

COVID-19 Resource Desk

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New Research

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

Clinical Syndrome

- 1. Attributes and predictors of Long-COVID: analysis of COVID cases and their symptoms collected by the Covid Symptoms Study App.** Sudre CH, Murray B, Varsavsky T, et al. *MedRxiv Preprint* 10-21-2020. <https://www.medrxiv.org/content/10.1101/2020.10.19.20214494v1>
Findings: Reports of "Long-COVID", are rising but little is known about prevalence, risk factors, or whether it is possible to predict a protracted course early in the disease. We analysed data from 4182 incident cases of COVID-19 who logged their symptoms prospectively in the COVID Symptom Study app. 558 (13.3%) had symptoms lasting >28 days, 189 (4.5%) for >8 weeks and 95 (2.3%) for >12 weeks. Long-COVID was characterised by symptoms of fatigue, headache, dyspnoea and anosmia and was more likely with increasing age, BMI and female sex. Experiencing more than five symptoms during the first week of illness was associated with Long-COVID. Our model to predict long-COVID at 7 days, which gained a ROC-AUC of 76%, was replicated in an independent sample of 2472 antibody positive individuals. This model could be used to identify individuals for clinical trials to reduce long-term symptoms and target education and rehabilitation services.
- 2. QTc interval prolongation and life-threatening arrhythmias during hospitalization in patients with COVID-19. Results from a multi-center prospective registry.** Santoro F, Monitillo F, Raimondo P, et al. *Clin Infect Dis.* 2020 Oct 24:ciaa1578. doi: 10.1093/cid/ciaa1578. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1578/5938528>
Findings: 110 consecutive patients were enrolled in a multicenter international registry. 12-lead ECG was performed at admission, after 7 and 14 days; QTc values were analyzed. After 7 days of hospitalization, 14% of patients with Covid-19 developed pQTc; age, basal heart rate and dual antiviral therapy were found as independent predictor of pQTc. Life threatening arrhythmias have an incidence of 3.6% and were associated with poor outcome.
- 3. Characterization of Myocardial Injury in Patients With COVID-19.** Giustino G et al. *Journal of the American College of Cardiology.* 76(18)2020 DOI: 10.1016/j.jacc.2020.08.069 <https://www.clinicalkey.com#!/content/journal/1-s2.0-S0735109720355522>
Findings: Myocardial injury is prevalent among patients hospitalized with COVID-19; however, troponin concentrations were generally present at low levels. Patients with CVD are more likely

to have myocardial injury than patients without CVD. Troponin elevation among patients hospitalized with COVID-19 is associated with higher risk of mortality.

Diagnosics & Screening

- 4. Multiplex rt-Real Time PCR assays for diagnostic testing of SARS-CoV-2 and seasonal influenza viruses. A challenge of the phase 3 pandemic setting.** Mancini F, Barbanti F, Scaturro M, et al. *J Infect Dis*. 2020 Oct 20:jiaa658. doi: 10.1093/infdis/jiaa658. <https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa658/5932324>
Findings: The assay developed was able to detect and discriminate each virus target, and to intercept co-infections. The limit of quantification of each assay ranged between 5 and 10 genomic copy numbers, with a cutoff value of 37.7 and 37.8 for influenza and SARS-CoV-2 viruses, respectively. Only two influenza co-infections were detected in COVID-19 samples. This study suggests that multiplex assay is a rapid, valid, and accurate method for the detection of SARS-CoV-2 and influenza viruses in clinical samples. The test may be an important diagnostic tool for both diagnostic and surveillance purposes during the seasonal influenza activity period.
- 5. COVID-19 Serial Testing among Hospitalized Patients in a Midwest Tertiary Medical Center, July-September 2020.** Kobayashi T, Trannel A, Holley SA, et al. *Clin Infect Dis*. 2020 Oct 26:ciaa1630. doi: 10.1093/cid/ciaa1630. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1630/5939900>
Findings: We implemented serial COVID-19 testing for inpatients with a negative test on admission. The conversion rate (negative to positive) on repeat testing was one percent. We identified patients during their incubation period and hospital-onset cases, rapidly isolated them, and potentially reduced exposures. Serial testing and infectiousness determination were resource intensive.

Epidemiology & Public Health

- 6. Excess Deaths Associated with COVID-19, by Age and Race and Ethnicity — United States, January 26–October 3, 2020.** Rossen LM, Branum AM, Ahmad FB, Sutton P, Anderson RN. *MMWR Morb Mortal Wkly Rep*. ePub: 20 October 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6942e2> https://www.cdc.gov/mmwr/volumes/69/wr/mm6942e2.htm?s_cid=mm6942e2_w
Findings: As of October 15, 216,025 deaths from COVID-19 have been reported in the United States; however, this might underestimate the total impact of the pandemic on mortality. Overall, an estimated 299,028 excess deaths occurred from late January through October 3, 2020, with 198,081 (66%) excess deaths attributed to COVID-19. The largest percentage increases were seen among adults aged 25–44 years and among Hispanic or Latino persons.
- 7. COVID-19 in a Correctional Facility Employee Following Multiple Brief Exposures to Persons with COVID-19 — Vermont, July–August 2020.** Pringle JC, Leikauskas J, Ransom-Kelley S, et al. *MMWR Morb Mortal Wkly Rep*. ePub: 21 October 2020. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6943e1>

