

COVID-19 Resource Desk

#21 | 9.9.2020 to 9.15.2020

Prepared by [System Library Services](#)

[Retraction Watch](#)

New Research

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

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

Retracted Articles - see also [Retraction Watch](#)

1. Retraction Correction: **Hydroxychloroquine with or without Azithromycin in Mild-to-Moderate Covid-19**. NEJM. September 10, 2020 DOI: 10.1056/NEJMx200021
<https://www.nejm.org/doi/full/10.1056/NEJMx200021>
Original Article, *N Engl J Med* 2020. DOI: 10.1056/NEJMoa2019014

Clinical Syndrome

2. **Chest Computed Tomography Findings in Asymptomatic Patients with COVID-19**. Chang MC, Lee W, Hur J, Park D. *Respiration*. 2020 Sep 7:1-7. doi: 10.1159/000509334.
Findings: All patients had ground-glass opacity (GGO) on chest CT. Further, the GGO lesions were predominantly distributed peripherally and posteriorly in all patients. In 9 (90%) patients, the GGO lesions were combined with reticular opacity. Air bronchogram due to bronchiolectasis surrounded by GGO was observed in 8 patients (80%). Additionally, the lung lesions were dominant on the right side in all patients. In conclusion, considering our results that the lung is affected in asymptomatic patients, it will be necessary to extend the indications of COVID-19 testing for effective management of COVID-19 during the pandemic.
3. **Assessment of pulmonary surfactant in COVID-19 patients**. Schousboe P, Wiese L, Heiring C, et al. *Crit Care*. 2020 Sep 7;24(1):552. doi: 10.1186/s13054-020-03268-9.
<https://ccforum.biomedcentral.com/articles/10.1186/s13054-020-03268-9>
Findings: We propose that the direct effects on pulmonary tissue by SARS-CoV-2 in COVID-19 pneumonia in ARDS COVID-19 patients resembles neonatal respiratory distress syndrome (NRDS), caused by surfactant deficiency. We suggest assessment of surfactant levels should be added to the evaluation of COVID-19 patients. A point-of-care test for fast measuring surfactant at birth in premature babies has been developed. This method may be suitable for determining the surfactant in tracheal fluid obtained from critically ill adults. Knowledge of surfactant levels contributes to understanding pathophysiology in COVID-19 patients. Surfactant treatment may be considered included with other interventions for the treatment of COVID-19 induced respiratory failure.

4. **COVID-19 and Pneumothorax: A Multicentre Retrospective Case Series.** Martinelli AW, Ingle T, Newman J, et al. *Eur Respir J.* 2020 Sep 9:2002697. doi: 10.1183/13993003.02697-2020. <https://erj.ersjournals.com/content/early/2020/09/03/13993003.02697-2020>
Findings: Seventy-one patients from 16 centres were included in the study, of whom 60 patients had pneumothoraces (six also with pneumomediastinum), whilst 11 patients had pneumomediastinum alone. Two of these patients had two distinct episodes of pneumothorax, occurring bilaterally in sequential fashion, bringing the total number of pneumothoraces included to 62. Clinical scenarios included patients who had presented to hospital with pneumothorax, patients who had developed pneumothorax or pneumomediastinum during their inpatient admission with COVID-19 and patients who developed their complication whilst intubated and ventilated, either with or without concurrent extracorporeal membrane oxygenation. Survival at 28 days was not significantly different following pneumothorax (63.1%±6.5%) or isolated pneumomediastinum (53.0%±18.7%; p=0.854). The incidence of pneumothorax was higher in males. The 28-day survival was not different between the sexes (males 62.5%±7.7% versus females 68.4%±10.7%; p=0.619). Patients above the age of 70 had a significantly lower 28-day survival than younger individuals (≥70 years 41.7%±13.5% survival versus <70 years 70.9%±6.8% survival; p=0.018 log-rank). These cases suggest that pneumothorax is a complication of COVID-19.
5. **Meta-analysis of Cardiovascular Events and Related Biomarkers Comparing Survivors vs. Non-survivors in Patients with COVID-19.** Shoar S, Hosseini F, Naderan M, Mehta JL. *Am J Cardiol.* 2020 Sep 8:S0002-9149(20)30902-4. doi: 10.1016/j.amjcard.2020.08.044. <https://www.sciencedirect.com/science/article/abs/pii/S0002914920309024>
Findings: We conducted an online search to identify original cohorts comparing data between survivors and non-survivors from COVID-19. The presence of cardiovascular events and related biomarkers were compared between the two groups. Data on 1,845 hospitalized patients with COVID-19 were pooled from 12 comparative studies. The overall mortality rate in relation to COVID-19 was 17.6%. Men aged > 50 years old were more likely to die from COVID-19. Significant co-morbidities contributing to mortality were hypertension, diabetes mellitus, smoking, a previous history of cardiovascular disease including chronic heart failure, and cerebrovascular accidents. A significant relationship was observed between mortality and patient presentation with dyspnea, fatigue, tachycardia, and hypoxemia. Cardiovascular disease-related laboratory biomarkers related to mortality were elevated serum level of lactate dehydrogenase, creatine kinase, and cardiac troponin I. Adverse cardiovascular disease-related clinical events preceding death were shock, arrhythmias, and acute myocardial injury.
6. **Increased risk of acute stroke among patients with severe COVID-19: a multicenter study and meta-analysis.** Siepmann T, Sedghi A, Simon E, et al. *Eur J Neurol.* 2020 Sep 12. doi: 10.1111/ene.14535. <https://onlinelibrary.wiley.com/doi/abs/10.1111/ene.14535>
Findings: Of 165 patients hospitalized for COVID-19 (49.1% males, median age 67, 72.1% severe or critical) included in the multicenter study, overall stroke rate was 4.2%. Systematic literature search identified two observational studies involving 576 patients that were eligible for meta-analysis. Among 741 pooled COVID-19 patients overall stroke rate was 2.9%. Risk of acute

stroke was increased for patients with severe compared to non-severe COVID-19 with no evidence of heterogeneity. Synthesized analysis of data from our multicenter study and previously published cohorts indicate that severity of COVID-19 is associated with an increased risk of acute stroke.

