COVID-19
Roadmap to Recovery
A Report for the Nation

Contents

Co-Chairs' Foreword

As Co-Chairs of the "Roadmap to Recovery" taskforce it has been a privilege to work with over a hundred of the brightest scholars in Australia's leading universities to address the most pressing question of our times – How can society recover from COVID-19?

This report is independent, was not commissioned by a Government, and was produced by the leading researchers in this nation based on the latest evidence available.

How this document differs from the hundreds of articles and opinion pieces on this issue is that this report specifies the evidence on which it is based …

COVID-19 is not just a medical or a scientific issue, it is something that affects each of us, and all of us. Therefore, this is addressed as a Report for the Nation. It is shared with the National Cabinet, our Federal, State and Territory Governments in the hope that it may help inform the many decisions they have to make.

For a problem as vast and complex as COVID-19 there is no one solution. That is why our Roadmap to Recovery, offers two alternatives, with many side roads – but all taking us to the destination. We provide choices because at the moment there are many uncertainties in the data and in predictions. Under such circumstances it is the job of our research community to illuminate the possibilities, rather than offer simple solutions.

How this document differs from the hundreds of articles and opinion pieces on this issue is that this report specifies the evidence on which it is based, it is produced by

researchers who are experts and leaders in their area, and it engages the broadest range of disciplines – from mathematicians, to virologists, to philosophers.

Over a three-week period, this taskforce has debated and discussed, disagreed, and agreed, edited and revised its work over weekdays and holidays, Good Friday and Easter. All remotely. All with social distancing. It is a testimony to their commitment to the Australian community, to our enviable way of life, to securing our standard of living, to increasing national productivity and to protecting the values all Australian's hold dear.

It is research collaboration in action – a collective expression of a belief that expert research can help Government plot the best path forward and of a commitment to provide this help in support of the nation and the Australian community.

As Co-Chairs we recognise the enormous effort expended by our researchers, and they join with the Go8 Board and with us the Co-Chairs, to acknowledge that the hardest task

belongs to Government which must now make the decisions.

… it is produced by researchers who are experts and leaders in their area, and it engages the broadest range of disciplines – from mathematicians, to virologists, to philosophers.

Prof. Shitij Kapur
MBBS, PhD, FRCPC, FMedSci, FAHMS
Dean and Asst.Vice Chancellor (Health) University of Melbourne

Vicki Thomson
Go8 Chief Executive

A Roadmap to Recovery – A Report for the Nation

from Australia's Leading Universities

Executive Summary

Covid-19 has changed the course of history. What started off as a flu-like illness in one person in one corner of the world, has changed the lives, livelihoods and futures of billions. Australia saw its first case on January 25 and now has over 6,600 cases, the country is in partial lockdown, schools and universities have left their campuses, hundreds of thousands of jobs have been lost. Fortunately, the tide appears to be turning and we can start thinking of Recovery.

To chart a *Roadmap to Recovery* we convened a group of over a hundred of the country's leading epidemiologists, infectious disease consultants, public health specialists, healthcare professionals, mental health and well-being practitioners, indigenous scholars, communications and behaviour change experts, ethicists, philosophers, political scientists, economists and business scholars from the Group of Eight (Go8) universities. The group developed this Roadmap in less than three weeks, through remote meetings and a special collaborative reasoning platform, in the context of a rapidly changing pandemic.

In this Executive Summary, we provide: ***one ethical*** framework; ***two options*** for pandemic response; ***three requirements*** for success in recovery regardless of which path is taken; and ***six imperatives*** in the implementation of recovery plan.

Nature of this Report and the Reasons for it

Rather than recommend a single dominant option for pandemic response in Australia, we present and explain two options for the nation's consideration – Elimination or Controlled Adaptation. We offer two choices for several reasons:

First, there are considerable uncertainties around what we know about Covid-19. Estimates of critical determinants, such as the number of carriers, vary by a factor of ten. With such uncertainties in facts, there is a limit to how sure one can be.

Second, we completed this report in late April 2020, when the Prime Minister had already set the course to May 15th. Therefore, our job was to consider possibilities beyond that date. The facts regarding the pandemic will evolve and change between now and
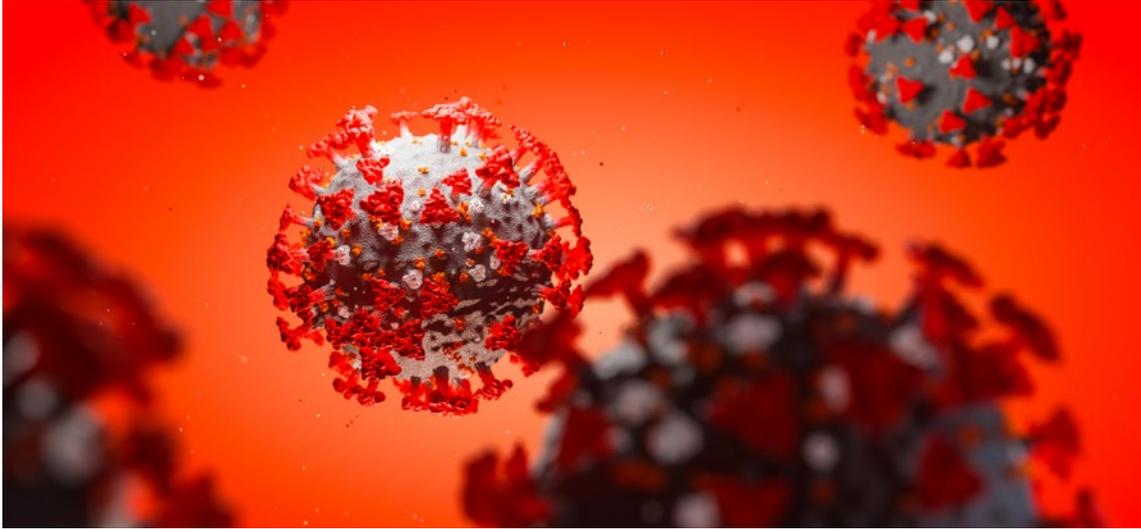
then. Therefore, rather than prescribe an outcome for three weeks hence – we propose to present a balanced case for two of them.

Any choice between these two options entails a delicate trade-off between protecting health, supporting the economy and societal well-being. It is not the role of researchers, or this report, to make this choice. That is the role of our Government. We are responsible for setting out the trade-offs and that is what this report looks to provide.

Finally, this report focusses on the impact of the virus and short term recovery. The pandemic will change global economies and international relations. This will have significant impacts for Australia, its society and

economy for years to come. That is not the focus of this report.

An Ethical framework to guide decision making

At a time of national crisis, and in turning our minds to the recovery, it is vital to clarify the key values and principles that will guide us in the many difficult dilemmas we face. There are things we should not be prepared to sacrifice, whatever the circumstances. However, the severity of this pandemic will force us to sacrifice some things we may not have ordinarily done. Therefore, we should know the conflicting values at stake and the consequences of our choices.

A Roadmap to Recovery – A Report for the Nation

We propose the following principles to guide us:

- Whatever measures we implement to manage COVID-19 must be compatible with a commitment to democratic accountability and the protection of civil liberties. Special measures that require the restriction of movement, the imposition on freedoms, and the sharing of private data must be proportionate, time-bound, grounded in consent and subject to democratic review.

- Equal access to healthcare and a social safety net must be provided for all members of our community. Attention should also be paid to the needs of the non-citizens, keeping in view their unique circumstances.

- The virus has impacted us all, some more than others. The economic cost must be shared fairly across the whole community.

- Although equal treatment is a fundamental Australian value, the virus, and our policies to control it have impacted some disproportionately. Therefore, renewal and recovery programs should focus on those most affected first. In the long run, they should foster social and economic innovation that will make all Australians more resilient in the face of future shocks.

- Finally, there is the issue of partnership and personal responsibility. Recovery is not only what Governments can do for us. Strong recovery will require a trusted partnership between governments and civil society, including business, community sector, unions, academia and local communities. Recovery is something each person owes their neighbour. We need to look out for each other's welfare in times like this. That is our way.

This is not meant to be a comprehensive or an exclusive list of values, but an effort to articulate the values that should guide our strategies today. In the long run, how we respond to this pandemic will define us.

Two Options Proposed and a Third Rejected

For any jurisdiction facing an epidemic, there are three fundamental options:

1. Eliminate the illness;

2. Suppress the illness to a low level and manage it; or

3. Allow the epidemic to run through the population in a way that does not overwhelm the healthcare system. Some have called this approach "herd immunity."

At the very outset, the Taskforce rejected the third option which would entail somewhere close to 15 million Australians becoming infected. The disruption of healthcare, the lives lost, the inequalities of impact and the tragic consequences on society did not make this a viable option for Australia, as Government has made clear. This report focused on the remaining two.

Australia is unique among comparable Western nations, and fortunate, to have two options – elimination or suppression. This is afforded because of our success in controlling the number of cases. From the peak of the epidemic in late March when we saw nearly 500 cases a day, the number of daily new cases now are fewer than 25. During the peak, 90% of cases were imported or a direct consequence of importation, a pathway that has now been practically stopped. Australia's testing rate is amongst the highest in the world, and its test positivity rate and case fatality rate amongst the lowest. This confirms the government's strategy in controlling the epidemic and the population's embrace of it.

Therefore, while most countries simply cannot consider the prospect of elimination, for Australia, a ***State by State Elimination Strategy*** remains a conceivable, and some would say desirable, option for Australia. This option is detailed in Chapter 2.

Option 1: Elimination Strategy

- The Elimination strategy should lead to fewer total infections, hospitalisations and deaths, and better protection of vulnerable populations than any of the alternatives.

- Once achieved, elimination would allow for a faster decrease in social distancing and other restrictions.

- To achieve this elimination, Australia would likely have to continue the lockdown in certain jurisdictions beyond mid-May, possibly for another 30 days.

- It necessitates waiting for new local cases to fall to zero, and then maintaining this for two incubation periods, i.e. about two weeks.

- This strategy will require extensive testing and contact tracing, but modelling shows the extra testing should be achievable within our system with reasonable additional investment.

- It is hard to predict exactly when the cases of locally acquired disease might fall to zero, and whether current measures may need to be enhanced to achieve it. Hence the option entails greater uncertainty regarding the *timing* of relaxation of social distancing measures.

- The number of asymptomatic carriers in Australia is not known for certain and may pose a potential risk to this strategy. However, modelling shows that provided the number of asymptomatic cases is modest, the strategy should still be viable.

- If some jurisdictions have achieved elimination and others have not, it will require extended travel barriers within Australia.

- The risk of re-introduction of cases from abroad will remain , requiring strict international border control measures. Australia's unique geography, strong border control and quarantine procedures would enable this.

- Once achieved, the psychological sense of safety and social well-being that would result from "elimination" of all local transmission would allow for a fuller and more vigorous recovery of the economy.

The second option acknowledges the likelihood of ongoing international infections, a limit to the duration of social distancing measures and the potential of asymptomatic or undetected transmission and therefore accepts that some low level of cases may remain active. It accepts this reality and tries to manage it. We call this strategy "***Controlled Adaptation***" because it entails *controlling* the spread of the virus, while making sure that society *adapts* to live with ongoing infections.

Option 2: Controlled Adaptation Strategy

- The major immediate advantage of this strategy is that the phased lifting of restrictions can begin as early as May 15th.

- The major long-term advantage of this approach is that it acknowledges the high likelihood of prolonged global circulation of this infection, and starts off by preparing Australians and the system to adapt to living with the ongoing risk of infections

- This approach provides a feasible strategy to safely manage current and future infections within the health system.

- The strategy accepts a slightly higher number of cases, hospitalisations, and deaths.

- This strategy will require extensive testing and contact tracing, but with a special emphasis on a very tight feedback to those managing the public health response so that they can adjust the restrictions, in regions, or in segments of the population, as appropriate.

- However, there is always a risk that the number of infections could spike, and some of the spikes could lead to more extensive "surges" which may require resumption of some stricter social distancing, as has occurred in Singapore.

- What is hard to predict is how confident the public will feel when restrictions are lifted with new cases ongoing, therefore economic and social life may resume slower, even though the restrictions may be lifted earlier.

What the public must know and understand

The choices are not binary, but along a continuum. They will both require some restrictions, large scale testing, tracing and isolation systems to keep us safe. In that regard they are similar. They differ in the depth, breadth and duration of how these measures are applied.

The big difference is that while Elimination will require the restrictions for a longer duration at first, it offers the reward of lower cases and greater public confidence about safety and all its attendant benefits. The Controlled Adaptation sends a signal of pragmatic acceptance of low infections right at the start, and in return promises a somewhat earlier return, greater flexibility with measures, and manages the risk of flare ups within the capacity of our adapted health system.

Neither of these two will allow for a return to life as we knew it over Christmas 2019. As with air travel after 9/11, some restrictions and impositions are here to stay. In both cases, enhanced hygiene, some measures of physical distancing and greater testing and tracing, will be the new norm.

In both cases most of us will remain susceptible. The final "exit" from both pathways will require a vaccine that confers immunity to all of us. We cannot predict when that will be. It seems reasonable to expect one in the next year or two. Should it become clear that the chance of a vaccine is remote – current strategies will need to be revisited.

The challenge over the coming weeks will be to evaluate the relative attractiveness of the two options; to assess, despite considerable uncertainty, how best to trade off the potential rewards of the Elimination option against the greater sacrifices required in a framework of values we share.

The Go8 looks forward to working with the nation and its Government to continue its contribution.

Three requirements for success

1. Early Detection and Supported Isolation
2. Travel and Border Restrictions
3. Public Trust, Transparency and Civic Engagement

Regardless of which path Australia chooses in mid-May, some things do not change.

1. Early Detection and Supported Isolation

- Both strategies will require an extensive system of testing, tracing and isolation.

- Two kinds of tests are useful. Tests detecting the virus (also called, PCR, antigen) and tests that detect personal immunity (antibody, serology). At this stage the virus-PCR test is the critical one.

- The purpose of testing is to identify the cases and isolate them, identify the contacts and quarantine them, and assess the level of community prevalence.

- Both strategies envisage that testing is widely available and accessible (including in remote areas), free of charge, with minimal wait times and a short turnaround time (less than one day). Sentinel testing, which entails testing of a few selected persons, alone will not be sufficient. Therefore, testing capacity will need to be significantly increased.

- The precise application of testing and contact tracing differs between the two strategies. In devising these new approaches Government should explore the possibility of engaging the community, private and business sector.

- In both strategies, those who are positive must isolate in a safe way – with support and monitoring in

an appropriate way. Their potential contacts must be traced and contacted, and advised quarantine and testing if appropriate.

- Isolation and quarantine should only end after confirmation of no further viral shedding.

Rather than waiting for a vaccine, we recommend that the Government fund research into developing and testing new strategies based on virus and/or immunity testing and a combination of in-country/overseas quarantine which may allow for an earlier resumption of international travel.

