A. Medicine and Health

September 25, 2020 (JAMA Netw. Open)
Association of Race and Ethnicity with Comorbidities and Survival Among Patients with COVID-19 at an Urban Medical Center in New York
Rafi Kabarriti, N. Patrik Brodin, Maxim I. Maron et al.
https://doi.org/10.1001/jamanetworkopen.2020.19795

This cohort study investigates whether presenting comorbidities in patients with coronavirus disease (COVID-19) in New York City differed by race/ethnicity and whether case fatality rates varied among different ethnic and racial groups controlling for presenting comorbidities and other risk factors.

September 25, 2020 (The Lancet)
Prevalence of SARS-CoV-2 antibodies in a large nationwide sample of patients on dialysis in the USA: a cross-sectional study
Shuchi Anand, Maria Montez-Rath, Jialin Han et al.
https://doi.org/10.1016/S0140-6736(20)32009-2

Many patients receiving dialysis in the USA share the socioeconomic characteristics of underserved communities. In this cross-sectional study, the authors tested plasma of 28,503 randomly selected adult patients receiving dialysis in July 2020, using a spike protein receptor-binding domain total antibody chemiluminescence assay (100% sensitivity, 99.8% specificity). They found that during the first wave of the COVID-19 pandemic, fewer than 10% of the US adult population formed antibodies against SARS-CoV-2, and fewer than 10% of those with antibodies were diagnosed to have the disease. Public health efforts to limit SARS-CoV-2 spread need to especially target racial and ethnic minority and densely populated communities.

September 25, 2020 (The Lancet Microbe)
Viral presence and immunopathology in patients with lethal COVID-19: a prospective autopsy cohort study
Bernadette Schurink, Eva Roos, Teodora Radonik et al.
https://doi.org/10.1016/S2666-5247(20)30144-0

This prospective cohort study performed in the Netherlands aimed to assess the duration of viral presence, identify the extent of an inflammatory response, and investigate the underlying cause of coagulopathy in patients who succumbed to COVID-19. The authors performed autopsies on 21 patients and found that in patients with lethal COVID-19, an extensive systemic inflammatory response was present, with a continued presence of neutrophils and NETs. However, SARS-CoV-2-infected cells were only sporadically present at late stages of COVID-19. This suggests a maladaptive immune response and substantiates the evidence for immunomodulation as a target in the treatment of severe COVID-19.
September 25, 2020 (Science)
Distinct conformational States of SARS-CoV-2 spike protein
Yongfei Cai, Jun Zhang, Tianshu Xiao et al.
https://doi.org/10.1126/science.abd4251

Efforts to protect human cells against severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have focused on the trimeric spike (S) protein. Several structures have shown a stabilized ectodomain of the spike in its prefusion conformation. Cai et al. now provide insight into the structural changes in the S protein that result in the fusion of the viral and host cell membranes. They purified full-length S protein and determined cryo–electron microscopy structures of both the prefusion and postfusion conformations. These structures add to our understanding of S protein function and could inform vaccine design.

September 24, 2020 (JAMA)
Gastrointestinal Complications in Critically Ill Patients With and Without COVID-19
Mohamad El Moheb, Leon, Naar, Mathias A. Christensen et al.
https://doi.org/10.1001/jama.2020.19400

This study compares the incidence of gastrointestinal complications of critically ill patients with COVID-19–induced acute respiratory distress syndrome (ARDS) vs comparably ill patients with non–COVID-19 ARDS using propensity score analysis.

September 23, 2020 (JAMA Netw. Open)
Association of Red Blood Cell Distribution Width With Mortality Risk in Hospitalized Adults With SARS-CoV-2 Infection
Brody H. Foy, Jonathan C. T. Carlson, Erik Reinertsen et al.
https://doi.org/10.1001/jamanetworkopen.2020.22058

This cohort study assesses the potential use of red blood cell distribution width for risk stratification of patients with coronavirus disease in 2019. The authors studied 1641 adult patients with SARS-CoV-2 infection who were hospitalized and found that elevated red blood cell distribution width (RDW) at admission and increasing RDW during hospitalization were associated with statistically significant increases in mortality risk. They postulate that RDW may be helpful for patient risk stratification.

September 15, 2020 (BMJ)
Biomarkers and outcomes of COVID-19 hospitalisations: systematic review and metaanalysis
Preeti Malik, Urvish Patel, Deep Mehta et al.
https://doi.org/10.1136/bmjebm-2020-111536

In this meta-analysis of 32 studies reflective of 10491 confirmed COVID-19 patients across different geographic locations, the authors found that decreased lymphocyte count, a decreased platelet count and elevated C reactive protein, creatine kinase, procalcitonin, D-dimer, lactate dehydrogenase, alanine aminotransferase, aspartate aminotransferase and creatinine were associated with poor outcomes in COVID-19 hospitalised patients. The results show that there is clear evidence of an association between different biomarkers and COVID-19 disease severity. This can be used as an adjunct in clinical practice to guide treatment and admission, helps improve prognosis and decrease mortality rates.
September 9, 2020 (BMJ)
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
https://doi.org/10.1136/bmj.m3339

This prospective observational cohort study was carried out to develop and validate a pragmatic risk score to predict mortality in patients admitted to hospital with COVID-19. The 4C Mortality Score developed by the authors 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 authors recommend that the score be further validated to determine its applicability in other populations.

