

Maintaining strong foundations and building resilience: planning Australia's path through the COVID-19 pandemic

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Australian
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Public health measures introduced by Australian State, Territory and Federal governments, working with the Australian community, have significantly reduced the impact of COVID-19 in Australia. In fact, by any global measure the response to date has been a spectacular success. But, this has come at significant economic and broader health cost and, as the second wave in Victoria showed, success can be fragile and requires imposition of strong measures to regain control.

It is now crucial that we plan for the coming months, heading into 2021. The Australian Academy of Health and Medical Sciences is the impartial, authoritative, cross-sector voice of health and medical science in Australia – an independent, interdisciplinary body of Australia's leading minds in the health and medical sciences.

The Academy holds that for the foreseeable future, national control of the COVID-19 pandemic will need to be driven by:

- Ongoing implementation of comprehensive public health measures. High levels of swab testing for the SARS CoV-2 virus coupled with contact tracing, isolation and quarantine will be crucial. This should be set alongside physical distancing, enforced if needed, the judicious use of face masks and effective controls at international borders. This approach needs to be increasingly driven by communication and service delivery approaches that are community-centric (i.e. bottom up as well as top down).
- Optimal roll-out of effective and safe vaccines, treatments and other interventions as they become available, including improved antigen based diagnostics to provide rapid options for active case detection.
- Effective prevention and management of the long-term health issues arising from the pandemic, especially mental ill health and the effects of long COVID. Prevention and treatment programs must especially target populations who are most vulnerable to COVID-19, including health professionals, older people, those in low socioeconomic groups and our First Nations peoples.
- Australia's contribution to global management of the pandemic, in particular, through support of our neighbours in the region.
- Sustained and enhanced support for research and innovation to continue to deliver the knowledge and tools required to tackle the pandemic – even when case numbers are low.

Australia's capacity to deliver effective public health programs, together with our world class research and innovation sector, mean that we are well placed to execute this agenda. Doing so successfully will also enhance our ability to respond to future pandemics.

2021: the most likely scenario

It is unlikely that a single ‘silver bullet’ will return Australia and the world to what we now consider as pre-COVID ‘normality’. Instead, we anticipate a scenario in which the vaccines, anti-viral therapies and other tools that become available will reduce COVID-19 associated hospitalisation and deaths.

Announcements of interim results from vaccine trials are promising, but even a vaccine that is 90% effective (at reducing disease) will take time to manufacture, distribute and administer, and may have limited impact on SARS-CoV-2 transmission and spread, or protection may be short-lived.

Australia’s comprehensive COVID-19 public health measures and management approach will therefore remain crucial to the ongoing response. Building on this foundation, several factors will impact on how the COVID-19 pandemic will proceed in Australia, which need to be acted upon to build resilience.

As we approach 2021, planning should be informed by ongoing research and innovation, to support a national strategy that:

- Creates effective systems and capabilities to develop, manufacture and distribute vaccines, treatments and diagnostics.
- Monitors the health impacts of COVID-19 within Australia, and the acceptability, safety, efficacy and uptake of vaccines, treatments and other interventions.
- Enables ethical and equitable roll out of vaccines, treatments and other interventions.
- Is responsive to the evolution of the pandemic through a readiness to modify public health measures appropriately.

This document sets out priorities for Australia’s path through the pandemic and identifies 15 actions in these four areas, which we believe will equip Australia to continue its successful management of the pandemic.

*Further detail, evidence and all references can be found in the background briefing, ‘Key tools and measures – where are we now?’.**

* Further detail, evidence and all references available in our background briefing ‘Key tools and measures – where are we now?’: bit.ly/AAHMS-COVID-background-brief

Maintaining strong foundations: the importance of public health

Comprehensive public health measures, policies and strategies to manage the broader impacts of the pandemic, and support for our health services and workforce, are all crucial foundations for the ongoing pandemic response.

The global research community is working at an unprecedented speed and scale to deliver new vaccines, treatments and other tools for managing the pandemic.

It is likely that a safe and effective vaccine, able to prevent at least 50% of symptomatic COVID-19 episodes, will be approved and available for use in Australia within the next year, and that new treatments will be found. However, many uncertainties remain about the precise timelines, as information continues to emerge about the safety and efficacy of vaccine candidates as well as the speed with which manufacturing and distribution can be scaled up. Australia must therefore continue to manage the pandemic in a manner that recognises this reality. It is crucial that we regard lockdowns as a measure of last resort, given their considerable impacts on individuals, communities and our economy.