- Digital contact tracing apps can assist – however they are not a panacea and work best when integrated with traditional manual contact tracing methods.

- The Taskforce recommends the exploration and use of these innovative digital techniques but

cautions that automatic uptake may be low, and may require public campaigns to increase acceptance. Any such use must be with the person's consent, for a time-limited period, only for the purposes of public health, and without prejudice.

2. Travel and Border Restrictions

- Given the state of the pandemic in the rest of the world, we recommend that the government continue the two-week period of enforced and monitored quarantine and isolation for all incoming travellers regardless of origin or citizenship.

- International travel bans remain on all Australians, other than for sanctioned "essential" travel, for the next six months and any returning essential travellers be subject to the quarantine restrictions.

- If some countries have their epidemics under control in a manner same as ours, then our Government may explore establishing a special bilateral travel understanding.

- The Australian Government should engage with the World Health Organisation (WHO) to anticipate a regime of "International Vaccine Certification" were a vaccine to become available.

- We do not find evidence for a reliable "immunity passport" at the moment.

- Rather than waiting for a vaccine, we recommend that the Government fund research into developing and testing new strategies based on virus and/or immunity testing and a combination of in-country/overseas quarantine which may allow for an earlier resumption of international travel.

3. Public Trust, Transparency and Civic Engagement

- Given the months and possibly years of measures and compliance that are required, winning public trust, transparency of the information used to make decisions and the degree and quality of civic engagement are critical to success.

- Communication is the central link to building trust. Prioritise trust by acknowledging uncertainty, communicating clearly and with empathy for everyone, especially those with vulnerabilities.

- The Australian population has a sophisticated understanding of Covid-19 issues and has engaged

The Australian population has a sophisticated understanding of Covid-19 issues and has engaged actively in the social distancing issues. Treat them as a partner by clearly communicating rationale for decisions, including what evidence is being used, who was consulted, and what impacts were considered and why a choice was made.

actively in the social distancing issues. Treat them as a partner by clearly communicating rationale for decisions, including what evidence is being used, who was consulted, and what impacts were considered and why a choice was made.

- This is especially critical if there is use of citizen-generated data (i.e., from mobile contact tracing applications). Governments must address real and perceived privacy concerns and mitigate against the potential for misuse. Where possible use trusted independent bodies to oversee some of these activities to avoid the politicisation of health data and to ensure continuity.

- Maintaining civic engagement for the long haul is critical. Where possible, involve communities, industries, business organisations, and other stakeholders in decisions about options for strengthening and/ or relaxing containment measures.

- The young have been particularly displaced by the social distancing policies and many will find it hard to gain a foothold in the economy. Consideration should be given to the establishment of a funded national service program (e.g. *Aussies All Together*) to inclusively engage the young from across the nation in the process of social reconstruction across the country.

Six imperatives in the implementation of Recovery

1. The Health of our Healthcare System and its Workers

2. Preparing for Relaxation of Social Distancing

3. Mental Health and Wellbeing for All

4. The Care of Indigenous Australians

5. Equity of Access and Outcomes in Health Support

6. Clarity of Communication

1. The Health of our Healthcare System and its Workers

Australia has done an effective job of reinforcing its hospitals and its critical care capacity. For now, that seems sufficient. At the same time, the Australian health research sector has excelled by isolating the virus, developing vaccines candidates, and testing new therapeutics. However, it must now prepare for the long run and:

- Support healthcare workers by ensuring they have sufficient and assured PPE supplies and comprehensive training in the appropriate use and bespoke programs to support their mental health and well-being.

- Many have delayed or deferred their ongoing care and elective procedures. Support direct messaging to assure all Australians of the safety of the healthcare system and urge a gradual return to usual patterns of healthcare. Care of COVID-19 patients must not come at the expense of others.

- Create a national, real-time, data-repository of all COVID-19-related care in primary, secondary and acute care to ensure best care for all. This is critical because we know little about COVID-19 care now. Developing such a national resource will improve outcomes for all.

- Continue to support medical research that integrates laboratory, epidemiological and clinical trial-based and health services research that models the projected dissemination and spread of COVID-19 in an Australian context, informs strategies to minimise the number of infections and optimise the treatment of Australians.

- COVID-19 has resulted in a huge increase in video/tele-health and eHealth use. The valuable aspects of this new model should be sustained as an important part of routine health care, supported by nationally agreed standards and quality indicators. The digital divide in Australia must be closed or we risk even further entrenching existing health inequalities amongst lower income groups.

- The training and education of thousands of healthcare students has been disrupted. The National Principles for clinical education during the COVID-19 pandemic are a significant step towards flexibility in health care worker training requirements to ensure viability of the health workforce pipeline.

2. Preparing for Relaxation of Social Distancing

Australia will soon face the complex challenge of resuming campus teaching in schools and universities, and businesses returning to premises. While many will look forward to this, many others will be concerned and some will personally be at greater risk. How this transition is supported will have a major impact on societal wellbeing and economic recovery.

- Return to physical schooling with special consideration of the following groups: children in primary schools as they have additional needs in regards to socialisation, emotional and academic support and require greater parental involvement in schooling at home; students for whom this is the final year for transition to further study or employment; students and teachers who have pre-existing conditions and who may feel particularly vulnerable on return.

- All schools may need to coordinate a range of additional resources to help educators identify and address

learning gaps, mental health issues among students and concerns and wellbeing of staff.

- There is no one-size-fits-all formula for the return of all businesses. Consideration should be given to the creation of a sophisticated national "risk tool" that businesses can use to review and self-assess their own situation and create the appropriate and optimal environment for return.

There is no one-size-fits-all formula for the return of all businesses.

- A workforce health-tracking system specific to COVID-19 and should be developed to ensure that reopening practices are safe to the workforce and public. Information from such a system should be used to learn and design best practices, and those should be widely shared.

3. Mental Health and Wellbeing for All

The unprecedented scale and speed of the COVID-19 pandemic has implications for the wellbeing of all. Evidence from previous large natural disasters and pandemics shows that in its aftermath there is a significant increase in anxiety, depression, post-traumatic stress syndromes as well as substance abuse. These symptoms extract a huge individual and family price and a significant economic toll. People with psychological vulnerabilities and pre-existing mental illness are at higher risk. The greatly increased demand for services will continue throughout the recovery phase. The following is recommended:

- Coordinated and sustained public health messaging on the risks associated with COVID-19 and actions that can be taken to maintain mental health and wellbeing.

- Rapid scaling of secure evidence-based Health and Telehealth interventions in addition to strengthened provision of community-based support.

• Increased capacity to ensure timely assessment and effective treatment for people with ongoing mental illness and those at risk of suicide.

4. The Care of Indigenous Australians

The disproportionate impact of pandemics on Indigenous

Lack of adequate housing particularly adversely affects the ability of local aboriginal health services to control virus spread – immediate and more enduring interventions are needed to address the shortage of appropriate housing.

populations worldwide is well documented. Thanks to the leadership by Australian Indigenous organisations and their partnership with Governments, the number of cases is proportionately lower. However, Indigenous Australians are particularly at risk as Australia "reopens" with a weakened economy and the resulting consequences.

• We recommend the continued financial and logistical support of Indigenous COVID-19 planning taskforces in all jurisdictions for the remainder of the pandemic.

• Lack of adequate housing particularly adversely affects the ability of local aboriginal health services to control virus spread – immediate and more enduring interventions are needed to address the shortage of appropriate housing.

• The COVID-19 pandemic has exacerbated vulnerabilities of local workforces which were dependent on staff from interstate and even New Zealand. Short and Long-term initiatives to build local workforce capacity are needed.

5. Equity of Access and Outcomes in Health Support

History tells us that pandemics affect those with the least resources and with specific vulnerabilities hardest and longest. We must guard against that. Subsequent generations will judge us for how equitably we supported and included in decision-making the people who are most at risk.

- The report identifies several populations that are particularly at risk: women who are pregnant and women at risk of family violence, children and young people, those living in out-of-home care; older adults and those living in residential aged care; people with disabilities; people living with a life-threatening illnesses amongst others.

- Those who are at the intersection of these attributes, often bear the greatest brunt.

- The main purpose of this section is to alert the nation to its special responsibilities to these many populations.

- The main thrust of our recommendations is that there isn't a single silver bullet for all these diverse populations. However, a central principle is for Governments to engage and partner with these groups in designing and delivering solutions for them.

It is also critical that the public understand that even with the Elimination Strategy, life will not return to the 'old normal'.

6. Clarity of Communication

The overall success of the recovery will depend upon engaging widespread public support and participation regardless of which strategy is chosen.

If the Elimination Strategy is pursued, it is important that the public understands the additional

sacrifice needed, why it is worth it and what benefits they can expect in return. It is also critical that the public understand that even with the Elimination Strategy, life will not return to the 'old normal'.

Several community reference groups should be established so that collectively, they represent Australia's demographic and socio-cultural diversity.

With the Controlled Adaptation strategy, it is critical that the public understand that in exchange for an earlier relaxation, there will be a need for ongoing adaptation. The public should also be prepared that should numbers worsen, the course may need to be temporarily reversed. This would not be a failure of the strategy – rather it *is* the strategy.

It is important that Governments continues to:

- Communicate the approach and associated measures using specific and empathetic language that helps people feel empowered to act, rather than just passive recipients of instructions.

- Enlist the support and assistance of independent, credible and trustworthy advocates (e.g. healthcare workers, educators, community leaders) to convey key messages.

- Enhance the impact of communication by establishing community reference groups to provide ongoing input into the decisions that affect them and also how best to communicate them. Collectively they should represent Australia's demographic and socio-cultural diversity.

- Be proactive in identifying and actively combatting misinformation and conspiracy theories by transparently providing factual and current information.

1 An Ethical Framework for the Recovery

At a time of national crisis, and in turning our minds to the recovery from it, it is vital to clarify the key values and principles that will guide decision-making when we will face many difficult challenges and trade-offs.

There are things we should not be prepared to sacrifice, whatever the circumstances. While in other cases, we must be clear about conflicting values and the consequences of our choices. To facilitate that discussion, we articulate the six core principles that should frame Australia's decisions and policymaking. They are not only guides for decision-making about recovery, they are also preconditions for its success.

Six core principles to frame Australia's decisions and policymaking

1. Democratic accountability and the protection of civil liberties

2. Equal access to healthcare and social welfare

3. Shared economic sacrifice

4. Attentiveness to the distinctive patterns of disadvantage

5. Enhancing social well-being and mental health

6. Partnership and shared responsibility

1. Democratic accountability and the protection of civil liberties: Whatever measures Australia implements to deal with the virus now, and in recovery, must be compatible with a commitment to democratic accountability and the protection of fundamental civil liberties. Special measures that require restriction of movement or data-sharing, by either public or private bodies, must be proportionate, time-bound, grounded in consent and subject to democratic review.

2. Equal access to healthcare and social welfare: Equal access to healthcare and core universal services and to a social safety net for all in our community must remain a fundamental principle now, and later, as we recover.

Many such inequities are not a direct impact of the virus, but a consequence of the choices we have made in responding to it. These and future economic sacrifices must be shared fairly across the community.

Attention must also be given to the healthcare and social needs of those within our society who are not currently citizens, with appropriate recognition of their special circumstances.

3. Shared economic sacrifice: While the virus's economic impact is significant and affects all of us in different ways, some bear more of the cost than others. Many such inequities are not a direct impact of the virus, but a consequence of the choices we have made in responding to it. These and future economic sacrifices must be shared fairly across the community.

4. Attentiveness to the distinctive patterns of disadvantage: Equal treatment is a fundamental value in Australia, nonetheless the impact of policies and measures on people varies depending on their social circumstances. Aboriginal and Torres Strait Islanders, minorities, women, children, people with disability, the elderly and others, will experience distinctive disadvantages as a result of their relative social, economic and cultural position. Any policies and measures to contain the virus, and for recovery, must explicitly identify and address the negative distributional effects of implementation.

5. **Enhancing social well-being and mental health:** Any policies or measures should aim to enhance and strengthen individual mental health, social solidarity and reciprocity, both now and as we recover. Economic renewal programs should focus on lifting the most disadvantaged first. We should foster economic and social innovation that will make Australia more resilient in the face of future shocks.

6. **Partnership and shared responsibility:** Recovery is not just what governments can do for us, but what we can do for each other – and in partnership with our community organisations, businesses and industry. Each of us has an individual responsibility to respond in this moment of crisis. We have a duty to act in ways that both respects the dignity and equal worth of others, contribute to their safety, and to ensure that the measures implemented now and in recovery are equitable and just.

It is important also to recognise the inter-relatedness of these principles. Each principle reinforces the other.

Economic renewal programs should focus on lifting the most disadvantaged first.

Democratic accountability depends on an engaged community, which in turn depends on its social and economic well-being. The protection of our civil liberties, as well as the universal provision of health and social welfare, depends on our shared commitment to upholding the necessary conditions required for civic life.

In the next few months and years, we will not just be responding to a virus. Our response will be defining who we are and what we will become.

2 The Elimination Option

Definition: Elimination is defined as the eradication of community transmission of SARS-CoV-2 at a country, State/Territory or regional level. In practice this would mean no new SARS-CoV-2 cases linked to community transmission or unknown sources of infection over two incubation periods since the time of the last known community acquired case, *provided* a highly sensitive early detection, case and contact tracing and management surveillance system is in place.

A jurisdiction-by-jurisdiction elimination approach would only relax internal containment and social distancing measures once there was no evidence of community transmission in the relevant jurisdiction, and once appropriate early detection and control measures were in place. It would aim to maintain elimination through border control and detection and control of transmission chains. This contrasts with the "controlled adaptation" method (next chapter), which would allow for an earlier relaxation of social distancing measures while there is still some minimal evidence of community transmission – seeking instead to maintain such transmission at levels for a prolonged period.

Key Points:

- Elimination of community transmission, and maintenance of that elimination **is achievable and feasible** in Australia, unlike many other countries. This has already been achieved in some of our jurisdictions and could be made to occur for the last State/Territory by June, and hence nationally.

- Elimination of community transmission could optimise health, social and economic outcomes for Australia and provide particular safety to the vulnerable groups who are especially at risk if we allow ongoing background transmission.

- Elimination of community transmission in Australia will present unique geopolitical and economic advantages, positioning Australia as a global and regional leader, and attracting and reinvigorating business activity at a greater pace.

Goal and objectives

The goal of Elimination is to optimise health, social and economic outcomes in Australia through:

- Elimination of local transmission of COVID-19 on a State and Territory, and then national basis;

- Maintenance of such elimination, through border control, highly sensitive early detection systems and effective control of detected transmission chains;

- Implementation of gradual and targeted relaxation of internal containment and social distancing measures once elimination is achieved with continuing avoidance of large gatherings and other potential super-spreading activities;

- Use of a State and Territory approach means that social and economic activities can be resumed as each jurisdiction achieves elimination and builds its surveillance and control capacity, with appropriate jurisdictional border controls in place until there is elimination across all States.

