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Title: COVID19: Emerging lessons from the pandemic

And so, four months into the global pandemic, there are now more than 3.5 million reported cases and over 250,000 deaths worldwide.[1] The figures are likely to be an underestimate in view of under-reporting and underdiagnosis. Several countries that were hard hit early on such as Italy, France and Spain, appear to have past the peak of the first wave of the pandemic, whilst others including Russia, Brazil and India remain on the ascendancy. Casualty numbers will continue to rise in the coming months and years, as a consequence of infection and disruption of health services, disease screening and immunisation programmes, and management of chronic diseases. There will also be wider socioeconomic impacts on health due to lost income, poverty and hunger.

So, what have we learned so far? Firstly, rapid response is key. As Dr Michael Ryan, Executive Director of the World Health Organization's Health Emergencies Program, said at a briefing on the COVID-19 outbreak in March, "Speed trumps perfection … Be fast and have no regrets". This is a highly infectious virus where its transmissibility appears to be greatest before and around the time of symptom onset.[2] Unfortunately, the speed of its exponential spread has exceeded the response times of most health systems and several countries were caught flat footed. Both the US and UK governments, for example, have been criticized for their suboptimal response to COVID19. They were slow to react to the threat, to implement widescale testing, to source sufficient ventilators and personal protective equipment for healthcare staff, and slow to recognize the vulnerabilities of nursing and residential care homes. Where speed is of the essence, top-down bureaucracy can be a major hindrance. Lower level agencies end up being reactive, awaiting national instruction, rather than proactive in anticipating local needs and responding quickly to local issues. Decentralization of response may help speed up reaction times and enable adapted responses.

Secondly, there is no single magic bullet for this pandemic, be it contact tracing apps, point of care tests, or antivirals. A combination of measures is clearly required. Physical distancing and hygiene measures are paramount. Also essential is the ability of local systems to identify possible cases early, for their contacts to be traced, and for both cases and contacts to be isolated in order to break chains of transmission. Whilst testing is essential to confirm cases, the infrastructure and processes for testing introduce delay that could allow spread to take place before effective measures are implemented. Moreover, there are limitations with all the existing types of tests, including concerns of their sensitivity and specificity.[3,4] Support and monitoring of persons who are in quarantine are essential, in order to monitor for possible deterioration, adherence with quarantine, as well as for psychosocial and welfare support.

Transparency is also key. The value of transparency of information, plans, strategies, is about the "Why?" - Why are we taking a particular course of action? In liberal democracies, this transparency is key to public trust. Public trust in government will undoubtedly influence their compliance and support of national directives to "shelter in place" or "lockdown". Transparency also requires the sharing of information. In the absence of this, where there is a void, there is a risk that people fill the void with ideas that may not be well founded or could even be counterproductive. There is the very real risk of further pandemic

waves or localised outbreaks that may require the re-imposition of lockdown measures. The continued support of the public will be key as personal hygiene and physical distancing measures as well as increased public vigilance for illness will be required for many months to come. The public health benefits of such measures must be made clear.[5]

Experience from around the world highlights the importance of community engagement.[6] We have to be careful not to adopt a veterinary approach, treating the population as helpless victims, but consider them as a potential community asset. This does not sit comfortably in the UK as it is not usual practice to meaningfully engage with communities and we are more comfortable with the familiar top down bureaucracy. The latter may be accepted in peacetime, but as time passes it is likely there will be greater clamour for decentralization of disease control efforts and greater empowerment of local communities and authorities. Moreover, national decreed responses tend to be "one-size-fits-all" that do not always meet local needs or fit local contexts. Local agencies know their local situation, communities and partners, and are likely to be best placed to deliver a tailored response.

COVID19 also demonstrates how once again the distribution of infectious diseases follow a social gradient. Like Tuberculosis, HIV and measles, COVID19 affects many marginalised and socioeconomically disadvantaged population subgroups more than others. These trends happen both within and between countries. In the UK, a social gradient is evident with greater infection prevalence and severity in deprived areas.[7] COVID19 has also disproportionately affected people from Black and ethnic minority groups. This will to a large extent reflect endemic issues of marginalisation, poverty, socioeconomic disadvantage, poor housing and insecure jobs. Elsewhere, migrants workers in Thailand, Singapore, and the Gulf states who work and live in poor conditions are at high risk of outbreaks, and many will lack access to health services.[8] Similarly, rural populations in low- and middle-income countries are likely to be at high risk due to the inadequacies in disease surveillance and rural healthcare.

Public health threats are deadly. As a specialty, public health is seen by some as a backwater for failed doctors. Public health is not sexy. Cardiology is sexy. Neurosurgery is sexy. No surprises then that public health struggles for influence over the specialties or resourcing. But, if anything COVID19 has shown us, is that populations die from public health threats. If intensive care units, hospitals and clinics are full it is because public health measures have failed. Medicine treats the effects of diseases, but public health addresses the root causes. It is harder to put out a fire once it has started.

Public health investment is value for money. In the UK, public health has been grossly underfunded and under-resourced for years, and more cuts in public health funding are in the pipeline. Deprioritized. This has consequences. Whilst the UK has a decent health protection system, it could have been stronger had the government invested in it more. Communicable disease control teams kept COVID19 at bay for a month, delaying the epidemic. The economic costs of a month of lockdown far exceed the miniscule investments in public health. Because of COVID19, public health suddenly is in the spotlight. When this is all over, there is a risk it will be quickly forgotten again. There is also the frightening possibility that science and public health will be made a scapegoat for political failings

during the COVID19 crisis. This is despite the best efforts of public health professionals and scientists having done as much as they can with the available resources.

Finally, COVID19 is a global health security issue. It has direct impacts on the world's economies and dire consequences socioeconomically. David Beasley, Executive Director for the UN World Food Programme has warned of a hunger pandemic in Low- and Middle-Income Countries with over 265 million people at risk.[9] This pandemic disaster is also likely to have a long tail of consequences including as yet, and the mental health effects could be profound.[10] As we warned previously, this threat cannot be dealt with by nations in isolation as the virus respects no borders. Global concerted action is required if we are to effectively eliminate this existential threat.[11]

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