

## 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. **Incidence, Management, and Outcomes of Patients with COVID-19 and Pneumothorax.** Geraci TC, et al. *Ann Thorac Surg.* 2021 Sep 2:S0003-4975(21)01545-9. doi: 10.1016/j.athoracsur.2021.07.097. [https://www.annalsthoracicsurgery.org/article/S0003-4975\(21\)01545-9/pdf](https://www.annalsthoracicsurgery.org/article/S0003-4975(21)01545-9/pdf)

The incidence of secondary pneumothorax in patients admitted for COVID-19 is 7.4%, most commonly occurring in patients requiring mechanical ventilation, and is associated with an in-hospital mortality rate of 58%. Placement of large-bore chest tubes is associated with fewer complications than small-bore tubes.

### Diagnostics & Screening

2. **Rapid diagnosis of SARS-CoV-2 pneumonia on lower respiratory tract specimens.** De Pace V, et al. *BMC Infect Dis.* 2021 Sep 8;21(1):926. doi: 10.1186/s12879-021-06591-w. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8423595/>  
Vivalytic SARS-CoV-2 can be used effectively on LRT specimens following sample liquefaction. It is a feasible and highly accurate molecular procedure, especially in samples with high viral loads. This assay yields results in about 40 min. and may therefore accelerate clinical decision-making in urgent/emergency situations.

### Epidemiology & Public Health

3. **Severity of SARS-CoV-2 alpha variant (B.1.1.7) in England.** Grint DJ et al. *Clin Infect Dis.* 2021 Sep 6:ciab754. doi: 10.1093/cid/ciab754. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciab754/6365124>  
The SARS-CoV-2 alpha variant is associated with an increased risk of both hospitalisation and mortality than wild-type virus.
4. **Risk of hospital admission with covid-19 among teachers compared with healthcare workers and other adults of working age in Scotland, March 2020 to July 2021: population based case-**

**control study.** Fenton L et al. *BMJ*. 2021 Sep 1;374:n2060. doi: 10.1136/bmj.n2060.

<https://www.bmj.com/content/374/bmj.n2060>

Compared with adults of working age who are otherwise similar, teachers and their household members were not found to be at increased risk of hospital admission with covid-19 and were found to be at lower risk of severe covid-19. These findings should reassure those who are engaged in face-to-face teaching.

### Healthcare Delivery & Healthcare Workers

5. **Mass Critical Care Surge Response during COVID-19: Implementation of Contingency Strategies a Preliminary Report of findings from the Task Force for Mass Critical Care.** Task Force for Mass Critical Care Writing Group. *Chest*. 2021 Sep 6:S0012-3692(21)03845-9. doi: 10.1016/j.chest.2021.08.072.

<https://www.sciencedirect.com/science/article/pii/S0012369221038459?via%3Dihub>

A subcommittee from the Task Force for Mass Critical Care offers interim evidence-informed operational strategies to assist hospitals and communities to plan for and respond to surge capacity demands from COVID-19.

### Prognosis

6. **Baseline SARS-CoV-2 Viral Load is Associated with COVID-19 Disease Severity and Clinical Outcomes: Post-Hoc Analyses of a Phase 2/3 Trial.** Boyapati A, et al. *J Infect Dis*. 2021 Sep 8:jiab445. doi: 10.1093/infdis/jiab445. <https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiab445/6366357>

In post-hoc analyses, higher baseline viral load, measured by both RT-qPCR cycle threshold (Ct) and log<sub>10</sub> copies/mL, was associated with greater supplemental oxygenation requirements and disease severity at study entry. Higher baseline viral load was associated with higher mortality, lower likelihood of improvement in clinical status and supplemental oxygenation requirements, and lower rates of hospital discharge. Viral load was not impacted by sarilumab treatment over time versus placebo. These data support viral load as an important determinant of clinical outcomes in hospitalized patients with COVID-19 requiring supplemental oxygen or assisted ventilation.

### Survivorship & Rehabilitation

7. **Time to resolution of respiratory and systemic COVID-19 symptoms in community setting.** Dinh A et al. *Clin Microbiol Infect*. 2021 Sep 2:S1198-743X(21)00481-X. doi: 10.1016/j.cmi.2021.08.021. [https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X\(21\)00481-X/fulltext](https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(21)00481-X/fulltext)

Time to symptom resolution among outpatients with COVID-19 seemed shorter for systemic than respiratory symptoms. Prolonged respiratory symptoms were common at day 30. Risk factors associated with later resolution included age, cardiovascular and pulmonary diseases.