Methods and requirements

The methods of the elimination approach are broadly summarised as:

1. **Continuation of current containment, social distancing, testing, contact tracing and management measures** to bring about elimination of community transmission of SARS-CoV-2.

2. In parallel, **further enhancement of a highly sensitive early detection, case and contact tracing and management and border control system**, with monitoring of important parameters. This would build on existing systems and is required for both the elimination and controlled adaptation options; it is outlined in detail below.

3. **Community engagement** is critical to any early detection and control system, to ensure appropriate support for and engagement with the required measures. The Australian community has shown itself to be highly engaged and compliant with COVID-19 control measures (see below).

It is anticipated that internal containment and social distancing measures will be able to be relaxed to a greater extent under the elimination than the controlled adaptation approach, since the risks of resurgence of community transmission will be minimised.

4. Once **early detection, case and contact tracing and management and border control systems are functioning** at the required capacity and these systems show that elimination has been achieved, **gradual and targeted relaxation of social distancing measures can be implemented**.

5. **Strong border control measures and quarantining of people coming into Australia** from areas affected by COVID-19 will need to be maintained. It is anticipated that internal containment and social distancing measures will be able to be relaxed to a greater extent under the elimination than the controlled adaptation approach, since the risks of resurgence of community transmission will be minimised.

6. The overall system will need to be **responsive to community needs** and will need to be able to **take advantages of technological advances as they occur**, including progress with contact tracing apps and potential self-testing for SARS-CoV-2. Systems requirements will need to be reviewed regularly and adapted (Lurie et al, 2020).

Details of early detection and case and contact management systems, including performance indicators and targets

In addition to current testing, testing should be implemented to detect all SARS-CoV-2 transmission chains. This should occur through testing all syndromic fever and cough primary care presentations, in combination with exhaustive and meticulous case and contact identification and management (Lokuge et al).

These measures will enable appropriate early detection and elimination of community transmission of COVID-19 and are in addition to established regimes such as the testing of very fast increasing here symptomatic travellers, contacts, health care workers and hospitalised pneumonia cases. If testing capacity is limited, interventions such as pooling allow increased case detection, even given reduced test sensitivity. Though our first preference is to increase testing capacity to meet the potential need.

Wider identification and testing of all upstream contacts, (i.e. potential sources of infection for identified cases, and their related transmission chains) is critical, and to be done exhaustively requires more resources than downstream contact tracing. Symptom definitions may be broadened as evidence emerges (see below).

An Australian study investigated detection and elimination of community transmission of SARS-CoV-2 and maintenance of such elimination (Lokuge et al). It compared efficiency and sensitivity to detect community transmission chains through testing of hospital cases; primary care fever and cough patients; or asymptomatic community members, using surveillance evaluation methods and mathematical modelling, varying testing capacities and prevalence of COVID-19 and non-COVID-19 fever and cough, and the reproduction number. This analysis showed that, assuming 20% of cases are asymptomatic and that all symptomatic COVID-19 cases present to primary care – there are 13 unrecognised community cases

(five infectious) when a transmission chain is identified through hospital surveillance versus three unrecognised cases (one infectious) through primary care surveillance (Lokuge et al) – making primary care detection a better choice. These three unrecognised upstream community

… there are 13 unrecognised community cases (five infectious) when a transmission chain is identified through hospital surveillance versus three unrecognised cases (one infectious) through primary care surveillance …

cases are themselves estimated to generate a further 22–33 contacts requiring follow-up. The unrecognised community cases rise to five, if only 50% of symptomatic cases present to primary care. Screening for asymptomatic disease in the community could not exhaustively

identify all transmission under any of the scenarios assessed. Thus primary care driven identification seems the preferred mode.

System requirements for increasing testing to allow exhaustive identification of all transmission chains, and then enable complete follow-up of all cases and contacts within each chain, were assessed per million population. The additional capacity required to screen all fever and cough primary care patients would be approximately 2,000 tests/million population per week using 1/16 pooling of samples (Lokuge et al). Australia could easily enhance its capacity to meet these numbers and with the availability of greater testing may even be able to dispense with pooling.

The following are **recommended indicators** for elimination achievement and maintenance. They relate to the ability of the system to cover and test the population (A), indicators which will assure one that elimination targets are being met (B) and being maintained (C).

A) Indicators of system coverage, uptake and completeness:

- **Proportion of fever and cough (influenza-like-illness) in the community screened for COVID-19 (target=100%):** weekly percent population screening target for all locations to be based initially on State/Territory-specific targets in Table 1, varying with expected monthly total fever and cough incidence (i.e. 0.6%–3% of the population). This percent target should be reassessed monthly based on sentinel influenza surveillance systems (e.g. Flutracker, plus additional community-based surveys.) Surveillance system performance should also be validated through, for example, random community-based surveillance for unreported fever and cough at household and in general primary care settings. Fever and cough prevalence have decreased due to social distancing, however as these measures are lifted, it would be expected that prevalence will increase, especially if lifting occurs during winter.

- **For the elimination option, the above indicator is the primary indicator to be monitored on an ongoing basis, regardless of whether phase of response is aiming towards elimination or maintaining elimination.**

- Related performance indicators:

  » Uptake of screening for COVID-19 in patients with fever and cough in sentinel surveillance populations **(target=100%)**, this can be part of the information collected during sentinel follow-up and monthly fever and cough prevalence surveys recommended above.

  » Community understanding of testing criteria, attitudes towards uptake of screening, practices related to screening, views on feasibility and burden, support services for enabling screening (again, can be included in sentinel surveillance and surveys).

B) Indicators of *successful progress towards elimination* of community transmission, given indicators in (A) have all been met:

- Proportion of newly reported cases that are travel related and/ or known contacts of confirmed cases **(target=100%)**.

- Proportion of newly reported cases that are tested on day of symptom onset **(target=100%)**.

- Proportion of newly detected cases

… total number of contacts under follow up per case should be >35 …

that have been under quarantine from time of exposure event **(target=100%)**.

- Proportion of complete follow up of all contacts **(target=100%)**. Initially, as the modelling suggests, the number of upstream contacts under follow up per case should be at least 2 times number of downstream contacts under follow up (as there will be 2–3

upstream transmission branches for every identified case, and total number of contacts under follow up per case should be >35, unless there is a clear justification for lower). This figure should also be reviewed regularly, and contact case definitions updated based on sero-surveys and screening for viral shedding around identified cases, including in high-risk settings (institutional settings, schools, health care facilities). Complete follow-up includes:

» For upstream contacts: PCR and serological testing at time of case detection

» For downstream contacts: documented quarantining for 14 days after last contact, linked to PCR testing at end of quarantine period to exclude asymptomatic viral shedding.

- Proportion of hospitalised new cases and/or deaths relative to total new community-acquired cases **(target=0%)**.

- Proportion of tested patients provided results within 24 hours of testing **(target = 100%)**.

C) Indicators of successful elimination of community transmission, given (A) and (B) have all been met:

- Proportion of new cases are travel related introductions of disease **(target=100%)**.

- Proportion of new cases that are classified as unknown source or local community transmission-related exposure **(target=0%)**.

Elimination-relevant evidence and technologies regarding early detection and case and contact management systems should be reviewed rapidly on an ongoing basis, incorporating new evidence-based developments as they emerge. Such developments include: data on symptoms that would be appropriate to include in addition to fever and cough in primary care (e.g. anosmia, milder influenza-like-illnesses); analysis of wastewater; and use of apps related to contact tracing and management.

There is relevant evidence available from countries and jurisdictions with experience of effective COVID-19 control, including China, Singapore, South Korea, Hong Kong and Taiwan (see Appendix).

Evidence: rationale, benefits and risks of the jurisdiction-by-jurisdiction elimination approach

Elimination is a desired outcome and the lowest risk approach. Apart from global eradication, elimination is the most effective measure to control mortality and morbidity from and health services impacts of infectious disease. The desirability of this goal is not disputed, the main concerns regarding an elimination approach are:

i. that it may not be achievable;

ii. that it may not be sustainable; and

iii. that it may be too costly in social and economic terms to achieve and maintain.

We address these concerns below, including demonstrating the feasibility of the approach, its safety and the fact that it is likely to result in better health, social and economic outcomes than its alternatives.

Elimination is feasible, even in the presence of asymptomatic infections, based on detection and management of transmission chains.

Chapter 2: The Elimination Option

Figure 1. Sporadic disease
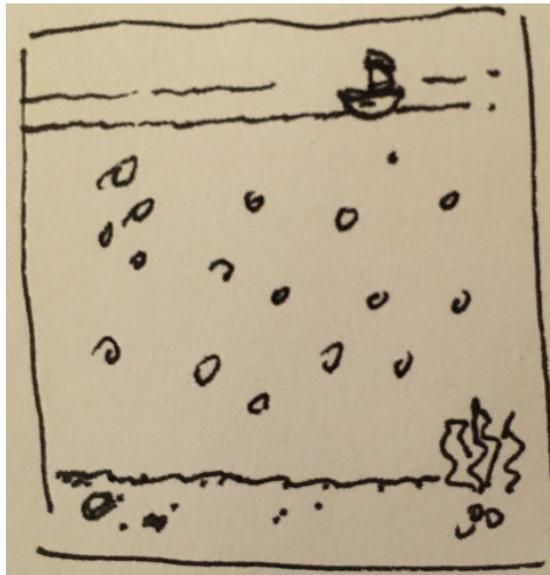
Figure 2. Disease in Transmission Chains
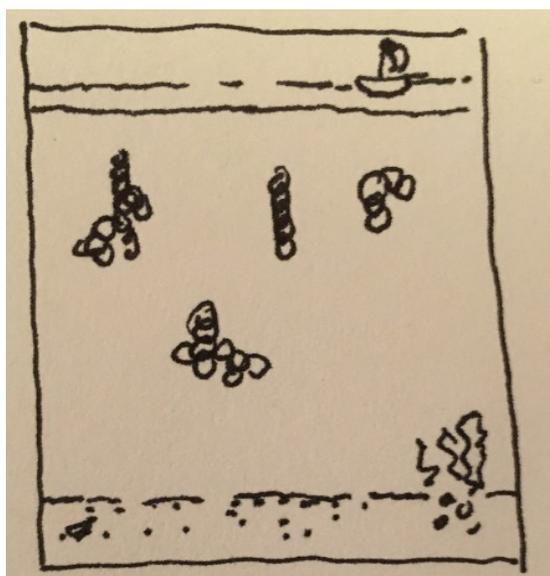
Concerns have been raised regarding the proportion of individuals infected with SARS-CoV-2 who are asymptomatic and the implications of this for elimination and disease control. Most screening in high income countries such as Australia targets detection of sporadic disease in asymptomatic individuals, scattered throughout the population e.g. for breast, bowel and cervical cancer, PKU, neonatal deafness (see Figure 1). Population testing for asymptomatic cases is critical to the success of such screening. In contrast, infectious diseases like COVID-19 occur in transmission chains, where each case is linked to another series of cases (see Figure 2).

Detection and control of these types of infectious diseases relies on first detecting the transmission chains, then exhaustive upstream and downstream identification and management of all of cases in each chain. The World Health Organisation recommends management of COVID-19 using transmission chains (World Health Organisation, 2020). Provided a proportion of the cases in each transmission chain are

symptomatic, each chain will be detectable. Subsequent contact tracing aims to identify and manage cases in the chain regardless of whether they are symptomatic or asymptomatic; for example, quarantining of downstream contacts of cases will prevent spread of disease regardless of whether someone develops symptoms.

The crucial question for COVID-19 control is not the proportion of cases which are asymptomatic, but whether the early detection system that is applied will detect cases and prevent transmission. This relates to the proportion of *transmission chains* (rather than individuals) that are totally asymptomatic. While the proportion of SARS-CoV-2 cases which are truly asymptomatic is currently not known,[1] our analyses indicate that virtually all transmission chains will include symptomatic individuals (Lokuge et al). Added to this, early detection systems should include a broad range of testing, including conducting wide serological testing in potential upstream contacts, testing of sentinel and vulnerable populations, such as

health care workers, as well as testing with expanded sensitivity (such as that which may be possible with sewerage) and sequencing viral samples, allowing investigation of relatedness of infections. Finally, general measures such as containment, social distancing and border control work on both symptomatic and asymptomatic infections.

Australia is in the enviable position of having elimination as the preferred option for COVID-19 control, thanks to a range of factors, including the timely actions of the Australian community.

Australia is on track to eliminate community transmission of SARS-CoV-2 and elimination is likely to have already been achieved in multiple jurisdictions. Australia is in the enviable position of having elimination as the preferred option

---

1   https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200402-sitrep-73-covid-19.pdf?sfvrsn=5ae25bc7_6

Chapter 2: The Elimination Option

for COVID-19 control, thanks to a range of factors, including the timely actions of the Australian community. The low number of cases overall mean that elimination is possible within a relatively short timeframe if containment measures are maintained. ***A number of jurisdictions are already at or close to elimination,*** in that they have recorded no cases where the source was not a known case (presumed community transmission) or have recorded <10 such cases during the course of the pandemic to date (e.g. ***Australian Capital Territory, Northern Territory, South Australia, Tasmania, Western Australia***).[2] Other jurisdictions are showing rapidly declining case numbers, especially those from unknown sources. Hence, the most recent available national data indicate small and declining numbers of cases with an unknown source (Figure 3).

