The Royal College of Emergency Medicine

RCEM COVID-19 CPD Journal club
Weekly top 5 papers
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Professor Simon Carley and the RCEM COVID-19 CPD team

The only thing coming close to stretching emergency medicine clinicians as much as the cases of COVID-19 is the volume of information about it. This flash update gives clinicians the weekly top 5 research papers, and the findings that can influence your practice on the front line.

The team is screening up to 1000 papers per week, reviewing high impact journals, and taking suggestions from the FOAMEd community. We are also publishing the runners up in a Director's Cut edition every other week on RCEM learning. Check it out here.

Again this week we will host an interactive journal club to guide us through the key papers. We are lucky enough to have professors of EM and Virology! Join us Tuesday 21st April at 1100. Click here to register.

As we reached capacity for users last time, we have also set up a live video stream. We will use Twitter so anyone can put a question to the panel. Watch it here.

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

Compassionate Use of Remdesivir for Patients with Severe Covid-19 by Grein et al [1]
Topic: Treatment
Rating: Head Tuner for all the wrong reasons
Scout: Professor Simon Carley

Don't be fooled by this trial being published in the internationally renowned New England Journal of Medicine and the subsequent misguided hype in the media. This is an uncontrolled trial looking at 51 severe Covid-19 patients who received Remdesivir, a novel antiviral agent. It is uncontrolled, we know little about the patients, the inclusion criteria were unclear (but also widely variable), the treatment was started at different times and we struggle to know exactly what happened to the patients. Although many patients improved with the treatment we have absolutely no idea whether it was because of Remdesivir or because of some other factor(s). This trial has more authors than patients and the manufacturer was deeply involved in the trial and the write up. There is nothing that I like about this trial apart from the fact that it is a welcome reminder that we must seek to practice evidence-based medicine and critical appraisal in a pandemic. Fortunately there are at least three well designed RCTs of Remdesivir recruiting now and we can hope to have a 'real' answer of its effectiveness very soon.
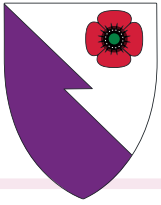
Electrolyte Imbalances in Patients with Severe Coronavirus Disease 2019 (COVID-19) by Lippi et al [2]

Topic: Epidemiology
Rating: Head Turner
Scout: Dr Mina Naguib

Electrolytes are rarely diagnostic, but often correlate with some conditions. Regardless, abnormalities can affect clinical status - particularly in the critically ill. This systematic review and pooled analysis by Lippi et al compared electrolyte status in severe vs mild COVID-19 disease in 1415 pooled patients. Sodium, potassium, and calcium were all lower in patients with severe COVID-19 disease. These were small but statistically significant deficiencies. We cannot determine if this is specifically due to COVID-19 (the authors hypothesise about physiologic mechanisms of hypokalaemia with ACE2 downregulation), represents an underlying predisposition to severe infection, or is a general correlation with critical illness. There is no definitive and prompt front door test for COVID-19; assessing electrolytes at the front door (and not just leaving it to the intensivists), may contribute to the constellation of already recognised patterns of this new disease - particularly in the more seriously unwell.

Coronavirus Disease 2019 in Children — United States, 12th February – 2nd Aprli 2020 by CDC COVID Response team [3]

Topic: Pathophysiology
Rating: Worth a peek
Scout: Dr Anisa Jafar

This is a mortality and morbidity weekly report from the CDC, they examined all US paediatric cases from February 12–April 2, 2020. Of the 146,510 lab confirmed cases 2,572 were under 18 (1.3%). 11.1% (291 children) had details of symptoms recorded, maybe the missing 89.9% did not have symptoms, we just don't know. 29% (745 children) had details of hospitalisation status of these 20% (147 children) were hospitalized. Perhaps we can be bold here and assume those with no data were not hospitalised? So then it becomes 5.7% hospitalised. 13% (345 children) had details of underlying conditions reported (maybe the missing 87% did not have underlying conditions, again, we just don't know). Of these 23% (80 children) had either chronic lung disease, cardiac disease, and immunosuppression. There is more detail summarised in this week's directors cut. There is some useful data but the missing data must remind us all to a) collect better data b) beware of how we interpret research findings based on such incomplete information.

