Good Ancestors Policy

Good Ancestors Policy is an Australian charity working to improve policy via rigorous and evidence-based proposals that could have a big impact on the future. We are proud to have helped coordinate *Australians for Pandemic Prevention* and support the content of their submission.

We think this Inquiry will lead to the most positive outcomes for Australians if it focuses on the future. Australia needs to learn the lessons of COVID-19, but also needs to not "over-learn" those lessons. While some things might be the same, others are likely to be different.

Overall, we assess that the evidence justifies substantial investment in pandemic prevention – both to reduce the risk of novel pathogens emerging and to reduce the risk that any outbreak escalates into a pandemic. Australia's approach should factor in all potential causes of a pandemic: this requires robust implementation of proven approaches, as well as urgent implementation of new and emerging technologies. Spending on mitigations should be commensurate with risk. Currently, there is substantial underinvestment in pandemic prevention when compared to other, less consequential, disasters.[1] Even conservative estimates that don't account for promising new technologies or co-benefits suggest that every dollar spent on zoonotic pandemic prevention alone saves $20 in harm.[2]

We recommend:

1. The CDC should design and operate **practical programs to reduce the risk of zoonoses**.[2,3]
    1.1. Work with states and territories to update biosecurity strategies to identify and implement measures to prevent transmission at the human-wildlife-livestock interface.[4–7]
    1.2. The CDC, the Indo-Pacific Centre for Health Security, and the Ambassador for Global Health should protect Australians by increasing efforts to support other countries in combating the risks of novel pathogens emerging in their jurisdiction.
    1.3. Australia should consider including requirements about minimum standards of pandemic prevention in free trade agreements. For instance, if a free trade deal relates to animal products, the deal should set minimum zoonoses prevention standards for all parties.
2. Early detection could transform the trajectory of future pandemics. The CDC should **develop a strategy for an early novel pathogen detection system**[8,9] that harnesses emerging surveillance technologies, including metagenomics and CRISPR-based diagnostics.[10–12]
3. **Reliably clean indoor air must be normalised**.[13–15] In addition to improving standards for filtration and ventilation,[16] the Inquiry should recommend that **research funding be directed to resolving outstanding questions relating to UV germicidal irradiation, including far-UVC**.[17] These technologies must be deployed before the next pandemic pathogen emerges.
4. While zoonoses have been the leading cause of pandemics historically, evidence suggests that **the next pandemic is most likely to leak from a lab or be intentionally engineered**.[18] This has profound implications for how we must prevent and prepare for pandemics. The CDC should be tasked with assessing and controlling the risk of emerging biotechnologies and encouraging

safer practices domestically and globally.[19–22] It is unacceptable that the Office of the Gene Technology Regulator has not inspected any Australian PC4 labs for over 2 years.[23]

5. Across all of its work, **the Inquiry should consider the possibility of pandemics worse than COVID-19** and how suitable its recommendations are in those contexts. Specifically:
   - 5.1. **Workforce shortages and absenteeism could endanger the operation of critical infrastructure**, including electricity.[24] Addressing this will require critical infrastructure operators to have robust pandemic planning, including PRE that realistically allows their employees to perform critical functions during a catastrophic pandemic.[25]
   - 5.2. **Government should develop and exercise national plans that cover a range of pandemic scenarios**, including worst-case scenarios. To ensure the plans are robust and build public confidence, the plans should be made public and exercised regularly with civil society and industry participants. The plans should cover:
     - 5.2.1. The emergence of a novel pathogen in Australia with the goal of identifying, containing and eliminating it before a pandemic occurs.
     - 5.2.2. A "wildfire" pandemic that is more transmissible and has higher lethality than COVID-19. [25]
     - 5.2.3. A"'stealth" pandemic that is more transmissible as COVID-19, and has presentation or harmful effects that may manifest significantly after infection e.g. similar to HIV or Human T-lymphotropic virus.[25]

Given the page restriction, this focuses on far-UVC and the implications of worse pandemics. We would welcome further opportunities to engage with the Inquiry.