Figure 3. Number of COVID-19 cases by place of acquisition over time, Australia (n = 6,394)
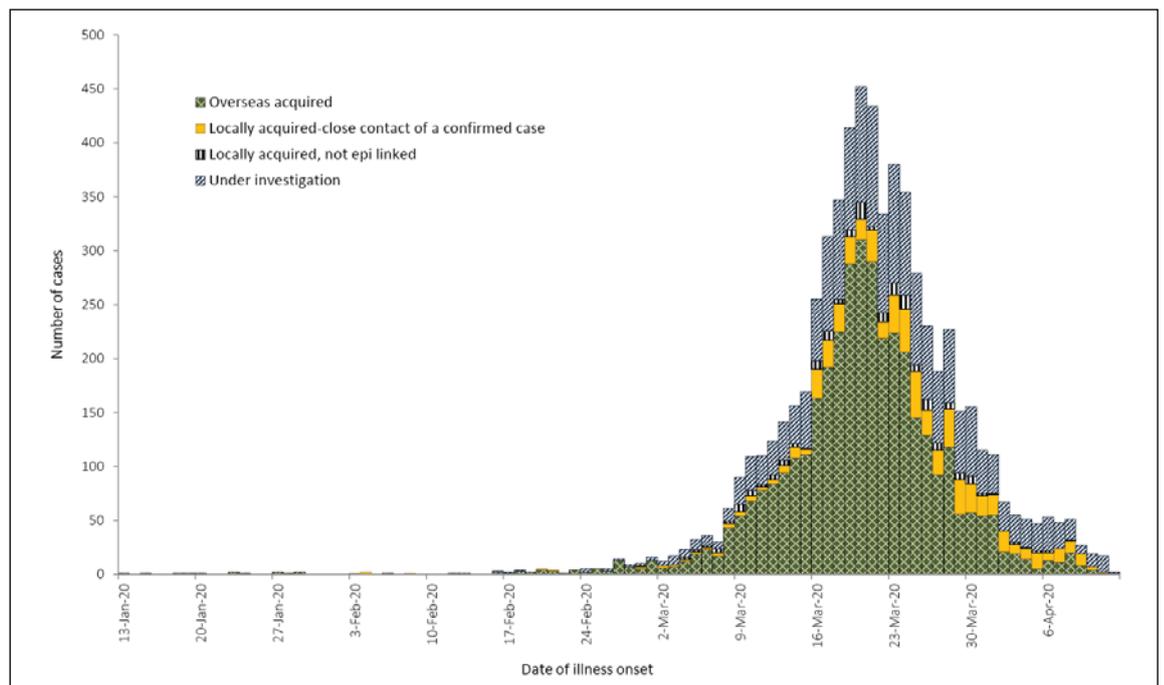
From: Commun Dis Intell 2020 44 https://doi.org/10.33321/cdi.2020.44.34 Epub 17/4/2020

----

2   https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers#in-australia

A basic reproduction number in the range 2.2–2.7 has been used in relevant Australian modelling studies and appears consistent with local dynamics (Change et al, 2020; Moss et al 2020, Coatsworth 2020, Jarvis et al 2020). Currently, effective Rt is below 1 across virtually all jurisdictions in Australia, with the increase in Tasmania due to an identified cluster of cases. This is evidenced by declining prevalence across states and territories; estimates from multiple approaches, including modelling, are that the effective reproduction number (Rt) to about 0.5 at present in NSW and Victoria (Figure 4).

The reductions in the effective reproduction number that have been achieved indicate approximately a two thirds reduction in overall transmission since early March. This has been achieved through social distancing combined with contact tracing and increasingly effective public health control as case numbers have dropped and notification delays have fallen. The updated model of

Chang et al. (2020) suggests that the social distancing compliance levels in Australia have approached 90% between 24 March and mid-April 2020, providing evidence of high community engagement with the measures.

The updated model of Chang et al. (2020) suggests that the social distancing compliance levels in Australia have approached 90% between 24 March and mid-April 2020, providing evidence of high community engagement with the measures.

Hence there is good evidence that, if the current efforts are continued, elimination will be achieved, state-by-state. Estimates based on modelling – and from calculations based on an Rt of 0.5, current national case numbers of 50/day and a serial interval of five days – indicate that elimination of

Chapter 2: The Elimination Option

Figure 4. Time-varying estimate of the effective reproduction number of COVID-19

(light blue ribbon = 90% credible interval; dark blue ribbon = 50% credible interval) up to 5 April based on data up to and including 13 April, for each Australian State/Territory with sufficient local transmission (excludes ACT, NT). Confidence in the estimated values is indicated by shading with reduced shading corresponding to reduced confidence. The black dotted line indicates the target value of 1 for the effective reproduction number required for control. The red dotted line indicates the reproduction number estimated for the early epidemic phase in Wuhan, China in the absence of public health interventions and assuming that the population was completely susceptible to infection (2.68). Estimates from Tasmania should be regarded with caution.

From: Price et al, 2020
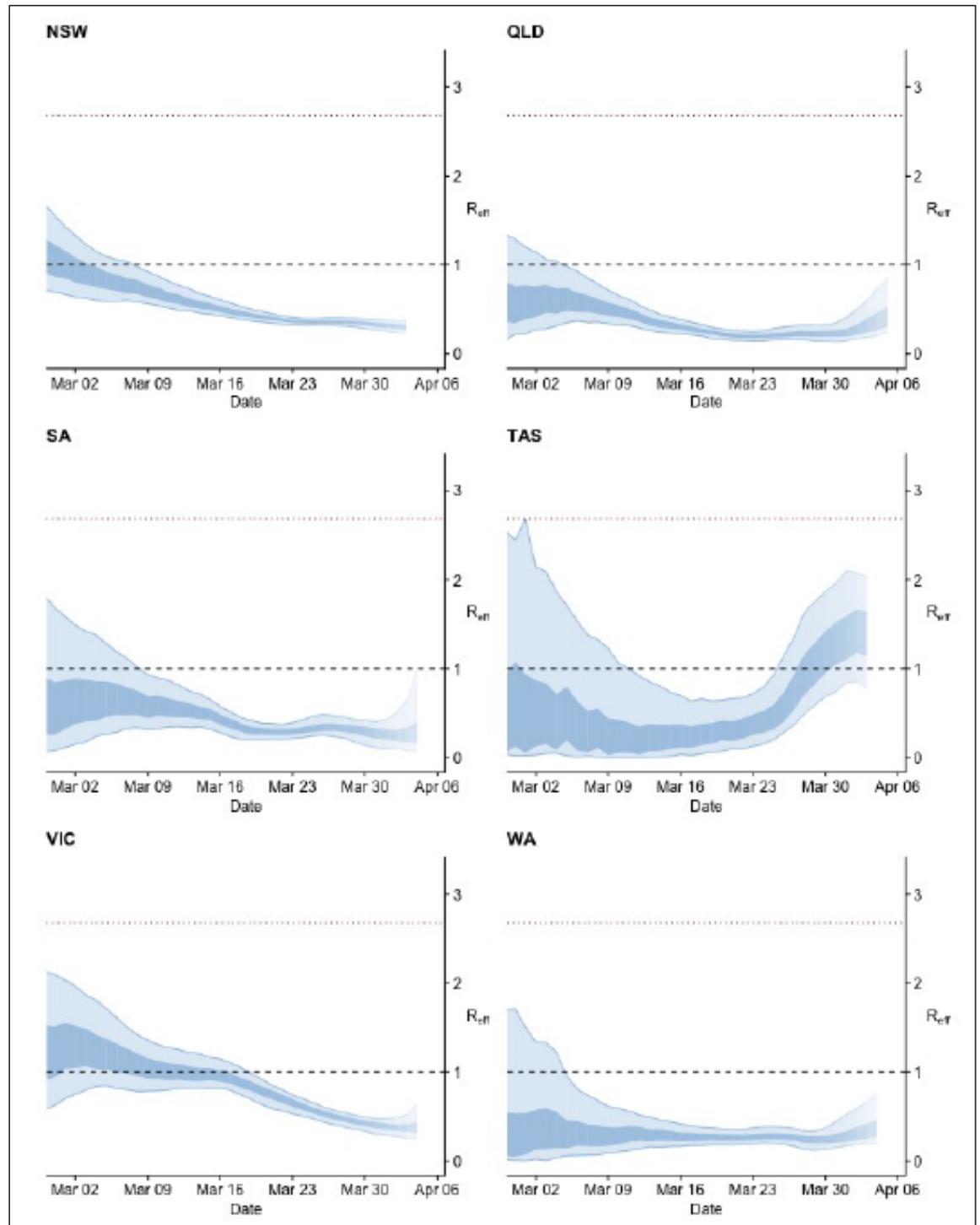
community transmission for the last remaining state in Australia is likely to occur within 30–60 days from the time of writing (i.e. from 16 May to 14 June). This is assuming no major institutional or other outbreak events. Empirical evidence suggests it may be quicker than this, depending on levels of community action: in Hubei province case numbers fell from around 80 cases to <1 case on average per day in two weeks, albeit with extreme containment and social distancing. It would be expected that with further enhancements of surveillance in Australia and resultant early case detection and case and contact management, the rate of elimination would be increased.

The reductions in the effective reproduction number that have been achieved indicate approximately a two thirds reduction in overall transmission since early March. This has been achieved through social distancing combined with contact tracing and increasingly effective public health control as case numbers have dropped and notification delays have fallen.

Maintenance of elimination is achievable and feasible. Australia has a long history of successful disease elimination and of maintaining long term elimination, including for human conditions with and without vaccines. It has also demonstrated its ability to maintain biosecurity for a wide range

Australia has a long history of successful disease elimination and of maintaining long term elimination, including for human conditions with and without vaccines.

of animal and plant diseases – such as equine influenza, bovine brucellosis and foot and mouth disease[3] – that remain widespread in the rest of the world. A number of Asian countries – including China, Hong Kong, Taiwan and South Korea – and New Zealand have either implicit or explicit aims to control COVID-19 through elimination, at a regional or national level. Policies in many other countries, particularly

3   https://www.health.qld.gov.au/cdcg/index/brucell

in Europe, are predicated on assuming elimination is not possible – partly given the extent of their spread and partly because they do not account for the impact of community-based case detection and contact tracing on transmission control (Ferguson et al, 2020).

In general, such outbreaks can be managed with effective surveillance, even if very large … but limitation of non-essential mass spreading events will mean the surveillance and case management systems will not be overwhelmed.

Mantaining elimination of COVID-19 community transmission will require demonstrable high-performing border controls, case and contact follow-up, along with sufficient testing and surveillance to detect a low risk of COVID-19 circulation in the population (Baker et al, 2020).

In a very low transmission setting, which is tending to elimination and where interventions have been partially relaxed, it is important to be prepared to rapidly respond to a breakout spike in cases. Modelling suggests that such a reactive strategy, where the strength of social distancing measures is rapidly increased, is highly effective.[4] In general, such outbreaks can be managed with effective surveillance, even if very large (e.g. as has been seen in South Korea) but limitation of non-essential mass spreading events will mean the surveillance and case management systems will not be overwhelmed.

Once elimination, surveillance and control system and border control indicators are met, gradual and targeted relaxation of containment social distancing measures can be implemented.

There is a chance for rebound cases if the current containment and social distancing measures are relaxed simultaneously and broadly. A phased approach, tailored to specific cohorts of the population and sectors of the economy, is recommended.

4   Figure 1, Milne and Xie, medRxiv https://doi.org/10.1101/2020.03.20.20040055

Employees in several prioritised sectors of the economy can be excluded from strict social distancing and added in a staggered fashion to the essential services which are currently exempt.

Priority can be decided by Government, with a focus on:

1. manufacturing, construction, mining, agriculture, forestry and fishing;

2. wholesale and retail trade; and

3. tourism, education, media and communication, arts and recreation.

There is a trade-off between compliance/adoption levels and duration of the restrictions (Chang et al., 2020), and so an elimination strategy would need to err on a side of caution in recommending time intervals for resumption of activity. Consideration would be given to continuing social distancing tailored to specific community cohorts (e.g. elderly, immunocompromised individuals, and other vulnerable groups). Given the experience in South Korea, avoidance of large gatherings would reduce risk.

Elimination of community transmission and maintenance of this elimination will optimise health, social and economic outcomes for Australia. The elimination strategy will result in the fewest cases of disease and lowest mortality compared to other proposed strategies. Given the value of life and health and the uncertainties about the long-term effects of COVID-19 infection, this is a critical consideration. It will also place the least burden on the health care system, protecting our health care workers and ensuring they are able to support the health of the broader community. This is particularly important given the likely co-circulation with seasonal influenza. Elimination will also permit the greatest resumption of health programs – including screening programs – critical to reducing morbidity and mortality in Australia.

The marginal costs of achieving elimination are low relative to the alternative of controlled adaptation and, overall, the total economy costs may be lesser than other strategies. After elimination has been achieved it should permit greater social and

Chapter 2: The Elimination Option

economic activity within the region of elimination than its alternatives, up to the point where a vaccine and/or effective treatments become available. Additionally, once one region has demonstrated the requirements for sustained elimination in the context of lifting of control measures, this provides guidance and unparalleled incentives for other settings to implement such measures. As the areas and regions achieving elimination grows, the economic benefits continue to accumulate for those regions. However, those areas not achieving elimination will suffer comparatively greater social and economic marginalisation.

Elimination of domestic transmission would not only provide tangible benefits, it would result in substantial intangible benefits related to change in people's perception in relation to infection; it would be expected to result in increasing participation in the entertainment and hospitality sectors. Controlled adaptation would likely have a greater ongoing impact on perceptions and behaviour, and therefore on such sectors. Elimination would be expected to positively

influence consumer and business confidence and would also reduce the uncertainty and associated risks with a new outbreak and subsequent re-introduction on social distancing controls. Importantly, repeated, large-scale outbreaks, with possible re-introduction of controls, as may occur with controlled adaptation, would likely have negative impacts on business confidence and investment as it would make business planning, beyond the very short term, difficult.

Elimination may mean a slower relaxation of mandated controls (say a maximum of 30 days or so after controlled adaptation begins to relax mandated controls, for the latest jurisdiction). Thus, elimination implies initially higher economic costs until mandated controls are relaxed. The estimated economic costs per 30 days of current levels of mandated controls is approximately 2% of GDP. After mandated controls are relaxed, there is a higher level of economic activity as Australia moves closer to (but is still below) pre-COVID-19 economic output – thus leading to greater improvement in the medium term.

The relative economic performance of elimination and controlled adaptation is illustrated in Figure 5. In this figure, area B (economic output with elimination, less economic output with controlled adaptation *after* 1 August 2020) exceeds area A (economic output of controlled adaptation, less economic output with elimination *before* 1 August 2020). An elimination strategy may be expected to deliver, say, about a 5% higher level of economic activity, on average, for each month from 1 August. Thus, **an elimination strategy might be expected to deliver, over an 18-month period, about 50% more increase in economic output compared to controlled adaptation**. Even in the extremely conservative projection that elimination only delivers a 1% extra economic output per month, on average, from 1 August 2020 onwards compared to the adaptation strategy, it remains the preferred strategy in terms of the economy.

Both elimination and controlled adaptation overwhelmingly dominate an uncontrolled epidemic attempting to achieve herd immunity. This is illustrated in Figure 6 where the vertical axis measures economic loss. The uncontrolled strategy results in **at least THREE times greater** economic loss than an elimination strategy. Figure 6 also shows that an elimination strategy dominates a controlled adaptation strategy where a vaccine is not available, at the earliest, until the second half of 2021.

*The uncontrolled strategy results in **at least THREE times greater** economic loss than an elimination strategy.*

Figure 7 provides a comparison of the possible number of COVID-19 infected people in Australia with the elimination and controlled adaptation strategies. It illustrates that a controlled adaptation strategy has a greater probability of recurrence of another outbreak. This is shown by the 'ups and downs' in the number of infected persons with a controlled adaptation strategy but not with the elimination strategy.

