

COVID-19 Resource Desk

#5 | 5.20.2020 to 5.26.2020

Prepared by [System Library Services](#)

New Research

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

Basic Science / Virology / Pre-clinical

- 1. Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: a dose-escalation, open-label, non-randomised, first-in-human trial.** Zhu F-C et al. *Lancet* 2020 May 22. doi: [https://doi.org/10.1016/S0140-6736\(20\)31208-3](https://doi.org/10.1016/S0140-6736(20)31208-3)
[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31208-3/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31208-3/fulltext)
Findings: The Ad5 vectored COVID-19 vaccine is tolerable and immunogenic at 28 days post-vaccination. Humoral responses against SARS-CoV-2 peaked at day 28 post-vaccination in healthy adults, and rapid specific T-cell responses were noted from day 14 post-vaccination. Our findings suggest that the Ad5 vectored COVID-19 vaccine warrants further investigation.
- 2. DNA vaccine protection against SARS-CoV-2 in rhesus macaques.** Yu J et al. *Science*. 2020 May 20:eabc6284. doi: 10.1126/science.abc6284.
<https://science.sciencemag.org/content/early/2020/05/19/science.abc6284>
Findings: In this study, we developed a series of DNA vaccine candidates expressing different forms of the SARS-CoV-2 Spike (S) protein and evaluated them in 35 rhesus macaques. Vaccinated animals developed humoral and cellular immune responses, including neutralizing antibody titers comparable to those found in convalescent humans and macaques infected with SARS-CoV-2. Following vaccination, all animals were challenged with SARS-CoV-2, and the vaccine encoding the full-length S protein resulted in >3.1 and >3.7 log₁₀ reductions in median viral loads in bronchoalveolar lavage and nasal mucosa, respectively, as compared with sham controls. Vaccine-elicited neutralizing antibody titers correlated with protective efficacy, suggesting an immune correlate of protection. These data demonstrate vaccine protection against SARS-CoV-2 in nonhuman primates.
- 3. SARS-CoV-2 infection protects against rechallenge in rhesus macaques.** Chandrashekar A et al. *Science*. 2020 May 20:eabc4776. doi: 10.1126/science.abc4776.
<https://science.sciencemag.org/content/early/2020/05/19/science.abc4776>
Findings: A key unanswered question is whether infection with SARS-CoV-2 results in protective immunity against re-exposure. We developed a rhesus macaque model of SARS-CoV-2 infection and observed that macaques had high viral loads in the upper and lower respiratory tract, humoral and cellular immune responses, and pathologic evidence of viral pneumonia. Following initial viral clearance, animals were rechallenged with SARS-CoV-2 and showed 5 log₁₀

reductions in median viral loads in bronchoalveolar lavage and nasal mucosa compared with primary infection. Anamnestic immune responses following rechallenge suggested that protection was mediated by immunologic control. These data show that SARS-CoV-2 infection induced protective immunity against re-exposure in nonhuman primates.

4. **Potent neutralizing antibodies against SARS-CoV-2 identified by high-throughput single-cell sequencing of convalescent patients' B cells.** Cao Y, Su B, Guo X, et al. *Cell*. 2020 May 18. doi: 10.1016/j.cell.2020.05.025.

<https://www.sciencedirect.com/science/article/pii/S0092867420306206>

Findings: Here we report the rapid identification of SARS-CoV-2 neutralizing antibodies by high-throughput single-cell RNA and VDJ sequencing of antigen-enriched B cells from 60 convalescent patients. We demonstrated that SARS-CoV-2 neutralizing antibodies could be directly selected based on similarities of their predicted CDR3H structures to those of SARS-CoV neutralizing antibodies. Altogether, we showed that human neutralizing antibodies could be efficiently discovered by high-throughput single B-cell sequencing in response to pandemic infectious diseases.

Clinical Syndrome

5. **Pulmonary Vascular Endothelialitis, Thrombosis, and Angiogenesis in Covid-19.** Ackermann M, Verleden SE, Kuehnel M, et al. *N Engl J Med*. 2020 May 21. doi: 10.1056/NEJMoa2015432.

<https://www.nejm.org/doi/full/10.1056/NEJMoa2015432>

Findings: In patients who died from Covid-19-associated or influenza-associated respiratory failure, the histologic pattern in the peripheral lung was diffuse alveolar damage with perivascular T-cell infiltration. The lungs from patients with Covid-19 also showed distinctive vascular features, consisting of severe endothelial injury associated with the presence of intracellular virus and disrupted cell membranes. Histologic analysis of pulmonary vessels in patients with Covid-19 showed widespread thrombosis with microangiopathy. Alveolar capillary microthrombi were 9 times as prevalent in patients with Covid-19 as in patients with influenza ($P < 0.001$). In lungs from patients with Covid-19, the amount of new vessel growth - predominantly through a mechanism of intussusceptive angiogenesis - was 2.7 times as high as that in the lungs from patients with influenza. Vascular angiogenesis distinguished the pulmonary pathobiology of Covid-19 from that of equally severe influenza virus infection.

6. **Epidemiology, clinical course, and outcomes of critically ill adults with COVID-19 in New York City: a prospective cohort study.** Cummings MJ et al. *Lancet* 2020 May 19. doi:

[https://doi.org/10.1016/S0140-6736\(20\)31189-2](https://doi.org/10.1016/S0140-6736(20)31189-2)

[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31189-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31189-2/fulltext)

Findings: Between March 2 and April 1, 2020, 1150 adults were admitted to both hospitals with laboratory-confirmed COVID-19, of which 257 (22%) were critically ill. The median age of patients was 62 years (IQR 51–72), 171 (67%) were men. 212 (82%) patients had at least one chronic illness, the most common of which were hypertension (162 [63%]) and diabetes (92 [36%]). 119 (46%) patients had obesity. As of April 28, 2020, 101 (39%) patients had died and 94 (37%) remained hospitalised. 203 (79%) patients received invasive mechanical ventilation for a

median of 18 days (IQR 9–28), 170 (66%) of 257 patients received vasopressors and 79 (31%) received renal replacement therapy. The median time to in-hospital deterioration was 3 days (IQR 1–6). In the multivariable Cox model, older age, chronic cardiac disease, chronic pulmonary disease, higher concentrations of interleukin-6, and higher concentrations of D-dimer were independently associated with in-hospital mortality.