September 5, 2020 (BMJ)
Ethics of sharing medical knowledge with the community: is the physician responsible for medical outreach during a pandemic?
Rael D. Strous, Tami Karni
http://dx.doi.org/10.1136/medethics-2020-106348

In this article, the authors discuss the role of the physician in sharing medical knowledge to the public during an epidemic. Citing the effects of COVID-19 on the Chareidi community in Israel, the authors advocate that the physician has an ethical obligation to promote population healthcare and share medical knowledge based on ethical concepts of beneficence, nonmaleficence, utilitarian ethics as well as social, procedural and distributive justice.

B. Science and Engineering

September 18, 2020 (The Lancet Digital Health)
Artificial Intelligence in COVID-19 drug repurposing
Yadi Zhou, Fei Wang, Jian Tang et al.
https://doi.org/10.1016/S2589-7500(20)30192-8

Drug repurposing or repositioning is a technique whereby existing drugs are used to treat emerging disease such as COVID-19. This Review provides a strong rationale for using AI-based tools for drug repurposing medications for the disease. The authors introduce guidelines on how to use AI for accelerating drug repurposing or repositioning to expedite therapeutic development.

September 2, 2020 (Nonlinear Dynamics)
Human mobility and COVID-19 initial dynamics
Stefano Maria Iacus, Carlos Santamaria, Francesco Sermi et al.
https://doi.org/10.1007/s11071-020-05854-6
Reliable and consistent method to measure the evolution of contagion at the international level is still missing. Europe took different mobility containment measures to curb the spread of COVID-19. The European Commission asked mobile network operators to share voluntarily anonymised and aggregated mobile data to improve the quality of modelling and forecasting for the pandemic. This study shows that mobility alone can explain up to 92% of the initial spread in France and Italy and that the spreading of the virus and human mobility are connected. The findings will support policymakers in formulating strategies for future outbreaks.

August 10, 2020 (Nonlinear Dynamics)
The COVID-19 pandemic: model-based evaluation of non-pharmaceutical interventions and prognoses
Alex De Visscher
https://doi.org/10.1007/s11071-020-05861-7

De Visscher develops an epidemiological model for COVID-19 for use by public health practitioners, policymakers, and the general public. The model distinguishes four stages in the disease: infected, sick, seriously sick, and better. The model assumes a case mortality rate of 1.5%. Preliminary simulations model indicate that concepts such as “herd immunity” and containment (“flattening the curve”) are highly misleading in the context of this virus. Public policies based on these concepts are inadequate to protect the population. Only reducing the R0 of the virus below 1 is effective. The model is illustrated with the cases of Italy, France, and Iran and can describe the number of deaths as a function of time in all these cases.

August 6, 2020 (Nonlinear Dynamics)
COVID-19: data-driven dynamics, statistical and distributed delay models, and observations
Xiaobo Liu, Xie Zheng, Balakumar Balachandran
https://doi.org/10.1007/s11071-020-05863-5

A generalized logistic function model and extended compartmental models have been developed to study the responses and distributions of infection. The role of data is discussed as to how the compartmental model can be used to capture responses to various measures such as quarantine. Data for different parts of the world are considered and compared.

C. Social Sciences, Humanities and Public Policies

August 28, 2020 (Health Policy and Technology)
COVID-19: the need for an Australian Economic Pandemic Response Plan
Shannen Higginson, Katarina Milovanovic, James Gillespie et al.
https://doi.org/10.1016/j.hlpt.2020.08.017

This qualitative review of Australian reports, official government publications, and COVID-19 data to discern robust future responses. Epidemiological and economic data were used to provide insight into the impact of the pandemic on Australia's healthcare system and economy. Policies implemented by the Australian government to mitigate the spread of COVID-19 affected the healthcare sector and the economy. Lessons learned concerning optimal economic preparedness are provided to guide
the Australian government policymakers in ensuring holistic and robust solutions for future pandemics.

**August 4, 2020 (Research in Globalization)**

Covid-19, China and the future of global development
Seth Schindler, Nicholas Jepson, Wenxing Cui.
https://doi.org/10.1016/j.resglo.2020.100020

This article examines China’s prospects and strategies in securing its global hegemony in a post-COVID world among developing nations. The authors propose that three factors may impact the future of China’s global standings: a reconciliation of global financial governance and China’s development lending; the outcome of the upcoming American presidential election; domestic discontent within China over the Belt and Road Initiative.

**August 2, 2020 (Journal of Air Transport Management)**

Ultra-Long-Haul: An emerging business model accelerated by COVID-19
Linus Benjamin Bauer, Daniel Bloch, Rico Merket et al.
https://www.sciencedirect.com/science/article/pii/S0969699720304853

The COVID-19 outbreak has sent shockwaves throughout the aviation industry, sending many airlines into administration or partial government ownership. This paper argues that the novel phenomenon of Ultra Long Haul (ULH) operations already maintain a competitive advantage that outperforms other business models. Their modelling and scenario analysis results suggest that point-to-point ULH services, with access to a strong domestic feeder system, will require minimal adjustments and will produce positive outcomes.