Articles about COVID-19 for May 18th to May 22nd

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Name of Article + Link	Journal, Date	Category of Study	Question it asks	Results in Brief	Implications + Limitations	Initials
Out-of-Hospital Cardiac Arrest during the Covid-19 Outbreak in Italy	*NEJM* April 29, 2020.	Epidemiological	Is COVID-19 associated with higher rates of out-of-hospital cardiac arrest (OHCA) in Lombardy, Italy?	Primary Results: Compared to the same time period in 2019, this region in Italy saw a 58% increase in total OHCA's, an increase of 133, total. 103 of those 133 were suspected or confirmed COVID cases. Spearman rank coefficient of 0.87: 95% CI, 0.83 to 0.91; P<0.001. Secondary Results: Unwitnessed arrests and arrests at home increases by 11.3% and 7.3%, respectively. Bystander CPR decreased by 15.6% and EMS response increased by 3 minutes. Successful resuscitation attempts decreased by 14.9%.	It is reasonable to say that COVID is causing more deaths at home in the region under study, during a critical period of the pandemic. The study does not make any attempt to suggest if the increase in deaths at home is due to the nature of the disease or the state of the health care system at that time. As for the secondary results, most had large CI ranges, unclear on their utility or generalizability.	MG
SARS-CoV-2 Rates in BCG-Vaccinated and Unvaccinated Young Adults	JAMA May 13, 2020	vaccination	Is there a difference in the infection of SARS-Cov-2 between people with BCG vaccination and without it?	In the study, there were 3064 COVID-19 patients born between 1979 and 1981 (1.02% of birth cohort of that period; 49.2% male; mean age, 40 years) and 2869 COVID-19 patients were among likely unvaccinated people born between 1983 and 1985 (0.96% of total birth cohort; 50.8% male; mean age, 35 years). There was no statistically significant difference in the proportion of positive test results	Limitations: Because of the small number of severe cases, no conclusion about the association between BCG status and severity of disease can be reached. Included populations who were not born in Israel, with unknown vaccination status The rates per 100 000 do not represent the positivity rate in the population, as persons	FM

				in the BCG-vaccinated group (361 [11.7%]) vs the unvaccinated group (299 [10.4%]; difference, 1.3%; 95% CI, −0.3% to 2.9%; P = .09) . or in positivity rates per 100 000 (121 in vaccinated group vs 100 in unvaccinated group; difference, 21 per 100 000; 95% CI, −10 to 50 per 100 000; P = .15).	tested were pre-selected based on reported symptoms Implications: BCG vaccination in childhood doesn't provide a protective effect against COVID-19 in adulthood.	
Targets of T cell responses to SARS-CoV-2 coronavirus in humans with COVID-19 disease and unexposed individuals	Cell May 14, 2020	Basic Science	What is the nature of T-cell responses in convalescent COVID patients and non-exposed individuals?	HLA class I and II predicted peptide megapools were used to identify SARS-CoV-2 specific CD8+ and CD4+ cells in circulation among 20 convalescent COVID patients and non exposed individuals. Spike specific CD4+ responses in 100% of COVID-19 cases ($p<0.0001$), remainder of orfeome (N and M protein) also in 100%. The cells were functional and produced IL-2 in response to non-spike and spike MPs. They also exhibited high polarization in classic TH1 manner. Total CD4+ response per donor consisted of 50% directed at spike, 50% at remainder of orfeome. Higher spike responses correlated to higher antispike IgG and IgA titers ($p<0.0001$, $p<0.0002$). Non-spike specific CD4+ responses were also detected in unexposed. CD8+ responses	Data from human coronaviruses suggest the possibility that adaptive immune responses can fail to occur. If natural infection with SARS-CoV-2 elicits potent CD4+ and CD8+ responses, then COVID-19 is a strong candidate for rapid vaccine development. COVID-19 vaccines endeavoring to elicit CD8+ responses to the spike protein will elicit a narrow CD8+ response compared to natural. Vaccines should also elicit TH1 response. Some degree of CD4+ cross-reactivity from seasonal common cold human coronaviruses exists in 40-60% of unexposed individuals. Study was strong in that it focuses on non-hospitalized patients. Study	TP