Chapter 2: The Elimination Option

Figure 5

Figure 6

Figure 7
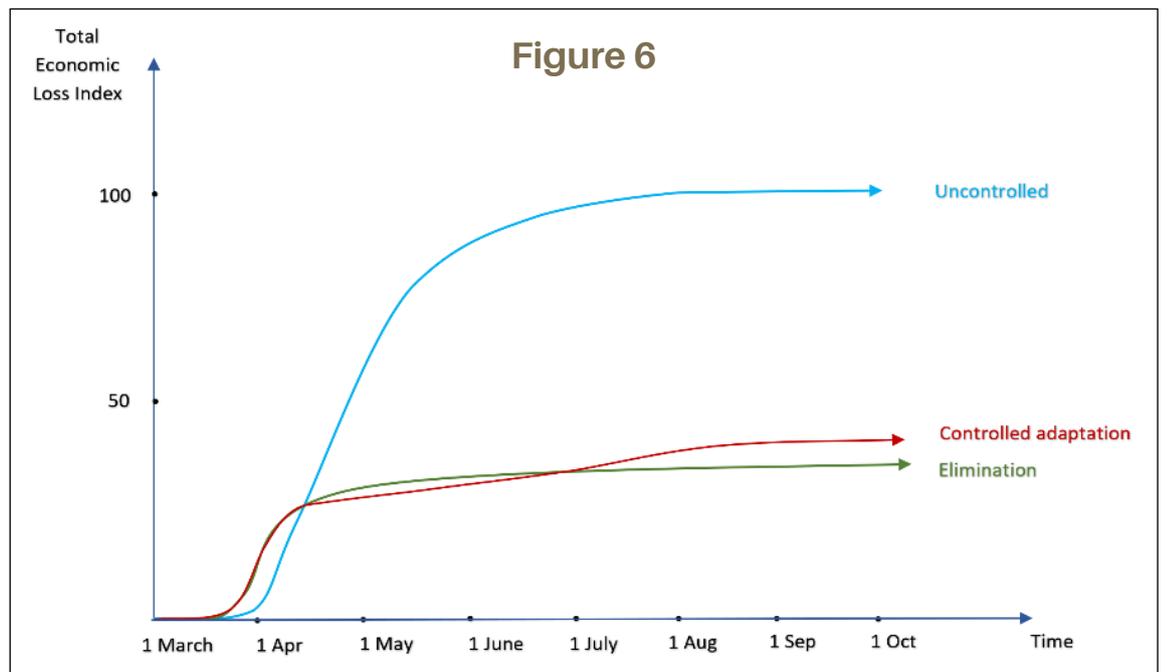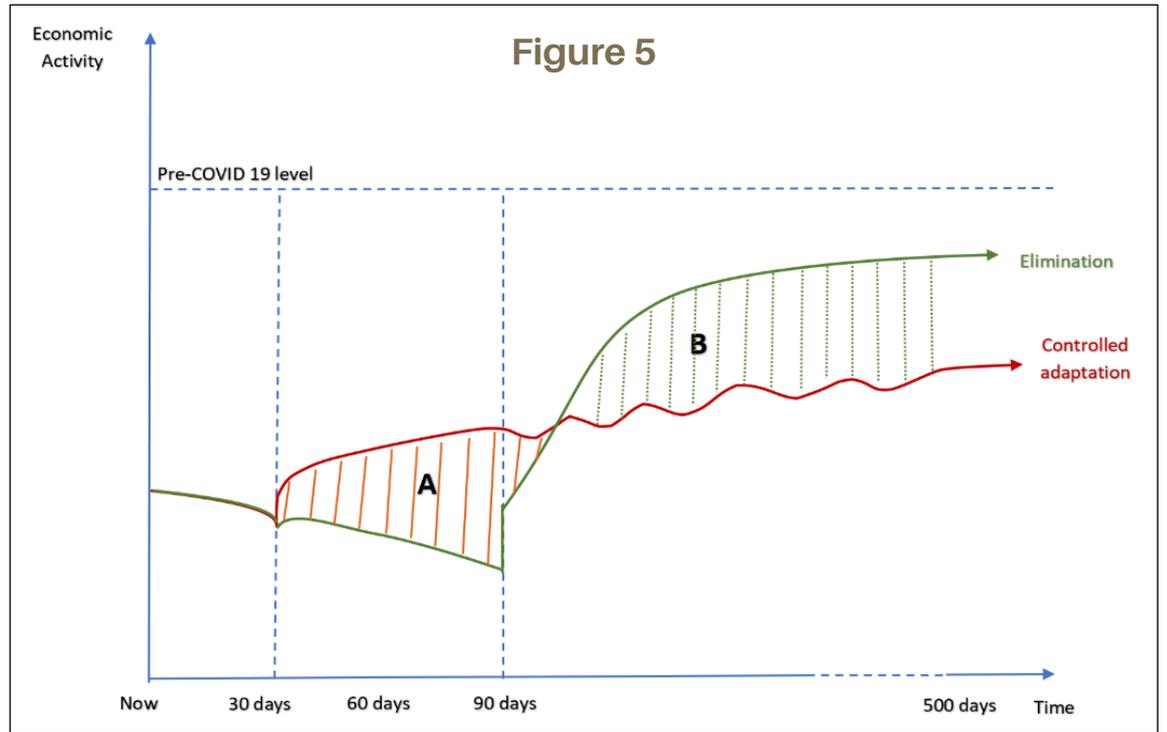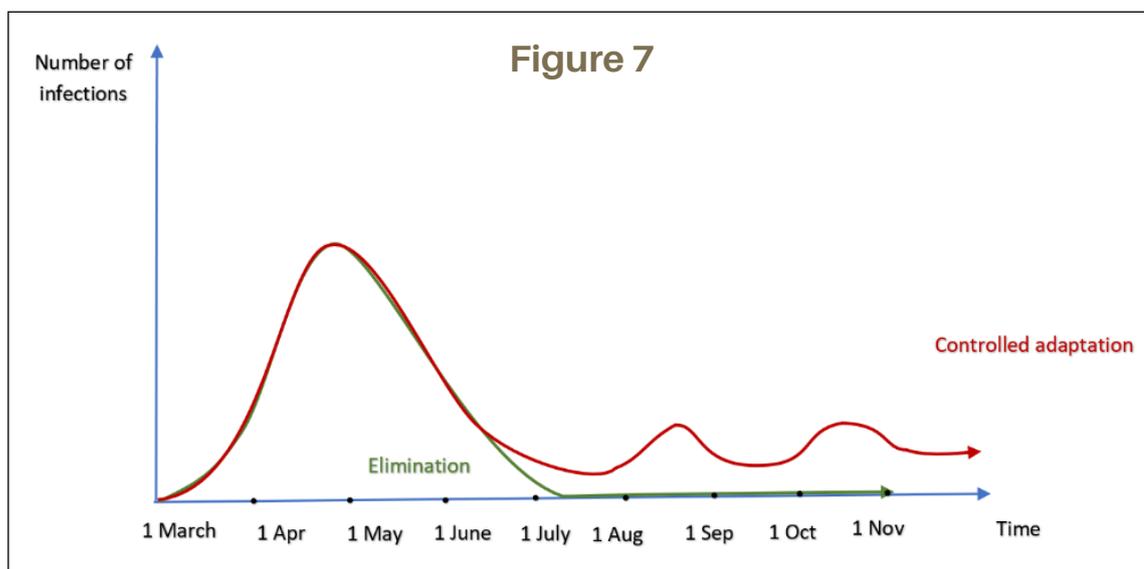
There are significant risks to allowing continuing background community transmission of SARS-CoV-2 in Australia, including for vulnerable populations. Cases of COVID-19 in the community will inevitably lead to morbidity and mortality. The greater the number of cases in the community at the time when measures are relaxed, the greater the probability of a spike in new cases. Controlled adaptation is a higher risk strategy than elimination, as with a positive number of cases there is a higher probability that an outbreak will occur resulting in more deaths and the possibility of the reintroduction of physical distancing controls. This phenomenon has already been seen in settings where containment and social distancing measures have been relaxed while community transmission is still occurring.[5] Even in settings with limited transmission, without enhanced surveillance transmission resurgence occurs, but with enhanced surveillance such resurgence is prevented (as has been seen in South Korea: see Appendix).

5   https://www.bbc.com/news/world-asia-52305055

Chapter 2: The Elimination Option

This issue is further emphasised by recent modelling work demonstrating that, in the European setting, Rt only becomes <1.0 when multiple strong measures of social distancing are implemented (see example for Denmark in Figure 8). Hence, if social distancing measures are relaxed when community transmission is active, the Rt may increase to >1.0 and remaining cases then become foci for resurgent infection.

To date, even when there have been small numbers of cases nationally, it has not been possible to prevent vulnerable community members from contracting COVID-19, especially within institutions such as aged care homes. This is because these individuals remain connected to community members for their care and other needs. The greatest protection from infectious diseases for the vulnerable comes from minimising the potential pool of infection they are exposed to, with elimination providing the greatest assurance of such protection.

Figure 8. Relation of different non-pharmaceutical interventions to Rt
Example from Denmark (Flaxman et al., 2020)

Time-varying reproduction number R_t, dark green 50% CI, light green 95% CI. Icons are interventions shown at the time they occurred.
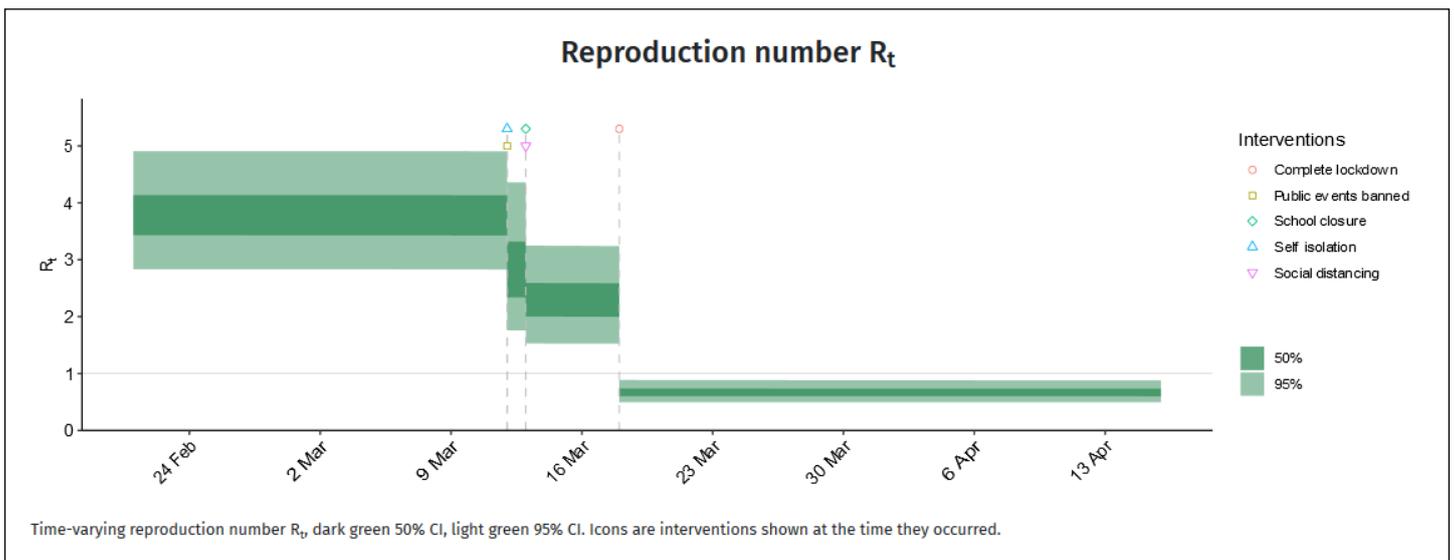
There are also risks to regional Australia from removing restrictions prior to elimination of community transmission. In our prior work, we distinguished between urban and rural epidemic peaks: "the first wave is observed in highly-urbanised residential centres where the pandemic first reaches a nation (e.g. near international airports), whilst the second wave is observed in sparsely connected rural regions" (Zachreson et al, 2018). "In contrast to many other countries with a more even spatial population distribution, Australia comprises a relatively small number of densely populated urban centres distributed along the coastline, sparsely connected to many more low-density inland towns and rural/regional communities. This particular population distribution has been implicated in Australia's highly bimodal epidemic curves, with modes associated with its urban, and rural communities". For the COVID-19 pandemic early results indicate that the first wave may peak in metropolitan areas about 45 days before the smaller second

wave in regional Australia (seen as an inflexion in Fig 3b from Chang et al. 2020). This effect disappears under the elimination strategy. Failing to eliminate the current spread concentrated in/near major urban centres may result in secondary waves in regional Australia.

For the COVID-19 pandemic early results indicate that the first wave may peak in metropolitan areas about 45 days before the smaller second wave in regional Australia …

Risks of the elimination approach.
While States and Territories will vary in the time taken to SARS-CoV-2 elimination, the jurisdiction-by-jurisdiction approach is likely to require greater time before containment and social distancing measures can be relaxed to the fullest extent possible. There are also risks related to controlling

internal borders while States/ Territories are at different stages of control. The approach depends on being able to establish and maintain strong international border controls, including quarantining of people coming into Australia from areas with active COVID-19 transmission. It is

As demonstrated by the strong positive support for leaders that took early decisive and consistent action, the community can and will act appropriately with the right leadership and support.

also dependent on the functioning of a highly sensitive early detection system, and on resultant case and contact tracing and management. Such a system requires additional investment and will need to adapt and mature as the pandemic continues.

All aspects of control require the engagement and trust of the Australia people, over an extended period. There will be multiple challenges to this – including the possibility that the community may be unwilling to continue with certain aspects of disease control and early detection – and clear strategies will need to be devised, factoring in the stages when engagement may be most at risk. Confidence can be gained in this regard from the very effective adoption of social distancing measures by the Australian community. As demonstrated by the strong positive support for leaders that took early decisive and consistent action,[6] the community can and will act appropriately with the right leadership and support.

At a global scale, it has been shown that it is possible to repeatedly eliminate diseases such as Ebola virus disease, including in low-resource settings. Nevertheless, it remains possible that Australia may not be able to achieve elimination.

---

6   https://www.abc.net.au/news/2020-04-19/wa-premier-mark-mcgowan-applauded-in-coronavirus-crisis-analysis/12159020

In this case, the strategy may need to change to one of controlled adaptation. Even if this is the case, the interventions in place to support elimination, such as enhanced surveillance, will ensure that any transmission that does occur will be much lower.

The other challenge that elimination strategy may pose is to international travel, especially if the entire world developed "Herd Immunity" while Australia did not. That is very unlikely without a vaccine. Were a vaccine to become available, it is very likely that Australia will be one of the first jurisdictions to use it.

One may think that using the Controlled Adaptation strategy could allow for easier travel, because of greater immunity. This is very unlikely at any scale. Even if the infection rate were managed at the current rate of say about 100 cases a day, it would take years and years before sufficient numbers of Australians have been safely exposed to change the international travel restrictions.