8. **Long-Term Symptoms Among Adults Tested for SARS-CoV-2 - United States, January 2020-April 2021.** Wanga V, et al. *MMWR Morb Mortal Wkly Rep.* 2021 Sep 10;70(36):1235-1241. [https://www.cdc.gov/mmwr/volumes/70/wr/mm7036a1.htm?s\\_cid=mm7036a1\\_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7036a1.htm?s_cid=mm7036a1_w)  
Approximately two thirds of respondents who had received a positive test result experienced long-term symptoms often associated with SARS-CoV-2 infection. Those who received a positive test result reported believing that receiving a COVID-19 vaccine made their long-term symptoms better.

### Therapeutics

9. **Early treatment of COVID-19 with anakinra guided by soluble urokinase plasminogen receptor plasma levels: a double-blind, randomized controlled phase 3 trial.** Kyriazopoulou E et al. *Nat Med.* 2021 Sep 3. doi: 10.1038/s41591-021-01499-z. <https://www.nature.com/articles/s41591-021-01499-z>  
The SAVE-MORE double-blind, randomized controlled trial evaluated the efficacy and safety of anakinra, an IL-1 $\alpha/\beta$  inhibitor, in 594 patients with COVID-19 at risk of progressing to respiratory failure as identified by plasma suPAR  $\geq 6$  ng ml<sup>-1</sup>, 85.9% of whom were receiving dexamethasone. At day 28, the adjusted proportional odds of having a worse clinical status with anakinra, as compared to placebo, was 0.36. The median WHO-CPS decrease on day 28 from baseline in the placebo and anakinra groups was 3 and 4 points, respectively; the respective median decrease of Sequential Organ Failure Assessment (SOFA) score on day 7 from baseline was 0 and 1 points. Twenty-eight-day mortality decreased, and hospital stay was shorter.
10. **SARS-CoV-2-neutralising monoclonal antibodies for treatment of COVID-19.** Kreuzberger et al. *Cochrane Database Syst Rev.* 2021 Sep 2;9(9):CD013825. doi: 10.1002/14651858.CD013825.pub2 <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD013825.pub2/full>  
We consider the current evidence insufficient to draw meaningful conclusions regarding treatment with SARS-CoV-2-neutralising mAbs. Further studies and long-term data from the existing studies are needed to confirm or refute these initial findings, and to understand how the emergence of SARS-CoV-2 variants may impact the effectiveness of SARS-CoV-2-neutralising mAbs. Publication of the 36 ongoing studies may resolve uncertainties about the effectiveness and safety of SARS-CoV-2-neutralising mAbs for the treatment of COVID-19 and possible subgroup differences.
11. **Efficacy and safety of baricitinib for the treatment of hospitalised adults with COVID-19 (COV-BARRIER): a randomised, double-blind, parallel-group, placebo-controlled phase 3 trial.** Marconi VC et al. *Lancet Respir Med.* 2021 Aug 31:S2213-2600(21)00331-3. doi: 10.1016/S2213-2600(21)00331-3. [https://www.thelancet.com/journals/lanres/article/PIIS2213-2600\(21\)00331-3/fulltext](https://www.thelancet.com/journals/lanres/article/PIIS2213-2600(21)00331-3/fulltext)  
Although there was no significant reduction in the frequency of disease progression overall, treatment with baricitinib in addition to standard of care (including dexamethasone) had a

similar safety profile to that of standard of care alone and was associated with reduced mortality in hospitalised adults with COVID-19.

12. **Prolonged Prone Positioning for COVID-19-induced Acute Respiratory Distress Syndrome: A Randomized Pilot Study.** Page DB, et al. *Ann Am Thorac Soc.* 2021 Sep 7. doi: 10.1513/AnnalsATS.202104-498RL.

<https://www.atsjournals.org/doi/abs/10.1513/AnnalsATS.202104-498RL>

There remain questions about the optimal duration of each proning session and implementation is often limited by concerns about staff burden. The landmark trial on prone positioning demonstrated a mortality benefit in patients with severe ARDS using 16-hour prone sessions; however, there is observational evidence of a dose-response relationship, with longer periods of prone positioning conferring greater benefit than shorter periods. In this single-center randomized, controlled study, prolonged prone positioning was feasible. Importantly, allocation to prolonged prone positioning was associated with fewer position changes which may reduce staff workload, decrease the risk of infectious disease transmission to medical personnel, and decrease need for personal protective equipment. Furthermore, prolonged prone positioning did not appear to increase the risk of adverse events including tube dislodgement or pressure ulcers although these events were rare, and our study was underpowered to detect these differences.

