

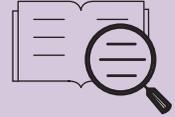
Another week, another Top 5 research papers! We have narrowed down thousands of papers to a handful that we think deserve your attention.

The number and quality of COVID-19 papers is increasing and we quickly realised that we were not going to be able to squeeze them all in. So we have compiled the papers that didn't make the top 5 (but still deserve attention) in an extended blog: the Director's Cut, check it out on RCEMLearning.

The live journal clubs are continuing as well! Join the expert panel of Professors Tuesdays at 11:00. Click here to register.

The following papers have been split into 3 categories that will allow you to focus on those that are most vital to your practice.

- Worth a peek: interesting, but not yet ready for prime time
- Head Turner: new concepts
- Game Changer: this paper could/should change practice



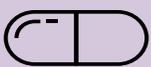
In-hospital Cardiac Arrest Outcomes Among Patients With COVID-19 Pneumonia in Wuhan, China by Shao et al¹

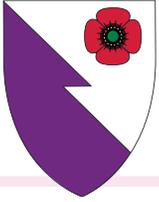
Topic: Treatment

Rating: Head Turner

Scout: Professor Simon Carley

CPR in Covid-19 patients has been controversial. Most people (including me) believe that it is an aerosol generating procedure and therefore health care workers are at risk. What's perhaps more important is asking whether it works? Patients who suffer a cardiac arrest as a result of their Covid-19 infection are likely to be at the end of a long process that is not easily reversible. Unlike myocardial infarction leading to VF for instance, Covid-19 cardiac arrests are likely to be the product of a more gradual, severe and wide ranging decline. It is therefore unsurprising that the outcomes from cardiac arrest amongst in-patients in China was very low. Of 136 cardiac arrests with attempted resuscitation just one patient survived to neurologically intact survival. I suspect that outcomes from out of hospital cardiac arrest might be even lower. However, please do remember that not everything is Covid-19 and we must not 'miss' the patient with a non-Covid-19 treatable cause.





COVID-19 Antibody Seroprevalence in Santa Clara County, California by Bendavid et al² pre-print

Topic: Epidemiology

Rating: Head Turner

Scout: Dr Charlie Reynard



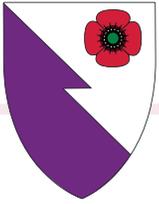
What is the true mortality rate, how long until I can go back outside; these are all questions that revolve around one statistic, the number of people who have been infected. Bendavid et al used Facebook ads to enroll participants from California, USA, for a seroprevalence study.

To detect the antibodies (IgG and IgM), they used a lateral flow immunochromatography test kit (home pregnancy test tech). This was cross-validated with Stanford University's new ELISA test, which was cross-validated with PCR-positive COVID-19 patient samples. The PCR is likely specific but not sensitive, so for negative controls they used pre-pandemic samples. It is convoluted but potentially is the best possible with a shifting gold standard for diagnosis. Unfortunately it does not account for cross-reactivity with other coronavirus antibodies. This validation gave the test kit a sensitivity of 80.3% and specificity of 99.5%.

3,330 participants from Santa Clara in early April were included in the analysis, and 50 had test kits positive for antibodies. This gives an adjusted prevalence of 2.49 - 4.16% depending on the assumptions of test accuracy. Critically Bendavid et al highlight the Achilles heel of this analysis; if their test kit later proves to have a specificity of less than 97.9%, then the confidence interval for prevalence would include 0%. This candor is a tribute to the authors, and a reminder that all COVID-19 research is based on the best available data at that time. When the results are applied to Santa Clara in early April, this implies an infection count of 48,000 to 81,000 compared to 956 confirmed cases. The estimated case fatality rate is 0.12 - 0.2% but this is based on projected deaths.



As anticipated, COVID-19 has spread beyond official testing statistics. The magnitude of the results whilst interesting are hard to generalise to the rest of the world; geography, population density, national testing regimes, and demographics will vary and interact with these results.



Incidence of thrombotic complications in critically ill ICU patients with COVID-19 by Klok et al³

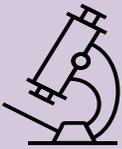
Topic: Pathophysiology

Rating: Head Turner

Scout: Professor Daniel Horner

This paper has been widely cited as justification for talk of increased VTE rates in the COVID-19 population. As a result, clinicians have been looking at d-dimer levels and suggesting that it may be worth higher dose prophylaxis in everyone with COVID, or perhaps treatment dose anticoagulation (without any proof of VTE) in those who are very ill. This paper requires full reading and critical appraisal - the incidence of VTE cited at

31% is a composite endpoint, including sub-segmental PE (which are often not treated), arterial thrombosis and catheter related thrombi. When large PE or DVT are selected as outcome measures only, the incidence is similar to that in general ICU cohorts. These findings suggest caution regarding empirical raised dose anticoagulation.



Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China by Mao et al⁴

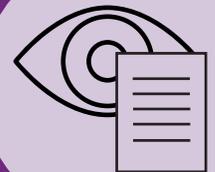
Topic: Epidemiology

Rating: Worth a peek

Scout: Dr Govind Oliver

This retrospective case series from three centres in Wuhan, reports the prevalence of neurological features in 214 consecutive patients testing positive for COVID-19. Neurology was noted in 36.4% of patients, was mostly observed early in the illness and was more prevalent in those with severe disease. Peripheral nervous system changes were noted in 8.9%, with impaired smell (5.1%) and taste (5.6) most frequent. Central nervous system manifestations were more common (24.8%) with dizziness (16.8%) and headache (13.1%) the major features.

Impaired consciousness and cerebrovascular disease were also noted. The testing strategy, and whether COVID was incidental or causative to the presentation, is not clear in this study. The population in this paper also potentially has some differences to patients presenting to UK EDs. The mean age was 52.7 years, 40.7% were male and only 38.8% had at least one or more co-morbidity. These findings provide an early insight into how COVID may affect the nervous system.





Decline of acute coronary syndrome admissions in Austria since the outbreak of COVID-19: the pandemic response causes cardiac collateral damage by Metzler et al⁵

Topic: Epidemiology

Rating: Head Turner

Scout: Dr Charlie Reynard

Non-essential shops have been closed, roads have been emptied of cars and everyone, but COVID-19 patients, stopped coming to ED. This has been flagged by our college president as a serious cause for concern, and Metzler et al have the first European evidence of this worrying trend. They surveyed all the PCI centres in Austria and received responses from 90% of them. The survey was rapid and basic; how many admissions for ACS have you had in

March? From the first week of March until the last they observed a 39.4% reduction in admissions. Their rapid data collection did not allow for any confounders to be analysed. What normally happens in March when there is not a pandemic, is there a drop off? Are these patients still presenting but due to system changes don't make it to the PCI centres? I doubt that an adjusted analysis would account for the whole 39.4% and notwithstanding these caveats, this Austrian study should raise the alarm.



In summary

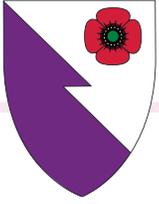
Shao et al showed us CPR in COVID-19 might almost always be a terminal event
Bendavid et al made an early estimate of the prevalence that offers hope
Klok et al didn't necessarily find a meaningful difference in rates of VTE
Mao et al has given us all another headache to worry about
Metzler et al sounded the alarm, ACS patients might not be coming for help



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