Keeping transmission of SARS-CoV-2 infection under control through testing (including more active case finding), contact tracing, isolation and quarantine will be our best strategy to balance public health and open up society and the economy. Physical distancing, use of face masks and hand hygiene all have roles to play and are known to be effective. Further detail on the use of such measures is outlined in our background brief, *'Key tools and measures – where are we now?'*^{*}

Ongoing public information is essential to ensure that the community understands the current status of the pandemic and why specific measures are being promoted, especially if infection rates remain low and the immediate threat appears to be lower.

The other crucial component of the health system response will be the adoption of policies and strategies to manage the broader impacts of the pandemic, including on mental health and the prevention and treatment of health conditions unrelated to COVID-19. For instance, the pandemic has generated feelings of anxiety and distress within the general population. There is already evidence of more people developing mental health problems for the first time, increased relapse rates in those with previous mental illness and for some, an exacerbation of their existing mental illness. We are also seeing delays in seeking or obtaining care for other conditions such as stroke, myocardial infarction, cancer and acute surgical conditions, some of which are time-sensitive and there is evidence that delays in presentations with these conditions impact morbidity and mortality. The challenge lies in continuing to deliver optimum care to patients, when patients themselves are too scared to seek assistance for fear of contracting what they perceive to be a more serious illness. Mitigation strategies must promote mental and physical wellbeing and target risk factors exacerbated by the pandemic; as well as providing formal health interventions that treat and support individuals who develop mental and other illnesses.

Finally, the success of our ongoing response depends on our health services and workforce, which will need adequate investment to enable service innovation, expanded workforce capacity and development (e.g. infection prevention nurses), redesign to cope with outbreaks (surge capacity, e.g. workflows, staffing and virtual services), and support for the mental and physical health of our health professionals.

^{*} Further detail, evidence and all references available in our background briefing *'Key tools and measures – where are we now?'*: bit.ly/AAHMS-COVID-background-brief

Maintaining strong foundations: what will change the course of the pandemic?

Building on the strong foundation of public health, the course of the pandemic will be changed over the coming months by developments and interventions in five key areas.

We outline these areas below and provide more detail in our background brief, 'Key tools and measures – where are we now?'.* In the next section, we identify actions that should be taken to ensure Australia is able to make use of these tools to navigate its way through the pandemic.

1. Availability of the safest and most effective COVID-19 vaccines

Emerging evidence suggests that the 'first generation' vaccines currently in trials have a good chance of preventing SARS-CoV-2 related illness, but that they are less likely to prevent acquisition of infection with the virus. This means it is unlikely that virus transmission will be significantly reduced by this first generation of vaccines. Additionally, current trials will not detect rare side effects, those that occur in the longer-term, or those associated with specific population groups, because they do not involve enough participants. Such data will only become available after several months. The Academy supports the position of the US Food and Drug Administration (FDA), which has said that issuing emergency use authorisation for a vaccine requires monitoring of data from at least half of the phase 3 trial participants for at least two months after vaccination and that further trial data are to be provided beyond this timeframe.

Population-wide vaccine roll out is a major undertaking, which requires detailed planning, including ensuring:

- Adequate external supplies or on-shore manufacturing and quality control capacity, including the development of new capabilities (e.g. to manufacture RNA vaccines, for which Australia does not currently have the capability), along with safe and secure storage and transportation, and meticulous cold chain management throughout the process. Vaccine distribution will require coordination between the Commonwealth and States/Territories.
- Sufficient accessible locations and processes for efficient, large-scale, community vaccination, including trained professionals to administer the vaccine and mechanisms to ensure individuals receive the correct doses at the right times. Options include pharmacies, GPs and other strategies once sufficient vaccine supply is available.
- A values-based ethical framework that prioritises and balances those most at risk of infection or severe illness with the effectiveness of the vaccine in different populations.
- A system for monitoring vaccine roll out, including receipt of vaccine doses and monitoring of vaccine wastage, efficacy and adverse events in those vaccinated, as well as vaccine acceptance, so that potential problems can be rapidly identified and addressed.
- A well-designed public information campaign about the vaccine and how to access it – informed by community consultation and experts who understand how to design and tailor such messaging.