https://www.cdc.gov/mmwr/volumes/69/wr/mm6943e1.htm?s_cid=mm6943e1_w

On August 11, 2020, a confirmed case of COVID-19 in a male correctional officer aged 20 years was reported to the Vermont Department of Health (VDH). On July 28, the correctional officer had multiple brief encounters with six incarcerated or detained persons (IDPs) while their SARS-CoV-2 test results were pending. The six asymptomatic IDPs arrived from an out-of-state correctional facility on July 28 and were housed in a quarantine unit. In accordance with Vermont Department of Corrections (VDOC) policy for state prisons, nasopharyngeal swabs were collected from the six IDPs on their arrival date and tested for SARS-CoV-2 at the Vermont Department of Health Laboratory, using RT-PCR. On July 29, all six IDPs received positive test results. VDH and VDOC conducted a contact tracing investigation and used video surveillance footage to determine that the correctional officer did not meet VDH's definition of close contact (i.e., being within 6 feet of infectious persons for ≥ 15 consecutive minutes); therefore, he continued to work. At the end of his shift on August 4, he experienced loss of smell and taste, myalgia, runny nose, cough, shortness of breath, headache, loss of appetite, and gastrointestinal symptoms; beginning August 5, he stayed home from work. An August 5 nasopharyngeal specimen tested for SARS-CoV-2 by real-time RT-PCR at a commercial laboratory was reported as positive on August 11; the correctional officer identified two contacts outside of work, neither of whom developed COVID-19. On July 28, seven days preceding his illness onset, the correctional officer had multiple brief exposures to six IDPs who later tested positive for SARS-CoV-2; available data suggests that at least one of the asymptomatic IDPs transmitted SARS-CoV-2 during these brief encounters.

****CDC updated guidelines for quarantine based on this case report***

8. **Estimating the infection-fatality risk of SARS-CoV-2 in New York City during the spring 2020 pandemic wave: a model-based analysis.** Yang W, Kandula S, Huynh M, et al. *Lancet Infect Dis.* 2020 Oct 19:S1473-3099(20)30769-6. doi: 10.1016/S1473-3099(20)30769-6.
[https://www.thelancet.com/journals/laninf/article/PIIS1473-3099\(20\)30769-6/fulltext](https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30769-6/fulltext)
FINDINGS: During the period March 1 to June 6, 2020, 205 639 people had a laboratory-confirmed infection with SARS-CoV-2 and 21 447 confirmed and probable COVID-19-related deaths occurred among residents of New York City. We estimated an overall infection-fatality risk of 1.39% in New York City. Our estimated infection-fatality risk for the two oldest age groups (65-74 and ≥ 75 years) was much higher than the younger age groups, with a cumulative estimated infection-fatality risk of 0.116% for those aged 25-44 years and 0.939% for those aged 45-64 years versus 4.87% for those aged 65-74 years and 14.2% for those aged 75 years and older. In particular, weekly infection-fatality risk was estimated to be as high as 6.72% for those aged 65-74 years and 19.1% for those aged 75 years and older. Our results are based on more complete ascertainment of COVID-19-related deaths in New York City than other places and thus probably reflect the true higher burden of death due to COVID-19 than that previously reported elsewhere. Given the high infection-fatality risk of SARS-CoV-2, governments must account for and closely monitor the infection rate and population health outcomes and enact prompt public health responses accordingly as the COVID-19 pandemic unfolds.

9. **Race, Ethnicity, and Age Trends in Persons Who Died from COVID-19 - United States, May-August 2020.** Gold JAW, Rossen LM, Ahmad FB, et al. *MMWR Morb Mortal Wkly Rep.* 2020 Oct 23;69(42):1517-1521. doi: 10.15585/mmwr.mm6942e1.

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6942e1.htm>

Findings: During February 12-October 15, 2020, the COVID-19 pandemic resulted in approximately 7,900,000 aggregated reported cases and approximately 216,000 deaths in the United States. Among COVID-19-associated deaths reported to national case surveillance during February 12-May 18, persons aged ≥ 65 years and members of racial and ethnic minority groups were disproportionately represented. This report describes demographic and geographic trends in COVID-19-associated deaths reported to the National Vital Statistics System during May 1-August 31, 2020, by 50 states and the District of Columbia. During this period, 114,411 COVID-19-associated deaths were reported. Overall, 78.2% of decedents were aged ≥ 65 years, and 53.3% were male; 51.3% were non-Hispanic White (White), 24.2% were Hispanic or Latino (Hispanic), and 18.7% were non-Hispanic Black (Black). The number of COVID-19-associated deaths decreased from 37,940 in May to 17,718 in June; subsequently, counts increased to 30,401 in July and declined to 28,352 in August. From May to August, the percentage distribution of COVID-19-associated deaths by U.S. Census region increased from 23.4% to 62.7% in the South and from 10.6% to 21.4% in the West. Over the same period, the percentage distribution of decedents who were Hispanic increased from 16.3% to 26.4%. COVID-19 remains a major public health threat regardless of age or race and ethnicity. Deaths continued to occur disproportionately among older persons and certain racial and ethnic minorities, particularly among Hispanic persons. These results can inform public health messaging and mitigation efforts focused on prevention and early detection of infection among disproportionately affected groups.

10. **Modeling COVID-19 scenarios for the United States.** IHME COVID-19 Forecasting Team. *Nature Medicine* 2020 Oct 23. <https://www.nature.com/articles/s41591-020-1132-9>

Findings: We use COVID-19 case and mortality data from 1 February 2020 to 21 September 2020 and a deterministic SEIR (susceptible, exposed, infectious and recovered) compartmental framework to model possible trajectories of SARS-CoV-2 infections and the effects of non-pharmaceutical interventions in the United States at the state level from 22 September 2020 through 28 February 2021. Using this SEIR model, and projections of critical driving covariates (pneumonia seasonality, mobility, testing rates and mask use per capita), we assessed scenarios of social distancing mandates and levels of mask use. Projections of current non-pharmaceutical intervention strategies by state—with social distancing mandates reinstated when a threshold of 8 deaths per million population is exceeded (reference scenario)—suggest that, cumulatively, 511,373 lives could be lost to COVID-19 across the United States by 28 February 2021. We find that achieving universal mask use (95% mask use in public) could be sufficient to ameliorate the worst effects of epidemic resurgences in many states. Universal mask use could save an additional 129,574 lives from September 22, 2020 through the end of February 2021, or an additional 95,814 lives assuming a lesser adoption of mask wearing (85%), when compared to the reference scenario.

