Providence

COVID-19 Resource Desk

Week 1 | 4.21.2020 to 4.28.2020

Prepared by System Library Services

New Research

Basic Science / Virology

1. **A systematic review of antibody mediated immunity to coronaviruses: antibody kinetics, correlates of protection, and association of antibody responses with severity of disease.** Angkana T. Huang, Bernardo Garcia-Carreras, Matt D.T. Hitchings, Bingyi Yang, Leah Katzelnick, et al. (2020 April 17). *Preprint* https://doi.org/10.1101/2020.04.14.20065771 https://www.medrxiv.org/content/10.1101/2020.04.14.20065771v1
   Findings: Presents a broad, comprehensive review of multiple aspects of the literature on antibody immunity to coronaviruses. Reliable data on the levels and kinetics of antibodies to SARS-CoV-2 in subclinical patients remains severely lacking.

Clinical Syndrome

2. **Large-Vessel Stroke as a Presenting Feature of Covid-19 in the Young.** Thomas Oxley, et al. *NEJM*. Published online April 28, 2020. https://www.nejm.org/doi/full/10.1056/NEJMc2009787
   Abstract: A report of five cases of large-vessel stroke in patients younger than 50 years of age who presented to our health system in New York City. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was diagnosed in all five patients.

3. **Presenting Characteristics, Comorbidities, and Outcomes Among 5700 Patients Hospitalized With COVID-19 in the New York City Area.** Safiya Richardson, MD, MPH; Jamie S. Hirsch, MD, MA, MSB; Mangala Narasimhan, DO; et alJames M. Crawford, MD, PhD; Thomas McGinn, MD, MPH; Karina W. Davidson, PhD, MASc; and the Northwell COVID-19 Research Consortium. *JAMA*. Published online April 22, 2020. doi:10.1001/jama.2020.6775 case series https://jamanetwork.com/journals/jama/fullarticle/2765184
   Findings: In this case series that included 5700 patients hospitalized with COVID-19 in the New York City area, the most common comorbidities were hypertension, obesity, and diabetes. Among patients who were discharged or died (n = 2634), 14.2% were treated in the intensive care unit, 12.2% received invasive mechanical ventilation, 3.2% were treated with kidney replacement therapy, and 21% died. Of those patients that required mechanical ventilation, 88.1% died.

4. **Characteristics of Hospitalized Adults With COVID-19 in an Integrated Health Care System in California.** Laura C. Myers, MD, MPH; Stephen M. Parodi, MD; Gabriel J. Escobar, MD; et al. JAMA. Published online April 24, 2020. doi:10.1001/jama.2020.7202 retrospective cohort study https://jamanetwork.com/journals/jama/fullarticle/2765303
   Findings: Unlike previous studies, adults across age groups, not just elderly individuals, required inpatient care, with persons aged 60 to 69 years most commonly hospitalized. These findings

underscore the importance of public health interventions that prevent transmission for the entire public to mitigate hospital surges.

5. **Association of Inpatient Use of Angiotensin Converting Enzyme Inhibitors and Angiotensin II Receptor Blockers with Mortality Among Patients with Hypertension Hospitalized With COVID-19.** Peng Zhang, LiHua Zhu, Jingjing Cai, Fang Lei, Juan-Juan Qin, Jing Xie, et al. Circulation Research. 2020 April 17. https://doi.org/10.1161/CIRCRESAHA.120.317134 retrospective multi-center study
https://www.ahajournals.org/doi/10.1161/HYPERTENSIONAHA.120.15178
Findings: Among hospitalized COVID-19 patients with hypertension, inpatient use of ACEI/ARB was associated with lower risk of all-cause mortality compared with ACEI/ARB non-users. While study interpretation needs to consider the potential for residual confounders, it is unlikely that in-hospital use of ACEI/ARB was associated with an increased mortality risk.

6. **Alterations in Smell or Taste in Mildly Symptomatic Outpatients With SARS-CoV-2 Infection.** Spinato G, Fabbris C, Polesel J, Cazzador D, Borsetto D, Hopkins C, Boscolo-Rizzo P. *JAMA*. 2020 Apr 22. doi: 10.1001/jama.2020.6771. patient interview
https://jamanetwork.com/journals/jama/fullarticle/2765183
Findings: Alterations in smell or taste were frequently reported by mildly symptomatic patients with SARS-CoV-2 infection and often were the first apparent symptom. 64.4% (130 patients) of those surveyed reported an altered sense of smell or taste, though it should be noted that 34.6% (45 patients) of those also reported a blocked nose.