Our background briefing provides further detail on how vaccines could contribute towards delivering herd immunity and why uptake is so important.*

* Further detail, evidence and all references available in our background briefing 'Key tools and measures – where are we now?': bit.ly/AAHMS-COVID-background-brief

2. Development of novel treatments for COVID-19 and associated health problems

Treatments for COVID-19 will remain vital in the short and medium term, but are currently limited. Respiratory support and corticosteroids can help recovery in severely ill patients. Remdesivir may result in faster recovery in some sick, hospitalised patients, but does not appear to reduce mortality, and is still under investigation. **Further research is vital if we are to increase existing treatment options, further reduce COVID-19 associated morbidity and mortality, and find treatments that work in milder cases, early disease or even prophylactically.** Data must come from properly designed and conducted clinical trials. As with vaccines, delivery of effective treatments requires appropriate facilities for manufacturing, storage and distribution. In the short term, for small molecules like antiviral drugs, Australia will likely need to procure drugs in short supply from international manufacturers, while exploring how to develop on-shore manufacturing capability for the medium and long term. We also need to better understand long COVID, where infected individuals experience persistent symptoms for several weeks or months after infection.

3. Development of faster and more accessible diagnostic tests for the SARS-CoV-2 virus and for demonstration of protective immunity

Diagnostics are crucial to the successful operation of testing and contact tracing systems. The most important components of effective surveillance appear to be testing rates and the speed of reporting, meaning that the rapid tests now entering the market could substantially enhance current capabilities. **Tracing systems should be designed to maximise rapid access, as well as accuracy. New regulatory frameworks are needed to improve the roll out of rapid and home-based testing in Australia.** Novel surveillance methods, including sewage surveillance, should be evaluated formally and their utility in early detection of circulating COVID-19, estimation of the burden of disease and interruption of COVID-19 spread, confirmed.

4. More effective interventions to reduce social and health inequalities that cause disproportionate impacts of COVID-19

COVID-19 is known to impact some groups more than others, such as those in lower socio-economic groups and Aboriginal and Torres Strait Islander communities. Such individuals are at both greater risk of COVID-19 and of progressing to severe disease, probably mainly because they are more likely to have a relevant co-existing disease (comorbidity). Risk factors for new, or exacerbation of existing, mental health problems are also more common – and are further exacerbated by other consequences of the pandemic, such as isolation, access to care and unemployment. **These types of social and health inequalities must not only be addressed urgently, but also be taken into account when designing and delivering programs for prevention and treatment – not only of COVID-19, but of other health conditions, where care or access to services may have been reduced as a result of the pandemic.**

5. Management of the COVID-19 pandemic overseas

In this global pandemic, the success of other nations in managing the virus will impact on Australia and our regional neighbours. Existing global health inequalities are at risk of exacerbation and the distribution of health professionals and medical technologies such as vaccines is unequal globally. **We have an obligation to reduce these inequities. Furthermore, we have an obligation to actively support our regional neighbours and advocate for all countries to have timely access to COVID-19 treatments and vaccines.**

* Further detail, evidence and all references available in our background briefing
'Key tools and measures – where are we now?': bit.ly/AAHMS-COVID-background-brief

Building resilience: priorities for 2021 - what should happen now?

Planning is crucial to making the best use of new tools and interventions. We have identified 15 actions in four areas that will equip Australia to continue its successful management of the pandemic.

Understanding how to make best use of new tools and interventions

Planning ahead for how the new tools can best be deployed will be crucial. Key questions and considerations will be different for each vaccine, treatment or other intervention, and include:*

- **Effectiveness:** how effective are the vaccines in preventing disease, severe disease and SARS-CoV-2 transmission, and for how long do they protect individuals? Are there particular populations for whom a vaccine or treatment is less effective – such as people aged over 65 and those with pre-existing medical conditions?
- **Accessibility:** are we able to import or manufacture sufficient quantities of vaccines and treatments? If not, how can we develop this capability – and is there an interim solution while we do so?
- **Logistics:** what is the manufacturing schedule for each available vaccine and what are the storage requirements? How can a roll out schedule be designed to efficiently distribute and deliver doses, particularly if more than one dose is required? How can we best assist low and middle income countries to gain access to COVID-19 technologies needed for effective vaccine uptake?
- **Prospects:** what does modelling tell us about the prospects of herd immunity – and what are the associated parameters? Can we achieve equitable roll out of vaccines, treatments and other interventions, in Australia and globally – how?
- **Monitoring:** what should be monitored during vaccine roll out – and how – to understand the acceptability, safety, efficacy and uptake of vaccines and treatments? Are we able to assess and monitor their relative efficacy, especially with multiple vaccines in use concurrently?

* Further detail, evidence and all references available in our background briefing
'Key tools and measures – where are we now?': bit.ly/AAHMS-COVID-background-brief

Priority actions for success

The Academy has identified 15 actions that should be prioritised to ensure that Australia is equipped to answer such questions and therefore able to make best use of new tools and interventions as they become available.