Check out an inforgraphic here for more info.
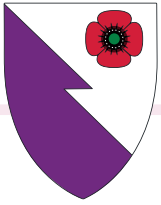
Chest CT Features of COVID-19 in Rome, Italy by Caruso et al [4]
Topic: Diagnosis
Rating: Worth a peek
Scout: Dr Charlie Reynard

We knew CT imaging was good but this Italian prospective observational trial tells us just how good. 158 consecutive patients with suspected COVID-19 were enrolled and a CT thorax was conducted. The gold standard diagnostic test was two sets of swabs 24 hours apart. This is the closest we have got to a gold standard but don't forget that we aren't sure of its accuracy. Caruso et al found that CTs of the thorax had a high sensitivity at 97%, and a specificity of 56% i.e. it can rule out but not rule in. The CT findings from 58 positive patients were: ground glass opacity (100%), subsegmental vessel enlargement (89%), and consolidation (72%). What are those subsegmental vessels up to, and does it have anything to do with the happy hypoxia we are seeing? The pathophysiology may be shifting again...
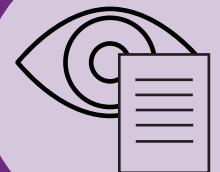
Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore by Tan et al [5]
Topic: Well-being
Rating: Worth a peek
Scout: Dr Charlie Reynard

A pandemic was always going to be stressful, but Tan et al have applied scientific method to an emotional response. This two-centre well-being survey from Singapore enrolled 470 healthcare workers to take a questionnaire based around the depression, anxiety and stress scale (DASS-21) and the Impact of Events Scale-Revised (IES-R). Tan et al found lower mean scores than in previous pandemics, suggesting that past experiences may be protective. They sounded an alarm for non-clinical staff with the prevalence of anxiety being found to be nearly twice as that of clinical staff, 20.7% versus 10.8%.

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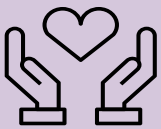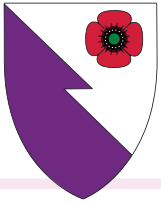
In summary

Grein et al demonstrated a need for good randomised control trials and journal reputation is no guarantee [1]

Lippe et al made a good case for checking serum potassium, sodium and calcium levels [2]

CDC COVID team showed us how far we are from closing the data gap [3]

Caruso et al told us that the benefit of CT scans is in their ability to rule-out COVID-19 [4]

Tan et al reminded us to consider our non-clinical colleagues [5]

Talking of important psychological health and wellbeing research, the Trainee Emergency Medicine Research Network (TERN) is leading the CERA study (The COVID-19 Emergency Response Assessment Study). It is a longitudinal study in the UK and Ireland, examining psychological distress and trauma across 3 time points of the pandemic, acceleration, peak and deceleration. It has more than 6,000 initial respondents and the first results are due out any day now.
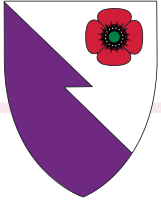
References

1) Grein J, Ohmagari N, Shin D, Diaz G, Asperges E, Castagna A, et al. Compassionate Use of Remdesivir for Patients with Severe Covid-19. N Engl J Med. 2020 Apr 10.

2) Lippi, G., South, A.M. and Henry, B.M., 2020. ANNALS EXPRESS: Electrolyte Imbalances in Patients with Severe Coronavirus Disease 2019 (COVID-19). Annals of Clinical Biochemistry, p.0004563220922255.

3) Coronavirus Disease 2019 in Children — United States, 12th February – 2nd April 2020. MMWR Morb Mortal Wkly Rep. ePub: 6 April 2020. DOI: http://dx.doi.org/10.15585/mmwr.mm6914e4.

4) Caruso, D., Zerunian, M., Polici, M., Pucciarelli, F., Polidori, T., Rucci, C., Guido, G., Bracci, B., de Dominicis, C. and Laghi, A., 2020. Chest CT Features of COVID-19 in Rome, Italy. Radiology, p.201237.

5) Tan, B.Y., Chew, N.W., Lee, G.K., Jing, M., Goh, Y., Yeo, L.L., Zhang, K., Chin, H.K., Ahmad, A., Khan, F.A. and Shanmugam, G.N., 2020. Psychological Impact of the COVID-19 Pandemic on Health Care Workers in Singapore. Annals of Internal Medicine.

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