Thus, the only risk of the elimination strategy, given its many and significant benefits across the spectrum, is the extra cost of about

Even if the infection rate were managed at the current rate of say about 100 cases a day, it would take years and years before sufficient numbers of Australians have been safely exposed to change the international travel restrictions.

30 additional days of controls and social distancing. Should it fail for any reason – all the elements will be in place to revert to the Controlled Adaptation.

Appendix:
Brief summaries of experiences of countries with evidence of effective COVID-19 control, aiming for elimination[7]

South Korea

South Korea's initial response was largely focused on international travellers and local healthcare responses, with enhanced screening for travellers from Wuhan initiated in early January and then progressively stronger restrictions for travellers applied over the period from late January to mid-February. South Korea then experienced a superspreading event (or potentially a series of these) connected with members of the widespread Shincheonji church. This led to very rapid growth from one or two cases per day to 100s of cases per day. In response South Korea introduced both focused efforts to contain the church outbreak (testing ~10,000 members) and introduced wider social distancing, in particular preventing schools and childcare reopening. They have not, however, been as restrictive in terms of business with restaurants and shopping malls remaining open. After spikes to as high as 800 cases a day during the outbreak, case numbers fell to about 100 per day by mid-March and in the last two weeks have fallen further, with only eight cases recorded on 18/04 with just three of these locally acquired.

In response South Korea introduced both focused efforts to contain the church outbreak (testing ~10,000 members) and introduced wider social distancing, in particular preventing schools and childcare reopening.

---

7   Note all of these charts are sourced from the worldometers site: https://www.worldometers.info/coronavirus/

Daily new cases in South Korea
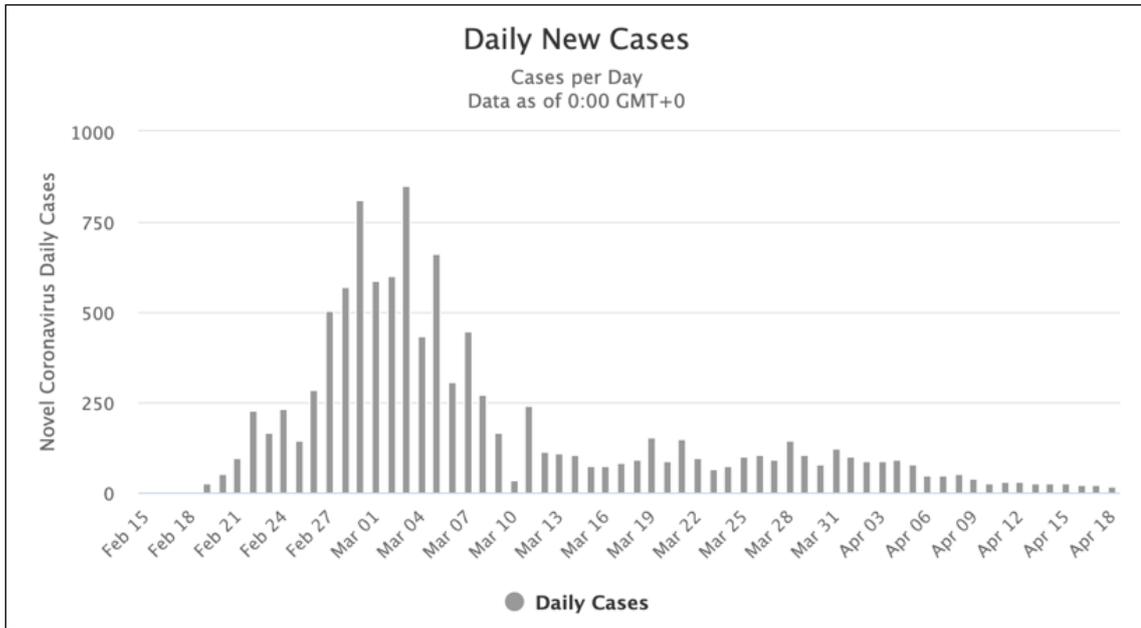
Daily new cases in Singapore
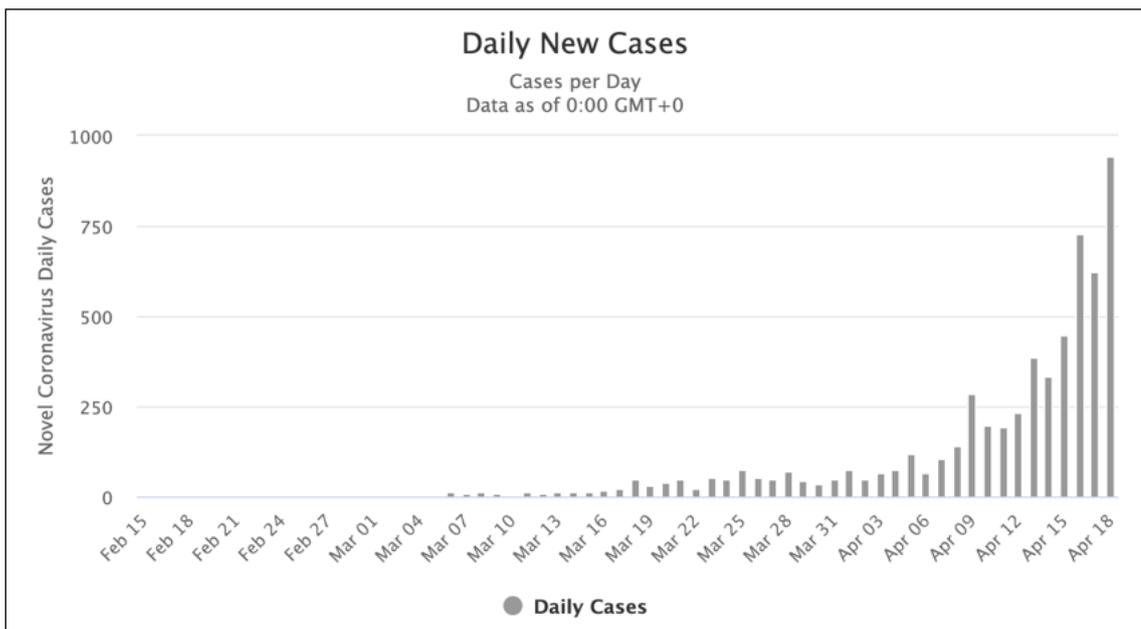
Singapore

Singapore has until recently had the least restrictions on movement and business, focusing on strong border controls and quarantine requirement, well-resourced contact tracing widespread fever-screening and hospital-based isolation of all cases. This strategy appeared highly established in the population of foreign workers housed in dormitory accommodation. This has now led to an escalating growth in cases in these populations and required Singapore to adopt a similar social distancing approach to Australia since early April but with special measures for the foreign worker populations.

With around 700 cases per day at present, it seems likely that this specific population outbreak will continue for at least the next two to four weeks despite the extra restrictions. This highlights the need to identify and focus specific measures on transmission-related high-risk sub-populations.

effective until around the middle of March, when as in Australia, imported cases increased substantially. Over the 2nd half of March, unlinked cases started to grow, suggesting that local transmission had become established and a series of tighter measures started to be established. However, by this point infection had become

Hong Kong

Hong Kong has paralleled Singapore but has not experienced a large scale outbreak of the kind seen in either South Korea or Singapore. They experienced large case growth from March 15 connected with international arrivals as seen in Australia and Singapore. However, this has not led to large local case outbreaks. Hong Kong has maintained fairly strict home quarantine requirements for travellers (wristband monitors etc.) but has selectively relaxed these (including not requiring these since late March for travellers from mainland China).

Hong Kong has introduced similar but slightly less restrictive social distancing rules to Australia since early April. Previously schools had been closed and remain closed. Case numbers have fallen to four to five per day in the last week and their public estimates of Rt now have 95% uncertainty intervals below 1 in this period.

Daily new cases in China, Hong Kong SAR

Daily New Cases
Cases per Day
Data as of 0:00 GMT+0
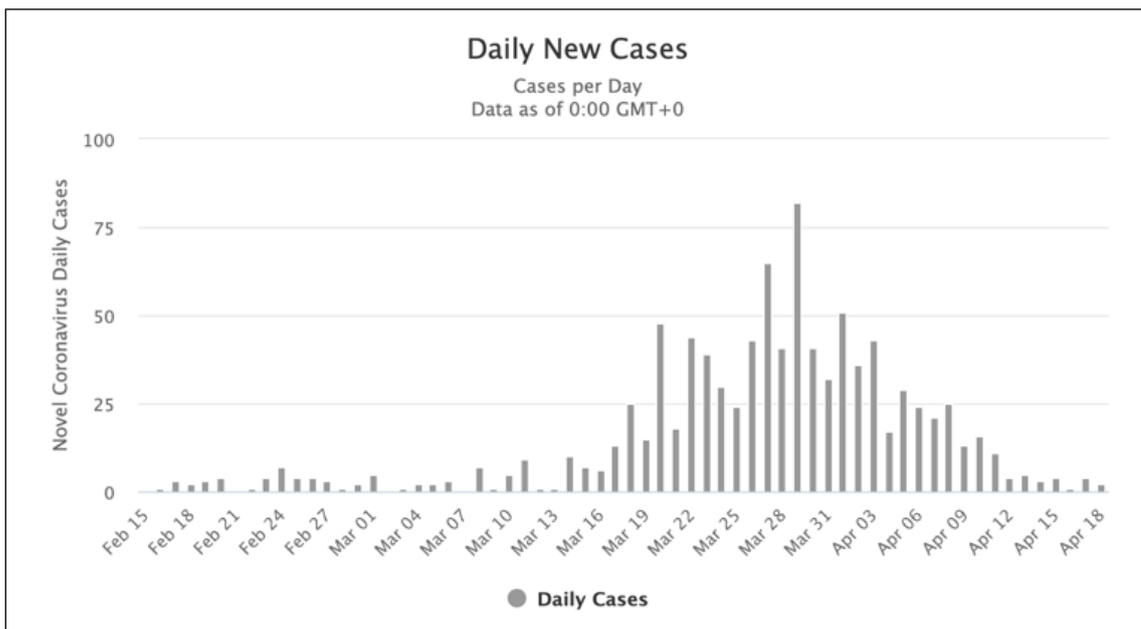
Taiwan

Taiwan has operated in a similar fashion to Singapore's initial approach but with perhaps a slightly stronger focus on border control. They have encouraged wearing of masks and in recent weeks encouraged social distancing. They also delayed return to school in February but have kept schools open since then. Businesses

China

China as the first location affected had a large epidemic on their hands by the time of the shutdown in Wuhan, with estimates from early modelling studies suggesting ~75,000 cumulative infections by this point.[8] The shutdown was progressive, initially isolating Wuhan but quickly extending to much of

A widely reported, social contact outside of the household was almost entirely prevented, while the public health and health system response was scaled up to find and isolate cases and expand treatment capacity.

remain open. Perhaps due to their strong focus on border control and home quarantine, they have seen very little local transmission, with >85% of cases being overseas source. They have reported fewer than 5 cases per day in the last week – almost all of these are imported.

Hubei province due to high travel volumes out of Wuhan prior to shutdown. A widely reported, social contact outside of the household was almost entirely prevented, while the public health and health system response was scaled up to find and isolate cases and expand

8   https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7159271/

treatment capacity. Restrictions were less severe in the rest of China due to lower case numbers but still strong, with movement restrictions later applied in mid-February using a rapidly developed mobile app. The lockdown appears to have been highly successful in reducing transmission, with Hubei province reporting no new cases by mid-late March. From that point on, symptomatic cases have primarily occurred via importation with 14-day quarantine restrictions preventing onward transmission. China does appear to be in an elimination phase but their recent reporting of moderate daily numbers of asymptomatic cases suggests some remaining challenges in entirely removing local transmission in settings that have experienced widespread, uncontrolled transmission.[9]

Daily new deaths in China

9   http://weekly.chinacdc.cn/news/TrackingtheEpidemic.htm
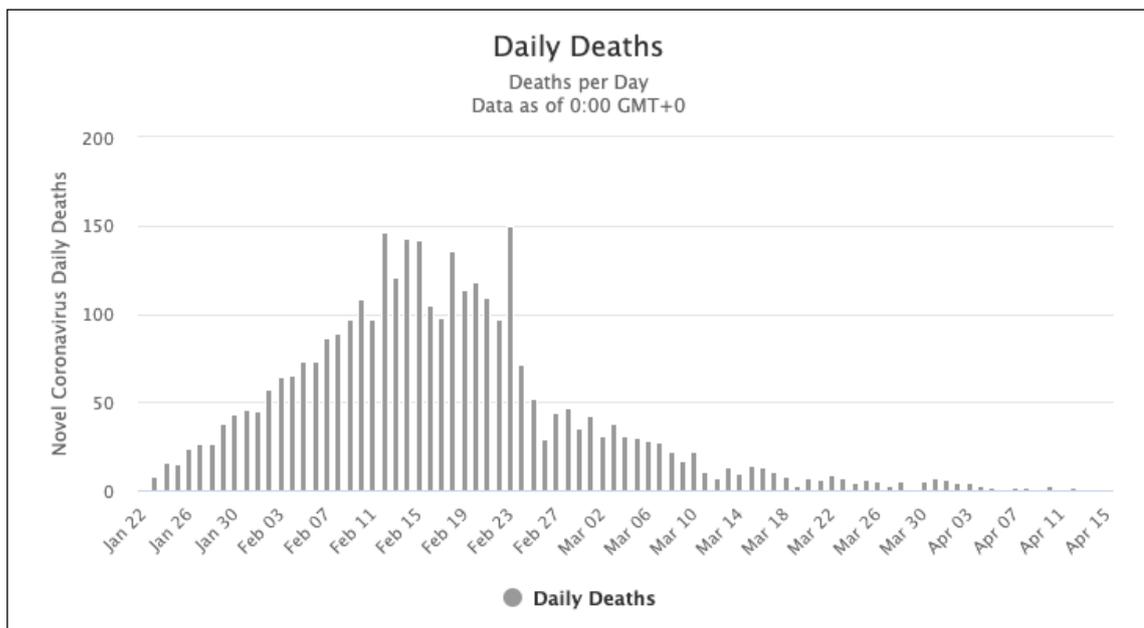
References

Australia Government Department of Health https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers#in-australia (accessed 19 April 2020)

Michael G Baker, Amanda Kvalsvig, Ayesha J Verrall, Lucy Telfar-Barnard, Nick Wilson. New Zealand's elimination strategy for the COVID-19 pandemic and what is required to make it work | NZ Med J. Vol 133 No 1512: 3 April 2020

S.L. Chang, N. Harding, C. Zachreson, O.M. Cliff, M. Prokopenko, Modelling transmission and control of the COVID-19 pandemic in Australia, arXiv preprint arXiv:2003.10218, 2020

Deputy Chief Medical Officer, Dr Nick Coatsworth, an update on coronavirus, 15.04.2020 https://www.facebook.com/healthgovau/videos/live-deputy-chief-medical-officer-dr-nick-coatsworth-with-an-update-on-coronavir/2845981535498744/ (from 10:20 onwards).