7. **Kidney biopsy findings in a critically ill COVID-19 patient with dialysis-dependent acute kidney injury: a case against "SARS-CoV-2 nephropathy"**. Rossi GM, Delsante M, Pilato FP, et al. *Kidney Int Rep*. 2020 May 17. doi: 10.1016/j.ekir.2020.05.005. [https://www.kireports.org/article/S2468-0249\(20\)31239-0/fulltext](https://www.kireports.org/article/S2468-0249(20)31239-0/fulltext)
Findings: It is unclear whether in patients with SARS-CoV-2 infection, acute kidney injury (AKI) results from direct infection of the kidneys or from complications arising from COVID-19. Reports of urinary abnormalities in COVID-19 patients, positive staining of tubules with viral antigens and complement components in one autopsic series, visualization of viral particles in tubular epithelial cells and podocytes on ultrastructural examination in another, and isolation of SARS-CoV-2 in urine, raised the possibility of a "SARS-CoV-2 nephropathy".
8. **The liver in times of COVID-19: What hepatologists should know**. Ridruejo E, Soza A. *Ann Hepatol*. 2020 May 18. doi: 10.1016/j.aohep.2020.05.001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7233236/>
Findings: Information on how the infection affects the liver and relevance of pre-existing liver disease as a risk factor for acquiring the infection or having a severe disease are still scarce. In this review we discuss current data on the COVID-19 and liver aiming to provide hepatologists with updated information to face this pandemic.
9. **Coronavirus disease 2019 (SARS-CoV-2) and colonization of ocular tissues and secretions: a systematic review**. Aiello F, Gallo Afflitto G, et al. *Eye (Lond)*. 2020 May 18:1-6. doi: 10.1038/s41433-020-0926-9. <https://www.nature.com/articles/s41433-020-0926-9>
Findings: Coronavirus disease 19 (COVID-19) has been described to potentially be complicated by ocular involvement. However, scant information is available regarding severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) and ocular structures tropism. Globally, 252 SARS-CoV-2 infected patients were included in our review. The prevalence of ocular conjunctivitis complicating the course of COVID-19 was demonstrated to be as high as 32% in one study only. Globally, three patients had conjunctivitis with a positive tear-PCR, 8 patients had positive tear-PCR in the absence of conjunctivitis, and 14 had conjunctivitis with negative tear-PCR. It cannot be excluded that SARS-CoV-2 could both infect the eye and the surrounding structures. SARS-CoV-2 may use ocular structure as an additional transmission route, as demonstrated by the COVID-19 patients' conjunctival secretion and tears positivity to reverse transcriptase-PCR SARS-CoV-2-RNA assay.
10. **Spontaneous Bleedings in COVID-19 Patients: An Emerging Complication**. Bargellini I, Cervelli R, Lunardi A, et al. *Cardiovasc Intervent Radiol*. 2020 May 17:1-2. doi: 10.1007/s00270-020-02507-4. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7231527/>
Findings: Case series of four consecutive COVID-19 patients with spontaneous bleedings treated

with endovascular coil embolization.

11. **SARS2-CoV-2 and Stroke in a New York Healthcare System.** Yaghi S, Ishida K, Torres J, et al. *Stroke*. 2020 May 20:STROKEAHA120030335. doi: 10.1161/STROKEAHA.120.030335. . <https://www.ahajournals.org/doi/10.1161/STROKEAHA.120.030335>
Findings: We observed a low rate of imaging-confirmed ischemic stroke in hospitalized patients with COVID-19. Most strokes were cryptogenic, possibly related to an acquired hypercoagulability, and mortality was increased. Studies are needed to determine the utility of therapeutic anticoagulation for stroke and other thrombotic event prevention in patients with COVID-19.
12. **Olfactory Dysfunction in COVID-19: Diagnosis and Management.** Whitcroft KL, Hummel T. *JAMA*. 2020 May 20. doi: 10.1001/jama.2020.8391. <https://jamanetwork.com/journals/jama/fullarticle/2766523>
13. **Imaging in Neurological Disease of Hospitalized COVID-19 Patients: An Italian Multicenter Retrospective Observational Study.** Mahammedi A, Saba L, Vagal A, et al. *Radiology*. 2020 May 21:201933.doi:10.1148/radiol.2020201933. <https://pubs.rsna.org/doi/pdf/10.1148/radiol.2020201933>
Findings: Our study demonstrated that the neuroimaging features of hospitalized COVID-19 patients were variable but dominated by acute ischemic infarcts and intracranial hemorrhages. We also showed that MR neuroimaging spectrum may include posterior reversible encephalopathy syndrome (PRES), hypoxic-ischemic encephalopathy, exacerbation of demyelinating disease and nonspecific cortical pattern of T2 FLAIR hyperintense signal with associated restriction diffusion that may be caused by systemic toxemia, viremia and/or hypoxic effects. Furthermore, our findings also support the suggested potential COVID-19 associated Guillain-Barré syndrome and variants.
14. **Clinical Features and Outcomes of 105 Hospitalized patients with COVID-19 in Seattle, Washington.** Buckner FS, McCulloch DJ, Atluri V, et al. *Clin Infect Dis*. 2020 May 22:ciaa632. doi: 10.1093/cid/ciaa632. <https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa632/5842263>
Findings: Of 105 hospitalized COVID-19 patients, thirty-five percent were admitted from a senior home or skilled nursing facility. The median age was 69 years and half were women. Three or more comorbidities were present in 55% of patients, with hypertension (59%), obesity (47%), cardiovascular disease (38%) and diabetes (33%) being the most prevalent. Most (63%) had symptoms for 5 days or longer prior to admission. Only 39% had fever in the first 24 hours, whereas 41% had hypoxia at admission. Seventy-three percent of patients had lymphopenia. Of 50 samples available for additional testing, no viral coinfections were identified. Severe disease occurred in 49%. Eighteen percent of patients were placed on mechanical ventilation and the overall mortality rate was 33%. During the early days of the COVID-19 epidemic in Washington State, the disease had its greatest impact on elderly patients with medical comorbidities. We observed high rates of severe disease and mortality in our hospitalized patients.

15. **Features of 20,133 UK patients in hospital with covid-19 using the ISARIC WHO Clinical Characterisation Protocol: prospective observational cohort study.** Docherty AB, Harrison EM, Green CA, et al. *BMJ*. 2020 May 22;369:m1985. doi: 10.1136/bmj.m1985. <https://www.bmj.com/content/bmj/369/bmj.m1985.full.pdf>
Findings: The median age of patients admitted to hospital with covid-19, or with a diagnosis of covid-19 made in hospital, was 73 years. More men were admitted than women (men 60%, n=12 068; women 40%, n=8065). The median duration of symptoms before admission was 4 days. The commonest comorbidities were chronic cardiac disease (31%, 5469/17 702), uncomplicated diabetes (21%, 3650/17 599), non-asthmatic chronic pulmonary disease (18%, 3128/17 634), and chronic kidney disease (16%, 2830/17 506); 23% (4161/18 525) had no reported major comorbidity. Overall, 41% (8199/20 133) of patients were discharged alive, 26% (5165/20 133) died, and 34% (6769/20 133) continued to receive care at the reporting date. 17% (3001/18 183) required admission to high dependency or intensive care units; of these, 28% (826/3001) were discharged alive, 32% (958/3001) died, and 41% (1217/3001) continued to receive care at the reporting date. Of those receiving mechanical ventilation, 17% (276/1658) were discharged alive, 37% (618/1658) died, and 46% (764/1658) remained in hospital. Increasing age, male sex, and comorbidities including chronic cardiac disease, non-asthmatic chronic pulmonary disease, chronic kidney disease, liver disease and obesity were associated with higher mortality in hospital.
16. **Factors associated with hospital admission and critical illness among 5,279 people with coronavirus disease 2019 in New York City: prospective cohort study.** Petrilli CM, Jones SA, Yang J, et al. *BMJ*. 2020 May 22;369:m1966. doi: 10.1136/bmj.m1966. <https://www.bmj.com/content/bmj/369/bmj.m1966.full.pdf>
Findings: Of 11,544 people tested for SARS-Cov-2, 5566 (48.2%) were positive. After exclusions, 5279 were included. 2741 of these 5279 (51.9%) were admitted to hospital, of whom 1904 (69.5%) were discharged alive without hospice care and 665 (24.3%) were discharged to hospice care or died. Of 647 (23.6%) patients requiring mechanical ventilation, 391 (60.4%) died and 170 (26.2%) were extubated or discharged. The strongest risk for hospital admission was associated with age. Other risks were heart failure, male sex, chronic kidney disease, and high BMI. Risk of critical illness decreased significantly over the study period. Age and comorbidities were found to be strong predictors of hospital admission and to a lesser extent of critical illness and mortality in people with covid-19; however, impairment of oxygen on admission and markers of inflammation were most strongly associated with critical illness and mortality. Outcomes seem to be improving over time, potentially suggesting improvements in care.
17. **The Pulmonary Sequelae in Discharged Patients With COVID-19: A Short-Term Observational Study.** Dehan Liu, Wanshu Zhang, Feng Pan, et al. *Respir Res*. 2020 May 24;21(1):125. doi: 10.1186/s12931-020-01385-1. <https://respiratory-research.biomedcentral.com/track/pdf/10.1186/s12931-020-01385-1>
Findings: Lung lesions in COVID-19 pneumonia patients can be absorbed completely during short-term follow-up with no sequelae. Two weeks after discharge might be the optimal time point for early radiological estimation.

