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Pandemic lessons learned and future public health strategies

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ABSTRACT

This article explores the significant challenges of the COVID-19 pandemic in Australia since 2020 and reflects on important lessons for preparedness and response to future emergent infectious diseases or pandemics. It highlights the importance of One Health as a framework for pandemic preparedness; near-real time surveillance data to inform responses; and the critical place of equity considerations in planning, preparedness, response and recovery. The role of crisis communication and engagement is explored, noting the significant place of local engagement, informed by local epidemiological data and local communication needs and priorities of diverse communities.

Keywords: communication, COVID-19, equity, One Health, pandemic.

In this, the fifth year of the COVID-19 pandemic, it is worth reflecting on some of the important lessons informed by global and local experiences. There has been some debate over whether we are still in a 'pandemic phase' and – if so – whether COVID-19 remains 'exceptional'. The more pertinent analysis here is on the ongoing impact, rather than the semantics of what an ongoing pandemic might mean.

The Australian Bureau of Statistics reports that in 2023 to 30 September, there were 137,048 deaths in Australia.[1] This is 5.7% less than for the same period in 2022. Although this is positive in terms of the ongoing impact of COVID-19 on Australian mortality, it is still 9.9% above the baseline average. This therefore represents an excess mortality of 12,377 over baseline. Although this may be due in part to deferred care, reduced illness screening and other direct and indirect health impacts of the pandemic, there is a high likelihood that COVID-19 is responsible for the majority of excess mortality in Australia.[2] Nonetheless, the excess mortality has shown a substantial correlation with COVID-19 hospitalisations and reported deaths; now tending towards peaks 4–6 months apart[3] with variation according to circulating strains.

In addition to this substantial increased burden of mortality, there is growing concern at the potential health, social and economic costs of Long COVID. The myriad post-acute sequelae[4] represent a significant societal cost in medical terms, but the more substantial burden may well be in the chronic symptoms and disability borne by survivors and those who love and care for them. The potential impact on cognitive function[5] alone should be a cause of concern as the population-level impacts in the working-age population will be multi-dimensional, causing suffering and affecting productivity.

The COVID-19 pandemic certainly challenged the global assumptions of pandemic preparedness, with an understandable but unfortunate bias towards novel influenza as a potential cause of a pandemic. Countries that had direct experience with another coronavirus (e.g. SARS in 2003) did comparatively better on performance measures[6] than those that did not, despite the higher baseline risk in these countries. It is notable that many of the better-performing countries enacted early, robust public health measures, but that not all of these countries pursued 'aggressive suppression' in the way that Australia, New Zealand, China, Taiwan and others did.

The enormous economic cost, mental health and social burden of aggressive suppression policies must be interrogated and understood in order to inform future approaches. Although agent-based modelling has been extremely useful in informing responses in Australia and the potential policy settings in differing scenarios,[7] it must be understood that in an 'effective elimination' approach, the optimal approach is highly contingent on the timing, feasibility and social acceptability of such measures. To quote Dr Mike Ryan, executive director of the World Health Organization's Health Emergencies Programme, when it comes to infectious disease emergencies, 'speed trumps perfection' and 'the greatest error is not to move'.[8]

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In settings where border closures and mass quarantine settings are in place, early, robust public health measures tip the scales significantly towards an elimination (COVID Zero) approach. Such early action leads not just to minimal morbidity and mortality, but to significantly averted costs and an overall less restrictive response when the full period of pre-vaccination response is considered. New Zealand, as a prime example, had overall lower average stringency of public health measures in the pre-vaccine phase, despite strict lockdowns as part of the initial pandemic response.[9] It remains a country with one of the lowest excess mortality rates globally, even 4 years into the pandemic.[10] However, where this is not feasible or where social licence is not supportive, then the most effective, sustainable mitigation strategies must be employed. The challenge is in the sustainability of such measures, especially when more costly or where they impose significant constraints on normal activity.

In this phase of the pandemic, as successive viral variants become more transmissible, public health and social measures are significantly harder to maintain and arguably less effective in reducing the burden of illness. This requires a strong focus on the key interventions that reduce severity of illness and level of transmission. Vaccines for COVID-19 were explored, developed, tested and mass produced in an astonishingly short period[11] given the 'usual' timelines for vaccine development and deployment. That is a testament to the incredible global effort that was focused on this profound challenge, but also to the decades of research in vaccine technology, including mRNA technology, that formed the foundation for such exploration and achievement.