- 11. Factors Associated with Mental Health Disorders Among University Students in France Confined During the COVID-19 Pandemic.** Wathelet M, Duhem S, Vaiva G, et al. *JAMA Netw Open*. 2020;3(10):e2025591. doi:10.1001/jamanetworkopen.2020.25591
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2772154>
Findings: This survey study of 69 054 students who experienced quarantine found high prevalence rates of severe self-reported mental health symptoms. Among risk factors identified, female or nonbinary gender, problems with income or housing, history of psychiatric follow-up, symptoms compatible with COVID-19, social isolation, and low quality of information received were associated with altered mental health. The findings of this study suggest that students' mental health is a public health issue that has become even more critical in the context of a pandemic, underlining the need to reinforce prevention, surveillance, and access to care.
- 12. Risk Factors for testing positive for SARS-CoV-2 in a national US healthcare system.** Fan VS, Dominitz JA, Eastment MC, et al. *Clin Infect Dis*. 2020 Oct 27:ciaa1624. doi: 10.1093/cid/ciaa1624. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1624/5940590>
Findings: Of 88,747 persons tested, 10,131 (11.4%) were SARS-CoV-2 PCR positive. Positivity was associated with older age (≥ 80 vs. < 50 years), male sex, regional SARS-CoV-2 burden, urban residence, Black or American Indian/Alaska Native/Pacific Islander vs. White race, and Hispanic ethnicity. Obesity and diabetes were the only two medical conditions associated with testing positive. Documented fevers, chills, cough, and diarrhea were also associated with testing positive. The majority of positive SARS-CoV-2 tests were attributed to regional SARS-CoV-2 burden, demographic characteristics and obesity with a minor contribution of chronic comorbid conditions.
- 13. Improving Survival of Critical Care Patients with Coronavirus Disease 2019 in England: A National Cohort Study, March to June 2020.** Dennis JM, McGovern AP, Vollmer SJ, Mateen BA. *Crit Care Med*. 2020 Oct 26. doi: 10.1097/CCM.0000000000004747.
https://journals.lww.com/ccmjournal/Abstract/9000/Improving_Survival_of_Critical_Care_Patients_With.95449.aspx
Findings: Twenty-one thousand eighty-two critical care patients were included. Unadjusted survival at 30 days was lowest for people admitted in late March in both high dependency unit (71.6% survival) and ICU (58.0% survival). By the end of June, survival had improved to 92.7% in high dependency unit and 80.4% in ICU. Improvements in survival remained after adjustment for patient characteristics (age, sex, ethnicity, and major comorbidities) and geographical region. There has been a substantial improvement in survival amongst people admitted to critical care with coronavirus disease 2019 in England, with markedly higher survival rates in people admitted in May and June compared with those admitted in March and April. Our analysis suggests this improvement is not due to temporal changes in the age, sex, ethnicity, or major comorbidity burden of admitted patients.
- 14. COVID-19 Mitigation Behaviors by Age Group — United States, April–June 2020.** Hutchins HJ, Wolff B, Leeb R, et al. *MMWR Morb Mortal Wkly Rep*. ePub: 27 October 2020. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6943e4>

https://www.cdc.gov/mmwr/volumes/69/wr/mm6943e4.htm?s_cid=mm6943e4_x

Findings: Self-reported engagement in mitigation behaviors (mask wearing, handwashing, physical distancing, crowd and restaurant avoidance, and cancellation of social activities) differed significantly by adult age group. During April–June 2020, the prevalence of these behaviors was lowest among adults aged 18–29 years and highest among those aged >60 years. Whereas mask wearing increased over time, other reported mitigation behaviors decreased or remained unchanged.

Healthcare Delivery & Healthcare Workers

15. **Protecting the front line: a cross-sectional survey analysis of the occupational factors contributing to healthcare workers' infection and psychological distress during the COVID-19 pandemic in the USA.** Firew T, Sano ED, Lee JW, et al. *BMJ Open*. 2020 Oct 21;10(10):e042752. doi: 10.1136/bmjopen-2020-042752. <https://bmjopen.bmj.com/content/10/10/e042752>
Findings: Participants were largely from the Northeast and Southern USA, with attending physicians (31.12%), nurses (26.80%), EMTs (13.04%) with emergency medicine department (38.30%) being the most common department and specialty represented. Twenty-nine per cent of respondents met the criteria for being a probable case due to reported COVID-19 symptoms or a positive test. HCWs in the emergency department (31.64%) were more likely to contract COVID-19 compared with HCWs in the ICU (23.17%) and inpatient settings (25.53%). HCWs that contracted COVID-19 also reported higher levels of depressive symptoms, anxiety symptoms and burn-out. HCWs have experienced significant physical and psychological risk while working during the COVID-19 pandemic. These findings highlight the urgent need for increased support for provider physical and mental health well-being.

16. **Hospital Volumes of 5 Medical Emergencies in the COVID-19 Pandemic in 2 US Medical Centers.** Bhambhani HP, Rodrigues AJ, Yu JS, et al. *JAMA Intern Med*. October 26, 2020. doi:10.1001/jamainternmed.2020.3982
<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2772352>
Findings: Using data from 2 academic medical centers, we assessed the association of the COVID-19 pandemic with the incidence of 5 medical emergencies: acute MI, ischemic stroke, nontraumatic subarachnoid hemorrhage, ectopic pregnancy, and appendicitis. After accounting for underlying trends, we estimated a 39% reduction in the daily volume of acute MI cases at NYP and a 26% reduction at Stanford. There was a 49% reduction in the daily volume of ischemic stroke cases at NYP and a 16% reduction at Stanford. The daily volume of ntSAH cases decreased by 33% at NYP and by 21% at Stanford. There was a 42% reduction in the daily volume of appendicitis cases at NYP but no significant difference at Stanford. No difference in the daily volume of ectopic pregnancy cases was noted at either institution.