7. **Prevalence and Characteristics of Gastrointestinal Symptoms in Patients with SARS-CoV-2 Infection in the United States: A Multicenter Cohort Study.** Redd WD, Zhou JC, Hathorn KE, et al. 2020 Apr 22. *Gastroenterology*.
https://www.gastrojournal.org/article/S0016-5085(20)30564-3/pdf?referrer=https%3A%2F%2Fwww.ncbi.nlm.nih.gov%2F
Findings: in our cohort of hospitalized U.S. adults, approximately two-thirds of patients with COVID-19 reported at least one gastrointestinal symptom, with anorexia and diarrhea being the most common. While we did not find a correlation between the presence of gastrointestinal symptoms and hospitalization outcomes, we noted that the cardinal COVID-19 symptoms of anosmia and ageusia were independently predictive of nausea and anorexia at presentation. Further studies are needed to investigate the value and clinical utility of gastrointestinal-specific testing for SARS-CoV-2 to help improve diagnosis and reduce transmission.

8. **COVID-19 Coagulopathy in Caucasian patients**. Fogarty H, Townsend L, Ni Cheallaigh C, et al. 2020 Apr 24. *Br J Haematol*.
https://onlinelibrary.wiley.com/doi/epdf/10.1111/bjh.16749
Abstract: In this study, we investigated COVID-19 coagulopathy in Caucasian patients. Our findings confirm that severe COVID-19 infection is associated with a significant coagulopathy that correlates with disease severity. Collectively, these data suggest that the diffuse bilateral pulmonary inflammation observed in COVID-19 is associated with a novel pulmonary-specific vasculopathy which we have termed pulmonary intravascular coagulopathy (PIC) as distinct to DIC. Findings raise the intriguing possibility that pulmonary vasculopathy may contribute to the unexplained differences that are beginning to emerge highlighting racial susceptibility to COVID-19 mortality.

9. **Pulmonary Embolism in COVID-19 Patients: Awareness of an Increased Prevalence.** Poissy J, Goutay J, Caplan M, et al. 2020 Apr 24]. *Circulation*. https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.120.047430
Findings: Among the 107 first consecutive confirmed COVID-19 patients admitted in ICU for pneumonia from Feb 27th to March 31th, we noticed an unexpected high number of PE during their stay in ICU, 22(20.6%) at the time of analysis (April 9th), within a median time from ICU admission of 6 days (range 1 to 18 days).

Diagnostics

10. **Test performance evaluation of SARS-CoV-2 serological assays.** Jeffrey D. Whitman, M.D., M.S., Joseph Hiatt, B.A., Cody T. Mowery, B.S., et al. Posted April 29, 2020 *Preprint* https://www.medrxiv.org/content/10.1101/2020.04.25.20074856v1?rss=1
Findings: This study describes test performance for 12 COVID-19 serology assays on a panel of 130 samples from 80 individuals with PCR-confirmed SARS-CoV-2 infection and 108 pre-COVID-19 specimens. Data demonstrate specificity greater than 95% for the majority of tests evaluated and >99% for 2 LFAs and 1 ELISA. The study reinforces the need for assay validation using standardized sample sets with: 1) known positives from individuals with a range of clinical presentations at multiple time points after onset of symptoms, 2) pre-COVID-19 outbreak samples for specificity, and 3) samples from individuals with other viral and inflammatory illnesses as cross-reactivity controls.

11. **Positive RT-PCR test results after consecutively negative results in patients with COVID-19**. Liang C, Cao J, Liu Z, et al. 2020 Apr 24. *Infect Dis (Lond)*. 2020;1-3. https://www.tandfonline.com/doi/abs/10.1080/23744235.2020.1755447
Findings: 22 hospitalized COVID-19 patients were studied. After 3 days of normal temperature, resolved respiratory symptoms, improved lesions on chest CT and negative RT-PCR result, patients were tested another 4 times at >24 hr intervals. 11 of 22 (50%) of patients had positive RT-PCR test results after 2 or 3 consecutively negative results. It seems reasonable that a proportion of recovered patients may be virus carriers after hospital discharge.

Epidemiology

12. **Modelling the COVID-19 epidemic and implementation of population-wide interventions in Italy.** Giordano G, Blanchini F, Bruno R, Colaneri P, Di Filippo A, Di Matteo A, Colaneri M. Nat Med. 2020 Apr 22. doi: 10.1038/s41591-020-0883-7. Epidemiological model https://www.nature.com/articles/s41591-020-0883-7
Findings: Results demonstrate that restrictive social-distancing measures will need to be combined with widespread testing and contact tracing to end the ongoing COVID-19 pandemic.