Seth Flaxman, Swapnil Mishra, Axel Gandy et al. Estimating the number of infections and the impact of non-pharmaceutical interventions on COVID-19 in 11 European countries. Imperial College London (2020), doi: https://doi.org/10.25561/77731 https://mrc-ide.github.io/covid19estimates/#/details/Denmark

Neil M Ferguson, Daniel Laydon, Gemma Nedjati-Gilani, Natsuko Imai, Kylie Ainslie, Marc Baguelin, Sangeeta Bhatia, Adhiratha Boonyasiri, Zulma Cucunubá, Gina Cuomo-Dannenburg, Amy Dighe, Ilaria Dorigatti, Han Fu, Katy Gaythorpe, Will Green, Arran Hamlet, Wes Hinsley, Lucy C Okell, Sabine van Elsland, Hayley Thompson, Robert Verity, Erik Volz, Haowei Wang, Yuanrong Wang, Patrick GT Walker, Caroline Walters, Peter Winskill, Charles Whittaker, Christl A Donnelly, Steven Riley, Azra C Ghani (2020). Report 9: Impact of non-pharmaceutical interventions (NPIs) to reduce COVID-19 mortality and healthcare demand, Imperial College London, https://www.imperial.ac.uk/media/imperial-college/medicine/sph/ide/gida-fellowships/Imperial-College-COVID19-NPI-modelling-16-03-2020.pdf

Christopher I Jarvis, Kevin Van Zandvoort, Amy Gimma, Kiesha Prem, CMMID COVID-19 working group, Petra Klepac, G James Rubin, W John Edmunds. Quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK. doi: https://doi.org/10.1101/2020.03.31.20049023

Laschon E. WA Premier Mark McGowan draws applause in coronavirus crisis, but the question is whether the praise will last, https://www.abc.net.au/news/2020-04-19/wa-premier-mark-mcgowan-applauded-in-coronavirus-crisis-analysis/12159020

Lokuge K, Banks E, Davies S, Roberts L, Street T, O'Donovan D, Caleo G, Glass K. Exit strategies: optimising feasible surveillance for detection, elimination and ongoing prevention of COVID-19 community transmission. Preprint

Nicole Lurie, Melanie Saville, Richard Hatchett, and Jane Halton, Developing Covid-19 Vaccines at Pandemic Speed, The New England Journal of Medicine, https://www.nejm.org/doi/full/10.1056/NEJMp2005630, DOI: 10.1056/NEJMp2005630, 2020

David J. Price, Freya M. Shearer, Michael Meehan, Emma McBryde, Nick Golding, Jodie McVernon1, James M. McCaw. Estimating the case detection rate and temporal variation in transmission of COVID-19 in Australia Technical Report 14th April 2020

Wingfield-Hayes R. Coronavirus lockdown: Lessons from Hokkaido's second wave of infections. BBC News, Tokyo. https://www.bbc.com/news/world-asia-52305055

Moss R, Wood J, Brown D, Shearer F, Black, AJ, Cheng AC, McCaw JM, McVernon J, Modelling the impact of COVID-19 in Australia to inform transmission reducing measures and health system preparedness, preprint, 2020

World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19), 2020

C. Zachreson, K. M. Fair, O. M. Cliff, N. Harding, M. Piraveenan, M. Prokopenko, Urbanization affects peak timing, prevalence, and bimodality of influenza pandemics in Australia: Results of a census-calibrated model, *Science Advances*, 4(12), eaau5294, 2018

3 The "Controlled Adaptation" Strategy

Definition: What is meant by "controlled adaptation"?

Controlled adaptation is an approach to achieving a targeted or minimal level of symptomatic COVID-19 cases with three objectives:

- Minimal COVID-19 case load;

- Keeping within health system capacity; and

- Maximising societal and economic functioning.

Figure 1. Controlled adaptation as an optimisation problem (and solution)
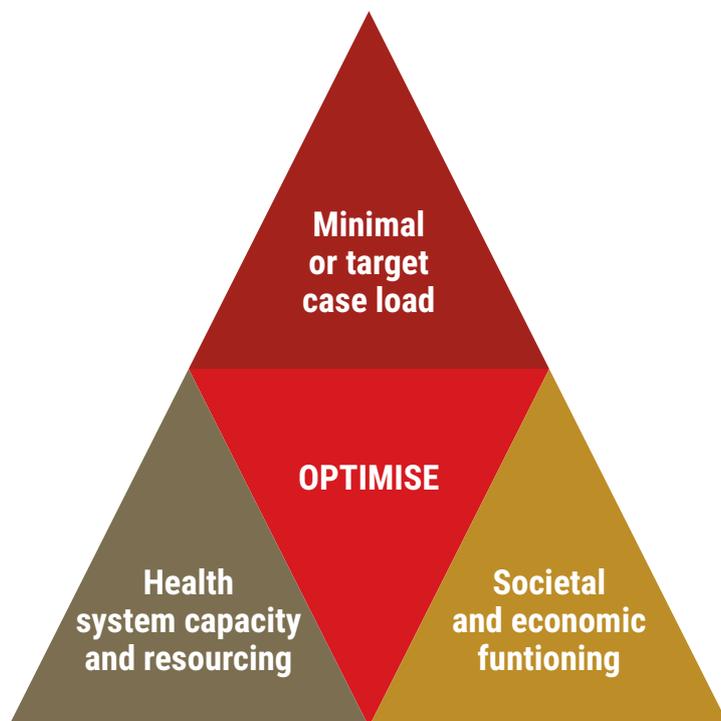
Controlled adaptation – at its heart – is a constrained optimisation problem (and solution). Some just call it "suppression." We have called it "***Controlled Adaptation***" because it entails two elements:

1. ***controlling*** the virus by increasing and decreasing the restrictions as indicated by data; and

2. ***adapting*** society to function with it for a long time.

This strategy accepts that the virus is here to stay, and therefore our best response is to adapt our ways until a vaccine becomes available.

If the number of new cases of infections continue to be low as they are, we think it may be possible

to start lifting social distancing restrictions in a phased manner around mid May.

This chapter provides the rationale for relaxing social distancing, the kind of testing-tracing-isolation system that would need to be in place to make it happen, which restrictions could be lifted first, how this could be done while protecting the vulnerable in society.

We then show how to monitor the success of the strategy, its economic impact as well as its flexibility, so that it is truly adaptive in the face of uncertain outcomes.

In the end, we propose how the decisions required could be best made and provide a simple table of the pros and cons of such a strategy.

What are the best approaches to relaxing restrictions?

There are (at least) two schools of thought to relaxing restrictions.

One approach is intermittent application of social distancing restrictions, an on-off scenario laid out by Kissler et al (2020) who singled out health system capacity as a major criterion for relaxation. In this scenario you relax measures, the cases surge, you clamp down again. And repeat. They indicate that such an intermittent strategy will likely continue in the United States until 2022, and suggest a resurgence could occur as late as 2024, necessitating ongoing monitoring.

This strategy accepts that the virus is here to stay, and therefore our best response is to adapt our ways until a vaccine becomes available.

The other approach is to aim for carefully staged relaxation that has a low probability of needing severe tightening up again in the future. This approach is already occurring in other countries including China and various European nations. However, in drawing international comparisons, it is important to bear in mind variations in case load, testing and surveillance measures, and health system capacity put Australia in a uniquely advantageous situation to deliver this strategy.

Chapter 3: The "Controlled Adaptation" Strategy

Once relaxation begins, it will be critical to set the target infection rates in a manner that is mindful of reserve in the event of a surge or cross-cover of localised explosive outbreaks. This is particularly important should outbreaks occur in those with high rates of chronic disease, and in aged care facilities, correctional centres, homeless shelters and with other vulnerable communities.

This involves a cycle of release, evaluate, learn, release some more.

The goal of Controlled Adaptation over the next month (i.e. to mid May) would be to suppress new infections to a minimum using the currently-in-place social distancing measures and travel restrictions. This period will provide time to prepare for relaxation of distancing measures through enhanced surveillance capacity and planning, improved understanding of COVID-19 epidemiology and modelling scenarios, building public health capacity (especially testing and contact tracing – including app technologies), creating reserve health system capacity, developing better knowledge regarding effective therapeutic options, and creating stable supply lines for medical consumables and ventilators.

In the medium-term, distancing measures would be progressively lifted but with the ability to reinstitute as the need arises.

Recommendation

Lift measures in phases, with an interval/pause of a minimum of three weeks to determine the impact on spread and case numbers, and a close watch on the effective reproductive number to keep it below one.

This involves a cycle of release, evaluate, learn, release some more. Timelines and case load thresholds for lifting of measures are likely to differ between states, particularly if interstate travel restrictions remain, as well as per factors such as varying local health service capacities, climate, population density and contact tracing capacity.

Possible criteria for lifting restrictions	Possible criteria for continuing/ imposing restrictions
Health care has been expanded to adequate capacity	Geographic areas of high COVID-19 activity (R_{eff}>1.0)
Contact tracing capacity has been enhanced	Defined communities or geographic areas containing high proportion of at-risk individuals (by age, comorbidity)
Testing is available on a significantly wider basis, and results are available more rapidly	Syndromic surveillance suggests an increase in respiratory presentations which is not matched by an increase in testing, perhaps due to temporary shortfalls in capacity (such as from inadequate reagent supply)

What are the essential requirements before lifting restrictions?

Recommendation

Put in place extensive testing and surveillance, rapid, effective case detection, case isolation and contact tracing, including potential re-introduction of some distancing measures if it seems that R_{eff} will overshoot 1.

The key to Controlled Adaptation is maintaining the effective Reproduction Number, or the number of new cases that a current generates, to just under one (i.e R_{eff} ~<1). Modelling will be required to identify the level of coverage of individual measures and their mix to achieve an *average* R_{eff} of 1 across time and sub-populations. Modelling and analysis will continue to be required to monitor and ensure that we are achieving this target. Real fluctuations and statistical errors mean we will aim for just under one, and not exactly for one.

Chapter 3: The "Controlled Adaptation" Strategy

Border and travel controls

Border and travel controls are likely to be needed over the long term unless the traveller has documented immunity (natural or vaccine-related) or is willing to submit to a two-week quarantine period upon arrival. International border controls will

This explains in part why the current testing approach has failed to identify the sources of a number of cases, and reinforces that testing strategies need to be expanded.

impede tourism and education, which has traditionally been a key driver of growth in Australia. The period of quarantine may, however, reduce as testing capacity, speed and accuracy improves – and more innovative mechanisms of ensuring safety may be considered (pre-testing before presenting at border, off-shore pre-arrival quarantine, etc.).

Surveillance systems and contact tracing

Surveillance of all infections with a range of mild and often non-specific symptoms is always challenging, with reported case numbers reflecting testing rates and methodology. An unknown proportion of cases with a SARS-CoV 2 infection are asymptomatic or only mildly symptomatic (Zhou et al, 2020).

Prevalence rates of asymptomatic or mild disease have been as high as 50–78% of cases in studies reported from different countries and contexts (Day, 2020a; Day 2020b; Nishiura et al, 2020). Modelling to estimate the proportion of asymptomatic cases on the Diamond Princess cruise ship suggested much lower rates (17.9% (95% credible interval (CrI): 15.5–20.2%)), although this population was older and largely contained (Mizumoto et al 2020). Recent data from Austria, which instituted containment measures early in the epidemic, indicated there were three times as many acutely infected cases than initially thought by testing patients that were symptomatic but not hospitalised (Groendahl, 2020).

Surveillance for COVID-19 disease to date has focused on high-risk cases based on epidemiology and/or symptoms, which underestimates the true case numbers to an unknown degree. This explains in part why the current testing approach has failed to identify the sources of many cases and reinforces that testing strategies need to be expanded.

Emerging data suggests asymptomatic cases can transmit SARS-CoV 2 (Huang et al, 2020), even if transmission may be less efficient than from symptomatic cases. This implies that it will not be possible to identify all cases and transmission chains, rendering an elimination strategy difficult to achieve through case-targeted measures alone. The prospect of environmental transmission poses an additional challenge. The Controlled Adaptation strategy accepts this reality, and is built in response to it.

There are two potential approaches to surveillance: sentinel and universal.

Intensive universal surveillance is necessary to underpin the control strategy, while the role of sentinel surveillance is secondary. We explain both below.

There are two types of tests, both have a role. We specify their respective roles in this strategy.

Virological testing

Universal surveillance aiming at detecting the vast majority of symptomatic cases would require widespread virological testing of people presenting with symptoms that could be consistent with COVID-19, even when mild.

Prevalence rates of asymptomatic or mild disease have been as high as 50–78% of cases …

In addition, the public would need to be encouraged to seek testing as soon as they develop symptoms. For this to happen, testing centres would have to be widely available and accessible (including in remote areas), free of charge, with minimal wait times and a short turnaround time (less than one day).

Chapter 3: The "Controlled Adaptation" Strategy

The following would need to be in place:

- sufficient laboratory capacity and/or point of care testing

- electronic test result tracking

- sufficient trained workforce for taking throat swabs and communicating results

- sufficient capacity to manage waste

- sufficient PPE

- social marketing to encourage people to come forward for testing

- education for medical practitioners

- spaces suitable for sample collection while allowing social distancing

- logistics expertise.

Standardised systems of demographic data collection could also be established at the network of COVID-19 testing sites to determine biases in voluntary presentations. In addition, mechanisms for managing people with more severe symptoms, including diagnosing other conditions, would need to be in place.

> ## Recommendation
>
> Create a comprehensive, adequately resourced and swift testing infrastructure supported by strong incentives and messaging to encourage public engagement.

Virological testing of people with no symptoms would be unlikely to be useful except when investigating clusters (including in households). A single negative test in someone with no symptoms would only indicate that they had no detectable virus at the time of testing. If testing were done early post symptom onset, some false negative results may occur (Arima et al, 2020), and consideration should be given to repeat testing for cases with a high level of suspicion.

Sentinel surveillance strategies based on selective person case-testing cannot be used as part of a control strategy but can be useful to detect trends. Sentinel surveillance could include testing of all people presenting to selected health care services regardless of whether they have symptoms. The selected health care services could be targeted

to communities considered to be particularly susceptible to COVID-19, such as remote Aboriginal and Torres Strait Islander communities. The sentinel surveillance would be additional to the current universal case-based surveillance system – it cannot replace it.

Serological testing

To inform whether the removing restrictions in high-risk settings, for example, on inter-generational (mixed) gatherings should be undertaken, an accurate understanding of the level of positive seroprevalence to infection in the community would be needed. Modelling could do this based on the number of recorded cases and the likely relative proportion of asymptomatic individuals with SARS-CoV-2.

