

This week's flash update comes from the EMERGING research team and HCRI. We have sorted through thousands of papers, narrowing down the selection to the top 5 papers that deserve your attention.



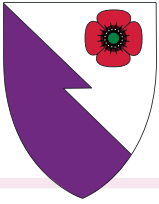
EMERGING (the Emergency Medicine & Intensive Care Research Group) at Manchester University NHS Foundation Trust designs and delivers research in acute care settings. The group has a special interest in diagnostics and clinical decision support. It is led by Professor Rick Body, who leads a programme of research around acute coronary syndromes and is currently co-lead for the CONDOR programme, a national platform for evaluating new diagnostic tests relating to COVID-19.

The Humanitarian and Conflict Response Institute at the University of Manchester is a leading global centre for the study of humanitarianism and conflict response, global health, international disaster management and peacebuilding. The institute brings together the disciplines of medicine and the humanities to facilitate improvements in crisis response on a global scale, while providing a centre of excellence for practitioners in emergencies and conflicts.

The University of Manchester has a thriving integrated academic training scheme, hosting the NIHR Incubator for Emergency Care. It has a long track record of hosting multiple Academic Foundation doctors, Academic Clinical Fellows, doctors and allied health professionals undertaking PhDs, NIHR Clinical Lecturers (including Dr Anisa Jafar) and currently counts multiple Professors in acute healthcare disciplines amongst its staff.

These have been split into 3 categories that will allow you to focus on the papers 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 should change practice



Individualizing risk prediction for positive COVID-19 testing results from 11,672 patients by Jehi et al ¹

Topic: Prognosis

Impact rating: Head Turner

Scout: Mina Naguib



Predictions are hard, especially about the future. The role of risk scores has seen a steady increase in medicine, largely to the benefit of our patients by providing a degree of uniformity to assessment. This is of particular value for presentations which can present in multiple ways - hence the many risk scores for pulmonary embolism. Given the multisystem presentation of COVID, a score which contributes diagnostically and prognostically could yield significant benefits to individual patients, whilst improved risk stratification would allow for better resource planning; essential given limited intensive care beds. Via a prospective registry at the Cleveland Clinic, an individual risk prediction model was developed using data from 11672 patients, before being subsequently validated in 2295 patients. At this point most of the risk factors are not in themselves surprising - though the protective features of paroxetine, carvedilol, and melatonin are intriguing. The utility is potentially using these risk/protective factors to be able to individualise our assessments of individual patients. Crucially, is the explicit recognition not just of ethnicity, but of the likely cause underpinning that risk factor; socioeconomic status. Clearly this is a single centre study, and socioeconomic mapping via postcode would thus require significant efforts in every locale to measure this. Further, an argument against such tools is that most reliable clinicians typically include the majority of features incorporated into such tools. However, the standard of care and individual prognostication make this a promising study.



Should chest compressions be considered an aerosol-generating procedure? A literature review in response to recent guidelines on personal protective equipment for patients with suspected COVID-19 by Brown et al ²

Topic: Treatment

Rating: Head turner

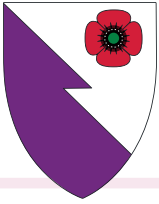
Scout: Mina Naguib



Research around cardio-pulmonary resuscitation (CPR) has long been sparse given that it is—quite literally—the most life or death moment in medicine. The logistics of clinical research often results in an inverse relationship between high acuity patient interactions and large studies. This review thus seeks to bring together the evidence we do have for CPR in COVID, including a couple of simulated studies.

Essentially, they found limited evidence of aerosolisation, however there was evidence of spread of infection during CPR; analogous to the laudable trend to more pragmatic trials in emergency medicine, this is arguably a more useful outcome than what the virus may or may not be doing in the air. The implications regarding staff safety are clear, SARS-CoV-2 can be spread during CPR, although the precise mechanism is not yet clear.





Racial capitalism within public health: how occupational settings drive COVID-19 disparities by McClure et al³