Pediatrics

13. **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in Children and Adolescents, A Systematic Review.** Riccardo Castagnoli, MD; Martina Votto, MD; Amelia Licari, MD; et al. 2020 April 22. *JAMA Pediatr*. doi:10.1001/jamapediatrics.2020.1467 https://jamanetwork.com/journals/jamapediatrics/fullarticle/2765169

Findings: Children at any age were mostly reported to have mild respiratory symptoms, namely fever, dry cough, and fatigue, or were asymptomatic. Bronchial thickening and ground-glass opacities were the main radiologic features, and these findings were also reported in asymptomatic patients. Among the included articles, there was only 1 case of severe COVID-19 infection, which occurred in a 13-month-old infant. No deaths were reported in children aged 0 to 9 years. Available data about therapies were limited.

14. **Multicenter initial guidance on use of antivirals for children with COVID-19/SARS-CoV-2** Chiotos K, Hayes M, Kimberlin DW, et al. 2020 Apr 22. *J Pediatric Infect Dis Soc*. https://academic.oup.com/jpids/advance-article/doi/10.1093/jpids/piaa045/5823622
Findings: Given the typically mild course of pediatric COVID-19, supportive care alone is suggested for the overwhelming majority of cases. The panel suggests a decision-making framework for antiviral therapy that weighs risks and benefits based on disease severity as indicated by respiratory support needs, with consideration on a case-by-case basis of potential pediatric risk factors for disease progression. If an antiviral is used, the panel suggests remdesivir as the preferred agent. Hydroxychloroquine could be considered for patients who are not candidates for remdesivir or when remdesivir is not available.

Therapeutics

15. **Regional Planning for Extracorporeal Membrane Oxygenation Allocation During COVID-19.** Prekker ME, Brunsvold ME, et al. *Chest.* 2020 Apr 24. pii: S0012-3692(20)30769-8. https://journal.chestnet.org/article/S0012-3692(20)30769-8/fulltext
Abstract: Drawing from a collaborative framework developed by one United States metropolitan area with multiple adult and pediatric extracorporeal life support centers, this article aims to inform decision-making around ECMO use during a pandemic such as COVID-19. It also addresses the ethical and practical aspects of not continuing to offer ECMO during a disaster.

16. **Inpatient Care of Patients with COVID-19: A Guide for Hospitalists.** Yetmar ZA, Issa M, Munawar S, et al. 2020 Apr 24. *Am J Med*. 2020. https://www.amjmed.com/article/S0002-9343(20)30349-1/pdf

Transmission / Infection Control

17. **Novel Percutaneous Tracheostomy for Critically Ill Patients with COVID-19**. Angel L, Kon ZN, Chang SH, et al. *Ann Thorac Surg*. 2020 Apr 24. https://www.annalsthoracicsurgery.org/article/S0003-4975(20)30603-2/pdf
Abstract: Authors developed a novel percutaneous tracheostomy technique that placed the bronchoscope alongside the endotracheal tube, not inside it. This improved visualization during the procedure and continued standard mechanical ventilation after positioning the inflated endotracheal tube cuff in the distal trachea. This technique offers a significant mitigation for the risk of virus aerosolization during the procedure.

18. **COVID-19 Antibody Seroprevalence in Santa Clara County, California.** Eran Bendavid, Bianca Mulaney, Neeraj Sood, Soleil Shah, Emilia Ling, Rebecca Bromley-Dulfano, et al. (2020 April 17). *Preprint* https://doi.org/10.1101/2020.04.14.20062463 https://www.medrxiv.org/content/10.1101/2020.04.14.20062463v1

Findings: The population prevalence of SARS-CoV-2 antibodies in Santa Clara County implies that the infection is much more widespread than indicated by the number of confirmed cases. Population prevalence estimates can now be used to calibrate epidemic and mortality projections.

19. **It's Not the Heat, It's the Humidity: Effectiveness of a Rice Cooker-Steamer for Decontamination of Cloth and Surgical Face Masks and N95 Respirators.** Li DF, Cadnum JL, Redmond SN, Jones LD, Donskey CJ. 2020 Apr 22. *Am J Infect Control*.
https://www.ajicjournal.org/article/S0196-6553(20)30238-8/pdf
Abstract: results demonstrate that steam treatment using a rice cooker-steamer is effective for decontamination of face masks and N95 respirators. Given the recommendation that cloth face masks be worn in public settings, steam treatment using these readily available kitchen items could provide safe and effective decontamination of cloth masks. Further studies are needed to evaluate steam treatment for N95 respirators and surgical face masks. Investigations of moist heat are also needed as 20 minutes of exposure to moist heat at 65°C has been reported to be effective with minimal adverse effects on respirator performance.

