

- 20. Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data.** Haas EJ, et al. *Lancet*. May 05, 2021 DOI: [https://doi.org/10.1016/S0140-6736\(21\)00947-8](https://doi.org/10.1016/S0140-6736(21)00947-8)  
[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)00947-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)00947-8/fulltext)  
Two doses of BNT162b2 are highly effective across all age groups ( $\geq 16$  years, including older adults aged  $\geq 85$  years) in preventing symptomatic and asymptomatic SARS-CoV-2 infections and COVID-19-related hospitalisations, severe disease, and death, including those caused by the B.1.1.7 SARS-CoV-2 variant. There were marked and sustained declines in SARS-CoV-2 incidence corresponding to increasing vaccine coverage. These findings suggest that COVID-19 vaccination can help to control the pandemic.
- 21. Safety Monitoring of the Janssen (Johnson & Johnson) COVID-19 Vaccine - United States, March-April 2021.** Shay DK, et al. *MMWR Morb Mortal Wkly Rep*. 2021 May 7;70(18):680-684. doi: 10.15585/mmwr.mm7018e2.  
<https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7018e2-H.pdf>  
As of April 21, 2021, 7.98 million doses of the Janssen COVID-19 vaccine had been administered. Among 13,725 VAERS reports reviewed, 97% were classified as nonserious and 3% as serious, including three reports among women of cases of thrombosis in large arteries or veins accompanied by thrombocytopenia during the second week after vaccination. These three cases and the previously detected CVST cases are consistent with 17 cases of TTS, a newly defined condition. Approximately 338,700 Janssen COVID-19 vaccine recipients completed at least one v-safe survey during the week after vaccination; 76% reported a systemic reaction, 61% reported a local reaction, and 34% reported a health impact. Fatigue and pain were commonly reported symptoms in both VAERS and v-safe. The overall safety profile is consistent with preauthorization clinical trials data.
- 22. Effectiveness of Pfizer-BioNTech and Moderna Vaccines against COVID-19 among Hospitalized Adults Aged  $\geq 65$  Years - United States, January-March 2021.** IVY Network; HAIVEN Investigators. *MMWR Morb Mortal Wkly Rep*. 2021 May 7;70(18):674-679. doi: 10.15585/mmwr.mm7018e1. <https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7018e1-H.pdf>  
Adjusted vaccine effectiveness against COVID-19-associated hospitalization among adults aged  $\geq 65$  years was estimated to be 94% for full vaccination and 64% for partial vaccination. These findings are consistent with efficacy determined from clinical trials in the subgroup of adults aged  $\geq 65$  years. This multisite U.S. evaluation under real-world conditions suggests that vaccination provided protection against COVID-19-associated hospitalization among adults aged  $\geq 65$  years.

23. **One dose of SARS-CoV-2 vaccine exponentially increases antibodies in recovered individuals with symptomatic COVID-19.** Levi R, et al. *J Clin Invest.* 2021 May 6:149154. doi: 10.1172/JCI149154. <https://doi.org/10.1172/JCI149154>  
Post-vaccine antibodies in SARS-CoV-2 exposed individuals increased exponentially within 5-18 days after the first dose compared to naïve subjects. In symptomatic SARS-CoV-2 exposed individuals, IgG reached a plateau after the second dose, and those that voluntarily refrained from receiving the second dose retained their antibody response. Thus, one vaccine dose is sufficient in symptomatic SARS-CoV-2 exposed subjects to reach a high titer of antibodies suggesting no need for a second dose, particularly in light of current vaccine shortage.

### Women & Children

24. **Prevalence of thrombotic complications in children with SARS-CoV-2.** EPICO-AEP Working Group. *Arch Dis Child.* 2021 Apr 30:archdischild-2020-321351. doi: 10.1136/archdischild-2020-321351. <https://adc.bmj.com/content/early/2021/04/29/archdischild-2020-321351>  
Knowledge of thrombosis in children with SARS-CoV-2 is scarce. In this multicentre national cohort of children with SARS-CoV-2 involving 49 hospitals, 4 patients out of 537 infected children developed a thrombotic complication (prevalence of 0.7% (95% CI: 0.2% to 1.9%) out of the global cohort and 1.1% (95% CI: 0.3% to 2.8%) out of the hospitalised patients). We describe their characteristics and review other published paediatric cases. Three out of the four patients were adolescent girls, and only two cases had significant thrombotic risk factors. In this paediatric cohort, D-dimer value was not specific enough to predict thrombotic complications. Adolescence and previous thrombotic risk factors may be considered when initiating anticoagulant prophylaxis on children with COVID-19.
25. **Coronavirus disease 2019 respiratory disease in children: clinical presentation and pathophysiology.** Steffes LC, Cornfield DN. *Curr Opin Pediatr.* 2021 Jun 1;33(3):302-310. doi: 10.1097/MOP.0000000000001013. <https://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&AN=00008480-202106000-00008&LSLINK=80&D=ovft>  
Over the past 14 months, knowledge of the clinical presentation and pathophysiology of COVID-19 pneumonia has rapidly expanded. The decreased disease severity of COVID-19 pneumonia in children was an early observation. Differences in the efficiency of viral cell entry and timing of immune recognition and response between children and adults remain at the center of ongoing research. The clinical spectrum of COVID-19 respiratory disease in children is well defined. The age-related differences protecting children from severe disease and death remain incompletely understood.

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## GUIDELINES & CONSENSUS STATEMENTS

[SARS-CoV-2 routes of transmission and recommendations for preventing acquisition: joint British Infection Association \(BIA\), Healthcare Infection Society \(HIS\), Infection Prevention Society \(IPS\) and](#)

[Royal College of Pathologists \(RCPATH\) guidance](#). Bak A et al. *J Hosp Infect*. 2021 Apr 30:S0195-6701(21)00180-8. doi: 10.1016/j.jhin.2021.04.027.

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## CDC / FDA / NIH / WHO

CDC - [Scientific Brief: SARS-CoV-2 Transmission](#) Modes of SARS-CoV-2 transmission are now categorized as inhalation of virus, deposition of virus on exposed mucous membranes, and touching mucous membranes with soiled hands contaminated with virus.

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## Commentary & News

[Pfizer and BioNTech Request Regulatory Agencies Expand Emergency Use of Their COVID-19 Vaccine to Adolescents](#)

[US backs waiving intellectual property rules on vaccines](#) May 6, 2021

[PFIZER AND BIONTECH INITIATE ROLLING SUBMISSION OF BIOLOGICS LICENSE APPLICATION FOR U.S. FDA APPROVAL OF THEIR COVID-19 VACCINE](#) May 7, 2021

[Should masks be worn outdoors?](#) Javid B, et al. *BMJ*. 2021 Apr 28;373:n1036. doi: 10.1136/bmj.n1036.

[An Inside Look at a Post-COVID-19 Clinic](#). Walter K. *JAMA*. May 5, 2021. doi:10.1001/jama.2021.2426

[Covid-19: Most people admitted to hospital after vaccination were infected before immunity could develop, research shows](#). Mahase E. *BMJ*. 2021 Apr 30;373:n1127. doi: 10.1136/bmj.n1127.

[Will SARS-CoV-2 variants of concern affect the promise of vaccines?](#) Gupta RK. *Nat Rev Immunol*. 2021 Apr 29:1-2. doi: 10.1038/s41577-021-00556-5.

[Covid-19: Heavy use of oxygen brings new danger to world's hospitals](#). Dyer O. *BMJ*. 2021 Apr 29;373:n1117. doi: 10.1136/bmj.n1117.

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