Although vaccination (and, to a degree, antiviral treatments) have been the most significant intervention to reduce the potential burden of mortality in the pandemic,[12] it has manifested an all-too-familiar challenge of public health interventions; that of inequity.

This author believes that future public health strategies must therefore consider four core pillars of pandemic planning, preparedness, mitigation and response: a 'One Health' approach; a health equity lens; a sustainable, systems approach to reduction in transmission risk; and an effective community engagement approach to crisis communication.

The World Health Organization defines One Health as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems'.[13]

The importance of such an approach is recognised in the establishment of the Australian Centre for Disease Control (ACDC) where there is an explicit reference to building capacity in health security and One Health.[14] This framework is critical for planning and preparing for emerging infectious diseases for a number of reasons, including that three-quarters of new or emergent infectious diseases in humans are zoonotic.[15]

The capacity for early identification and response to diseases with epidemic or pandemic potential – whether in animal or human populations – is therefore a core requirement for Australia's national surveillance system. Of course, such diseases will not always arise in Australia; in fact, most will arise elsewhere in the world, especially at the human–animal interface where global health security must focus. Nonetheless, a robust, near-real-time surveillance system in Australia is a necessary pillar of pandemic preparedness. It remains the case that 4 years into the COVID-19 pandemic there is no national case definition for hospitalised cases, making real-time comparisons of prevalence and severity across jurisdictions effectively impossible. The ACDC must have nationally standardised minimum data collection requirements and case definitions as one of its first, early 'wins', allowing for a true national picture to help inform responses that are evidence-based, proportionate and timely.

An equity lens is crucial for several reasons. The Grattan Institute has already highlighted the significant health gaps that played out through the pandemic.[16] The most at-risk populations for COVID-19 infection, hospitalisation and dying were also those in the lower socio-economic strata and populations born overseas. In particular, older population cohorts, especially residents in Aged Care settings, were significantly represented in the burden of morbidity and mortality. Such populations therefore require a concerted focus and additional support through the pandemic, but this is always profoundly challenging through the early, emergency phase of a pandemic and therefore the substantial work of engagement and policy levers with a focus on minimising inequity must occur in the pre- or inter-pandemic phases.

The other critical issue of equity is in access to, and uptake of, vaccines. Similar population-level disparities emerged through the pandemic[16] but there were many examples of achieving high vaccination coverage and geographic and broader equity in coverage in Australia, despite the economic and cultural differences in target cohorts. A study of vaccination coverage in south-east Melbourne demonstrated the ability to significantly close the equity gap in vaccination coverage with multi-layered interventions.[17]

The challenge with behavioural interventions is the sustained effort that is required and fragile social licence with certain interventions. It is thus critical to explore system-level interventions that do not require significant behavioural impetus. Clean indoor air, through natural and augmented ventilation, is rightly being explored to this end, including by the US Office of Science and Technology Policy.[18] The ability of indoor air ventilation and germicidal UV to reduce transmission risk of COVID-19 and many other respiratory pathogens is increasingly being demonstrated.[19] There is an urgent need now to explore further the cost-effectiveness and cost–benefits of such interventions.

Finally, there is a clear need for communication and engagement approaches that support social cohesion, trust in public health measures and sustained behaviours that protect health. The COVID-19 pandemic was a demonstration of the need to utilise better crisis communication principles,[20] including open, honest communication; acknowledging uncertainty; speaking with compassion and being responsive to changing circumstances and community engagement needs. Future crises – of whatever kind – will require the same principles to be applied if we are going to be truly accountable to the community. In an era of rising mis- and disinformation, and artificial intelligence enabling of 'deep fakes' and the occasional production of 'hallucinations', there is an urgent need to improve science literacy and provide individuals with the tools, such as 'pre-bunking' and strengthening critical

thinking, to counter false information.[21] The next pandemic demands it.

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Biography

Professor Brett Sutton is Director of Health & Biosecurity at CSIRO, Australia's national science agency. He is a qualified public health physician, with extensive experience and clinical expertise in public health and communicable diseases, gained through experience in Government, emergency medicine and field-based international work. Prior to CSIRO, he held the role of Victoria's Chief Health Officer together with the role of Victoria's Chief Human Biosecurity Officer.