Diagnostics & Screening

7. **Association between SARS-CoV-2 neutralizing antibodies and commercial serological assays.** Tang MS, Case JB, Franks CE, et al. *Clin Chem*. 2020 Sep 7:hvaa211. doi: 10.1093/clinchem/hvaa211. <https://academic.oup.com/clinchem/advance-article/doi/10.1093/clinchem/hvaa211/5902446>
Findings: COVID-19 patients generate an antibody response to multiple viral proteins such that the calibrator ratios on the Roche, Abbott, and EUROIMMUN assays are all associated with SARS-CoV-2 neutralization. Nevertheless, commercial serological assays have poor NPA for SARS-CoV-2 neutralization, making them imperfect proxies for neutralization.
8. **Comparative Clinical Evaluation of the Roche Elecsys and Abbott SARS-CoV-2 serology assays for COVID-19.** Tan SS, Saw S, Chew KL, et al. *Arch Pathol Lab Med*. 2020 Sep 9. doi: 10.5858/arpa.2020-0499-SA. <https://meridian.allenpress.com/aplm/article/doi/10.5858/arpa.2020-0499-SA/443501/Comparative-Clinical-Evaluation-of-the-Roche>
Findings: There was a strong level of agreement in the qualitative results between both assays with a Cohen's kappa value of 0.840, $P < .001$. The specificity for both Roche and Abbott were excellent at 100%. Roche exhibited marginally better performance in the ≥ 21 days group with a sensitivity of 90.6% (95% CI 75.8-96.8%) versus Abbott's sensitivity 84.4% (95% CI 68.3 - 93.1%) as well as the 14-20 days group with a sensitivity of 85.7% (95% CI 65.4 - 95.0%) versus Abbott sensitivity 81.0% (95% CI 60.0 - 92.3%). Less than 14 days of symptoms groups exhibited poor sensitivity at $< 50\%$ for both assays. The area under curve (AUC \pm standard error) for Roche (0.894 \pm 0.025, $P < .001$) and Abbott (0.884 \pm 0.026, $P < .001$) were very similar. Potential confounders for negative serological results include antiretroviral medication use and pauci-symptomatic patients. Specificities for high throughput Roche and Abbott immunoassays are excellent but users need to be cautious to interpret serological test results after 14 days of symptoms to avoid false negatives.
9. **Serological Assays Estimate Highly Variable SARS-CoV-2 Neutralizing Antibody Activity in Recovered COVID19 Patients.** Luchsinger LL, Ransegnola B, Jin D, et al. *J Clin Microbiol*. 2020 Sep 11:JCM.02005-20. doi: 10.1128/JCM.02005-20. <https://jcm.asm.org/content/jcm/early/2020/09/10/JCM.02005-20.full.pdf>
Findings: The development of neutralizing antibodies (nAb) against SARS-CoV-2, following infection or vaccination, is likely to be critical for the development of sufficient population immunity to drive cessation of the COVID19 pandemic. We collected 370 unique donors enrolled in the New York Blood Center Convalescent Plasma Program between April and May of 2020. We measured levels of antibodies in convalescent plasma using commercially available SARS-CoV-2 detection tests and in-house ELISA assays and correlated serological measurements

with nAb activity measured using pseudotyped virus particles, which offer the most informative assessment of antiviral activity of patient sera against viral infection. Our data show that a large proportion of convalescent plasma samples have modest antibody levels and that commercially available tests have varying degrees of accuracy in predicting nAb activity. We found the Ortho Anti-SARS-CoV-2 Total Ig and IgG high throughput serological assays (HTSAs), as well as the Abbott SARS-CoV-2 IgG assay, quantify levels of antibodies that strongly correlate with nAb assays and are consistent with gold-standard ELISA assay results. These findings provide immediate clinical relevance to serology results that can be equated to nAb activity and could serve as a valuable 'roadmap' to guide the choice and interpretation of serological tests for SARS-CoV-2.

10. **Saliva Alternative to Upper Respiratory Swabs for SARS-CoV-2 Diagnosis.** Byrne RL, Kay GA, Kontogianni K, et al. *Emerg Infect Dis.* 2020 Sep 11;26(11). doi: 10.3201/eid2611.203283. <https://wwwnc.cdc.gov/eid/article/26/11/20-3283>

Findings: PCR of upper respiratory specimens is the diagnostic standard for severe acute respiratory syndrome coronavirus 2 infection. However, saliva sampling is an easy alternative to nasal and throat swabbing. We found similar viral loads in saliva samples and in nasal and throat swab samples from 110 patients with coronavirus disease.

Epidemiology & Public Health

11. **Bacterial and viral co-infections in patients with severe SARS-CoV-2 pneumonia admitted to a French ICU.** Contou D, Claudinon A, Pajot O, et al. *Ann Intensive Care.* 2020 Sep 7;10(1):119. doi: 10.1186/s13613-020-00736-x.

<https://annalsofintensivecare.springeropen.com/articles/10.1186/s13613-020-00736-x>
Findings: We report on a 28% rate of bacterial co-infection at ICU admission of patients with severe SARSCoV-2 pneumonia, mostly related to Staphylococcus aureus, Haemophilus influenzae, Streptococcus pneumoniae and Enterobacteriaceae. In French patients with confirmed severe SARSCoV-2 pneumonia requiring ICU admission, our results encourage the systematic administration of an empiric antibiotic monotherapy with a 3rd generation cephalosporin, with a prompt de-escalation as soon as possible. Further larger studies are needed to assess the real prevalence and the predictors of co-infection together with its prognostic impact on critically ill patients with severe SARS-CoV-2 pneumonia.