Diagnostics & Screening

18. **Press release: Findings from investigation and analysis of re-positive cases.** Korea Centers for Disease Control and Prevention. 2020 May 19 [updated 2020 May 21].
https://www.cdc.go.kr/board/board.es?mid=a30402000000&bid=0030&act=view&list_no=367267&nPage=1
19. **Universal and Serial Laboratory Testing for SARS-CoV-2 at a Long-Term Care Skilled Nursing Facility for Veterans — Los Angeles, California, 2020.** Amy V. Dora, Alexander Winnett, Lauren P. Jatt et al. *MMWR Morb Mortal Wkly Rep.* 22 May 2020. DOI:
<http://dx.doi.org/10.15585/mmwr.mm6921e1>
https://www.cdc.gov/mmwr/volumes/69/wr/mm6921e1.htm?s_cid=mm6921e1_w
Findings: After identification of two cases of COVID-19 in an SNF in Los Angeles, universal, serial RT-PCR testing of residents and staff members aided in rapid identification of additional cases and isolation and cohorting of these residents and interruption of transmission in the facility.

Epidemiology & Public Health

20. **The effect of state-level stay-at-home orders on COVID-19 infection rates.** Renan C. Castillo, et al. *AJIC: American Journal of Infection Control* 2020
doi:<https://doi.org/10.1016/j.ajic.2020.05.017>
<https://www.ajicjournal.org/action/showPdf?pii=S0196-6553%2820%2930314-X>
Findings: State-level stay-at-home orders were monitored to determine their effect on the rate of confirmed COVID-19 diagnoses. Confirmed cases were tracked before and after state-level stay-at-home orders were put in place. The results were remarkably consistent across states and support the usefulness of stay-at-home orders in reducing COVID-19 infection rates.
21. **Coronavirus Disease 2019 (COVID-2019) Infection Among Health Care Workers and Implications for Prevention Measures in a Tertiary Hospital in Wuhan, China.** Lai X et al. *JAMA Netw Open.* 2020;3(5):e209666. doi:10.1001/jamanetworkopen.2020.9666
<https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2766227>
Findings: In this case series, most infections among HCWs occurred during the early stage of disease outbreak. That non–first-line HCWs had a higher infection rate than first-line HCWs differed from observation of previous viral disease epidemics. Rapid identification of staff with potential infection and routine screening among asymptomatic staff could help protect HCWs.
22. **Susceptible supply limits the role of climate in the early SARS-CoV-2 pandemic.** Baker RE, Yang W, Vecchi GA, Metcalf CJE, Grenfell BT. *Science.* 18 MAY 2020
DOI:10.1126/science.abc2535
<https://science.sciencemag.org/content/early/2020/05/15/science.abc2535>
Findings: We use a climate-dependent epidemic model to simulate the SARS-CoV-2 pandemic probing different scenarios based on known coronavirus biology. We find that during the pandemic stage of an emerging pathogen the climate drives only modest changes to pandemic size. A preliminary analysis of non-pharmaceutical control measures indicates that they may

moderate the pandemic-climate interaction via susceptible depletion. Our findings suggest, without effective control measures, strong outbreaks are likely in more humid climates and summer weather will not substantially limit pandemic growth.

22. High COVID-19 Attack Rate among Attendees at Events at a Church — Arkansas, March 2020.

James A, Eagle L, Phillips C, et al. *MMWR Morb Mortal Wkly Rep.* 19 May 2020. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6920e2>

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6920e2.htm>

Findings: Among 92 attendees at a rural Arkansas church during March 6–11, 35 (38%) developed laboratory-confirmed COVID-19, and three persons died. Highest attack rates were in persons aged 19–64 years (59%) and ≥65 years (50%). An additional 26 cases linked to the church occurred in the community, including one death.

23. Evaluation of the COVID19 ID NOW EUA assay. Mitchell SL, George KS. *J Clin Virol.* 2020 May 15;128:104429. doi: 10.1016/j.jcv.2020.104429.

<https://www.sciencedirect.com/science/article/pii/S1386653220301712>

Findings: Overall agreement of ID NOW was 78.7%. Sensitivity was 71.7% and specificity was 100%. Notably, all false-negative results correlated to those samples that were weakly positive. ID NOW performs well for strong and moderately positive samples but has reduced sensitivity for weakly positive samples. This sensitivity, among other concerns, should be taken into consideration when using this test for patients with a low suspicion for COVID-19 disease.

24. Burden and prevalence of prognostic factors for severe COVID-19 in Sweden. Gémes K, Talbäck M, Modig K, et al. *Eur J Epidemiol.* 2020 May 18:1-9. doi: 10.1007/s10654-020-00646-z.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7233678/>

Findings: We calculated the burden and prevalence of prognostic factors for severe COVID-19 based on records from the Swedish national health care and population registers for 3 years before 1st January 2016. 9,624,428 individuals were included in the study population. 22.1% had at least one prognostic factor for severe COVID-19, and 1.6% had at least three factors. The prevalence of underlying medical conditions ranged from 0.8% with chronic obstructive pulmonary disease to 7.4% with cardiovascular disease. We show that one in five individuals in Sweden is at increased risk of severe COVID-19. When compared with the critical care capacity at a local and national level, these results can aid authorities in optimally planning healthcare resources during the current pandemic. Findings can also be applied to underlying assumptions of disease burden in modelling efforts to support COVID-19 planning.

25. Herd Immunity: Understanding COVID-19. Randolph HE, Barreiro LB. *Immunity.* 2020 May 19;52(5):737-741. doi: 10.1016/j.immuni.2020.04.012.

<https://www.sciencedirect.com/science/article/pii/S1074761320301709>

Findings: Here, we explain the basic concepts of herd immunity and discuss its implications in the context of COVID-19.

26. American Indian Reservations and COVID-19: Correlates of Early Infection Rates in the Pandemic. Rodriguez-Lonebear D, Barceló NE, Akee R, Carroll SR. *J Public Health Manag Pract.*

2020 Jul/Aug;26(4):371-377. doi: 10.1097/PHH.0000000000001206.

<https://clinowl.com/american-indian-reservations-and-covid-19-correlates-of-early-infection-rates-in-the-pandemic/>

Findings: The lack of complete indoor plumbing and access to potable water may be an important determinant of the increased incidence of COVID-19 cases. Lack of information in the language spoken by many reservation residents may play a key role in the spread of COVID-19. Household overcrowding does not appear to be associated with COVID-19 infections in our data at the current time. Funding investments in tribal public health and household infrastructure, as delineated in treaties and other agreements, are necessary to protect American Indian communities.