				were observed in most and did not emphasize the spike protein (26% reactivity), N protein (12% reactivity).	was weak in that it needed the full epitope mapping.	
Multiorgan and Renal Tropism of SARS-CoV-2	NEJM May 13, 2020	Basic Science	Does SARS-CoV-2 infect tissue outside the respiratory tract?	Autopsy series of 27 patients, where SARS-CoV-2 was detected in numerous organs. Additionally, the authors quantified SARS-CoV-2 viral load from 6 patients in various renal compartments. Median viral count in renal cells < 0.01 RNA copy/cell, whereas the median viral RNA in lung tissue approached 1 copy/cell. Within the kidneys, viral concentrations were highest and found most often in the glomeruli.	This is a low power, mostly descriptive study. But, it does provide evidence for how SARS-CoV-2 might infect different types of cells.	MG
Antibody study shows just 5% of Spaniards have contracted the coronavirus	*El País,* 14 May 2020	Epi/Public Health	What is the prevalence of coronavirus infections in Spain?	A prevalence study was conducted by selecting over 36,000 households representing all age groups, gender, and geographical locations in Spain, which showed only 5% of Spaniards had contracted the virus. The study highlighted geographical differences: some provinces had up to seven times higher prevalence compared to others. Over 90% of infections in Spain have gone undetected by the healthcare system. Official figures showed 228,691 positive cases confirmed by PCR tests, but this study suggests over 2 million people have contracted the virus. One out every 3 people who tested positive for antibodies was asymptomatic and did not realize they had contracted the virus. Director for National Epidemiology Center noted that 43% experienced a sudden loss of sense of smell.	Implications: The Spanish figure of 5% is in line with studies in other European countries and far below the rate that would provide herd immunity which experts place at 60% at least. If the percentage of infected people who eventually die is around 1.1% the cost in human lives of herd immunity would be 200,000 - 300,000. Epidemiologists consulted by this newspaper said that social distancing measures must remain in place until a vaccine becomes available. Limitations: There is still uncertainty as to whether a positive antibody test is equivalent to future immunity from the virus. Also there are many people that were asymptomatic and therefore are not being factored into the mortality rates or overall prevalence figures, so additionally studies/random sampling such as this one are required.	MCG

ICU and ventilator mortality among critically ill adults with COVID-19	Preprint April 26, 2020	Clinical, retrospective cohort study	What is the mortality among critically ill adults with COVID-19 and does mechanical ventilation improve survival?	Preliminary data (March 6 – April 17) among 217 critically ill patients at 3 Emory hospitals (Atlanta, GA) were examined. Mortality on ventilators is 29.7%, with 8.5% still on ventilators at the time of the report. Overall mortality is 25.8% and 40.1% survived to discharge. 76.0% received invasive mechanical ventilation but only 10.1% needed pulmonary vasodilators and 1.8% needed ECMO. The median age is 64, with 22.6% of patients ≥75. 45.2% were female, 70.5% were black. 61.7% were comorbid with hypertension, 45.6% with diabetes, 9.7% with morbid obesity. The median age of death was significantly older than those who survived 70 vs. 61 years ($p<0.001$).	This 25.8% mortality contradicts reports of mortality rates exceeding 50%. This means a majority of critically ill patients can have good clinical outcomes. It also supports the ongoing use of mechanical ventilation for patients with acute respiratory failure. These patients are doing better than those in Wuhan (52-62%; 86-97% ventilated), in the UK (67% ventilated), and in Seattle (50-67%; 71-75% ventilated). Race and female sex did not differ for survival. Patients who died were less likely to be morbidly obese, more likely to have CAD. No difference in survival for those who received hydroxychloroquine or ACTT trial (remdesivir). Increased survival is correlated to delay in Georgia pandemic arrival such that structures, equipment, personnel, and protocols were prepared. All patients were admitted to pre-existing ICUs, with critical care teams experienced in managing	TP