12. **Years of life lost associated with COVID-19 deaths in the United States.** Quast T, Anel R, Gregory S, et al. *J Public Health (Oxf).* 2020 Sep 7:fdaa159. doi: 10.1093/pubmed/fdaa159. <https://academic.oup.com/jpubhealth/advance-article/doi/10.1093/pubmed/fdaa159/5901977>

Findings: The mortality effects of COVID-19 are a critical aspect of the disease's impact. Years of life lost (YLLs) can provide greater insight than the number of deaths by conveying the shortfall in life expectancy and thus the age profile of the decedents. We employed data regarding COVID-19 deaths in the USA by jurisdiction, gender and age group for the period 1 February 2020 through 11 July 2020. We used actuarial life expectancy tables by gender and age to estimate YLLs. We estimated roughly 1.2 million YLLs due to COVID-19 deaths. The YLLs for the

top six jurisdictions exceeded those for the remaining 43. On a per-capita basis, female YLLs were generally higher than male YLLs throughout the country. Our estimates offer new insight into the effects of COVID-19. Our findings of heterogeneous rates of YLLs by geography and gender highlight variation in the magnitude of the pandemic's effects that may inform effective policy responses.

- 13. Substantial underestimation of SARS-CoV-2 infection in the United States.** Wu, S.L., Mertens, A.N., Crider, Y.S. et al. *Nat Commun.* 11, 4507 (2020). <https://doi.org/10.1038/s41467-020-18272-4> <https://www.nature.com/articles/s41467-020-18272-4>
Findings: Accurate estimates of the burden of SARS-CoV-2 infection are critical to informing pandemic response. Confirmed COVID-19 case counts in the U.S. do not capture the total burden of the pandemic because testing has been primarily restricted to individuals with moderate to severe symptoms due to limited test availability. Here, we use a semi-Bayesian probabilistic bias analysis to account for incomplete testing and imperfect diagnostic accuracy. We estimate 6,454,951 cumulative infections compared to 721,245 confirmed cases (1.9% vs. 0.2% of the population) in the United States as of April 18, 2020. Accounting for uncertainty, the number of infections during this period was 3 to 20 times higher than the number of confirmed cases. 86% (simulation interval: 64–99%) of this difference is due to incomplete testing, while 14% (0.3–36%) is due to imperfect test accuracy. The approach can readily be applied in future studies in other locations or at finer spatial scale to correct for biased testing and imperfect diagnostic accuracy to provide a more realistic assessment of COVID-19 burden.
- 14. Transmission Dynamics of COVID-19 Outbreaks Associated with Child Care Facilities — Salt Lake City, Utah, April–July 2020.** Lopez AS, Hill M, Antezano J, et al. *MMWR Morb Mortal Wkly Rep.* ePub: 11 September 2020. DOI: <http://dx.doi.org/10.15585/mmwr.mm6937e3> https://www.cdc.gov/mmwr/volumes/69/wr/mm6937e3.htm?s_cid=mm6937e3_w
Findings: Twelve children acquired COVID-19 in child care facilities. Transmission was documented from these children to at least 12 (26%) of 46 nonfacility contacts. One parent was hospitalized. COVID-19 is less severe in children than it is in adults, but children can still play a role in transmission. The infected children exposed at these three facilities had mild to no symptoms. Two of three asymptomatic children likely transmitted SARS-CoV-2 to their parents and possibly to their teachers. Having SARS-CoV-2 testing available, timely results, and testing of contacts of patients in child care settings regardless of symptoms can help prevent transmission and provide a better understanding of the role played by children in transmission. Findings that staff members worked while their household contacts were ill with COVID-19–compatible symptoms support CDC guidance for child care programs recommendations that staff members and attendees quarantine and seek testing if household members are symptomatic. This guidance also recommends the use of face masks, particularly among staff members, especially when children are too young to wear masks, along with hand hygiene, frequent cleaning and disinfecting of high-touch surfaces, and staying home when ill to reduce SARS-CoV-2 transmission.
- 15. Delay or Avoidance of Medical Care Because of COVID-19–Related Concerns — United States, June 2020.** Czeisler MÉ, Marynak K, Clarke KE, et al. *MMWR Morb Mortal Wkly Rep*

2020;69:1250–1257. DOI: <http://dx.doi.org/10.15585/mmwr.mm6936a4>
<https://www.cdc.gov/mmwr/volumes/69/wr/mm6936a4.htm>

Findings: As of June 30, 2020, an estimated 41% of U.S. adults reported having delayed or avoided medical care during the pandemic because of concerns about COVID-19, including 12% who reported having avoided urgent or emergency care. These findings align with recent reports that hospital admissions, overall ED visits, and the number of ED visits for heart attack, stroke, and hyperglycemic crisis have declined since the start of the pandemic, and that excess deaths directly or indirectly related to COVID-19 have increased in 2020 versus prior years. Nearly one third of adult respondents reported having delayed or avoided routine medical care, which might reflect adherence to community mitigation efforts such as stay-at-home orders, temporary closures of health facilities, or additional factors. However, if routine care avoidance were to be sustained, adults could miss opportunities for management of chronic conditions, receipt of routine vaccinations, or early detection of new conditions, which might worsen outcomes.

16. **Every Body Counts: Measuring Mortality From the COVID-19 Pandemic.** Kiang MV, Irizarry RA, Buckee CO, et al. *Ann Intern Med.* 2020 Sep 11. doi: 10.7326/M20-3100. DOI: 10.7326/M20-3100 <https://www.acpjournals.org/doi/10.7326/M20-3100>

Findings: As of mid-August 2020, more than 170 000 U.S. residents have died of COVID-19; however, the true number of deaths resulting from COVID-19, both directly and indirectly, is likely to be much higher. The proper attribution of deaths to this pandemic has a range of societal, legal, mortuary, and public health consequences. This article discusses the current difficulties of disaster death attribution and describes the strengths and limitations of relying on death counts from death certificates, estimations of indirect deaths, and estimations of excess mortality. Improving the tabulation of direct and indirect deaths on death certificates will require concerted efforts and consensus across medical institutions and public health agencies. In addition, actionable estimates of excess mortality will require timely access to standardized and structured vital registry data, which should be shared directly at the state level to ensure rapid response for local governments. Correct attribution of direct and indirect deaths and estimation of excess mortality are complementary goals that are critical to our understanding of the pandemic and its effect on human life.