27. Children are unlikely to be the main drivers of the COVID-19 pandemic - a systematic review.

Ludvigsson JF. *Acta Paediatr.* 2020 May 19. doi: 10.1111/apa.15371.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/apa.15371>

Findings: We identified 700 scientific papers and letters and 47 full texts were studied in detail. Children accounted for a small fraction of COVID-19 cases and mostly had social contacts with peers or parents, rather than older people at risk of severe disease. Data on viral loads were scarce, but indicated that children may have lower levels than adults, partly because they often have fewer symptoms, and this should decrease the transmission risk. Household transmission studies showed that children were rarely the index case and case studies suggested that children with COVID-19 seldom caused outbreaks. Children are unlikely to be the main drivers of the pandemic. Re-opening schools is unlikely to impact COVID-19 mortality rates in older people.

28. Outbreak Investigation of COVID-19 Among Residents and Staff of an Independent and Assisted Living Community for Older Adults in Seattle, Washington.

Roxby AC, Greninger AL, Hatfield KM, et al. *JAMA Intern Med.* 2020 May 21. doi: 10.1001/jamainternmed.2020.2233.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/apa.15371>

Findings: Detection of SARS-CoV-2 in asymptomatic residents highlights challenges in protecting older adults living in congregate settings. In this study, symptom screening failed to identify residents with infections and all 4 residents with SARS-CoV-2 remained asymptomatic after 14 days. Although 1 asymptomatic infection was found on retesting, a widespread facility outbreak was avoided. Compared with skilled nursing settings, in assisted/independent living communities, early surveillance to identify asymptomatic persons among residents and staff, in combination with adherence to recommended preventive strategies, may reduce viral spread.

29. Decline in Child Vaccination Coverage During the COVID-19 Pandemic - Michigan Care Improvement Registry, May 2016-May 2020.

Bramer CA, Kimmins LM, Swanson R, Kuo J, Vranesich P, Jacques-Carroll LA, Shen AK. *MMWR Morb Mortal Wkly Rep.* 2020 May 22;69(20):630-631. doi: 10.15585/mmwr.mm6920e1.

https://www.cdc.gov/mmwr/volumes/69/wr/mm6920e1.htm?s_cid=mm6920e1_x

Findings: Vaccination coverage declined in all milestone age cohorts, except for birth-dose hepatitis B coverage, which is typically administered in the hospital setting. Among children aged 5 months, up-to-date status for all recommended vaccines declined from approximately

two thirds of children during 2016–2019 to fewer than half (49.7%) in May 2020. For the 16-month age cohort, coverage with all recommended vaccines declined, with measles-containing vaccination coverage decreasing from 76.1% in May 2019 to 70.9% in May 2020.

30. Disparities in Outcomes Among COVID-19 Patients In A Large Health Care System in California.

Azar KMJ, Shen Z, Romanelli RJ, et al. *Health Aff (Millwood)*. 2020 May 21:101377hlthaff202000598. doi: 10.1377/hlthaff.2020.00598.

<https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2020.00598>

Findings: We analyzed 1,052 confirmed cases of COVID-19 from January 1–April 8, 2020. Among our findings, we observed that, compared with non-Hispanic white patients, African Americans had 2.7 times the odds of hospitalization, after adjusting for age, sex, comorbidities, and income. We explore possible explanations for this, including societal factors that either result in barriers to timely access to care or create circumstances in which patients view delaying care as the most sensible option. Our study provides real-world evidence that there are racial and ethnic disparities in the presentation of COVID-19.

31. Differential Effects of Intervention Timing on COVID-19 Spread in the United States.

Pei S, Kandula S, Shaman J. *medRxiv*. doi: <https://doi.org/10.1101/2020.05.15.20103655> **PREPRINT**

<https://www.medrxiv.org/content/10.1101/2020.05.15.20103655v1.full.pdf>

Findings: Here we use county-level observations of reported infections and deaths, in conjunction with human mobility data and a metapopulation transmission model, to quantify changes of disease transmission rates in US counties from March 15, 2020 to May 3, 2020. We find significant reductions of the basic reproductive numbers in major metropolitan areas in association with social distancing and other control measures. Counterfactual simulations indicate that, had these same control measures been implemented just 1-2 weeks earlier, a substantial number of cases and deaths could have been averted. Specifically, nationwide, 61.6% of reported infections and 55.0% of reported deaths as of May 3, 2020 could have been avoided if the same control measures had been implemented just one week earlier.

32. Incidence, clinical outcomes, and transmission dynamics of severe coronavirus disease 2019 in California and Washington: prospective cohort study.

Lewnard JA, Liu VX, Jackson ML, et al. *BMJ*. 2020 May 22;369:m1923. doi: 10.1136/bmj.m1923.

<https://www.bmj.com/content/369/bmj.m1923>

Findings: Among residents of California and Washington state enrolled in Kaiser Permanente healthcare plans who were admitted to hospital with covid-19, the probabilities of ICU admission, of long hospital stay, and of mortality were identified to be high. Incidence rates of new hospital admissions have stabilized or declined in conjunction with implementation of social distancing interventions.

Healthcare Delivery & Healthcare Workers

33. The COVID-19 Hotel for Healthcare Workers: An Italian Best Practice.

Vimercati L, Tafuri S, Chironna M, et al. *J Hosp Infect*. 2020 May 16. doi: 10.1016/j.jhin.2020.05.018.

[https://www.journalofhospitalinfection.com/article/S0195-6701\(20\)30249-8/pdf](https://www.journalofhospitalinfection.com/article/S0195-6701(20)30249-8/pdf)

34. **12 Lessons Learned from the Management of the Coronavirus Pandemic.** Forman R, Atun R, McKee M, Mossialos E. *Health Policy*. 2020 May 15. doi: 10.1016/j.healthpol.2020.05.008. <https://www.sciencedirect.com/science/article/pii/S016885102030107X>
Findings: In response to the pandemic, many countries have had to introduce drastic legally mandated lockdowns to enforce physical separation, which are ravaging economies worldwide. Although it will be many months or even years before the final verdict can be reached, we believe that it is already possible to identify 12 key lessons that we can learn from to reduce the tremendous economic and social costs of this pandemic and which can inform responses to future crises. These include lessons around the importance of transparency, solidarity, coordination, decisiveness, clarity, accountability and more.
35. **Adapting a Comfort Care Order Set in a Large Health System during the COVID-19 Pandemic.** Dingfield LE, Flores EJ, Radcliff JA, Stamm R, Uritsky TJ. *J Palliat Med*. 2020 May 19. doi: 10.1089/jpm.2020.0277. <https://www.liebertpub.com/doi/pdfplus/10.1089/jpm.2020.0277>
Findings: Many health systems have established tools to guide pain, dyspnea, and anxiety management. Our existing comfort care order set is embedded in the electronic medical record and includes initiation of intravenous (IV) opioids and nurse- driven titration of boluses and infusions. Although some aspects of this order set are applicable to treating patients with COVID-19, modifications are needed for the current situation. We engaged an interdisciplinary committee of stakeholders from across our health system to modify the order set using a number of guiding principles.
36. **Design and Impact of a COVID-19 Multidisciplinary Bundled Procedure Team.** Albutt K, Luckhurst CM, Alba GA, et al. *Ann Surg*. 2020 May 20. doi: 10.1097/SLA.0000000000004089. https://journals.lww.com/annalsofsurgery/Citation/9000/Design_and_Impact_of_a_COVID_19_Multidisciplinary.94510.aspx
Findings: Here, we share the design, creation and preliminary outcomes of a streamlined multidisciplinary procedure team at our institution: the COVID-19 Bundled Response for Access (COBRA) team. The COBRA team has played a vital role in the management of the critical care surge at the Massachusetts General Hospital (MGH), and we believe that sharing our experience in a timely manner will assist other institutions worldwide in managing their COVID-19 critical care surge.
37. **Current Evidence for Minimally Invasive Surgery During the COVID-19 Pandemic and Risk Mitigation Strategies: A Narrative Review.** Chadi SA, Guidolin K, Caycedo-Marulanda A, et al. *Ann Surg*. 2020 May 20. doi: 10.1097/SLA.0000000000004010. <https://journals.lww.com/annalsofsurgery/Documents/Current%20Evidence%20for%20Minimally%20Invasive%20Surgery%20.pdf>
Findings: While it is currently assumed that open surgery minimizes operating room staff exposure to the virus, our findings reveal that this may not be the case. A well-informed, evidence-based opinion is critical when making decisions regarding which operative approach to pursue, for the safety and well-being of the patient, the operating room staff, and the