### Vaccines / Immunology

13. **Effectiveness of COVID-19 mRNA Vaccines against COVID-19–Associated Hospitalization — Five Veterans Affairs Medical Centers, United States, February 1–August 6, 2021.** Bajema KL, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 10 September 2021. DOI:

<http://dx.doi.org/10.15585/mmwr.mm7037e3>

During February 1–August 6, 2021, vaccine effectiveness among U.S. veterans hospitalized at five Veterans Affairs Medical Centers was 87%. mRNA COVID-19 vaccines remain highly effective, including during periods of widespread circulation of the SARS-CoV-2 B.1.617.2 (Delta) variant. Vaccine effectiveness in preventing COVID-19–related hospitalization was 80% among adults aged  $\geq 65$  years compared with 95% among adults aged 18–64 years.

14. **Interim Estimates of COVID-19 Vaccine Effectiveness against COVID-19–Associated Emergency Department or Urgent Care Clinic Encounters and Hospitalizations among Adults During SARS-CoV-2 B.1.617.2 (Delta) Variant Predominance — Nine States, June–August 2021.**

Grannis SJ, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 10 September 2021. DOI:

<http://dx.doi.org/10.15585/mmwr.mm7037e2>

In this multistate interim analysis of 32,867 medical encounters among adults of all ages during June–August 2021, when the Delta variant was predominant in the United States, VE of all three authorized COVID-19 vaccines combined remained high against hospitalization (86%) and ED/UC encounters (82%). These overall VE estimates were similar to those during the months before Delta became predominant. However, VE against COVID-19 hospitalization among adults aged  $\geq 75$  years was significantly lower than that among adults aged  $< 75$  years, which had not been observed previously from this data source. This moderate decline should be interpreted

with caution and might be related to changes in SARS-CoV-2, waning of vaccine-induced immunity with increased time since vaccination, or a combination of factors. Differences in VE between the two mRNA vaccines, which had not been observed previously in the VISION Network, are consistent with another recent finding.

15. **Surveillance for Adverse Events after COVID-19 mRNA Vaccination.** Klein NP et al. *JAMA*. 2021 Sep 3. doi: 10.1001/jama.2021.15072.

<https://jamanetwork.com/journals/jama/fullarticle/2784015>

A total of 11 845 128 doses of mRNA vaccines were administered to 6.2 million individuals (mean age, 49 years; 54% female individuals). The incidence of events per 1 000 000 person-years during the risk vs comparison intervals for ischemic stroke was 1612 vs 1781; for appendicitis, 1179 vs 1345; and for acute myocardial infarction, 935 vs 1030. No vaccine-outcome association met the prespecified requirement for a signal. Incidence of confirmed anaphylaxis was 4.8 per million doses of BNT162b2 and 5.1 per million doses of mRNA-1273. In interim analyses of surveillance of mRNA COVID-19 vaccines, incidence of selected serious outcomes was not significantly higher 1 to 21 days postvaccination compared with 22 to 42 days postvaccination. While CIs were wide for many outcomes, surveillance is ongoing.

16. **Reactogenicity and immunogenicity after a late second dose or a third dose of ChAdOx1 nCoV-19 in the UK: a substudy of two randomised controlled trials (COV001 and COV002).**

Flaxman A et al. *Lancet*. 2021 Sep 1:S0140-6736(21)01699-8. doi: 10.1016/S0140-6736(21)01699-8. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(21\)01699-8/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(21)01699-8/fulltext)

An extended interval before the second dose of ChAdOx1 nCoV-19 leads to increased antibody titres. A third dose of ChAdOx1 nCoV-19 induces antibodies to a level that correlates with high efficacy after second dose and boosts T-cell responses.