17. **Change in Donor Characteristics and Antibodies to SARS-CoV-2 in Donated Blood in the US, June-August 2020.** Dodd RY, Xu M, Stramer SL. *JAMA.* 2020 Sep 14. doi: 10.1001/jama.2020.18598. <https://jamanetwork.com/journals/jama/fullarticle/2770771>

Findings: This study found that, after the introduction of antibody testing, the proportion of first-time donors increased, and donations from younger and racial and ethnic minority donors were more likely to be reactive. In addition, reactivity rates increased with time. This increase may be due to donors with higher rates of prior exposure donating to obtain antibody test results, particularly first-time donors, but may also reflect increased exposure in the general population or increased recognition of the need for convalescent plasma.

18. **Social Disadvantage, Politics, and SARS-CoV-2 Trends: A County-Level Analysis of United States Data.** Mourad A, Turner NA, Baker AW, et al. *Clin Infect Dis.* 2020 Sep 11:ciaa1374. doi:

10.1093/cid/ciaa1374. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1374/5904339>

Findings: 1023/3142 US counties were included in the analysis. 66.3% had increasing, and 33.7% had non-increasing SARS-CoV-2 case counts between June 1 - June 30, 2020. Counties with increasing case counts had significantly higher Social Deprivation Index than counties with non-increasing case counts. Counties with increasing case counts were significantly more likely to be metropolitan areas of 250,000 - 1 million population, to have a higher percentage of Black residents, and to have voted for the Republican presidential candidate in 2016 by a 10-point or greater margin. In the multivariable model, metropolitan areas of 250,000 - 1 million population, higher percentage of Black residents and a 10-point or greater Republican victory were independently associated with increasing case counts.

Healthcare Delivery & Healthcare Workers

19. **SARS-CoV-2 seroprevalence and asymptomatic viral carriage in healthcare workers: a cross-sectional study.** Shields A, Faustini SE, Perez-Toledo M, et al. *Thorax*. 2020 Sep 11:thoraxjnl-2020-215414. doi: 10.1136/thoraxjnl-2020-215414.

<https://thorax.bmj.com/content/early/2020/08/28/thoraxjnl-2020-215414>

Findings: The point prevalence of SARS-CoV-2 viral carriage was 2.4%. The overall seroprevalence of SARS-CoV-2 antibodies was 24.4%. Participants who reported prior symptomatic illness had higher seroprevalence (37.5% vs 17.1%) and quantitatively greater antibody responses than those who had remained asymptomatic. Seroprevalence was greatest among those working in housekeeping (34.5%), acute medicine (33.3%) and general internal medicine (30.3%), with lower rates observed in participants working in intensive care (14.8%). BAME (Black, Asian and minority ethnic) ethnicity was associated with a significantly increased risk of seropositivity. Working on the intensive care unit was associated with a significantly lower risk of seropositivity compared with working in other areas of the hospital.

Prognosis

20. **Clinical Outcomes in Young US Adults Hospitalized With COVID-19.** Cunningham JW, Vaduganathan M, Claggett BL, et al. *JAMA Intern Med*. September 09, 2020. doi:10.1001/jamainternmed.2020.5313

<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2770542>

Findings: Young adults age 18 to 34 years hospitalized with COVID-19 experienced substantial rates of adverse outcomes: 21% required intensive care, 10% required mechanical ventilation, and 2.7% died. This in-hospital mortality rate is lower than that reported for older adults with COVID-19, but approximately double that of young adults with acute myocardial infarction. Morbid obesity, hypertension, and diabetes were common and associated with greater risks of adverse events. Young adults with more than 1 of these conditions faced risks comparable with those observed in middle-aged adults without them. More than half of these patients requiring hospitalization were Black or Hispanic, consistent with prior findings of disproportionate illness severity in these demographic groups.

- 21. Adverse outcomes and mortality in users of non-steroidal anti-inflammatory drugs who tested positive for SARS-CoV-2: A Danish nationwide cohort study.** Lund LC, Kristensen KB, Reilev M, et al. *PLOS Medicine*. 2020 Sep 8. <https://doi.org/10.1371/journal.pmed.1003308>
<https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003308>
Findings: Use of NSAIDs was not associated with 30-day mortality, hospitalization, ICU admission, mechanical ventilation, or renal replacement therapy in Danish individuals who tested positive for SARS-CoV-2.
- 22. Characteristics, Comorbidities, and Outcomes in a Multicenter Registry of Patients with HIV and Coronavirus Disease-19.** Dandachi D, Geiger G, Montgomery MW, et al. *Clin Infect Dis*. 2020 Sep 9:ciaa1339. doi: 10.1093/cid/ciaa1339. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1339/5903368>
Findings: 286 patients were included; the mean age was 51.4 years, 25.9% were female, and 75.4% were African-American or Hispanic. Most patients (94.3%) were on antiretroviral therapy, 88.7% had HIV virologic suppression, and 80.8% had comorbidities. Within 30 days of positive SARS-CoV-2 testing, 164 (57.3%) patients were hospitalized, and 47 (16.5%) required ICU admission. Mortality rates were 9.4% (27/286) overall, 16.5% (27/164) among those hospitalized, and 51.5% (24/47) among those admitted to an ICU. Older age, chronic lung disease, and hypertension were associated with severe outcomes. A lower CD4 count (<200 cells/mm³) was associated with the primary and secondary endpoints. There was no association between the antiretroviral regimen or lack of viral suppression and predefined outcomes. Severe clinical outcomes occurred commonly in PWH and COVID-19. The risk for poor outcomes was higher in those with comorbidities and lower CD4 cell counts, despite HIV viral suppression.
- 23. Bacterial and fungal superinfections in critically ill patients with COVID-19.** Bassetti M, Kollef MH, Timsit JF. *Intensive Care Med*. 2020 Sep 9. doi: 10.1007/s00134-020-06219-8. <https://link.springer.com/article/10.1007/s00134-020-06219-8>
Findings: The true prevalence of bacterial and fungal superinfections in critically ill COVID-19 patients remains elusive. In our opinion, a possible underestimation of the risk of late superinfection may occur at the bedside of ICU patients with COVID-19. Confounding factors also hamper a clear identification of the most frequent bacteria associated with superinfection, with either Gram-negative or Gram-positive organisms having alternatively deemed as the major culprit. Further dedicated investigation is necessary to better understand the true risk and the disease spectrum of superinfection in critically ill patients with COVID-19, with the aim of improving their management and outcomes.
- 24. Clinical characteristics and outcomes of immunosuppressed patients hospitalized with COVID-19: experience from London.** Vaid N, Ardissino M, Reed TAN, et al. *J Intern Med*. 2020 Sep 9. doi: 10.1111/joim.13172. <https://onlinelibrary.wiley.com/doi/abs/10.1111/joim.13172>
Findings: In this cohort study of 981 confirmed COVID-19 patients consecutively hospitalized at a large North West London hospital, immunosuppressant use was associated with significantly higher mortality rates. These results support the current UK government's early isolation ("shielding") policy for these individuals and should be used to guide future research.