Improving Indoor Air Quality

Improving Indoor Air Quality (IAQ) to reduce pathogen transmission would slow the initial spread of a pathogen and allow more time for response - including efforts to contain and eliminate a pathogen before a pandemic begins. Consistent with the recommendations of "Sick and tired: Casting a long shadow",[13] we recommend that the CDC lead an update of minimum performance requirements across the states and territories for IAQ to include infection prevention and incorporate the Lancet COVID-19 Commission Task Force's Proposed Non-infectious Air Delivery Rates (NADR).[16] This should include a mandated minimum standard for IAQ in new high-risk and public spaces and subsidising the cost of IAQ upgrades where necessary, including existing high-risk locations.

An uplift of IAQ will require a mix of technology. We assess that germicidal irradiation using ultraviolet C (UVC) light is particularly promising for a range of reasons:

- UVC light, a form of ultraviolet radiation with wavelengths between 200nm and 280nm, deactivates pathogens by damaging their DNA or RNA.
- Upper-room UVC (~254nm) emitters are installed horizontally near the ceiling to deactivate microorganisms that circulate towards the ceiling.
- Far-UVC (207 to 222 nm) light fixtures are installed to shine down on rooms and provide continuous disinfection. This could reduce short-distance transmission and surface

transmission, unlike other ventilation and filtration methods. Far-UVC could be particularly impactful in situations like hospitals, restaurants, classrooms or places of worship.

- While far-UVC is not immediately ready for commercialisation, research shows that it is safe for eyes and skin,[17,26,27] and effective at deactivating pathogens,[28] including in the air.[29]
- While work is required to drive down costs, it's unlikely that there are significant technical hurdles that would make far-UVC inherently impractical to commercialise.
- The combination of these features means that far-UVC can achieve many of the same health benefits that mask-use would achieve in the general population but without requiring individual behaviour change, making it a much more tractable public health measure for reducing airborne pathogen transmission.

Combined, these points mean that far-UVC is ideally placed for government support to transition it from a promising nascent technology to a scalable product that is ready for commercialisation. For these reasons, a key element of delivering recommendation 3 should be funding appropriate bodies – like the NHMRC, Thrive via ARC funding, or a new Cooperative Research Centre – to strategically accelerate the technology for inclusion in national IAQ standards.

Preparing for worse pandemics

The core function of this Inquiry should be readying Australia for the next pandemic. However, pandemic characteristics are growing harder to predict. The Geneva Centre for Security Policy assesses that lab leaks have already overtaken natural spillover as the most likely cause of the next pandemic.[25] Progress in biotechnology and AI may mean this gap will widen and the risk of nefarious actors will grow.[19–22,30] These potential differences need to inform our response - we can't fight the last war.

While COVID-19 caused workforce shortages and supply chain interruptions, these were less severe than if the virus was more lethal among the working-age population. In a catastrophic pandemic, the worst consequences could come from cascading and compounding effects. Worker absence could leave critical infrastructure understaffed. Given the constant need for human intervention in power generation and distribution, the national grid and other critical infrastructure could rapidly collapse.[31] A grid collapse causing cascading infrastructure failure could rapidly make cities uninhabitable.

Any recommendations produced by the Inquiry, including regarding PPE stockpiles, should be mindful of pressures on critical infrastructure from a pandemic more lethal than COVID. This might include ensuring there is sufficient and suitable PPE for critical infrastructure workers to confidently attend their places of work during the height of a future pandemic.[25]

Of course, merely having equipment is not enough. Australia lacks a sufficiently diverse range of regularly exercised national plans that would cover future pandemic scenarios i.e. "stealth" and "wildfire".[25] Given the value of immediate action, governance frameworks like the Australian Government Crisis Management Framework or coordination tools, like the National Coordination Mechanism or the Australian Health Protection Principal Committee, are necessary but not sufficient. Likewise, while specific plans like the Smallpox Emergency Management Plan are helpful, they do not have the flexibility to cover a novel pathogen. For these reasons, Australia should develop a range of plans and ensure they are regularly exercised on the tabletop and in person.

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