					acute respiratory failure, at standard patient-to-provider ratios.	
Moderna Announces Positive Interim Phase 1 Data for its mRNA Vaccine (mRNA-1273) Against Novel Coronavirus	Moderna May 18, 2020	Moderna Press Release Therapeutic	Is the mRNA-1273 vaccine effective in preventing COVID-19?	All participants in both the 25 µg and 100 µg dose cohorts developed antibody levels at or above levels seen in convalescent sera. It was also found to effectively protect against viral replication in the lungs of mice. So far, the vaccine has proven to be safe and well-tolerated.	This mRNA vaccine has demonstrated to be efficacious in preventing SARS-CoV-2 in mice and producing neutralizing antibodies at levels equal or higher than those seen in patients recovering from SARS-CoV-2. Phase 3 of the study will likely begin in July. There is already plan for upscaling manufacturing of the vaccine.	LW
Seroprevalence of SARS-CoV-2–Specific Antibodies Among Adults in Los Angeles County, California, on April 10-11, 2020	JAMA May 18, 2020	Epidemiological	What is the predicted cumulative incidence of COVID19 in LA based on serology?	865 random individuals were tested. The enrollment had quotas for subgroups based on age, sex, race, and ethnicity. Data was also weighted to reflect 2018 census data for LA. Both weighted and unweighted data were analyzed. "The unweighted and weighted prevalence of SARS-CoV-2 antibodies was 4.34% (CI, 2.76%-6.07%) and 4.65% (CI, 2.52%-7.07%), respectively."	"The estimate implies that approximately 367 000 adults had SARS-CoV-2 antibodies, which is substantially greater than the 8430 cumulative number of confirmed infections in the county on April 10." Because COVID19 is more prevalent than previously predicted, the fatality rate may be lower than the calculated fatality rate based on confirmed cases alone. Limitations: There may be selection bias with potentially more symptomatic individuals wanting to participate. Data is from only one county.	LW

Risk factors for SARS-CoV-2 among patients in the Oxford Royal College of General Practitioners Research and Surveillance Centre primary care network: a cross-sectional study	The Lancet May 15, 2020	Clinical	Are risk factors for positive SARS-CoV-2 test the same as for severe COVID-19 disease?	Active smoking had decreased odds of a positive test, OR 0·49, 95% CI 0·34–0·71). Chronic kidney disease associated with a positive test. Other risk factors similar to those of hospitalized patients.	Overall, confirms the standard associations we think of for COVID-19, no real difference in risks. The one surprise finding of smoking decreasing odds may be due to small sample size.	MG
Variation in False-Negative Rate of Reverse Transcriptase Polymerase Chain Reaction–Based SARS-CoV-2 Tests by Time Since Exposure	Annals of Internal Medicine May 13, 2020	Clinical	What is the false-negative rate by day since infection?	Over the 4 days of infection before symptom onset, the probability of false-negative in an infected person decreases from 100% on day 1 to 67% on day 4. On day of symptom onset, median false-negative rate was 38%, decreased to 20% on day 8 and increased from 21% on day 9 to 66% on day 21. There is considerable uncertainty in these numbers. The posttest probability of infection if the RT-PCR result would be reduced ONLY by 3% (CI from 0% to 47%). A window period of 3-5 days in which false negative is high. After 7 days, false negatives remain high at 21%; the minimum false negative rate occurred on the 8th day, 3 days after symptom onset. High false	If clinical suspicion is high, infection should not be ruled out on basis of RT-PCR alone. The relationship between a false-negative result and infectiousness is unclear. Also, we don't know if the false-negative rate increasing starting 9 days after exposure was true false negatives or clearance of infection. If goal is to clear patient of isolation, treat negative results as correct. If goal is to evaluate whether patient should be treated as SARS-CoV-2 positive or negative for contact tracing, the negative result may not be great.	TP