25. Elevated D-dimers and lack of anticoagulation predict PE in severe COVID-19 patients.

Mouhat B, Besutti M, Bouiller K, et al. *Eur Respir J*. 2020 Sep 9:2001811. doi: 10.1183/13993003.01811-2020.

<https://erj.ersjournals.com/content/erj/early/2020/09/03/13993003.01811-2020.full.pdf>

Findings: 162 patients (46.4%) underwent CTPA (mean age 65.6). PE was diagnosed in 44 patients (27.2%). Most PE were segmental and the rate of PE-related right ventricular dysfunction was 15.9%. By multivariable analysis, the only two significant predictors of CTPA-confirmed PE were D-dimer level and the lack of any anticoagulant therapy per additional quartile. Elevated D-dimers (>2590 ng·mL⁻¹) and absence of anticoagulant therapy predict PE in hospitalised COVID-19 patients with clinical signs of severity. These data strengthen the evidence base in favour of systematic anticoagulation and suggest wider use of D-dimer guided CTPA to screen for PE in acutely ill hospitalised patients with COVID-19.

26. Risk stratification of patients admitted to hospital with covid-19 using the ISARIC WHO Clinical Characterisation Protocol: development and validation of the 4C Mortality Score.

Knight SR, Ho A, Pius R, et al. *BMJ*. 2020 Sep 9;370:m3339. doi: 10.1136/bmj.m3339.

<https://www.bmj.com/content/bmj/370/bmj.m3339.full.pdf>

Findings: An easy-to-use risk stratification score has been developed and validated based on commonly available parameters at hospital presentation. The 4C Mortality Score outperformed existing scores, showed utility to directly inform clinical decision making, and can be used to stratify patients admitted to hospital with covid-19 into different management groups. The score should be further validated to determine its applicability in other populations.

27. Reduced maximal aerobic capacity after COVID-19 in young adult recruits, Switzerland, May 2020.

Gerardo Cramer GA, Bielecki M, Züst R, et al. *Euro Surveill*. 2020 Sep;25(36). doi: 10.2807/1560-7917.ES.2020.25.36.2001542.

<https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.36.2001542>

Findings: In March 2020, we observed an outbreak of COVID-19 among a relatively homogenous group of 199 young (median age 21 years; 87% men) Swiss recruits. By comparing physical endurance before and in median 45 days after the outbreak, we found a significant decrease in predicted maximal aerobic capacity in COVID-19 convalescent but not in asymptotically infected and SARS-CoV-2 naive recruits. This finding might be indicative of lung injury after apparently mild COVID-19 in young adults.

28. Effects of angiotensin receptor blockers (ARBs) on in-hospital outcomes of patients with hypertension and confirmed or clinically suspected COVID-19.

Soleimani A, Kazemian S, Karbalai Saleh S, et al. *Am J Hypertens*. 2020 Sep 12:hpa149. doi: 10.1093/ajh/hpaa149.

<https://academic.oup.com/ajh/advance-article/doi/10.1093/ajh/hpaa149/5904975>

Findings: We evaluated 636 patients with COVID-19 in the analysis. In this cohort, 108 (17.0%) patients expired and 407 (64.0%) patients incurred severe COVID-19. Of 254 (39.9%) patients with hypertension, 122 (48.0%) patients were receiving an ARB. After adjustment for possible confounders, we found no independent association between taking ARBs and in-hospital outcomes except for acute kidney injury (AKI), in patients with confirmed or clinically suspected COVID-19, either hypertensive or not-hypertensive. We found that discontinuation of ARBs

during hospitalization was associated with a greater risk of mortality, invasive ventilation, and AKI (All $P < 0.002$). We found that taking ARBs by patients with hypertension and confirmed or clinically suspected COVID-19 is not associated with poorer in-hospital outcomes after adjustment for possible confounders.

29. **Mortality and Disease Severity among COVID-19 Patients Receiving Renin-Angiotensin System Inhibitors: A Systematic Review and Meta-analysis.** Hasan SS, Kow CS, Hadi MA, et al. *Am J Cardiovasc Drugs*. 2020 Sep 12. doi: 10.1007/s40256-020-00439-5.

<https://link.springer.com/article/10.1007/s40256-020-00439-5>

Findings: A total of 59 original studies were included for qualitative synthesis. Twenty-four studies that reported adjusted effect sizes, conducted in RAS inhibitor-exposed and unexposed groups, were pooled in random-effects models to estimate overall risk. Quality assessment of studies revealed that most of the studies included were of fair quality. The use of an ACEI/ARB in COVID-19 patients was significantly associated with lower odds or hazard of mortality compared with non-use of ACEI/ARB. However, the use of an ACEI/ARB was non-significantly associated with lower odds or hazard of developing severe/critical disease compared with non-use of an ACEI/ARB. Since there was no increased risk of harm, the use of RAS inhibitors for hypertension and other established clinical indications can be maintained in COVID-19 patients.