20. **Presymptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility.** Arons MM, et al**.** *NEJM.* 2020 April 24
https://www.nejm.org/doi/10.1056/NEJMoa2008457
Findings: 56% of residents with positive test results were asymptomatic at the time of testing and most likely contributed to transmission. Infection-control strategies focused solely on symptomatic residents were not sufficient to prevent transmission after SARS-CoV-2 introduction into this facility.

21. **First experience of COVID-19 screening of health-care workers in England**. Hunter E, Price DA, Murphy E, et al. Apr 22. *Lancet*.
https://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(20)30970-3.pdf
Findings: Given that non-clinical staff had similar positivity rates to frontline staff, we conclude that current isolation protocols and personal protective equipment appear sufficient to prevent high levels of nosocomial transmission to frontline staff in our setting. Rather, the data appear to reflect wider patterns of community transmission.

22. **The prevalence, characteristics and prevention status of skin injury caused by personal protective equipment among medical staff in fighting COVID-19: A multi-center, cross-sectional study**. Jiang Q, Song S, Zhou J, et al. 2020 Apr 22. *Adv Wound Care.*
https://www.liebertpub.com/doi/10.1089/wound.2020.1212
Findings: A total of 4,308 respondents were collected from 161 hospitals and 4,306 respondents were valid. The overall prevalence of skin injuries was 42.8% (95% CI 41.30%-44.30%) with three types of device-related pressure injuries, moist associated skin damage and skin tear. Co-skin injuries and multiple locations injuries were 27.4% and 76.8%, respectively. The logistic regression analysis indicated that sweating (95%CI for OR 87.52-163.11), daily wearing time (95% CI for OR1.61-3.21), male (95% CI for OR 1.11-2.13) and grade 3 PPE (95% CI for OR1.08-2.01) were associated with skin injuries. Only 17.7% respondents took prevention and 45.0% skin injuries were treated.

Women's Health

23. **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Vertical Transmission in Neonates Born to Mothers With Coronavirus Disease 2019 (COVID-19) Pneumonia**. Hu X, Gao J, Luo X, et al. 2020 Apr 24. *Obstet Gynecol*.
https://journals.lww.com/greenjournal/Citation/9000/Severe_Acute_Respiratory_Syndrome_Coronavirus_2.97384.aspx
Findings: Authors report a neonatal transmission rate of one of seven (14.3%), with none symptomatic. Findings suggest that the vertical transmission of SARS-CoV-2 infection from mothers affected by COVID-19 during the last days of pregnancy is possible but relatively infrequent.

24. **Rapid Deployment of a Drive-Through Prenatal Care Model in Response to the Coronavirus Disease 2019 (COVID-19) Pandemic.** Turrentine M, Ramirez M, Monga M, et al. 2020 Apr 24. *Obstet Gynecol*.
https://journals.lww.com/greenjournal/Abstract/9000/Rapid_Deployment_of_a_Drive_Through_Prenatal_Care.97386.aspx
Abstract: Describes the rapid development of a drive-through prenatal care model that is projected to reduce the number of in-person clinic visits by 33% per patient compared with the traditional prenatal care paradigm, using equipment and supplies that most obstetric clinics in the United States can access.

GUIDELINES & CONSENSUS STATEMENTS

Infectious Diseases Society of America Guidelines on Infection Prevention in Patients with Suspected or Known COVID-19 (2020, April 27)
https://www.idsociety.org/practice-guideline/covid-19-guideline-infection-prevention/

Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19 (2020, April 11)
https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/

NIH Coronavirus Disease 2019 Treatment Guidelines (2020, April 21 updated continuously)
https://covid19treatmentguidelines.nih.gov/

Management of Acute Myocardial Infarction During the COVID-19 Pandemic: A Consensus Statement from the Society for Cardiovascular Angiography and Interventions (SCAI), American College of Cardiology (ACC), and the American College of Emergency Physicians (ACEP). Mahmud E, Dauerman HL, Welt FG, et al.] 2020 Apr 21. *J Am Coll Cardiol*. 2020;S0735-1097(20)35026-9.
https://pubmed.ncbi.nlm.nih.gov/32330544

Surgical Infection Society Guidance for Operative and Peri-Operative Care of Adult Patients Infected by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). Heffernan DS, Evans HL, Huston JM, et al. 2020 Apr 20]. *Surg Infect (Larchmt)*.
https://pubmed.ncbi.nlm.nih.gov/32310715/