Creating effective systems and capabilities to develop, manufacture and distribute vaccines, treatments and diagnostics

- Agreed systems for manufacturing, distributing and administering vaccines and treatments, including on-shore manufacturing capabilities and interim measures to source off-shore where required.
- Mechanisms to review and incorporate new diagnostic tests into testing and tracing regimes, to enhance access, frequency and speed, and reduce regulatory barriers to the roll out of rapid and home-based diagnostic tests.
- Ongoing research to develop vaccines and effective treatments – including combinations of treatments – which can decrease transmission, as well as reduce morbidity and mortality. As vaccines are rolled out, trials will need to evaluate the comparative efficacy of different vaccines in different populations, since it will be unethical to include a placebo arm in studies. Australia, with its low case numbers, will be in a strong position to conduct such research.

Monitoring the health impacts of COVID-19 within Australia, and the acceptability, safety, efficacy and uptake of vaccines, treatments and other interventions

- Effective frameworks to monitor efficacy and safety of vaccines in the longer term in different population groups. This should include product-specific information from clinical trials and active post-marketing pharmacovigilance, combined with a functional registry of vaccinated individuals. Existing responsible bodies, processes and monitoring systems could be modified, expanded and resourced to accommodate the urgency and volume.
- Management of the broader impacts of the pandemic, including mental ill health, long COVID and the rise in late presentations of a range of conditions.
- Support for our health services and workforce in service innovation and redesign, to provide surge capacity, while paying attention to their mental and physical health.

Enabling ethical and equitable roll out of vaccines, treatments and other interventions

- Clear, consistent messaging and information campaigns informed by social and behavioural researchers working with communities to understand and incorporate their perspectives. We have already seen misinformation altering behaviour during the pandemic and vaccine hesitancy and resistance remain a risk in Australia. Similarly, targeted messaging to ensure that the community is aware of the importance of seeking care for other conditions, especially time-sensitive emergency conditions.
- Frameworks that outline how vaccines and treatments should be allocated must balance vaccine efficacy with ethics and equity of access, including the likelihood of infection or severe illness in a particular individual or population.

* Further detail, evidence and all references available in our background briefing
'Key tools and measures – where are we now?': bit.ly/AAHMS-COVID-background-brief

- Targeted efforts to account for social and health inequalities when developing and delivering programs for preventing and treating COVID-19 and other health conditions.
- Active support and advocacy for timely access to COVID-19 treatments and vaccines in all countries, and especially our regional neighbours.

Responding to the evolution of the pandemic through a readiness to modify public health measures appropriately

- **Ongoing review and modification of measures such as social distancing**, which takes into account evidence as it emerges and responds to the impacts of new interventions on transmission, morbidity and mortality. This should be informed by systematic evaluation of the different tiers of the response, assessment of how well those tiers are achieving their goals and the scale of the indirect impacts.
- **Ongoing measures to protect and support populations that are vulnerable**, either because they are more susceptible to infection or illness, vaccines are contraindicated or less effective, or they have limited access to vaccines, treatments or care.
- **Research to understand the most common mechanisms of virus transmission and the best prevention strategies**, to enable effective monitoring and an optimal public health response in the event of local or more widespread outbreaks.
- **Surveillance of the viral genome**, which will evolve as the pandemic proceeds. Mutations in the genome could impact on the effectiveness of diagnostics, public health measures, vaccines and treatments. Continued surveillance, supported by research to understand the impacts of genetic changes, will be crucial.
- **Effective testing and contact tracing mechanisms at a national level and regular review of border and quarantine measures** to determine whether and when international travel can be re-established safely. Measures such as testing for infection and protective immunity with available and improved assays, use of prophylactic treatments, 'vaccine passports', or risk-based quarantine (e.g. based on duration and location) will need careful evaluation of their relative contributions to minimising the impact of international travel on the pandemic in Australia.

* Further detail, evidence and all references available in our background briefing 'Key tools and measures – where are we now?': bit.ly/AAHMS-COVID-background-brief



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This publication has been developed in liaison with the Academy's COVID-19 Expert Committee, which brings together interdisciplinary expertise from the Academy's Fellowship. The Academy is most grateful for the input of the members of this committee:

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We acknowledge the traditional custodians of the land on which our offices stand and on which we hold our meetings and events across the country. Aboriginal and/or Torres Strait Islander peoples were the nation's first scientists, and they remain the spiritual and cultural custodians of their land.

We pay our respects to elders past, present and emerging.

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