Introduction

Thank you for the opportunity to make a submission and share my views and experiences about the Government's COVID-19 response.

My key message is the overriding importance of efforts to prevent future pandemics. Perhaps more than any other kind of catastrophic risk, it's within our power to prevent novel pathogens from emerging and to quickly identify, contain and eliminate them if they do. Given the enormity of human and economic costs of pandemics – and that pandemics much worse than COVID-19 are possible – prevention should be our primary goal.

I think preventing pathogens from emerging and controlling them if they do should be top priorities for the new Australian Centre for Disease Control. Bernstein et al make the economic case for this in their paper "The costs and benefits of primary prevention of zoonotic pandemics". They show that, even on pessimistic assumptions and without considering the potential impact of promising emerging technologies, significant investment in pandemic prevention is overwhelmingly justified.

My comments go primarily to 'preventive health measures' in terms of reference 3.

Sources:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8816336/

Engineered pandemics are a significant risk and could be accelerated by advances in AI

The Inquiry's terms of reference include preventative health measures. The best preventative health measure is likely to be preventing pandemics from occurring. To do this most effectively, we need to have a good understanding of how pandemics might begin.

Historically, zoonoses have been the leading cause of pandemics. This is a significant risk that government policy should address. Looking forward, Gopal et al in "Securing Civilisation Against Catastrophic Pandemics" use a range of tools to estimate the likelihood of different future pandemic scenarios. Their estimates show that dangerous pathogens leaking from labs have likely surpassed zoonoses as the key risk. Even more worryingly, they argue that maliciously engineered pandemics could become the overriding risk unless action is taken.

The reason engineered pandemics have become a critical public health concern is rapid progress in biotechnology and the rise of "dual-use" AI products.

“Dual-use risks” refers to the risks generated by Ais intended to perform useful tasks if used by malicious actors. Specifically, biotechnology applications using artificial intelligence have capabilities that could amplify the ability of terrorists to harm Australians.

The US is taking dual-use risks seriously. On 25 July 2023, the US Senate Judiciary Subcommittee on Privacy, Technology and the Law took evidence about the potential risks of AI from Dario Amodei (CEO of Anthropic), Yoshua Bengio (Turing Award winner and the second-most cited AI researcher in the world), and Stuart Russell (Professor of Computer Science at Berkeley).

Committee Chair, Senator Blumenthal began the hearing by highlighting these “dual-use” risks:

'The future is not science fiction or fantasy — it’s not even the future, it’s here and now. And a number of you [Amodei, Bengio and Russell] have put the timeline at 2 years before we see some of the most severe biological dangers. It may be shorter because the pace of development is not only stunningly fast, it is also accelerating at a stunning pace.'

The hearings painted a concerning picture where frontier models will soon have the ability to combine with advances in biotechnology to supercharge the ability of malicious actors to do harm. Dario Amdodei, CEO of Anthropic, agreed with these concerns and called on Government to take action:

'Anthropic is concerned that AI could empower a much larger set of actors to misuse biology... Today, certain steps in bioweapons production involve knowledge that can’t be found on Google or in textbooks... We found that today’s AI tools can fill in some of these steps... a straightforward extrapolation of today’s systems to those we expect to see in 2 to 3 years suggests a substantial risk that AI systems will be able to fill in all the missing pieces, enabling many more actors to carry out large-scale biological attacks... We have instituted mitigations against these risks in our own deployed models, briefed a number of US government officials — all of whom found the results disquieting, and are piloting a responsible disclosure process with other AI companies to share information on this and similar risks. However, private action is not enough — this risk and many others like it requires a systemic policy response.'

In response to these hearings, on 30 October 2023, President Biden made an executive order that does two main things. First, it put a timeline on US agencies to develop a framework to ensure the proper screening of synthetic DNA. With or without the additional risks of AI, synthetic DNA is likely the essential input that any malicious or negligent actor would need to engineer a pandemic. Second, it put a range of requirements on AI labs designed to ensure future AI models don’t have these “dual-use risks” that could contribute to a future pandemic.

While I appreciate that this issue may feel outside the scope of a preventative public health measure – the same was said of clean drinking water, the work of Florence Nightingale or many other advances in public health that came from leaders realising that a vast range of social and technological factors feed into public health. Indeed, the history of innovation in public health is a history of tackling cutting-edge problems that others neglected. AI and synthetic biology are today's versions of those historic problems.

Sources:

https://medium.com/@daniel_eth/ai-x-risk-at-senate-hearing-7104f371ca0b

https://www.theverge.com/2022/3/17/22983197/ai-new-possible-chemical-weapons-generative-models-vx

https://www.nature.com/articles/s42256-022-00465-9

In an extremely severe pandemic, next-generation PPE may be essential to keep critical infrastructure functioning

In the context of Terms of Reference 5, support for industry, including in the context of labour shortages, I recommend that the Inquiry consider the paper by Gopal et al from the Geneva Centre for Security Policy titled "Securing Civilisation Against Catastrophic Pandemics".

The paper begins by unpacking ways that pandemic risk is increasing – in particular the possibility of engineered pandemics. The paper also makes a useful distinction between "stealth" and "wildfire" pandemics, which has deep implications for our policy response.

Importantly, the paper goes on to explain that in a pandemic worse than COVID-19, workers who operate critical infrastructure may die or refuse to attend the workplace. If that happens, a modern interconnected society would rapidly collapse. The second-order consequences from a lack of electricity causing cascading failures in other critical sectors would far exceed the immediate consequences of the virus.

When the Inquiry thinks about support for industry, the primary goal of that support should be keeping the lights on during a future, worse, pandemic. If critical infrastructure fails, other questions like financial support or community support rapidly become irrelevant or impossible.

Among the various recommendations, Gopal et al argue that "pandemic-proof personal protective equipment" (P4E) is essential to dealing with the risk of failing critical infrastructure. The argument for P4E is that essential workers (such as those critical to

providing food, water, power and law enforcement) need the confidence that they can continue to work without endangering themselves and their loved ones. The paper provides requirements for what this kind of equipment would need to look like.

The paper also includes discussions about definitions of essential workers, ways of preparing the workforce and supply chain, and a discussion of social and technological approaches to slowing the spread of future pandemics.

I recommend that the inquiry read Securing Civilisation Against Catastrophic Pandemics and treat it as a foundation stone for other recommendations. That is, our first priority has to be actions that take these worst-case scenarios off the table. Action against other elements of the terms of reference are only possible and impactful if we can be confident that we're in a position to prevent a social collapse.

Sources: https://dam.gcsp.ch/files/doc/securing-civilisation-against-catastrophic-pandemics-gp-31

Conclusion

As technology advances, the scope of public health continues to increase. Contemporaries would have thought that lenses in microscopes, the design of sewers, citrus on ships or a hundred other things had little to do with public health. However, expanding the scope of public health to include emerging issues and new technologies has directly led to substantially better outcomes.

This inquiry is a chance to put new and emerging topics at the forefront of how we think about pandemics. Whether it's harnessing the benefits of metagenomic sequencing or addressing the risks of AI – I think it's essential that this Inquiry look to the risks and opportunities of the future.