Survivorship & Rehabilitation

30. **Organizational Strategies for Managing COVID-19 Survivors who Return for Care.** Henderson DK, Haessler S, Hayden MK, et al. *Infect Control Hosp Epidemiol*. 2020 Sep 9:1-3. doi: 10.1017/ice.2020.456. <https://tinyurl.com/y34nxcsa>

Findings: We suggest that most previously positive patients, who return for care and who have met the CDC's symptom-based strategy for discontinuation of transmission-based precautions need not be re-tested, either prior to re-admission or prior to a procedure, and that they can be safely managed using standard precautions. For the subgroup of complicated patients who may have the potential to shed live virus for longer, such as those who required intensive care, or are severely immunocompromised, a more nuanced approach may be needed, and in these cases, CDC guidance suggests patients should be isolated for up to 20 days. The above data are reassuring that even in severely ill patients the more conservative time period ensures that no infectious virus is present and even those who persistently test positive could be removed from isolation. Test-based strategies may be considered to help exit isolation earlier than 20 days. However, from a practical perspective it is challenging to simultaneously implement test-based and time-based strategies effectively. One strategy to combat this is to discourage repeat testing and base decisions solely on time-based criteria for most patients.

31. **Cardiovascular Magnetic Resonance Findings in Competitive Athletes Recovering From COVID-19 Infection.** Rajpal S, Tong MS, Borchers J, et al. *JAMA Cardiol*. September 11, 2020. doi:10.1001/jamacardio.2020.4916

<https://jamanetwork.com/journals/jamacardiology/fullarticle/2770645>

Findings: Of 26 competitive athletes, 4 (15%) had CMR findings suggestive of myocarditis and 8 additional athletes (30.8%) exhibited LGE without T2 elevation suggestive of prior myocardial

injury. COVID-19–related myocardial injury in competitive athletes and sports participation remains unclear. Cardiac magnetic resonance imaging has the potential to identify a high-risk cohort for adverse outcomes and may risk stratify athletes for safe participation because CMR mapping techniques have a high negative predictive value to rule out myocarditis. To conclude, while long-term follow-up and large studies including control populations are required to understand CMR changes in competitive athletes, CMR may provide an excellent risk-stratification assessment for myocarditis in athletes who have recovered from COVID-19 to guide safe competitive sports participation.

- 32. Rehabilitation Levels in COVID-19 Patients Admitted to Intensive Care Requiring Invasive Ventilation: An Observational Study.** McWilliams D, Weblin J, Hodson J, et al. *Ann Am Thorac Soc.* 2020 Sep 11. doi: 10.1513/AnnalsATS.202005-560OC.

<https://www.atsjournals.org/doi/abs/10.1513/AnnalsATS.202005-560OC>

Findings: We describe the demographics, clinical status, level of rehabilitation and mobility status at ICU discharge of patients with COVID-19. A total of n=177 patients were identified, of whom n=110 survived to ICU discharge and were included in the subsequent analysis. Whilst on ICU, patients required prolonged periods of mechanical ventilation (mean 19 ± 10 days), most received neuromuscular blockade (90%) and 67% were placed in the prone position on at least one occasion. The mean ± SD time to first mobilise was 14 ± 7 days. Time to mobilise was significantly longer in those with higher BMI (p<0.001), whilst older patients (p=0.012) and those with more comorbidities (p=0.017) were more likely to require further rehabilitation post-discharge. The early experience of the COVID-19 pandemic in the UK resembles the experience in other countries, with high acuity of illness and prolonged period of mechanical ventilation required for those patients admitted to ICU. Whilst the time to commence rehabilitation was delayed due to this severity of illness, rehabilitation was possible within the ICU, and led to increased levels of mobility from waking prior to ICU discharge.

Therapeutics

- 33. Treatment with convalescent plasma in solid organ transplant recipients with COVID-19: Experience at large transplant center in New York City.** Rahman F, Liu STH, Taimur S, et al. *Clin Transplant.* 2020 Sep 12:e14089. doi: 10.1111/ctr.14089.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/ctr.14089>

Findings: Convalescent plasma was administered to hospitalized patients with COVID-19 at an academic transplant center in New York City. Thirteen SOT recipients received convalescent plasma from April 9 to May 17, 2020. The median time from symptom onset to plasma infusion was 8 days. Eight of 13 patients (62%) had de-escalating oxygenation support by day 7 post-convalescent plasma. Nine (69%) patients were discharged, 1 (7%) patient remain hospitalized and 3 (23%) patients died. This series supports the need for additional studies on convalescent plasma use in SOT recipients with COVID-19 to better determine efficacy and identify patients who are likely to benefit.

- 34. Interim Analysis of an Open-label Randomized Controlled Trial Evaluating Nasal Irrigations in Non-hospitalized Patients with COVID-19.** Kimura KS, Freeman MH, Wessinger BC, et al. *Int*

Forum Allergy Rhinol. 2020 Sep 11. doi: 10.1002/alr.22703.

<https://onlinelibrary.wiley.com/doi/10.1002/alr.22703>

Findings: The effect of nasal irrigation on symptom resolution was substantial, with nasal congestion and headache resolving a median of 7-9 days earlier in the intervention groups. Our analysis suggests that nasal irrigations may shorten symptom duration and may have potential as a widely available and inexpensive intervention to reduce disease burden among those affected.

Transmission / Infection Control

35. Incidence of Nosocomial COVID-19 in Patients Hospitalized at a Large US Academic Medical Center. Rhee C, Baker M, Vaidya V, et al. *JAMA Netw Open.* 2020;3(9):e2020498.

doi:10.1001/jamanetworkopen.2020.20498

<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2770287>

Findings. In this cohort study of 9149 patients admitted to a large US academic medical center over a 12-week period, 697 were diagnosed with COVID-19. In the context of a comprehensive and progressive infection control program, only 2 hospital-acquired cases were detected: 1 patient was likely infected by a presymptomatic spouse before visitor restrictions were implemented, and 1 patient developed symptoms 4 days after a 16-day hospitalization but without known exposures in the hospital. These findings suggest that overall risk of hospital-acquired COVID-19 was low and that rigorous infection control measures may be associated with minimized risk.

36. Assessing COVID-19 Transmission to Healthcare Personnel: The Global ACT-HCP Case-Control Study. Lentz RJ, Colt H, Chen H, et al. *Infect Control Hosp Epidemiol.* 2020 Sep 9:1-22. doi:

10.1017/ice.2020.455. <https://tinyurl.com/y4fsjkyp>

Findings: COVID-19 transmission to HCP was associated with medical exposures currently considered lower-risk and multiple extra-occupational exposures, while exposures associated with proper use of appropriate PPE were protective. Closer scrutiny of infection control measures surrounding healthcare activities and medical settings considered lower risk, and continued awareness of the risks of public congregation, may reduce the incidence of HCP infection.