				negative rates can be explained by variability in viral shedding or sample collection techniques. Sensitivity decreased with days since symptom onset, for both nasopharyngeal and oropharyngeal. A Bayesian hierarchical logistic regression model for rest sensitivity was fitted.		
Psychiatric and neuropsychiatric presentations associated with severe coronavirus infections: a systematic review and meta-analysis with comparison to the COVID-19 pandemic	*The Lancet Psychiatry,* 18 May 2020	Clinical	What are the psychiatric and neuropsychiatric presentations of SARS, MERS, and CoVID-19?	This is a systematic review and meta-analysis on the psychiatric and neuropsychiatric presentations with suspected or laboratory-confirmed coronavirus infection (SARS coronavirus, MERS coronavirus, or SARS coronavirus 2). 65 peer-reviewed studies and 7 pre-prints met the inclusion criteria which included 3559 cases of coronavirus. The mean age of participants in studies ranged from 12.2 years to 68 years old. Systematic review revealed that during acute illness common symptoms from SARS or MERS included confusion, depressed mood, anxiety, impaired memory and insomnia. In post-illness stage, depressed mood, insomnia, anxiety, irritability, memory impairment, fatigue,	Implications: if SARS-CoV-2 follows a similar course as SARS-CoV-1 and MERS then patients should recover without experiencing mental illness. There is the possibility that patients will develop PTSD, depression, anxiety, and/or sleep disturbances following their SARS-CoV-2 infection for which providers should be screening. Patients acutely ill with COVID-19 might also present with delirium in the hospital. Limitations: This did include preprint articles, which the authors say is a limitation due to the lack of peer review. The authors also indicate that they excluded non-English-language articles and included small studies.	MCG

				and traumatic memories and sleep disorders. Meta-analysis indicated that in post-illness stage the point of prevalence of PTSD was 32.2%, depression 14.8%, and 446 of the 580 patients from 6 studies had returned to work at a mean follow-up time of 35.3 months. From COVID-19 patients, data showed delirium (confusion in 26 of 40 intensive care unit patients and agitation in 40 of 68 intensive care patients and altered consciousness in 17 of 82 patients who subsequently died in another study). 15 of 45 patients with COVID-19 had a dysexecutive syndrome.	There was also a total lack of baseline psychiatric assessment, so incidence was difficult/impossible to determine. Also, the high prevalence of depression, anxiety, and fatigue could have been unrelated to coronavirus and more due to selection bias. The post-illness studies had a wide range of follow-up time, therefore making the studies difficult to compare.	
Work-related COVID-19 transmission in six Asian countries/areas: A follow-up study	PLOS ONE May 19, 2020	Public Health Epi	How does transmission differ between different occupations?	Confirmed work-related COVID-19 cases were examined from Hong Kong, Japan, Singapore, Taiwan, Thailand and Vietnam governmental investigation reports. 103/690 (14.9%) were possibly work-related, with healthcare workers (HCWs) with the most cases (22%) followed by drivers and transport (18%), services and sales (18%), cleaning and domestic (9%), and public safety (7%). Work-related transmission played a substantial role in early outbreak (47.7% of	High risk occupations can be examined for policy changes to protect workers during reopening. Many of these occupations are impossible to work remotely. Many high-risk workers also have relatively low socioeconomic status. Testing might be helpful if prioritizing these occupations. Retail and tour guides were the most common occupations in the early	TP

				early cases), compared to (11%) in the late period. Early = day 1-10. Late = day 10-40. Total cases examined was 2002. COVID-19 infection among the HCW showed a median 2-week lag of HCW case after local transmission outbreaks.	period, HCWs, domestic housekeepers and police officers in the late period, and transportation drivers and religious professionals in both early and late transmission periods.	
ChAdOx1 nCoV-19 vaccination prevents SARS-CoV-2 pneumonia in rhesus macaques	bioRxiv May 13, 2020	Vaccine	What's the efficacy of ChAdOx1 nCov-19 in rhesus macaques?	They show that the adenovirus-vectored vaccine ChAdOx1 nCoV-19, encoding the spike protein of SARS- CoV-2, is immunogenic in mice, eliciting a robust humoral and cell-mediated response. After a single vaccination with ChAdOx1 nCoV-19, they found that the average clinical score of control animals was higher compared to vaccinated animals. The spike-specific antibodies appeared 14 days post vaccination. They observed a significantly reduced viral load (gRNA and sgRNA) in bronchoalveolar lavage fluid and respiratory tract tissue of vaccinated animals challenged with SARS-CoV-2 compared with control animals, and no pneumonia was observed in vaccinated rhesus macaques. Importantly, no evidence of immune-enhanced disease following viral challenge in vaccinated animals was observed	Limitations: The reduction of viral shedding from the nose was not observed, probably due to the challenge with a high dose of virus via multiple routes, which likely not reflect a realistic human exposure. Implications: They showed that a single vaccination with ChAdOx1 nCoV-19 is effective in preventing damage to the lungs upon high dose challenge with SARS-CoV-2	FM