17. **COVID-19–Associated Hospitalizations among Health Care Personnel — COVID-NET, 13 States, March 1–May 31, 2020.** Kambhampati AK, O’Halloran AC, Whitaker M, et al. *MMWR Morb Mortal Wkly Rep*. ePub: 26 October 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6943e3>
<https://www.cdc.gov/mmwr/volumes/69/wr/mm6943e3.htm>

Findings: Analysis of COVID-19 hospitalization data from 13 sites indicated that 6% of adults hospitalized with COVID-19 were HCP. Among HCP hospitalized with COVID-19, 36% were in nursing-related occupations, and 73% had obesity. Approximately 28% of these patients were admitted to an intensive care unit, 16% required invasive mechanical ventilation, and 4% died. HCP can have severe COVID-19–associated illness, highlighting the need for continued infection prevention and control in health care settings as well as community mitigation efforts to reduce SARS-CoV-2 transmission.

Laboratory Results

18. Serologic Responses in Healthy Adult with SARS-CoV-2 Reinfection, Hong Kong, August 2020.

Chan PKS, Lui G, Hachim A, et al. *Emerg Infect Dis*. 2020 Oct 22;26(12). doi:

10.3201/eid2612.203833. https://wwwnc.cdc.gov/eid/article/26/12/20-3833_article

In March 2020, mild signs and symptoms of coronavirus disease developed in a healthy 33-year-old man in Hong Kong. His first infection did not produce virus neutralizing antibodies. In August, he had asymptomatic reinfection, suggesting that persons without a robust neutralizing antibody response might be at risk for reinfection.

19. Longitudinal observation and decline of neutralizing antibody responses in the three months following SARS-CoV-2 infection in humans. Seow J et al. *Nature Microbiology* 2020 Oct 26.

<https://www.nature.com/articles/s41564-020-00813-8>

Findings: Antibody responses to SARS-CoV-2 can be detected in most infected individuals 10–15 d after the onset of COVID-19 symptoms. It is not known how long antibody responses will be maintained or whether they will provide protection from reinfection. Using sequential serum samples collected up to 94 d post onset of symptoms (POS) from 65 individuals with confirmed SARS-CoV-2 infection, we show seroconversion (immunoglobulin (Ig)M, IgA, IgG) in >95% of cases and neutralizing antibody responses when sampled beyond 8 d POS. We show that the kinetics of the neutralizing antibody response is typical of an acute viral infection, with declining neutralizing antibody titres observed after an initial peak, and that the magnitude of this peak is dependent on disease severity. Although some individuals with high peak infective dose maintained neutralizing antibody titres >1,000 at >60 d POS, some with lower peak ID50 had neutralizing antibody titres approaching baseline within the follow-up period. A similar decline in neutralizing antibody titres was observed in a cohort of 31 seropositive healthcare workers. The present study has important implications when considering widespread serological testing and antibody protection against reinfection with SARS-CoV-2 and may suggest that vaccine boosters are required to provide long-lasting protection.

20. Seroprevalence of anti-SARS-CoV-2 antibodies in COVID-19 patients and healthy volunteers up to six months post disease onset. Figueiredo-Campos P et al. *Eur J Immunol*. 2020 Oct 21.

doi: <https://doi.org/10.1002/eji.202048970>

<https://onlinelibrary.wiley.com/doi/10.1002/eji.202048970>

Findings: We report the detailed setup to monitor the humoral immune response from over 300 COVID-19 hospital patients and healthcare workers, 2500 University staff and 198 post-COVID-19 volunteers. Anti-SARS-CoV-2 antibody responses follow a classic pattern with a rapid

increase within the first three weeks after symptoms. Although titres reduce subsequently, the ability to detect anti-SARS-CoV-2 IgG antibodies remained robust with confirmed neutralisation activity for up to six months in a large proportion of previously virus-positive screened subjects. Our work provides detailed information for the assays used, facilitating further and longitudinal analysis of protective immunity to SARS-CoV-2. Importantly, it highlights a continued level of circulating neutralising antibodies in most people with confirmed SARS-CoV-2.

21. **Neutralizing Antibody Responses in COVID-19 Convalescent Sera.** Lee WT, Girardin RC, Dupuis li AP, et al. *J Infect Dis.* 2020 Oct 26:jiaa673. doi: 10.1093/infdis/jiaa673.

<https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa673/5940177>

Findings: FDA guidelines for convalescent plasma initially recommended target antibody titers of 160. We evaluated SARS-CoV-2 neutralizing antibodies in sera from recovered COVID-19 patients using plaque reduction neutralization tests (PRNT) at moderate (PRNT50) and high (PRNT90) stringency thresholds. We found that neutralizing activity significantly increased with time post symptom onset (PSO), reaching a peak at 31-35 days PSO. At this point, the number of sera having neutralizing titers of at least 160 was ~93% (PRNT50) and ~54% (PRNT90). Sera with high SARS-CoV-2 antibody levels (>960 ELISA titers) showed maximal activity, but not all high titer sera contained neutralizing antibody at FDA recommended levels, particularly at high stringency. These results underscore the value of serum characterization for neutralization activity.

Prognosis

22. **The Effect of Prior ACEI/ARB Treatment on COVID-19 Susceptibility and Outcome: A Systematic Review and Meta-Analysis.** Xu J, Teng Y, Shang L, et al. *Clin Infect Dis.* 2020 Oct 20:ciaa1592. doi: 10.1093/cid/ciaa1592.<https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1592/5932274>

Findings: We identified a total of 102 eligible studies for systematic review, in which 49 studies adjusting for confounders were included in the meta-analysis. We found no association between prior ACEI/ARB use and risk of SARS-CoV-2 infection in general population. The risk of mortality and severe outcomes are also unchanged among COVID-19 patients taking ACEI/ARB. These findings remain consistent in subgroup analyses stratified by populations, drug exposures and in other secondary outcomes. This systematic review provides evidence-based support to current medical guidelines and position statements that ACEI/ARB should not be discontinued. Additionally, there has been no evidence for initiating ACEI/ARB regimen as prevention or treatment of COVID-19.