37. Community and Close Contact Exposures Associated with COVID-19 among Symptomatic Adults ≥18 Years in 11 Outpatient Health Care Facilities — United States, July 2020. Fisher KA,

Tenforde MW, Feldstein LR, et al. *MMWR Morb Mortal Wkly Rep* 2020;69:1258–1264. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6936a5>.

https://www.cdc.gov/mmwr/volumes/69/wr/mm6936a5.htm?s_cid=mm6936a5_w

Findings: Findings from a case-control investigation of symptomatic outpatients from 11 U.S. health care facilities found that close contact with persons with known COVID-19 or going to locations that offer on-site eating and drinking options (including indoor, patio, and outdoor seating) were associated with COVID-19 positivity. Adults with positive SARS-CoV-2 test results were approximately twice as likely to have reported dining at a restaurant than were those with negative SARS-CoV-2 test results.

38. **Detection and infectivity potential of Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) environmental contamination in isolation units and quarantine facilities.** Ben-Shmuel A, Brosh-Nissimov T, Glinert I, et al. *Clin Microbiol Infect.* 2020 Sep 9:S1198-743X(20)30532-2. doi: 10.1016/j.cmi.2020.09.004.
<https://www.sciencedirect.com/science/article/pii/S1198743X20305322>
Findings: In laboratory-controlled conditions, SARS-CoV-2 gradually lost its infectivity completely at day 4 at ambient temperature and the decay rate of viral viability on surfaces directly correlated with increase in temperature. Viral RNA detected in 52.7% and 38% of surface samples from the surrounding of symptomatic COVID-19 patients in isolation units of two hospitals and in a quarantine hotel for asymptomatic and very mild COVID-19 patients. None of the surface and air samples from all three sites were found to contain infectious titers SARS-Cov-2 in tissue culture assay. Despite prolonged viability of SARS-CoV-2 in laboratory-controlled conditions, uncultivable viral contamination on inanimate surfaces might suggest low feasibility for indirect fomite transmission.
39. **Environmental and Aerosolized SARS-CoV-2 among Hospitalized COVID-19 Patients.** Binder RA, Alarja NA, Robie ER, et al. *J Infect Dis.* 2020 Sep 9:jiaa575. doi: 10.1093/infdis/jiaa575.
<https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa575/5903399>
Findings: During April and May 2020, we studied 20 hospitalized COVID-19 patients, their hospital rooms (fomites and aerosols), and their close contacts for molecular and culture evidence of SARS-CoV-2 virus. Among the more than 400 samples, we found molecular evidence of virus in most sample types, especially the nasopharyngeal, saliva, and fecal samples, but the prevalence of molecular positivity among fomites and aerosols was low. The agreement between NP swab and saliva positivity was high (89.5%). Two NP swabs collected from patients on one and seven days post-symptom onset had evidence of infectious virus. In summary, the low molecular prevalence and lack of viable SARS-CoV-2 virus in fomites and air samples implied low nosocomial risk SARS-CoV-2 transmission through inanimate objects or aerosols.
40. **Decreasing High Risk Exposures for Healthcare-workers through Universal Masking and Universal SARS-CoV-2 Testing upon entry to a Tertiary Care Facility.** Walker J, Fleece ME, Griffin RL, et al. *Clin Infect Dis.* 2020 Sep 8:ciaa1358. doi: 10.1093/cid/ciaa1358.
<https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1358/5903054>
Findings: Universal masking decreased the rate per patient day of high-risk exposures by 68%, and universal testing further decreased those exposures by 77%.

Whole Person Care

41. **Palliative Care for People with COVID-19-Related Symptoms.** Paice JA, Dahlin C, Wholihan D, et al. *J Hosp Palliat Nurs.* 2020 Sep 8. doi: 10.1097/NJH.0000000000000692.
https://journals.lww.com/jhpn/Citation/9000/Palliative_Care_for_People_With_COVID_19_Related.99862.aspx
To help all nurses meet these informational needs, the End-of-Life Nursing Education Consortium (ELNEC) convened a task force to develop tools to guide symptom management.

Using the best evolving evidence, the team compiled clear, concise, relevant instructions in an infographic format. This style was selected to support quick access and dissemination of the information for very busy, overburdened nurses.

42. **Ethics Roundtable: Distribution of Critical Care Resources in the Setting of a COVID-19 Surge.** Baumrucker SJ, Carter G, Adkins RW, Perkins C, Stolick M, Gregg VandeKieft [PSJH author]. *Am J Hosp Palliat Care*. 2020 Dec;37(12):1096-1101. First Published September 8, 2020. doi: 10.1177/1049909120951084. <https://journals.sagepub.com/doi/10.1177/1049909120951084>