SAGES and EAES recommendations for minimally invasive surgery during COVID-19 pandemic. Francis N, Dort J, Cho E, et al. SAGES 2020 Apr 22. *Surg Endosc*.

https://pubmed.ncbi.nlm.nih.gov/32323016/

FDA / CDC / WHO Updates

Coronavirus (COVID-19) Update: FDA Authorizes First Test for Patient At-Home Sample Collection (2020 April 21). FDA re-issued emergency use authorization (EUA) for LabCorp's COVID-19 PCR with reverse transcription (RT–PCR) diagnostic at-home nasal swab sample collection kit.
https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-first-test-patient-home-sample-collection

FDA cautions against use of hydroxychloroquine or chloroquine for COVID-19 outside of the hospital setting or a clinical trial due to risk of heart rhythm problems. (2020 April 24). In patients with COVID-19 receiving hydroxychloroquine and chloroquine, either alone or combined with azithromycin or other QT prolonging medicines, adverse events were reported from the hospital and outpatient settings and included QT interval prolongation, ventricular tachycardia and ventricular fibrillation, and in some cases death.
https://www.fda.gov/drugs/drug-safety-and-availability/fda-cautions-against-use-hydroxychloroquine-or-chloroquine-covid-19-outside-hospital-setting-or

WHO - "Immunity passports" in the context of COVID-19 (2020, April 24)
At this point in the pandemic, there is not enough evidence about the effectiveness of antibody-mediated immunity to guarantee the accuracy of an "immunity passport" or "risk-free certificate." People who assume that they are immune to a second infection because they have received a positive test result may ignore public health advice. The use of such certificates may therefore increase the risks of continued transmission
https://www.who.int/news-room/commentaries/detail/immunity-passports-in-the-context-of-covid-19

WHO - COVID 19 Landscape of Experimental Treatments (2020, April 27)
WHO has published the 'R&D Blueprint: COVID-19 Experimental Treatments', which lists drug and non-drug experimental treatments for COVID-19. A living mapping of all ongoing research on Covid-19 is available and updated every week. The team is also reporting and synthesizing the data from the randomized trials every 3 days.
https://www.who.int/publications-detail/covid-19-landscape-of-experimental-treatments

Commentary

1. **Family-Centered Care During the COVID-19 Era**. Hart JL, Turnbull AE, Oppenheim IM, Courtright KR. 2020 Apr 22. *J Pain Symptom Manage*.
   https://www.jpsmjournal.com/article/S0885-3924(20)30208-6/pdf
   Abstract: a toolbox of strategies for supporting family-centered inpatient care during physical distancing responsive to the current clinical climate. Innovations in the implementation of family involvement during hospitalizations may lead to long-term progress in the delivery of family-centered care.

2. **The Potential Effects of Coronavirus on National Health Expenditures.** Glied S, Levy H. 2020 Apr 27. *JAMA*.
   https://jamanetwork.com/journals/jama/fullarticle/2765381

Abstract: Commentary - The coronavirus disease 2019 (COVID-19) pandemic is likely to result in year-over-year changes in both health care spending and GDP that are without precedent. Because the ratio of these 2 numbers, the share of health care in the GDP, receives so much attention in public policy, it is worth thinking about how large these changes may be, and more importantly, what they mean.

3. **COVID-19 research has overall low methodological quality thus far: case in point for chloroquine/hydroxychloroquine**. Alexander PE, Debono VB, Mammen MJ, et al. 2020 Apr 21. *J Clin Epidemiol*.
https://www.jclinepi.com/article/S0895-4356(20)30371-1/pdf
Abstract: This commentary focuses on the quality of current COVID-19 research. Authors used published clinical studies on chloroquine/hydroxychloroquine as an example to demonstrate some of the methodological concerns around research currently conducted in the field.

4. **Universal Do-Not-Resuscitate Orders, Social Worth, and Life-Years: Opposing Discriminatory Approaches to the Allocation of Resources During the COVID-19 Pandemic and Other Health System Catastrophes.** Bledsoe TA, Jokela JA, Deep NN, Snyder Sulmasy L. 2020 Apr 24. *Ann Intern Med*.
https://annals.org/aim/fullarticle/2765363/universal-do-resuscitate-orders-social-worth-life-years-opposing-discriminatory

---

If you would like to receive a **customized COVID-19 Topic Alert** related to your specialty or area of interest, would like a **literature search** conducted, or have difficulty **accessing** any of the above articles please contact us at **librarian@providence.org**