17. **Risk factors and disease profile of post-vaccination SARS-CoV-2 infection in UK users of the COVID Symptom Study app: a prospective, community-based, nested, case-control study.**

Antonelli M et al. *Lancet Infect Dis*. 2021 Sep 1:S1473-3099(21)00460-6. doi: 10.1016/S1473-3099(21)00460-6. [https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(21\)00460-6/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(21)00460-6/fulltext)

To minimise SARS-CoV-2 infection, at-risk populations must be targeted in efforts to boost vaccine effectiveness and infection control measures. Our findings might support caution around relaxing physical distancing and other personal protective measures in the post-vaccination era, particularly around frail older adults and individuals living in more deprived areas, even if these individuals are vaccinated, and might have implications for strategies such as booster vaccinations.

18. **mRNA Vaccine Effectiveness Against Asymptomatic SARS-CoV-2 Infection Over a Seven-Month Period.** Tande AJ, et al. *Infect Control Hosp Epidemiol*. 2021 Sep 6:1-7. doi:

10.1017/ice.2021.399. <https://www.cambridge.org/core/journals/infection-control-and-hospital-epidemiology/article/mrna-vaccine-effectiveness-against-asymptomatic-sarscov2-infection-over-a-sevenmonth-period/0B67BE1950C88E93B73C15F75E2FC497>

In this observational study of individuals without COVID-19 symptoms undergoing SARS-CoV-2 molecular screening prior to a medical procedure/surgery, the adjusted effectiveness of full and partial vaccination against asymptomatic infection was similar in April- May and June-August 15 to that observed in January-March. We observed a trend toward a decrease in effectiveness of full vaccination in the latter time as compared to January-March but the difference was not statistically significant. Our baseline adjusted effectiveness (91%) of full vaccination in January-March was similar to other reports of 90%<sup>4</sup> and 91.5%<sup>5</sup> effectiveness against asymptomatic infection from the same time, supporting the generalizability of our study design. Our findings support sustained effectiveness of the mRNA vaccines against COVID-19, in spite of the increasing proportion of SARS-CoV-2 alpha and delta VOC in the United States and changes in behavior and mitigation measures over this time.

19. **mRNA Vaccine Effectiveness against COVID-19 among Symptomatic Outpatients Aged  $\geq 16$  Years in the United States, February - May 2021.** Kim SS, et al. *J Infect Dis.* 2021 Sep 8:jiab451. doi: 10.1093/infdis/jiab451. <https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiab451/6366365>  
Among 236 SARS-CoV-2 nucleic acid amplification test-positive and 576 test-negative participants aged  $\geq 16$  years, VE of mRNA vaccines against COVID-19 was 91% for full vaccination and 75% for partial vaccination. Vaccination was associated with prevention of most COVID-19 cases among people seeking outpatient medical care.
20. **Effect of Vaccination on Transmission of SARS-CoV-2.** Shah ASV et al. *N Engl J Med.* 2021 Sep 8. doi: 10.1056/NEJMc2106757. <https://www.nejm.org/doi/full/10.1056/NEJMc2106757>  
Whether vaccination of individual persons for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) protects members of their households is unclear. We investigated the effect of vaccination of health care workers in Scotland (who were among the earliest groups to be vaccinated worldwide) on the risk of Covid-19 among members of their households. We provide empirical evidence suggesting that vaccination may reduce transmission by showing that vaccination of health care workers is associated with a decrease in documented cases of Covid-19 among members of their households. This finding is reassuring for health care workers and their families.
21. **Effectiveness of Covid-19 Vaccines in Ambulatory and Inpatient Care Settings.** Thompson MG et al. *N Engl J Med.* 2021 Sep 8. doi: 10.1056/NEJMoa2110362. <https://www.nejm.org/doi/full/10.1056/NEJMoa2110362>  
Covid-19 vaccines in the United States were highly effective against SARS-CoV-2 infection requiring hospitalization, ICU admission, or an emergency department or urgent care clinic visit. This vaccine effectiveness extended to populations that are disproportionately affected by SARS-CoV-2 infection.
22. **Booster-dose SARS-CoV-2 vaccination in patients with autoimmune disease: a case series.** Connolly CM et al. *Ann Rheum Dis.* 2021 Sep 7:annrheumdis-2021-221206. doi: 10.1136/annrheumdis-2021-221206. <https://ard.bmj.com/content/early/2021/09/06/annrheumdis-2021-221206>

In this first published series of booster-dose SARS-CoV-2 vaccination in patients with autoimmune disease, augmented antibody response was observed in the majority of participants.