healthcare system at large. Minimally invasive surgical approaches offer significant advantages with respect to both patient care, and the mitigation of the risk of viral transmission during surgery, provided the appropriate equipment and expertise are present.

- 38. Development and Implementation of a Clinician-facing Prognostic Communication Tool for Patients with COVID-19 and Critical Illness.** Gibbon LM, GrayBuck KE, Buck LI, et al. *J Pain Symptom Manage*. 2020 May 8:S0885-3924(20)30379-1. doi: 10.1016/j.jpainsymman.2020.05.005. [https://www.jpmsjournal.com/article/S0885-3924\(20\)30379-1/fulltext](https://www.jpmsjournal.com/article/S0885-3924(20)30379-1/fulltext)
Findings: We developed a point-of-care tool to summarize outcome data for critically ill patients with COVID-19 and help guide clinicians through a thoughtful prognostication process. This online, open source COVID-19 Prognostication Tool has been made available to all clinicians at our institution and is updated weekly to reflect evolving data. It may provide a useful approach to promoting consistent and high-quality prognostic communication across a healthcare system.
- 39. Perioperative anesthesia care for patients with confirmed or suspected COVID-19.** Mathur P, Cywinski JB, Khanna S, Trombetta C. *Cleve Clin J Med*. 2020 May 20. doi: 10.3949/ccjm.87a.ccc035. <https://www.ccjm.org/content/early/2020/05/13/ccjm.87a.ccc035>
Findings: Specific recommendations by national organizations and institution specific step-by-step guidelines and education materials are required to maintain safety for both patients and caregivers perioperatively, with transport, and medication management.
- 40. Hyperactive Delirium Requires More Aggressive Management in Patients with COVID-19: Temporarily Rethinking "Low and Slow".** Sanders BJ, Bakar M, Mehta S, et al. *J Pain Symptom Manage*. 2020 May 20:S0885-3924(20)30389-4. doi:10.1016/j.jpainsymman.2020.05.013. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7239778/>
Findings: In cases of hyperactive delirium we have frequently observed behaviors that pose a significant risk of disease transmission to health care providers. Preventive and non-pharmacologic interventions remain critical for managing delirium in such patients, though occasionally pharmacologic treatment is required. When use of an antipsychotic medication is indicated, we recommend that providers consider foregoing the lowest common dose and instead start with the next incrementally higher dose to more quickly and reliably ensure the safety of both patients and providers. We do not recommend initiating prophylactic treatment or escalating doses in a manner that conflicts with currently accepted guidelines without carefully considering the risks and benefits.
- 41. The Impact of Having Inadequate Safety Equipment on Mental Health.** A Simms, N T Fear, N Greenberg. *Occup Med (Lond)*. 2020 May 25;kqaa101. doi:10.1093/occmed/kqaa101. <https://academic.oup.com/occmed/advance-article/doi/10.1093/occmed/kqaa101/5843741?searchresult=1>
Findings: An individual's perception of having inadequate equipment is significantly associated with symptoms of CMD, probable PTSD, poorer global health and increased reporting of

emotional problems. This in turn may impact on their ability to safely carry out their duties and may have longer-term mental health consequences.

Laboratory Findings

42. **Reduction and Functional Exhaustion of T Cells in Patients with Coronavirus Disease 2019 (COVID-19).** Diao B, Wang C, Tan Y, et al. *Front Immunol.* 2020 May 1;11:827. doi: 10.3389/fimmu.2020.00827.
<https://www.frontiersin.org/articles/10.3389/fimmu.2020.00827/full>
Findings: T cell counts are reduced significantly in COVID-19 patients, and the surviving T cells appear functionally exhausted. Non-ICU patients with total T cells counts lower than 800/ μ L may still require urgent intervention, even in the immediate absence of more severe symptoms due to a high risk for further deterioration in condition.

Prognosis

43. **Association of inflammatory markers with the severity of COVID-19: a meta-analysis.** Zeng F, Huang Y, Guo Y, et al. *Int J Infect Dis.* 2020 May 18. doi: 10.1016/j.ijid.2020.05.055.
[https://www.ijidonline.com/article/S1201-9712\(20\)30362-3/fulltext](https://www.ijidonline.com/article/S1201-9712(20)30362-3/fulltext)
Findings: A total of 16 studies comprising of 3962 patients with COVID-19 were included in our analysis. Random-effect results demonstrated that patients with COVID-19 in nonsevere group had lower levels for CRP, PCT, IL-6, ESR, SAA and serum ferritin, compared with those in severe group. Moreover, survivors had a lower level for IL-6 than non-survivors. The meta-analysis highlights the association of inflammatory markers with the severity of COVID-19. Measurement of inflammatory markers might assist clinicians to monitor and evaluate the severity and prognosis of COVID-19.
44. **Analysis of thin-section CT in patients with coronavirus disease (COVID-19) after hospital discharge.** Wei J, Lei P, Yang H, et al. *Clin Imaging.* 2020 May 15. doi: 10.1016/j.clinimag.2020.05.001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7227562/>
Findings: Among 59 patients, 89.8% (53/59) patients had a typical transition from early phase to advanced phase and advanced phase to dissipating phase. Out of 59 patients, 39% (23/59) patients developed fibrosis. These patients were older, with longer LOS, higher rate of ICU admission, higher peak C-reactive protein level, and higher maximal CT score. Pulmonary fibrosis may develop early in patients with COVID-19 after hospital discharge. Older patients with severe illness during treatment were more prone to develop fibrosis according to thin-section CT results.
45. **Cardiovascular comorbidities, cardiac injury and prognosis of COVID-19 in New York City.** Kuno T, Takahashi M, Obata R, Maeda T. *Am Heart J.* 2020 May 15. doi: 10.1016/j.ahj.2020.05.005.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7227573/pdf/main.pdf>
Findings: Using Mt. Sinai (New York City) EMR health system data, we retrospectively analyzed a cohort of 8438 COVID-19 patients seen between March 1st and April 22nd 2020. Risk of

intubation and of death rose as a function of increasing age and as a function of greater cardiovascular comorbidity. Combining age and specific comorbidity markers showed patterns suggesting that cardiovascular comorbidities increased relative risks for adverse outcomes most substantially in the younger subjects with progressively diminishing relative effects at older ages.