23. **COVID-19 Mortality Risk in Down Syndrome: Results from a Cohort Study Of 8 Million Adults.** Clift AK, Coupland CAC, Keogh RH, et al. *Ann Intern Med.* 2020 Oct 21. doi: 10.7326/M20-4986.
<https://www.acpjournals.org/doi/10.7326/M20-4986>

Findings: We estimated a 4-fold increased risk for COVID-19–related hospitalization and a 10-fold increased risk for COVID-19–related death in persons with Down syndrome, a group that is currently not strategically protected. This was after adjustment for cardiovascular and

pulmonary diseases and care home residence, which our results suggest explained some but not all of the increased risk.

24. Effect of IBD medications on COVID-19 outcomes: results from an international registry.

Ungaro RC, Brenner EJ, Geary RB, et al. *Gut*. 2020 Oct 20:gutjnl-2020-322539. doi: 10.1136/gutjnl-2020-322539. <https://gut.bmj.com/content/early/2020/10/19/gutjnl-2020-322539>

Findings: 1439 cases from 47 countries were included (mean age 44.1 years, 51.4% men) of whom 112 patients (7.8%) had severe COVID-19. Compared with tumour necrosis factor (TNF) antagonist monotherapy, thiopurine monotherapy and combination therapy with TNF antagonist and thiopurine were associated with an increased risk of severe COVID-19. Any mesalamine/sulfasalazine compared with no mesalamine/sulfasalazine use was associated with an increased risk. This risk estimate increased when using TNF antagonist monotherapy as a reference group. Interleukin-12/23 and integrin antagonists were not associated with significantly different risk than TNF antagonist monotherapy. Combination therapy and thiopurines may be associated with an increased risk of severe COVID-19. No significant differences were observed when comparing classes of biologicals. These findings warrant confirmation in large population-based cohorts. MKH should be changed to MDK for co-last author line.

25. Living risk prediction algorithm (QCOVID) for risk of hospital admission and mortality from coronavirus 19 in adults: national derivation and validation cohort study.

Clift AK, Coupland CAC, Keogh RH, et al. *BMJ*. 2020 Oct 20;371:m3731. doi: 10.1136/bmj.m3731. <https://www.bmj.com/content/371/bmj.m3731>

Findings: 4384 deaths from covid-19 occurred in the derivation cohort during follow-up and 1722 in the first validation cohort period and 621 in the second validation cohort period. The final risk algorithms included age, ethnicity, deprivation, body mass index, and a range of comorbidities. The algorithm had good calibration in the first validation cohort. For deaths from covid-19 in men, it explained 73.1% of the variation in time to death. Similar results were obtained for women. In the top 5% of patients with the highest predicted risks of death, the sensitivity for identifying deaths within 97 days was 75.7%. People in the top 20% of predicted risk of death accounted for 94% of all deaths from covid-19. The QCOVID population based risk algorithm performed well, showing very high levels of discrimination for deaths and hospital admissions due to covid-19. The absolute risks presented, however, will change over time in line with the prevailing SARS-COV-2 infection rate and the extent of social distancing measures in place, so they should be interpreted with caution. The model can be recalibrated for different time periods, however, and has the potential to be dynamically updated as the pandemic evolves.

26. Routine use of statins and increased mortality related to COVID-19 in inpatients with type 2 diabetes: Results from the CORONADO study.

Cariou B, Goronflot T, Rimbart A, et al. *Diabetes Metab*. 2020 Oct 19:S1262-3636(20)30153-1. doi: 10.1016/j.diabet.2020.10.001. <https://www.sciencedirect.com/science/article/pii/S1262363620301531>

Findings: Of the 2449 patients with T2DM (881 women, 1568 men; aged 70.9 ± 12.5 years) suitable for analysis, 1192 (49%) were using statin treatment before admission. In unadjusted analyses, patients using statins had rates of the primary outcome similar to those of non-users within both 7 and 28 days of admission. However, mortality rates were significantly higher in statin users within 7 and 28 days. After applying IPTW, significant associations were observed with statin use and the primary outcome within 7 days and with death within both 7 and 28 days. Routine statin treatment is significantly associated with increased mortality in T2DM patients hospitalized for COVID-19.

27. **Risk for In-Hospital Complications Associated with COVID-19 and Influenza - Veterans Health Administration, United States, October 1, 2018-May 31, 2020.** Cates J, Lucero-Obusan C, Dahl RM, et al. *MMWR Morb Mortal Wkly Rep.* 2020 Oct 23;69(42):1528-1534. doi: 10.15585/mmwr.mm6942e3. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6942e3.htm>
Findings: To assess complications of COVID-19 and influenza, EHRs from 3,948 hospitalized patients with COVID-19 (March 1-May 31, 2020) and 5,453 hospitalized patients with influenza (October 1, 2018-February 1, 2020) from the national VHA, the largest integrated health care system in the United States,* were analyzed. Using ICD-10-CM codes, complications in patients with laboratory-confirmed COVID-19 were compared with those in patients with influenza. Patients with COVID-19 had almost 19 times the risk for ARDS than did patients with influenza, and more than twice the risk for myocarditis, deep vein thrombosis, pulmonary embolism, intracranial hemorrhage, acute hepatitis/liver failure, bacteremia, and pressure ulcers. The risks for exacerbations of asthma and chronic obstructive pulmonary disease were lower among patients with COVID-19 than among those with influenza. The percentage of COVID-19 patients who died while hospitalized (21.0%) was more than five times that of influenza patients (3.8%), and the duration of hospitalization was almost three times longer for COVID-19 patients.
28. **Echocardiographic abnormalities and predictors of mortality in hospitalized COVID-19 patients: the ECHOVID-19 study.** Lassen MCH, Skaarup KG, Lind JN, et al. *ESC Heart Fail.* 2020 Oct 22. doi: 10.1002/ehf2.13044. <https://onlinelibrary.wiley.com/doi/10.1002/ehf2.13044>
Findings: In this prospective multicentre cohort study, 214 consecutive hospitalized COVID-19 patients underwent an echocardiographic examination. All participants were successfully matched 1:1 with controls from the general population on age, sex, and hypertension. Mean age of the study sample was 69 years, and 55% were male participants. LV and RV systolic function was significantly reduced in COVID-19 cases as assessed by global longitudinal strain (GLS), tricuspid annular plane systolic excursion, and RV strain. All parameters remained significantly reduced after adjusting for important cardiac risk factors. During follow-up (median: 40 days), 25 COVID-19 cases died. RV and LV function are significantly impaired in hospitalized COVID-19 patients compared with matched controls. Furthermore, reduced TAPSE and GLS are independently associated with COVID-19-related death.
29. **CoVA: An Acuity Score for Outpatient Screening that Predicts COVID-19 Prognosis.** Sun H, Jain A, Leone MJ, et al. *J Infect Dis.* 2020 Oct 24:jiaa663. doi: 10.1093/infdis/jiaa663. <https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa663/5938525>