Women & Children

43. **SARS-CoV-2 Polymorphisms and Multisystem Inflammatory Syndrome in Children (MIS-C).** Pang J, Boshier FAT, Alders N, et al. *Pediatrics*. 2020 Sep 9:e2020019844. doi: 10.1542/peds.2020-019844. <https://pediatrics.aappublications.org/content/pediatrics/early/2020/09/07/peds.2020-019844.full.pdf>
Findings: Understanding the immunopathological etiology of MIS-C is useful in effective management and treatment of the disease. This report compares viral sequences from children diagnosed with MIS-C to viral sequences from children without MIS-C as well as the wider London community. Overall, the data suggest that the viruses causing MIS-C in our patients are representative of locally circulating SARS-CoV-2. We found no evidence for an association of MIS-C with the presence of new or unusual sequence polymorphisms. This suggests that alternative factors, such as host-genetics, may trigger MIS-C.
44. **Frequency of Children vs Adults Carrying Severe Acute Respiratory Syndrome Coronavirus 2 Asymptotically.** Milani GP, Bottino I, Rocchi A, et al. *JAMA Pediatr*. 2020 Sep 14. doi: 10.1001/jamapediatrics.2020.3595. <https://jamanetwork.com/journals/jamapediatrics/fullarticle/2770117>
Findings: In this study conducted among individuals hospitalized in Milan, one of the cities with the highest SARS-CoV-2 burden in the world, about 1% of children and 9% of adults without any symptoms or signs of SARS-CoV-2 infection tested positive for the virus. It has been estimated that approximately 80% of adults with SARS-CoV-2 are asymptomatic. The few available reports on children are from China and suggest that children who are asymptomatic might be 15% of individuals positive for SARS-CoV-2. In this study, children without symptoms and signs of SARS-CoV-2 carried the virus less frequently than adults, suggesting that their role as facilitators of the spreading of SARS-CoV-2 infection could be reconsidered.
45. **The Natural History of SARS-Cov-2 Related Multisystem Inflammatory Syndrome in Children (MIS-C): A Systematic Review.** Aronoff SC, Hall A, Del Vecchio MT. *J Pediatric Infect Dis Soc*. 2020 Sep 14:piaa112. doi: 10.1093/jpids/piaa112. <https://academic.oup.com/jpids/advance-article/doi/10.1093/jpids/piaa112/5905175>
Findings: 129 articles and 10 articles were identified from journal contents or article bibliographies; 16 reports describing 505 children with MIS-C comprise this review. Thirty-two

children (14.7%) had negative results for SARS-Cov-2 by nucleic acid and/or antibody testing. The weighted median age was 9 years (6 months to 20 years). Clinical findings included fever (100%), gastrointestinal symptoms (88.0%), rash (59.2%), conjunctivitis (50.0%), chelitis/"strawberry tongue" (55.7%) or extremity edema/erythema (47.5%). Median serum CRP, ferritin, fibrinogen and D dimer concentrations were above the normal range. Intravenous gammaglobulin (78.1%) and methylprednisolone/prednisone(57.6%) were the most common therapeutic interventions ; immunomodulation was used in 24.3% of cases. Myocardial dysfunction requiring inotropic support (57.4%) plus extracorporeal membrane oxygenation (5.3%), respiratory distress requiring mechanical ventilation (26.1%), and acute kidney injury (11.9%) were the major complications; anticoagulation was used commonly (54.4%) but thrombotic events occurred rarely (3.5%). Seven (1.4%) children died. MIS-C following SARS-Cov-2 infection frequently presents with gastrointestinal complaints and/or rash; conjunctivitis, chelitis and/or extremity changes also occur frequently. Serious complications occur frequently and respond to aggressive supportive therapy.

46. Heavy exposure of children aged 9 to 12 years with SARS-CoV-2 did not lead to infection.

Schmidt E, Steinhagen K, Rupp J. *Journal of the Pediatric Infectious Diseases Society*

<https://doi.org/10.1093/jpids/piaa116>

<https://academic.oup.com/jpids/advance-article/doi/10.1093/jpids/piaa116/5904972>

Findings: The reason for the apparently lower infection rate of children with SARS-CoV-2 compared to adults is still unclear. Here, we report on four school children with heavy exposure to SARS-CoV-2 with no clinical signs of COVID-19, repeated negative nasopharyngeal swabs for SARS-CoV-2 RNA, and no seroconversion.

GUIDELINES & CONSENSUS STATEMENTS

[Guidance for the Management of Patients with Vascular Disease or Cardiovascular Risk Factors and COVID-19: Position Paper from VAS-European Independent Foundation in Angiology/Vascular Medicine.](#) *Thromb Haemost.* 2020 Sep 13. doi: 10.1055/s-0040-1715798.

[Multicenter interim guidance on use of antivirals for children with COVID-19/SARS-CoV-2.](#) *J Pediatric Infect Dis Soc.* 2020 Sep 12:piaa115. doi: 10.1093/jpids/piaa115.

[Infectious Diseases Society of America Guidelines on the Diagnosis of COVID-19:Serologic Testing.](#) *Clin Infect Dis.* 2020 Sep 12:ciaa1343. doi: 10.1093/cid/ciaa1343.

[Update Alert 4: Epidemiology of and Risk Factors for Coronavirus Infection in Health Care Workers.](#)

Chou R, Dana T, Buckley DI, et al. *Ann Intern Med.* 2020 Sep 11. doi: 10.7326/L20-1134.

This is the fourth monthly update alert for a living rapid review on the epidemiology of and risk factors for coronavirus infection in health care workers.

[Guidance and Best Practices for Nuclear Cardiology Laboratories During the COVID-19 Pandemic: An Information Statement from ASNC and SNMMI.](#) *Circ Cardiovasc Imaging.* 2020 Sep;13(9):e011761. doi: 10.1161/CIRCIMAGING.120.011761.

FDA / CDC / NIH / WHO Updates

CDC - [Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease \(COVID-19\)](#). Updated 9/9/20

FDA - [Assessing COVID-19-Related Symptoms in Outpatient Adult and Adolescent Subjects in Clinical Trials of Drugs and Biological Products for COVID-19 Prevention or Treatment](#). Sept 14, 2020

WHO - [Diagnostic testing for SARS-CoV-2 Interim guidance](#). Updated 11 September 2020

WHO - [Antigen-detection in the diagnosis of SARS-CoV-2 infection using rapid immunoassays Interim guidance](#). Updated 11 September 2020

Commentary / Press Releases

[Statement on AstraZeneca Oxford SARS-CoV-2 vaccine, AZD1222, COVID-19 vaccine trials temporary pause](#) Sept 9, 2020. AZ has announced restarting trial since.

[Children and COVID-19: State-Level Data Report](#) American Academy of Pediatrics

[Political Appointees Meddled in C.D.C.'s 'Holiest of the Holy' Health Reports](#) *New York Times*, Sept 14, 2020

[Should We Mandate a COVID-19 Vaccine for Children?](#) *JAMA Pediatr.* September 14, 2020

[Up Is Down — Pharmaceutical Industry Caution vs. Federal Acceleration of Covid-19 Vaccine Approval](#). *NEJM*, Sept 15, 2020

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