46. **Comparison of short-term mortality between mechanically ventilated patients with COVID-19 and influenza in a setting of sustainable healthcare system.** Lee J, Lee YH, Chang HH, et al. *J Infect.* 2020 May 8:S0163-4453(20)30278-4. doi: 10.1016/j.jinf.2020.05.005.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7206433/>

Findings: Many experts are concerned about the future seasonal epidemic of COVID-19, like influenza. Thus, we aimed to investigate the clinical characteristics and short-term outcomes in mechanically ventilated patients with COVID-19 and compared them with those with seasonal influenza to better understand the differences between severe COVID-19 and influenza illness.

47. **Prognosis of COVID-19 in Patients with Liver and Kidney Diseases: An Early Systematic Review and Meta-Analysis.** Oyelade T, Alqahtani J, Canciani G. *Trop Med Infect Dis.* 2020 May 15;5(2):E80. doi: 10.3390/tropicalmed5020080.

<https://www.mdpi.com/2414-6366/5/2/80/htm>

Findings: In total, 22 studies including 5595 COVID-19 patients were included in this study with case fatality rate of 16%. The prevalence of liver diseases and chronic kidney disease (CKD) were 3% and 1%, respectively. In patients with COVID-19 and underlying liver diseases, 57.33% (43/75) of cases were severe, with 17.65% mortality, while in CKD patients, 83.93% (47/56) of cases were severe and 53.33% (8/15) mortality was reported. This study found an increased risk of severity and mortality in COVID-19 patients with liver diseases or CKD. This will lead to better clinical management and inform the process of implementing more stringent preventative measures for this group of patients.

48. **Combination of four clinical indicators predicts the severe/critical symptom of patients infected COVID-19.** Sun L, Song F, Shi N, et al. *J Clin Virol.* 2020 May 13;128:104431. doi: 10.1016/j.jcv.2020.104431.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7219384/>

Findings: We analyzed more than 200 clinical and laboratory features and proposed an SVM based model to predict the opportunity of patients progress into severe/critical symptoms. 36 clinical indicators significantly associated with severe/critical symptom were identified. Support Vector Machine (SVM) and optimized combination of age, GSH, CD3 ratio and total protein has a good performance in discriminating the mild and severe/critical cases. The model was robust and effective in predicting the severe/critical COVID cases.

49. **Predictors of mortality in hospitalized COVID-19 patients: A systematic review and meta-analysis.** Tian W, Jiang W, Yao J, et al. *J Med Virol.* 2020 May 22. doi: 10.1002/jmv.26050.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/jmv.26050>

Findings: We performed a systematic review of published articles, from January 1 to April 24, 2020, to evaluate the risk factors associated with mortality in COVID-19. A total of 14 studies documenting the outcomes of 4659 patients were included. The presence of comorbidities such

as hypertension, coronary heart disease and diabetes were associated with significantly higher risk of death amongst COVID-19 patients. Those who died, compared to those who survived, differed on multiple biomarker levels on admission. Individuals with underlying cardiometabolic disease and that present with evidence for acute inflammation and end-organ damage are at higher risk of mortality due to COVID-19 infection and should be managed with greater intensity.

50. **Prognostic factors in patients with diabetes hospitalized for COVID-19: Findings from the CORONADO study and other recent reports.** Scheen AJ, Marre M, Thivolet C. *Diabetes Metab.* 2020 May 21:S1262-3636(20)30085-9. doi: 10.1016/j.diabet.2020.05.008.

<https://www.sciencedirect.com/science/article/pii/S1262363620300859>

Findings: The prevalence of diabetes patients hospitalized in intensive care units for COVID-19 is two- to threefold higher, and the mortality rate at least double, than that of non-diabetes patients. This brief review discusses the main findings of CORONADO, a prospective observational study in France that specifically addressed this issue as well as related observations from other countries, mainly China and the US. Some prognostic factors beyond old age have been identified: for example, an increased body mass index is a major risk factor for requiring respiratory assistance. While previous diabetic microvascular (renal) and macrovascular complications also increase risk of death, the quality of past glucose control had no independent influence on hospitalized diabetes patient outcomes, and whether the quality of glucose control might modulate risk of COVID-19 in non-hospitalized diabetes patients is still unknown. In addition, no negative signs regarding the use of RAAS blockers and DPP-4 inhibitors and outcomes of COVID-19 could be identified. Hyperglycaemia at the time of hospital admission is associated with poor outcomes, but it may simply be considered a marker of severity of the infection. Thus, the impact of glucose control during hospitalization on outcomes related to COVID-19, which was not investigated in the CORONADO study, is certainly deserving of specific investigation.

51. **Prognostic value of C-reactive protein in patients with COVID-19.** Luo X, Zhou W, Yan X, et al. *Clin Infect Dis.* 2020 May 23:ciaa641. doi: 10.1093/cid/ciaa641.

<https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa641/5843450>

Findings: In patients with COVID-19, admission CRP correlated with disease severity and tended to be a good predictor of adverse outcome.

52. **Morbid Obesity as an Independent Risk Factor for COVID-19 Mortality in Hospitalized Patients Younger than 50.** Klang E, Kassim G, Soffer S, Freeman R, Levin MA, Reich DL. *Obesity (Silver Spring).* 2020 May 23. doi: 10.1002/oby.22913.

<https://onlinelibrary.wiley.com/doi/epdf/10.1002/oby.22913>

Findings: Our study demonstrates that hospitalized patients younger than 50 with morbid obesity are more likely to die from COVID-19. This is particularly relevant in the western world where obesity rates are high.

53. **Early Predictors of Clinical Deterioration in a Cohort of 239 Patients Hospitalized for Covid-19 Infection in Lombardy, Italy.** Cecconi M, Piovani D, Brunetta E, et al. *J Clin Med.* 2020 May 20;9(5):E1548. doi: 10.3390/jcm9051548. <https://www.mdpi.com/2077-0383/9/5/1548>
Findings: We analyzed 239 patients (29.3% females) with a mean age of 63.9 years. Clinical deterioration occurred in 70 patients (29.3%), including 41 (17.2%) ICU transfers and 36 (15.1%) deaths. The most common symptoms and signs at admission were cough (77.8%) and elevated respiratory rate (34.1%), while 66.5% of patients had at least one coexisting medical condition. Imaging frequently revealed ground-glass opacity (68.9%) and consolidation (23.8%). Age; increased respiratory rate; abnormal blood gas parameters and imaging findings; coexisting coronary heart disease; leukocytosis; lymphocytopenia; and several laboratory parameters (elevated procalcitonin; interleukin-6; serum ferritin; C-reactive protein; aspartate aminotransferase; lactate dehydrogenase; creatinine; fibrinogen; troponin-I; and D-dimer) were significant predictors of clinical deterioration.