Findings: We developed the COVID-19 Acuity Score (CoVA) based on a single-center study of adult outpatients seen in respiratory illness clinics (RICs) or the ED. In the prospective cohort, 26.1%, 6.3%, and 0.5% of patients experienced hospitalization, critical illness, or death, respectively. CoVA showed excellent performance in prospective validation for hospitalization (expected-to-observed ratio (E/O): 1.01, AUC: 0.76); for critical illness (E/O 1.03, AUC: 0.79); and for death (E/O: 1.63, AUC=0.93). Among 30 predictors, the top five were age, diastolic blood pressure, blood oxygen saturation, COVID-19 testing status, and respiratory rate. CoVA is a prospectively validated automatable score for the outpatient setting to predict adverse events related to COVID-19 infection.

Therapeutics

30. **Effect of Tocilizumab vs Standard Care on Clinical Worsening in Patients Hospitalized With COVID-19 Pneumonia: A Randomized Clinical Trial.** RCT-TCZ-COVID-19 Study Group. *JAMA Intern Med.* 2020 Oct 20. doi: 10.1001/jamainternmed.2020.6615.
<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2772186>
Findings: In this randomized clinical trial of hospitalized adult patients with COVID-19 pneumonia and Pao₂/Fio₂ ratio between 200 and 300 mm Hg who received tocilizumab, no benefit on disease progression was observed compared with standard care. Further blinded, placebo-controlled randomized clinical trials are needed to confirm the results and to evaluate possible applications of tocilizumab in different stages of the disease.
31. **Association between Early Treatment with Tocilizumab and Mortality Among Critically Ill Patients With COVID-19.** STOP-COVID Investigators. *JAMA Intern Med.* 2020 Oct 20. doi: 10.1001/jamainternmed.2020.6252.
<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2772185>
Findings: Among critically ill patients with COVID-19 in this cohort study, the risk of in-hospital mortality in this study was lower in patients treated with tocilizumab in the first 2 days of ICU admission compared with patients whose treatment did not include early use of tocilizumab. However, the findings may be susceptible to unmeasured confounding, and further research from randomized clinical trials is needed.
32. **Effect of Tocilizumab vs Usual Care in Adults Hospitalized with COVID-19 and Moderate or Severe Pneumonia: A Randomized Clinical Trial.** CORIMUNO-19 Collaborative Group. *JAMA Intern Med.* 2020 Oct 20. doi: 10.1001/jamainternmed.2020.6820.
<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2772187>
Findings: In this randomized clinical trial of patients with COVID-19 and pneumonia requiring oxygen support but not admitted to the intensive care unit, TCZ did not reduce WHO-CPS scores lower than 5 at day 4 but might have reduced the risk of NIV, MV, or death by day 14. No difference on day 28 mortality was found. Further studies are necessary for confirming these preliminary results.

33. **Efficacy of Tocilizumab in Patients Hospitalized with Covid-19.** BACC Bay Tocilizumab Trial Investigators. *N Engl J Med.* 2020 Oct 21. doi: 10.1056/NEJMoa2028836. <https://www.nejm.org/doi/full/10.1056/NEJMoa2028836>
Findings: Tocilizumab was not effective for preventing intubation or death in moderately ill hospitalized patients with Covid-19. Some benefit or harm cannot be ruled out, however, because the confidence intervals for efficacy comparisons were wide.
34. **Clinical Characteristics and Outcomes of COVID-19 Patients Receiving Compassionate Use Leronlimab.** Yang B, Fulcher JA, Ahn J, et al. *Clin Infect Dis.* 2020 Oct 20:ciaa1583. doi: 10.1093/cid/ciaa1583. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1583/5932277>
Findings: Leronlimab appeared safe and well tolerated. The high recovery rate suggested benefit, and those with lower inflammatory markers had better outcomes. Some but not all patients appeared to have dramatic clinical responses, indicating that unknown factors may determine responsiveness to leronlimab. Routine inflammatory and cell prognostic markers did not markedly change immediately after treatment, although IL-6 tended to fall. In some persons C-reactive protein clearly dropped only after the second leronlimab dose, suggesting that a higher loading dose might be more effective. Future controlled trials will be informative.
35. **Clinical characteristics and outcomes among hospitalized adults with severe COVID-19 admitted to a tertiary medical center and receiving antiviral, antimalarials, glucocorticoids, or immunomodulation with tocilizumab or cyclosporine: A retrospective observational study (COQUIMA cohort).** Guisado-Vasco P, Valderas-Ortega S, Carralón-González MM, et al. *EClinicalMedicine.* 2020 Oct 15:100591. doi: 10.1016/j.eclinm.2020.100591. [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(20\)30335-7/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(20)30335-7/fulltext)
FINDINGS: From March 10th to April 15th, 2020, 607 patients were included. Median age was 69 years. The most common comorbidities were hypertension (276 [46.94%]), diabetes (95 [16.16%]), chronic cardiac (133 [22.62%]) and respiratory (114 [19.39%]) diseases. 141 patients (23.2%) died. In the multivariate model the risk of death increased with older age (odds ratio, for every year of age, 1.15), tocilizumab therapy, C-reactive protein at admission, d-dimer > 2.5 µg/mL, diabetes mellitus, and the PaO₂/FiO₂ at admission. Among the prescribed therapies (tocilizumab, glucocorticoids, lopinavir/ritonavir, hydroxychloroquine, cyclosporine), only cyclosporine was associated with a significant decrease in mortality. In a real-clinical setting, inhibition of the calcineurin inflammatory pathway, NF-κB, could reduce the hyperinflammatory phase in COVID-19. Our findings might entail relevant implications for the therapy of this disease and could boost the design of new clinical trials among subjects affected by severe COVID-19.
36. **High versus standard doses of corticosteroids in severe COVID-19: a retrospective cohort study.** Monreal E, Sainz de la Maza S, Natera-Villalba E, et al. *Eur J Clin Microbiol Infect Dis.* 2020 Oct 20:1-9. doi: 10.1007/s10096-020-04078-1. <https://link.springer.com/article/10.1007/s10096-020-04078-1>
Findings: We evaluated the mortality, the risk of need for mechanical ventilation, or death and the risk of developing a severe ARDS between high (HD) and standard doses (SD) among