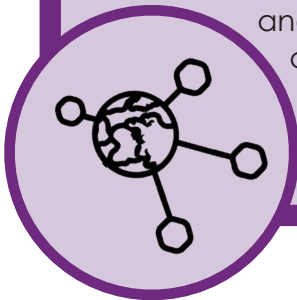
Topic: Epidemiology

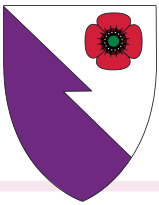
Impact rating: Head turner

Scout: Mina Naguib



For the past several weeks, two headlines have dominated the news; COVID-19, and the Black Lives Matter protests. This paper brings the two together with a brand of creative critical epidemiology which contributes a social discourse that is lacking in most medical circles. Using occupational epidemiology to compare lung disease with hearing loss, the authors demonstrate legally encoded structural inequalities regarding which illnesses allow the sufferer to not work (unsurprisingly it is black workers who are more likely to be obliged to continue), and the consequent rise in exposure to a virus known to cause more severe infection of those black workers. This is clearly intersectional, especially for the much lauded - but underpaid and unprotected - key workers. The eloquence of the introduction in framing how media narratives, focusing on supposed 'underlying conditions' as causative for the murder of a man who had his neck knelt on, before going on to critique some of the COVID literature on implicit racial bias makes the paper an education and worth the read alone. Strong references are made to racial capitalism whilst overviewing multiple occupational exposures as a means of demonstrating the relevance of the Inverse Hazard Law (that hazards accumulate inversely to power). Even a cursory knowledge of the role of the slave trade within the industrial revolution should suffice to explicate the roots of our current economic system. The perpetuation of such racial bias at an epistemic level within epidemiology and the health sciences is made clear, and by extension the responsibility to reverse this trend. We think of Virchow as a physiologist with his eponymous triad; he was first and foremost a strident exponent of social medicine, referring to a typhus outbreak in Prussia as a predominantly political and social problem - we would do well to remember this. If this is uncomfortable reading, it should be.



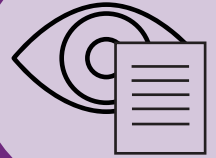


Association of particulate matter pollution and case fatality rate of COVID-19 in 49 Chinese cities by Yao et al ⁴

Topic: Epidemiology

Impact rating: Worth a peek

Scout: Daniel Darbyshire



This is a correlation study looking at the association between COVID-19 death rates and pollution, or more specifically particulate matter (PM). This study used routinely collected data in the form of case fatality rates (CFR) from China's National Health Commission and hourly air quality data from the National Urban Air Quality Publishing Platform. So, you could replicate this you were so inclined. Not that just anyone could – the cross-sectional analysis and multivariate linear regression method is familiar to anyone who has been reading the COVID-19 literature, but spatial auto-correlation statistics is slightly higher brow in its technical nature! They controlled for GDP and hospital beds and analysed their data in 3 tranches; Wuhan City, cities in Hubei (but not Wuhan) and cities outside Hubei. They found a positive correlation between CFR and PM and interestingly this held if you used the PM level during the pandemic and the average between 2015-2019. It is not surprising that a respiratory illness is any way correlated with air pollution, however it is unclear if the study adequately controlled for population density, which is an obvious confounder.

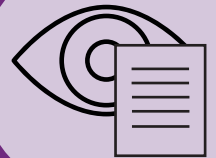


Emergency Department Syndromic Surveillance System: England 8th July 2020 Year: 2020 Week 27 by Public Health England ⁵

Topic: Epidemiology

Impact rating: Worth a peek

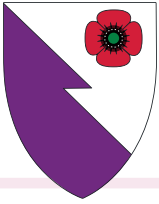
Scout: Daniel Darbyshire



Not a peer-reviewed paper but a summary of ED attendances in England from Public Health England. The Emergency Department Syndromic Surveillance System (EDSSS) began operating in April 2018 and receives automated daily transfer of anonymised ED data from NHS Digital. Not all hospitals in England provide data, but the number is increasing and large enough, including 83 type 1 emergency departments, that it is certainly useful. The weekly report contains a summary of the limitations and caveats for the data.

In the week up to 5th July COVID attendances declined slightly while all other respiratory attendance figures remained stable. Attendances for acute alcohol intoxication increased over Sat/Sun 4/5 July, at levels above those of recent weekends. Attendees for MI also increased. Total ED attendances continue to climb week on week but have yet to return to pre-pandemic levels. This data is provided weekly and is worth keeping an eye on to see if patterns you might notice locally are reflected nationally.





In summary



Jehi et al attempt to predict severity of COVID-19 infection ¹

Brown et al warned the danger in CPR is real, but it might not be in the air ²

McClure et al propose that the underlying conditions are in society rather than the individual ³

Yao et al positively correlate air pollution with mortality in COVID-19 ⁴

Public Health England revealed what was hiding under the lock down; alcohol abuse and MIs ⁵

References



1) Jehi, L., Ji, X., Milinovich, A., Erzurum, S., Rubin, B., Gordon, S., Young, J. and Kattan, M.W., 2020. Individualizing risk prediction for positive COVID-19 testing: results from 11,672 patients. *Chest*.

2) Brown, E. and Chan, L.M., 2020. Should chest compressions be considered an aerosol-generating procedure? A literature review in response to recent guidelines on personal protective equipment for patients with suspected COVID-19. *Clinical Medicine*.

3) McClure, E.S., Vasudevan, P., Bailey, Z., Patel, S. and Robinson, W.R., 2020. Racial Capitalism within Public Health: How Occupational Settings Drive COVID-19 Disparities. *American Journal of Epidemiology*.

4) Yao Y, Pan J, Wang W, et al. Association of particulate matter pollution and case fatality rate of COVID-19 in 49 Chinese cities [published online ahead of print, 2020 Jun 20]. *Sci Total Environ*. 2020;741:140396. doi:10.1016/j.scitotenv.2020.140396

5) Emergency Department Syndromic Surveillance System: England. Public Health England Real-time Syndromic Surveillance Team; Report No.: Year: 2020 Week: 27.