Therapeutics

54. **Hydroxychloroquine or chloroquine with or without a macrolide for treatment of COVID-19: a multinational registry analysis.** Mehra MR, Desai SS, Ruschitzka F, Patel AN. *Lancet* 2020 May 22. doi: [https://doi.org/10.1016/S0140-6736\(20\)31180-6](https://doi.org/10.1016/S0140-6736(20)31180-6)
[https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)31180-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)31180-6/fulltext)
Findings: We were unable to confirm a benefit of hydroxychloroquine or chloroquine, when used alone or with a macrolide, on in-hospital outcomes for COVID-19. Each of these drug regimens was associated with decreased in-hospital survival and an increased frequency of ventricular arrhythmias when used for treatment of COVID-19.
55. **Extracorporeal Membrane Oxygenation for Coronavirus Disease 2019-Induced Acute Respiratory Distress Syndrome: A Multicenter Descriptive Study.** Yang X, Cai S, Luo Y, et al. *Crit Care Med.* 2020 May 18. doi: 10.1097/CCM.0000000000004447.
https://journals.lww.com/ccmjournal/Abstract/9000/Extracorporeal_Membrane_Oxygenation_for.95646.aspx
Findings: Extracorporeal membrane oxygenation might be an effective salvage treatment for patients with severe acute respiratory syndrome coronavirus 2 pneumonia associated with severe acute respiratory distress syndrome. Severe CO₂ retention and acidosis prior to extracorporeal membrane oxygenation indicated a poor prognosis.
56. **Incidence of COVID-19 in a cohort of adult and paediatric patients with rheumatic diseases treated with targeted biologic and synthetic disease-modifying anti-rheumatic drugs.** Michelena X, Borrell H, López-Corbeto M, et al. *Semin Arthritis Rheum.* 2020 May 16. doi: 10.1016/j.semarthrit.2020.05.001.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7229730/>
Findings: Adult and paediatric patients with rheumatic diseases on tDMARDs do not seem to present a higher risk of COVID-19 or a more severe disease outcome when compared to general population.

57. **Corticosteroids, but not TNF Antagonists, are Associated with Adverse COVID-19 Outcomes in Patients with Inflammatory Bowel Diseases: Results from an International Registry.** Brenner EJ, Ungaro RC, Geary RB, et al. *Gastroenterology*. 2020 May 18. doi: 10.1053/j.gastro.2020.05.032. [https://www.gastrojournal.org/article/S0016-5085\(20\)30655-7/pdf](https://www.gastrojournal.org/article/S0016-5085(20)30655-7/pdf)
Findings: Increasing age, comorbidities, and corticosteroids are associated with severe COVID-19 among IBD patients, although a causal relationship cannot be definitively established. Notably, TNF antagonists do not appear to be associated with severe COVID-19.
58. **Clinical Outcomes in COVID-19 Patients Treated with Tocilizumab: An Individual Patient Data Systematic Review.** Antwi-Amoabeng D, Kanji Z, Ford B, et al. *J Med Virol*. 2020 May 21. doi: 10.1002/jmv.26038. <https://onlinelibrary.wiley.com/doi/10.1002/jmv.26038>
Findings: In COVID-19 patients treated with tocilizumab, IL-6 levels are significantly elevated which are supportive of cytokine storm. Following initiation of tocilizumab, there is elevation in the IL-6 levels and CRP levels dramatically decrease suggesting an improvement in this hyper-inflammatory state. Recent data indicate that severe COVID 19 causes cytokine release storm and is associated with worse clinical outcomes and IL-6 plays an important role. It is suggestive that anti-IL6 results in the improvement of this hyperinflammatory state. However, to our knowledge, there is no individual patient data systematic review performed to summarize baseline characteristics and clinical outcomes of COVID 19 patients who received tocilizumab.
59. **COVID-SAFER: Deprescribing Guidance for Hydroxychloroquine Drug Interactions in Older Adults.** Ross SB, Wilson MG, Papillon-Ferland L, et al. *J Am Geriatr Soc*. 2020 May 22. doi: 10.1111/jgs.16623. <https://onlinelibrary.wiley.com/doi/abs/10.1111/jgs.16623?af=R>
Findings: The COVID-19 pandemic highlights the importance of medication optimization and deprescribing PIMs in older adults. By acting now to reduce polypharmacy and use of PIMs, we can better prepare this vulnerable population for inclusion in trials and, if substantiated, pharmacologic treatment or prevention of COVID-19.
60. **Remdesivir for the Treatment of Covid-19 - Preliminary Report.** Beigel JH, Tomashek KM, Dodd LE, et al.; ACTT-1 Study Group Members. *N Engl J Med*. 2020 May 22. doi: 10.1056/NEJMoa2007764. <https://www.nejm.org/doi/full/10.1056/NEJMoa2007764>
Findings: Preliminary results from the 1059 patients (538 assigned to remdesivir and 521 to placebo) with data available after randomization indicated that those who received remdesivir had a median recovery time of 11 days (95% confidence interval [CI], 9 to 12), as compared with 15 days (95% CI, 13 to 19) in those who received placebo (rate ratio for recovery, 1.32; 95% CI, 1.12 to 1.55; P<0.001). Serious adverse events were reported for 114 of the 541 patients in the remdesivir group who underwent randomization (21.1%) and 141 of the 522 patients in the placebo group who underwent randomization (27.0%). Remdesivir was superior to placebo in shortening the time to recovery in adults hospitalized with Covid-19 and evidence of lower respiratory tract infection.
61. **Efficacy and safety of convalescent plasma for severe COVID-19 based on evidence in other severe respiratory viral infections: a systematic review and meta-analysis.** Devasenapathy N,

Ye Z, Loeb M, et al. *CMAJ*. 2020 May 22:cmaj.200642. doi: 10.1503/cmaj.200642.

<https://www.cmaj.ca/content/cmaj/early/2020/05/22/cmaj.200642.full.pdf>

Findings: Studies of non- COVID-19 severe respiratory viral infections provide indirect, very low-quality evidence that raises the possibility that convalescent plasma has minimal or no benefit in the treatment of COVID-19 and low-quality evidence that it does not cause serious adverse events.

Transmission / Infection Control

62. **Simulated Sunlight Rapidly Inactivates SARS-CoV-2 on Surfaces.** Ratnesar-Shumate S, Williams G, Green B, et al. *J Infect Dis*. 2020 May 20. pii: jiaa274. doi: 10.1093/infdis/jiaa274.

<https://academic.oup.com/jid/advance-article/doi/10.1093/infdis/jiaa274/5841129>

Findings: Ninety percent of infectious virus was inactivated every 6.8 minutes in simulated saliva and every 14.3 minutes in culture media when exposed to simulated sunlight representative of the summer solstice at 40°N latitude at sea level on a clear day. Significant inactivation also occurred at a slower rate under lower simulated sunlight levels. The present study provides the first evidence that sunlight may rapidly inactivate SARS-CoV-2 on surfaces, suggesting that persistence, and subsequently exposure risk, may vary significantly between indoor and outdoor environments. Additionally, these data indicate that natural sunlight may be effective as a disinfectant for contaminated non-porous materials.

63. **The Time Sequences of Oral and Fecal Viral Shedding of Coronavirus Disease 2019 (COVID-19) Patients.** Zhao F, Yang Y, Wang Z, Li L, Liu L, Liu Y. *Gastroenterology*. 2020 May 16. doi: 10.1053/j.gastro.2020.05.035.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7229722/pdf/main.pdf>

Findings: In this study, we tested in 401 COVID-19 patients for viral RNAs in both respiratory and rectal specimens, and tracked for more than 7 weeks to present a clear elucidation of the oral and fecal viral shedding profile, such as the duration, viral load, and relationship to patient symptoms.

64. **Ventilation Techniques and Risk for Transmission of Coronavirus Disease, Including COVID-19.** Schünemann HJ, Khabsa J, Solo K, et al. *Ann Intern Med*. 2020 May 22. doi: 10.7326/M20-2306.

