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COVID-19 Daily Briefing: July 8th

DISCLAIMER: Scientists for Labour are a voluntary organisation, and collating this research takes a significant amount of time. We cannot claim that this document is comprehensive, necessarily accurate in all regards, or that it covers all developments. Expert fact checking has been performed by the Boyd Orr Centre for Population and Ecosystem Health at the University of Glasgow.

1. Summary

PROTECTING HEALTHCARE WORKERS

- **DELVE REPORT:** Data Evaluation and Learning for Viral Epidemics (DELVE), a multidisciplinary group convened by the Royal Society, have stated in a scoping report that 1 in 10 cases of COVID-19 in England between 26 April and 7 June occurred in frontline health and social care staff. An "ambitious and comprehensive approach" like that applied to tackling MRSA in hospitals is called for. DELVE state that the report was timed to inform decisions about the opening up of hospitals and other healthcare settings for non-COVID-19 activities, and to inform NHS plans for winter and future waves of COVID-19.
- **ONS INFECTION SURVEY:** This preprint article presents results from the ONS coronavirus infection survey pilot with data from nearly 35,000 individuals in England. During the two month study (26 April - 28 June), the proportion of people testing positive for SARS-CoV-2 reduced from 0.32% to 0.08%. Of all positively tested participants, 61% reported no symptoms. Risk factors for a positive test included having a job with direct patient contact, working outside the home, and having had direct or indirect contact with a hospital.
- **PPE:** In this editorial, authors highlight findings published in June, that none of 420 doctors and nurses reallocated to frontline work at Wuhan hospitals from 24 January contracted COVID-19. These staff received training in proper use of PPE before their assignment and were provided with extensive PPE. Authors reflect that, although it is paramount that PPE recommendations are not influenced by availability, recommending "everything always" may not improve outcomes. Where adequate PPE is available, the risk of transmission from patients to healthcare workers is low. National authorities must make sure that durable supplies of PPE are available.

PERSONAL PROTECTIVE EQUIPMENT

- **AEROSOL DROPLETS:** In this preprint study, authors compared the use of face shields to medical masks in the protection against cough aerosol droplets. For larger droplets (>3 μm by diameter), face shields were comparable with medical masks with enhanced protection for areas of the face not covered with a mask. For finer particles (around 0.3 μm), a face shield blocked about 10x more material than a medical mask.

VACCINES AND TREATMENTS

- **BIOMATERIALS VACCINES:** A preprint study used mesoporous silica rods (MSRs), with a combination of an immune cell attractant and a bacterial component as the adjuvant and a number of SARS-CoV-2 target antigens, to elicit antibody responses against SARS-CoV-2. The results indicate that serum from mice vaccinated with the MSR vaccine presented specific antibody responses to the antigens within 28 days of immunisation and demonstrated neutralising activity against a SARS-CoV-2 pseudovirus in vitro.
- **FAVIPIRAVIR:** Favipiravir was used in a preprint study to treat COVID-19 in Syrian hamsters, with its pharmacokinetics and *in vivo* efficacy investigated. It was found that a high dose (700-1400mg/kg/day) significantly reduced virus replication in the lungs and clinical alleviated the disease. However, these high doses were associated with significant toxicity in hamsters.

- **ANTIVIRALS:** A preprint study from Belgium investigated the efficacy of antiviral drugs, including hydroxychloroquine (HCQ), lopinavir/ritonavir (L/R) and remdesivir, against standard treatment. The authors did not observe any benefit of treating patients with any specific antiviral treatment and the use of L/R was associated with acute kidney injury and the need for renal replacement therapy (in 64% of patients receiving L/R).

3. Quick Summaries

Lessons from Leicester: a COVID-19 testing system that's not fit for purpose

- **TESTING MISMANAGEMENT:** An editorial in the BMJ on the mismanagement of the crisis in Leicester discusses that the spike in cases ongoing throughout June, with data available to PHE's rapid investigation team, but this data was only made available by government ministers to the local authority days before lockdown was re-imposed. Reform is needed regarding the sharing of Pillar 2 data. Contracts are being handed out to increase testing without thought of how it fits into a wider strategy, and data has been reaching PHE slowly *via* the National Pathology Exchange and NHS Digital. It often lacks essential details such as NHS number and postcode.

4. Longer Reading

Assessment of airborne transmission potential of COVID-19 by asymptomatic individuals under different practical settings

- **AEROSOL TRANSMISSION:** *Preprint.* A modelling study on airborne transmission found that ventilation plays a critical role in the risk of COVID-19 transmission *via* aerosols from asymptomatic individuals. Analysis of the transport mechanisms in elevators, small classrooms, and supermarkets found that design can significantly limit the efficiency of aerosol removal, create local hot spots with orders of magnitude higher risks, and enhance aerosol deposition causing surface contamination. This supports the open letter to the WHO by 239 scientists which is analysed in the BMJ.

Modelling interventions to control COVID-19 outbreaks in a refugee camp

- **REFUGEES:** P*reprint.* In the absence of empirical data, a modelling study was conducted to test the potential of non-pharmaceutical interventions to control COVID-19 in refugee camps given their vulnerability due to overcrowding, poor hygiene and inadequate medical care. Outbreak simulations in the Moria refugee camp on Lesbos, Europe's largest displacement camp, found that in the absence of interventions the introduction of a single case almost always leads to epidemics. Sectoring the camp, whereby each sector has its own food line that can be used only by the residents of that sector, reduced the infection peak by 70% and delayed it by several months. Face masks and efficient isolation of infected individuals reduced the level of infection and sometimes averted epidemics altogether, with lockdowns proving ineffective on their own. These interventions must be implemented early to lead to the greatest impacts. The need for urgent measures is highlighted in this letter. Currently 653 people remain detained under immigration powers with many of these being classed as at-risk adults. The Home Office appealed to limit the granting of bail, citing the lack of suitable accommodation after release. However, Spain for example, emptied its detention centres in response to the pandemic. The UK should follow suit before avoidable deaths occur.