patients with a severe COVID-19. Patients were allocated to the HD (≥ 250 mg/day of methylprednisolone) of corticosteroids or the SD (≤ 1.5 mg/kg/day of methylprednisolone) at discretion of treating physician. Five hundred seventy-three patients were included: 428 (74.7%) men, with a median age of 64 (54-73) years. In the HD group, a worse baseline respiratory situation was observed and male gender, older age, and comorbidities were significantly more common. After adjusting by baseline characteristics, HDs were associated with a higher mortality than SD and with an increased risk of needing MV or death. Conversely, the risk of developing a severe ARDS was similar between groups. Interaction analysis showed that HD increased mortality exclusively in elderly patients. Our real-world experience advises against exceeding 1-1.5 mg/kg/day of corticosteroids for severe COVID-19 with an ARDS, especially in older subjects. This reinforces the rationale of modulating rather than suppressing immune responses in these patients.

37. **The use of intravenous immunoglobulin gamma for the treatment of severe coronavirus disease 2019: a randomized placebo-controlled double-blind clinical trial.** Gharebaghi N, Nejadrahim R, Mousavi SJ, et al. *BMC Infect Dis.* 2020 Oct 21;20(1):786. doi: 10.1186/s12879-020-05507-4. <https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-020-05507-4>
Findings: Among total study subjects, 30 patients received IVIg and 29 patients received a placebo. Demographics, clinical characteristics, and laboratory tests were not statistically different between the two groups. The in-hospital mortality rate was significantly lower in the IVIg group compared to the control group (20.0% vs. 48.3%, respectively). Our study demonstrated that the administration of IVIg in patients with severe COVID-19 infection who did not respond to initial treatment could improve their clinical outcome and significantly reduce mortality rate. Further multicenter studies with larger sample sizes are nonetheless required to confirm the appropriateness of this medication as a standard treatment.
38. **Clinical Nutrition Research and the COVID-19 Pandemic: A Scoping Review of the ASPEN COVID-19 Nutrition Taskforce.** Mechanick JI, Carbone S, Dickerson RN, et al. *JPEN J Parenter Enteral Nutr.* 2020 Oct 23. doi: 10.1002/jpen.2036. <https://onlinelibrary.wiley.com/doi/abs/10.1002/jpen.2036>
The purpose of this scoping review by the ASPEN COVID-19 Nutrition Taskforce was to examine nutrition research applicable to the COVID-19 pandemic. Important nutrition topics meriting urgent research included: food insecurity/societal infrastructure and transcultural factors (Pre-COVID-19); cardiometabolic-based chronic disease, pediatrics, nutrition support, and hospital infrastructure (Acute COVID-19); registered dietitian nutritionist counseling (Chronic/Post-COVID-19); and malnutrition and management (All Stages). The paucity of randomized, control trials was particularly glaring. Knowledge gaps were discovered for PICO-T questions on pediatrics, micronutrients, bariatric surgery, and transcultural factors (Pre-COVID-19); enteral nutrition, protein-energy requirements, and glycemic control with nutrition (Acute COVID-19); and home enteral and parenteral nutrition support (Chronic/Post-COVID-19). In conclusion, this ASPEN scoping review has identified multiple critical areas for urgent nutrition research, particularly using RCT design, to improve nutritional care for patients before, during, and after COVID-19.

39. **Aspirin Use is Associated with Decreased Mechanical Ventilation, ICU Admission, and In-Hospital Mortality in Hospitalized Patients with COVID-19.** Chow JH, Khanna AK, Kethireddy S, et al. *Anesth Analg*. 2020 Oct 21. doi: 10.1213/ANE.0000000000005292.

https://journals.lww.com/anesthesia-analgesia/Abstract/9000/Aspirin_Use_is_Associated_with_Decreased.95423.aspx

Findings: Four hundred twelve patients were included in the study. Three hundred fourteen patients (76.3%) did not receive aspirin, while 98 patients (23.7%) received aspirin within 24 hours of admission or 7 days prior to admission. Aspirin use had a crude association with less mechanical ventilation (35.7% aspirin vs. 48.4% non-aspirin, $p=0.03$) and ICU admission (38.8% aspirin vs. 51.0% non-aspirin, $p=0.04$), but no crude association with in-hospital mortality (26.5% aspirin vs. 23.2% non-aspirin, $p=0.51$). After adjusting for 8 confounding variables, aspirin use was independently associated with decreased risk of mechanical ventilation, ICU admission, and in-hospital mortality. There were no differences in major bleeding or overt thrombosis between aspirin users and non-aspirin users. Aspirin use may be associated with improved outcomes in hospitalized COVID-19 patients. However, a sufficiently powered randomized controlled trial is needed to assess whether a causal relationship exists between aspirin use and reduced lung injury and mortality in COVID-19 patients.