<https://www.acpjournals.org/doi/10.7326/M20-2306>

Findings: Indirect and low-certainty evidence suggests that use of NIV, similar to IMV, probably reduces mortality but may increase the risk for transmission of COVID-19 to health care workers.

Women & Children

65. **Testing of Patients and Support Persons for Coronavirus Disease 2019 (COVID-19) Infection Before Scheduled Deliveries.** Bianco, Angela; Buckley, Ayisha B.; Overbey, Jessica, et al. *Obstet Gynecol* May 19, 2020. doi: 10.1097/AOG.0000000000003985

https://journals.lww.com/greenjournal/Abstract/9000/Testing_of_Patients_and_Support_Persons_for.97342.aspx

Findings: This was an observational study in which all women scheduled for a planned delivery within the Mount Sinai Health system as well as their support persons were tested for COVID-19 one day before their scheduled delivery. More than 15% of asymptomatic maternity patients tested positive for SARS-CoV-2 infection despite having screened negative with the use of a telephone screening tool. Additionally, 58% of their asymptomatic, screen-negative support persons also tested positive for SARS-CoV-2 infection.

66. **The Relationship between Status at Presentation and Outcomes among Pregnant Women with COVID-19.** London V, McLaren R Jr, Atallah F, et al. *Am J Perinatol*. 2020 May 19. doi: 10.1055/s-0040-1712164.

<https://www.thieme-connect.de/products/ejournals/html/10.1055/s-0040-1712164>

Findings: Pregnant women who presented with COVID-19-related symptoms and subsequently tested positive for COVID-19 have a higher rate of preterm delivery and need for respiratory support than asymptomatic pregnant women. It is important to be particularly rigorous in caring for COVID-19 infected pregnant women who present with symptoms.

67. **Antenatal corticosteroids for pregnant women with COVID-19 infection and preterm prelabor rupture of membranes: a decision analysis.** Zhou CG, Packer CH, Hersh AR, Caughey AB. *J Matern Fetal Neonatal Med*. 2020 May 19:1-9. doi: 10.1080/14767058.2020.1763951.

<https://www.tandfonline.com/doi/full/10.1080/14767058.2020.1763951>

Findings: Administration of antenatal corticosteroids was an effective management strategy compared to no corticosteroid administration at gestational ages less than 31 weeks. These results provide data for clinicians to utilize when counseling pregnant patients hospitalized with PPRM and have a COVID-19 infection.

68. **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Universal Testing Experience on a Los Angeles Labor and Delivery Unit.** Naqvi M, Burwick RM, Ozimek JA, et al. *Obstet Gynecol*. 2020 May 19. doi: 10.1097/AOG.0000000000003987.

https://journals.lww.com/greenjournal/Citation/9000/Severe_Acute_Respiratory_Syndrome_Coronavirus_2.97344.aspx

Findings: Our experience with testing for SARS-CoV-2 infection in asymptomatic pregnant women differs greatly from reports from our colleagues in New York City. This may be the result of an overall lower disease burden in Los Angeles County compared with New York City. Our findings suggest that the decision to implement universal testing for SARS-CoV-2 infection for all pregnant women admitted to the hospital should take into account information on local rates of infection, assuming these data are available and reliable. Alternatively, a trial period of universal testing may help determine whether such an approach makes sense for an individual labor and delivery unit. Though universal testing did not yield enough positive results on our obstetric unit to warrant continued testing at this time, our approach may change if local rates of infection increase.

69. **Nasal Gene Expression of Angiotensin-Converting Enzyme 2 in Children and Adults.**

Bunyavanich S, Do A, Vicencio A. *JAMA*. Published online May 20, 2020.

doi:10.1001/jama.2020.8707

<https://jamanetwork.com/journals/jama/fullarticle/2766524>

Findings: Children account for less than 2% of identified cases of COVID-19. It is hypothesized that the lower risk among children is due to differential expression of ACE2, the receptor that SARS-CoV-2 uses for host entry. We investigated ACE2 gene expression in the nasal epithelium of children and adults.

70. **Immune thrombocytopenia (ITP) in a SARS-CoV-2–positive pediatric patient.** Tsao HS, Chason HM, Fearon DM. *Pediatrics*. 2020; doi: 10.1542/peds.2020-1419

<https://pediatrics.aappublications.org/content/pediatrics/early/2020/05/19/peds.2020-1419.full.pdf>

Findings: Immune thrombocytopenia (ITP) is characterized by isolated thrombocytopenia. This case report describes the first documented case of a SARS-CoV-2 positive pediatric patient with ITP and raises awareness of ITP as a possible pediatric presentation of Covid-19. SARS-CoV-2 testing should be considered in patients with a new ITP diagnosis to allow for appropriate hospital triaging and isolation, and to limit community spread and healthcare worker infection during epidemics or pandemics.

71. **Clinical Characteristics of COVID-19 Infection in Newborns and Pediatrics: A Systematic Review.** Panahi L, Amiri M, Pouy S. *Arch Acad Emerg Med*. 2020 Apr 18;8(1):e50. eCollection 2020.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7212072/>

Findings: A total of 2228 children, newborns and infants were studied. Clinical manifestation in children may be mild (72%), moderate (22%) or severe (6%), and the most common symptoms include dry cough (91%) and fever (96%). According to the included articles, two children had died, one of which was a 14-year-old boy and his exposure history and underlying disease were unclear, and the other was a male newborn with gestational age of 35 weeks and 5 days, birth weight of 2200. No differences were found between male and female children regarding infection with COVID-19. Most children were infected with COVID-19 due to family cluster or history of close contact; they have relatively milder clinical symptoms compared to infected adults. We should pay special attention to early diagnosis and early treatment in children infected with COVID-19.

72. **Effects of the Global COVID-19 Pandemic on Early Childhood Development: Short- and Long-Term Risks and Mitigating Program and Policy Actions.** Yoshikawa H, Wuermli AJ, Britto PR, et al. *J Pediatr*. 2020 May 18:S0022-3476(20)30606-5. doi: 10.1016/j.jpeds.2020.05.020.

[https://www.jpeds.com/article/S0022-3476\(20\)30606-5/fulltext](https://www.jpeds.com/article/S0022-3476(20)30606-5/fulltext)

Findings: We review the evidence base on short- and long-term risks for children during early childhood development (prenatal to 8 years of age). We also present evidence-based mitigating program and policy actions that may reduce these risks.

Pediatric Endoscopy in the Era of Coronavirus Disease 2019: A North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition Position Paper. Walsh CM, Fishman DS, Lerner DG; NASPGHAN Endoscopy and Procedures Committee#. J Pediatr Gastroenterol Nutr. 2020 Jun;70(6):741-750. doi: 10.1097/MPG.0000000000002750.

FDA / CDC / NIH/ WHO Updates

CDC - [Evaluation and Management Considerations for Neonates at Risk for COVID-19](#) - Testing is recommended for all neonates born to women with confirmed or suspected COVID-19, regardless of whether there are signs of infection in the neonate.

CDC - COVIDView – [Weekly surveillance summary of US COVID-19 activity](#)

CIDRAP [Viewpoint Part 3: Smart Testing for COVID-19 Virus and Antibodies.](#)

FDA - [What Tests Should No Longer Be Distributed for COVID-19?](#)

WHO - [Implements a temporary pause of the hydroxychloroquine arm within the Solidarity trial based on safety research published in The Lancet](#)

WHO – [Smoking and COVID-19](#)

Commentary

COVID-19 and Financial Vulnerability: What Health Care Organizations and Society Owe Each Other.
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