## Women & Children

23. **Hospitalizations Associated with COVID-19 Among Children and Adolescents - COVID-NET, 14 States, March 1, 2020-August 14, 2021.** COVID-NET Surveillance Team. *MMWR Morb Mortal Wkly Rep.* 2021 Sep 10;70(36):1255-1260.  
[https://www.cdc.gov/mmwr/volumes/70/wr/mm7036e2.htm?s\\_cid=mm7036e2\\_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7036e2.htm?s_cid=mm7036e2_w)  
During June 20-July 31, 2021, the hospitalization rate among unvaccinated adolescents (aged 12-17 years) was 10.1 times higher than that among fully vaccinated adolescents. Among all hospitalized children and adolescents with COVID-19, the proportions with indicators of severe disease after the Delta variant became predominant (June 20-July 31, 2021) were similar to those earlier in the pandemic (March 1, 2020-June 19, 2021). Implementation of preventive measures to reduce transmission and severe outcomes in children is critical, including vaccination of eligible persons, universal mask wearing in schools, recommended mask wearing by persons aged  $\geq 2$  years in other indoor public spaces and child care centers, and quarantining as recommended after exposure to persons with COVID-19.
24. **Trends in COVID-19 Cases, Emergency Department Visits, and Hospital Admissions among Children and Adolescents Aged 0–17 Years — United States, August 2020–August 2021.** Siegel DA, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 3 September 2021. DOI:  
<http://dx.doi.org/10.15585/mmwr.mm7036e1>  
COVID-19 cases, emergency department visits, and hospital admissions increased from June to August 2021 among persons aged 0-17 years. Emergency department visits and hospital admissions in a 2-week period in August 2021 were higher in states with lower population vaccination coverage and lower in states with higher vaccination coverage.
25. **Spontaneous Abortion Following COVID-19 Vaccination during Pregnancy.** Kharbanda EO, et al. *JAMA.* 2021 Sep 8. doi: 10.1001/jama.2021.15494.  
<https://jamanetwork.com/journals/jama/fullarticle/2784193>  
Among women with spontaneous abortions, the odds of COVID-19 vaccine exposure were not increased in the prior 28 days compared with women with ongoing pregnancies.
26. **SARS-CoV-2 infection in pregnancy during the first wave of COVID-19 in the Netherlands: a prospective nationwide population-based cohort study (NethOSS).** Overtoom EM, et al. *BJOG.* 2021 Sep 8. doi: 10.1111/1471-0528.16903.  
<https://obgyn.onlinelibrary.wiley.com/doi/10.1111/1471-0528.16903>  
Non-European country of origin and being overweight/obese are risk factors for severe course of SARS-CoV-2 infection in pregnancy, risk of caesarean section and hospital and ICU admission are increased.

27. **Effectiveness of the BNT162b2 mRNA COVID-19 vaccine in pregnancy.** Dagan N et al. *Nat Med.* 2021 Sep 7. doi: 10.1038/s41591-021-01490-8. <https://www.nature.com/articles/s41591-021-01490-8>

Study outcomes included documented infection with SARS-CoV-2, symptomatic COVID-19, COVID-19-related hospitalization, severe illness and death. Estimated vaccine effectiveness from 7 through to 56 d after the second dose was 96% for any documented infection, 97% for infections with documented symptoms and 89% for COVID-19-related hospitalization. Only one event of severe illness was observed in the unvaccinated group and no deaths were observed in either group. In summary, the BNT162b2 mRNA vaccine was estimated to have high vaccine effectiveness in pregnant women, which is similar to the effectiveness estimated in the general population.

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## GUIDELINES & CONSENSUS STATEMENTS

[SMFM Special Statement: COVID-19 Research in Pregnancy: Progress and Potential.](#) Society for Maternal-Fetal Medicine Research Committee.

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## FDA / CDC / NIH / WHO Updates

CDC - [Interim Infection Prevention and Control Recommendations for Healthcare Personnel During the Coronavirus Disease 2019 \(COVID-19\) Pandemic](#), updated Sept 10, 2021

The White House – [President Biden’s Covid-19 Action Plan](#)

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## Commentary / News

[Biden Lays Out Plan To Mandate Vaccines Or Testing For Millions Of Workers](#), September 9, 2021

[Rethinking Herd Immunity: Managing the Covid-19 Pandemic in a Dynamic Biological and Behavioral Environment.](#) *NEJM Catalyst*, September 10, 2021.

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