Transmission / Infection Control

40. **Environmental contamination in a COVID-19 intensive care unit (ICU) - what is the risk?** Ong SWX, Lee PH, Tan YK, et al. *Infect Control Hosp Epidemiol*. 2020 Oct 21:1-28. doi: 10.1017/ice.2020.1278. <https://tinyurl.com/y4hpnw3x>

Findings: 200 samples from 20 patient rooms, and 75 samples from common areas and the staff pantry, were tested. 14 rooms had at least one site contaminated, with an overall contamination rate of 14%. Environmental contamination was not associated with day of illness, ventilatory mode, aerosol generating procedures, or viral load. There was lower frequency of environmental contamination in ICU compared to GW rooms. Eight samples from the common area were positive, though all were negative on cell culture. Environmental contamination in the ICU is lower compared to the GW. Use of mechanical ventilation or high-flow nasal oxygen was not associated with greater surface contamination, supporting their use and safety from an infection control perspective. Transmission risk via environmental surfaces in the ICUs is likely to be low. Nonetheless, infection control practices should be strictly reinforced, and transmission risk via droplet or airborne spread remains.

Vaccine

41. **Factors Associated with US Adults' Likelihood of Accepting COVID-19 Vaccination.** Kreps S, Prasad S, Brownstein JS, et al. *JAMA Netw Open*. 2020 Oct 1;3(10):e2025594. doi: 10.1001/jamanetworkopen.2020.25594.

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2771872>

Findings: A total of 1971 US adults responded to the survey (median age, 43); 999 (51%) were women, 1432 (73%) White, 277 (14%) were Black, and 190 (10%) were Latinx. An increase in efficacy from 50% to 70% was associated with a higher probability of choosing a vaccine. An

increase in protection duration from 1 to 5 years was associated with a higher probability of choosing a vaccine. A decrease in the incidence of major adverse effects from 1 in 10 000 to 1 in 1 000 000 was associated with a higher probability of choosing a vaccine. An FDA emergency use authorization was associated with a lower probability of choosing a vaccine compared with full FDA approval. A vaccine that originated from a non-US country was associated with a lower probability of choosing a vaccine. Endorsements from the US CDC and the WHO, compared with an endorsement from President Trump were associated with higher probabilities of choosing a vaccine.

42. **Clinical Endpoints for Evaluating Efficacy in COVID-19 Vaccine Trials.** Mehrotra DV, Janes HE, Fleming TR, et al. *Ann Intern Med.* 2020 Oct 22. doi: 10.7326/M20-6169.
<https://www.acpjournals.org/doi/10.7326/M20-6169>

Several vaccine candidates to protect against SARS-CoV-2 infection or COVID-19 have entered or will soon enter large-scale, phase 3, placebo-controlled randomized clinical trials. To facilitate harmonized evaluation and comparison of the efficacy of these vaccines, a general set of clinical endpoints is proposed, along with considerations to guide the selection of the primary endpoints on the basis of clinical and statistical reasoning. The plausibility that vaccine protection against symptomatic COVID-19 could be accompanied by a shift toward more SARS-CoV-2 infections that are asymptomatic is highlighted, as well as the potential implications of such a shift.

Women & Children

43. **Pasteurization Inactivates SARS-CoV-2 Spiked Breast Milk.** Conzelmann C, Groß R, Meister TL, et al. *Pediatrics.* 2020 Oct 21:e2020031690. doi: 10.1542/peds.2020-031690.
<https://pediatrics.aappublications.org/content/pediatrics/early/2020/10/19/peds.2020-031690.full.pdf>

Findings: We and others described that SARS-CoV-2 RNA is detectable in breast milk of infected mothers. In two cases where the mother continued breastfeeding, the newborns were also tested positive for SARS-CoV-2. Thus, we explored the efficiency of holder pasteurization against SARS-CoV-2 in 5 milk samples and found that infectivity of all 5 tested SARS-CoV-2 isolates is completely eliminated by this treatment.

GUIDELINES & CONSENSUS STATEMENTS

[Scientific and Ethical Principles Underlying Recommendations From the Advisory Committee on Immunization Practices for COVID-19 Vaccination Implementation.](#) Bell BP, Romero JR, Lee GM. *JAMA.* 2020 Oct 22. doi: 10.1001/jama.2020.20847.

[Coronavirus Disease 2019 and the Athletic Heart: Emerging Perspectives on Pathology, Risks, and Return to Play.](#) *JAMA Cardiol.* October 26, 2020. doi:10.1001/jamacardio.2020.5890

[Interim Guidance on Supporting the Emotional and Behavioral Health Needs of Children, Adolescents, and Families During the COVID-19 Pandemic](#)

[Update Alert 5: Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers.](#)

Chou R, Dana T, Buckley DI, et al. *Ann Intern Med.* 2020 Oct 20. doi: 10.7326/L20-1227.

[Update Alert 5: Risks and Impact of Angiotensin-Converting Enzyme Inhibitors or Angiotensin-Receptor Blockers on SARS-CoV-2 Infection in Adults.](#)

Mackey K, Kansagara D, Vela K. *Ann Intern Med.* 2020 Oct 27. doi: 10.7326/L20-1293.

[Update Alert: Use of N95, Surgical, or Cloth Masks to Prevent COVID-19 in Health Care and Community Settings: Living Practice Points from the American College of Physicians \(Version 1\)](#)

Qaseem A, Etcheandia-Ikobaltzeta I, Yost J, Humphrey LL. *Ann Intern Med.* 2020 Oct 27. doi: 10.7326/L20-1268.

[Best Practices for COVID-19-Positive or Exposed Mothers-Breastfeeding and Pumping Milk.](#)

Sullivan SE, Thompson LA. *JAMA Pediatr.* 2020 Oct 26. doi: 10.1001/jamapediatrics.2020.3341.

FDA / CDC / NIH / WHO Updates

CDC - [When to Quarantine](#), updated to include repeated contacts with COVID-19 positive individual/s adding up to 15 minutes.

[FDA Approves First Treatment for COVID-19 -Remdesivir](#)

NIH - [Influenza and COVID-19](#), this new section of the Guidelines provides information for clinicians when influenza viruses and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are cocirculating in the community.

Commentary

[Time to Reassess Tocilizumab's Role in COVID-19 Pneumonia.](#)

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