However, modelling is unlikely to provide localised information and may, therefore, be unable to inform the lifting of localised high-risk control measures. When a reliable serological test (for IgG) becomes available, periodic population-based serological surveillance will be a useful adjunct to inform control strategies, and monitor levels of population immunity.

Recommendation

Conduct at least periodic (say, monthly) random antibody testing snapshots of a cross-section of the community to inform decisions on relaxation of local restrictions. Solicit detailed statistical advice on whether to have regionally and socio-demographically weighted sampling, conditional on variations in infection rates and sequelae.

SARS-CoV-2 immunity registers have been proposed and while they may have some use in restricted settings (e.g. some businesses or occupations), at a population level they are unlikely to be useful given both the small proportion of the population being infected and uncertainties about the degree and duration of immune-protection following primary infection.

Chapter 3: The "Controlled Adaptation" Strategy

Contact tracing

Contact tracing is most efficient while strong social distancing measures are in place, as the number of potential contacts for each case are low and likely to be known to the case. As social distancing measures are relaxed, contact tracing becomes more challenging because of the likelihood of each case having more

... it is necessary for contacts to be quarantined within two to three days of contact with the case.

contacts, some of whom may not be well known to the case. Due to the short latent period of SARS-CoV-2 (possibly as low as two to three days), it is necessary for contacts to be quarantined within two to three days of contact with the case. This may not be possible with current contact tracing methods or even with more rapid case identification, particularly given that transmission is possible in the pre-symptomatic period.

Recommendation

Promote and incentivise the use of contact tracing apps to ensure sufficient speed of contact tracing for use as a control strategy.

For this to be most effective, high uptake of contact tracing apps dispersed widely among the population would be necessary. Ferretti et al (2020) suggested a population uptake of 60% was sufficient to be effective as a control strategy, but this depends on the distribution of smartphones and apps in the population. Community organisations and businesses may have a role here, in building effective initiatives for testing and for tracing. There are many ethical and social considerations that would need to be addressed to increase uptake of the App[10] (Calvo et al, 2020). If social license allows, the apps can also be used to monitor the level of adherence of contacts to quarantine.

---

10 See international hub of research on apps living document
    "Unified research on privacy-preserving contact tracing and exposure notification" at
    https://docs.google.com/document/d/16Kh4_Q_tmyRh0-v452wiul9oQAiTRj8AdZ5vcOJum9Y/edit#

What aspects of Social Distancing should be relaxed initially and how?

Controlled adaptation is about the phased reintroduction of 'normal' societal conditions, with learning from each phase and the ability to pivot back to controls as needed. We have suggested a possible path below but it is important to note that this will be critically dependent on the precise conditions existing around mid-May.

Graduated relaxation (and when required, tightening) of physical distancing policies

Relaxation Options: Schools and Universities

Schools should be a high priority for resuming activity given there is limited evidence on the role of children as a source of infection, and the importance of schools in reducing inequity of education outcomes. Universities should provide online education as much as possible but restrictions regarding face-to-face laboratory practicals and clinical placements could be loosened.

Relaxation Options: Group Gatherings

Because of the potential for considerable population mixing and close contact between attendees at mass gatherings, it is unlikely that mass gatherings would be compatible with maintaining the R_{eff} close to 1. Until there is a sufficient level of immunity in the population mass gatherings are not advisable. A context specific risk assessment tool has been developed by the WHO Novel Coronavirus-19 Mass Gatherings Expert Group (McCloskey et al., 2020) which could be applied as circumstances change.

Schools should be a high priority for resuming activity given there is limited evidence on the role of children as a source of infection, and the importance of schools in reducing inequity of education outcomes.

Relaxation Options: Differentiation of High-Risk groups

In other contexts, such as return to work, restrictions could be determined by health status, age or geographical /postcode data identifying areas of high demographic vulnerability.

This suggests that if multiple morbidities, rather than age alone, are the primary correlate of COVID-19 fatality, then the incidence of morbidity should be an indicator of risk.

While age is one risk factor, in fact co-morbidities appear more important, at least until advanced age (say, 80+), when the impact of age on the immune system generally seems to reduce the resistance of organ function to the severity of the infection.

There is good evidence for the proposition that a simple age-based criterion may be needlessly costly. Unpublished analysis from the CHAMP study of older men (Cumming et al., 2009) suggests about a third of men in their 70s have none of the medical conditions associated with severe COVID-19.

This suggests that if multiple morbidities, rather than age alone, are the primary correlate of COVID-19 fatality, then the incidence of morbidity should be an indicator of risk.

Recommendation

Urgent analysis is required on the independent effects of sex, age, ethnicity and comorbidity of sequelae of COVID-19 infection, to improve recommendations on who should be self-isolating.

Possible staged return of societal activity, should the effective reproductive number remain at or below an *average* of 1.

Containment and social distancing requirements	Immediate term (Next 30 days)	Medium Term (30–90 days)	End Game (Beyond 90 days and until vaccine is available, say, end of 2021)
Travel and border controls	• Maintain travel for essential services or serious family issues	• Allow domestic travel subject to border quarantine or testing	• No overseas travel – unless quarantine observed or testing
Workplaces and Businesses	• Staged return – some working at home • Modified workplace practices	• Younger workers without key comorbidities at work • Regional plans based on comorbidities and demographics • Modified workplace practices	• Full return – high risk workers, if able, to work from home • Modified workplace practices
Schools	• Staged return	• Full return but voluntary • Modified practices	• Full return – high risk students and staff, if able, to work from home • Modified practices
Universities	• Staged return	• Full return but voluntary • Modified practices	• Full return – high risk students and staff, if able, to work from home • Modified practices
Mass and Public gatherings (Games, Concerts, Rallies)	• Banned	• Banned	• Banned – context specific

Chapter 3: The "Controlled Adaptation" Strategy

Modify Workplace and Business Practices

In the process of a staged relaxation of social distancing there are important measures that can be taken to enhance access to work while mitigating health risks, thereby increasing the economic efficiency of social distancing. These include:

- **Fractional Schooling**. Schools can return with classes divided and half the students attending each day.

- **Canteens and school/university cafes as take-away only,** physical distancing in classrooms, hand hygiene practices maintained.

- **Routine use of PPE** in high risk occupations such as dentists, optometrists and allied health workers.

- **Job sharing and shift-work**. Working from home could be combined with workplace shifts to allow a fraction of people to return to their workplaces but with greater physical space to allow social distancing. Policies could allow working from home for people with

co-morbidities, older age groups, or people who live with these groups. Work hours could be made flexible to facilitate this, especially in States with strong restrictions on hours.

- **Internal voluntary measures around physical distancing** and rigorous hand hygiene in meal preparation could be extended to restaurants and public places that are currently closed.

Recommendation

In the short-term workplaces should be encouraged to stagger the schedule of workers, and undertake other hygiene and physical distancing measures, to allow a safer return to work.

Protecting vulnerable populations

Residential aged care facilities are internationally recognised as exceptionally high-risk environments for the transmission of COVID-19, among individuals for whom severe disease outcomes, including death, are highly probable. As such, they

are likely to be the last environments in which liberalisation of physical distancing measures would be recommended.

However, there are also serious issues regarding the adverse impact of social isolation in these settings. If elderly people and those with chronic conditions need to be in isolation for much of the next year or so, we should prioritise support for these groups and also provide simple understandable information to guide their isolation.

Similar to fire risk or sunburn indices, there could be a daily or weekly (and regionally varying) risk index to allow vulnerable people to determine the degree to which they need to self-isolate.

Strict biosecurity controls have been implemented in Australia's north at the request of, and in consultation with, Aboriginal and Torres Strait Islander community leaders. These controls have been instigated in recognition of the increased risk of severe infection outcomes in these communities, coupled with limited access to medical care because of remoteness. These controls have been successful and provide a good exemplar of how community-led and owned initiatives may work well.

Economic impacts

Social distancing and border restrictions have "brick walled" the travel and hospitality industries which account for around 9% of GDP and employ 1.7m people or approximately 14% of the labour force (ABS Labour Force 2020, IBisWord 2020). Further unemployment has also been created by reduced demand and supply constraints with 49% of business impacted, rising to 89% in the next two months (ABS Business Impacts of COVID-19, 2020).

Unemployment generated by the partial shutdown measures will cause immense hardship to millions of Australians. Job loss is already estimated to have increased by approximately 2.1 million people – or 15.5% of the labour force (Roy Morgan, 2020, ABS, Labour Force 2020). This is likely to be costing

Australia approximately 1% of GDP per month, cumulating to 12% of GDP over a year, which is a similar annual decline to those experienced in the 1930s. The costs would fall disproportionally on the low-income and low wealth households, socially disadvantaged groups, those with less secure employment and contingent workers, such as in Arts, and also differ by sector.

Stronger social distancing measures in G7 countries are estimated to amount to over 2% of GDP per month or 25% of GDP over a year.

The costs could rise further. Stronger social distancing measures in G7 countries are estimated to amount to over 2% of GDP per month or 25% of GDP over a year (OECD 2020). Further losses due to a decline in confidence, trade wars, long lasting barriers to immigration, supply chain disruptions and global economic conditions, that

will transmit to Australia through the terms-of-trade (McKibbin and Fernando, 2020), could also increase the economic costs.

Other considerations include financial losses, particularly the wealth effect on superannuation and retiree incomes. Mature workers who become unemployed through this period will find it difficult to regain equivalent employment in a recovery. Some may never work again.

An important consideration for Australia is the impact of economic differences across States and Territories, including the possibility that some may adopt an elimination strategy and maintain closed borders, which will increase trade and travel costs.

Given that economic costs accumulate, they have the potential to quickly match health risks as a social priority. Notwithstanding this concern, maintaining social isolation for some period appears to be a good investment to allow the health system to prepare and to reduce the probability of an uncontrolled escalation as well as obtain

more information about medical interventions. But the costs of these measures, in human and financial terms, need to be carefully weighed. Extending the current regime into the second half of the year risks rising economic and social costs with very harmful consequences through rising unemployment, income losses, inequality and social unrest.

Recommendation

A staged relaxation of social distancing should be introduced as soon as the infection rate, health capacity and testing thresholds are met to mitigate the economic costs which will be disproportionately borne by some segments of society.

Recommendation

The adverse impact of border controls on trade, tourism, business services, education and immigration to Australia, and their impact on economic activity, needs to be considered and innovative solutions developed.

What are indicators of success of this strategy? And how do we monitor these?

It will be important to have in place data collection and analysis of KPIs for contact tracing and case identification, in order to provide sufficient confidence that this strategy can be delivered. This would also be useful to inform modelling where 'real-life' data could inform assumptions used in the modelling. Such KPIs would be by public health unit area, and could be monitored monthly then collated by state/territory health departments using line-listed data. These could include:

- Number of tests performed by age, gender, location

- Duration between symptom onset and test request (in hours or days) – median, IQR, range

- Duration between test request and test result notified to public health (for action) (in hours) – median, IQR, range

- Duration between case identification and notification of contacts (in days/hours) – median, IQR, range (by contact)

- Number and proportion of cases for whom a source or contact can be identified

- Number and proportion of identified contacts able to be contacted.

Key indicators of success will be:

- No sustained increase in positive tests, even as testing rates remain high

- No sustained increase in rates of severe disease and ICU admissions in at-risk populations

- Rapid response to any clusters or areas of increased transmission.

Recommendation

Create key performance indicators for the controlled adaptation strategy by jurisidiction, establish a reliable system of compiling them, monitor and transparently share them.

These KPIs are more focussed on the objective of controlling the infection rate and keeping it below a R_{eff} of 1. Indicators would also have to be established for rejuvenation of economic activity and social life. A controlled adaptation strategy will require the active and adaptive balancing of all three.

Flexibility of the strategy

Controlled adaptation can be thought of as a flexible 'holding position'. Depending on future developments, one can take several paths:

- If an effective vaccination becomes available, we can pivot to vaccination;

- Or relax social distancing further should better treatments become available or measures improve to protect the vulnerable.

These pivots and fine-tuning cannot be detailed now. Rather, as more research and understanding of how to manage COVID-19 emerges over the next few months, these options can be further explored.

The key research necessary to guide decision making in the medium and long term will include:

- vaccine development and clinical trials of their safety and effectiveness;

- new treatments or re-purposing of existing treatments;

- information on the impact of social and physical distancing measures on SARS-CoV-2 infection rates and sequelae, both in isolation and as packaged measures (e.g. from improved agent-based simulation models and "nowcasting", and cross-national comparisons of strategies implemented in similar societies);

- durability of immunity following infection. Viral mutation and waning immune-protection may both contribute to risks of infection recurrence. Multiple tests are now available for identifying SARS-CoV-2 and have been registered by the TGA[11], but their accuracy is uncertain. The positive predictive value of these tests should be calculated for both an asymptomatic screening population, and symptomatic 'case' population;

- the extent of asymptomatic infections and the role of asymptomatic individuals in disease transmission. This may vary by age and co-morbidities,

Multiple tests are now available for identifying SARS-CoV-2 and have been registered by the TGA, but their accuracy is uncertain.

but knowledge on this would help underpin decisions regarding removal of restrictions. As an example, understanding the potential contribution of school age children in transmission of infection to teachers would provide scientific data to underpin decisions regarding school closures;

---

11 https://www.tga.gov.au/covid-19-test-kits-included-artg-legal-supply-australia

- economic decision modelling on the health gains and costs (health system and societal) of various policy options, relative to each other, and impacts of social restrictions, including border control restrictions, on unemployment and economic activity more generally;

In the absence of a 'single' best method, more flexible methods such as multi-criteria decision analysis have been developed. Capacity for such optimisation resides in Governments, universities and the private sector but is currently fragmented and not directed as a coordinated mission.

- public preferences and responses to measures such as surveillance, testing, and ongoing restrictions on extended family and public gatherings.

Recommendation

Federal and State Governments and Health Agencies develop a coordinated repository of emerging COVID-19 research information, perhaps in collaboration with universities and other research organisations, to guide decision making during Controlled Adaptation.

Optimising the strategy

There are a range of methods and approaches for balancing the competing concerns and available alternatives, from mathematical optimisation procedures to decision analytic approaches. Economic, epidemiological and simulation modelling is critical. In the absence of a 'single' best method, more flexible methods such as multi-criteria decision analysis have been developed. Capacity for such optimisation resides in Governments, universities and the private sector but is currently fragmented and not directed as a coordinated mission.

Recommendation

Commission a coordinated stream of modelling, data collection and analysis in multiple sectors to help optimise the adaptation function of the Controlled Adaptation strategy, make the data transparent, and use it in the medium to long-term for decision-making on COVID-19.

Recommendation

Consideration should be given to creating a multi-sectoral, independent advisory body to manage and depoliticise the process of controlled adaptation.

Existing political decision-making approaches (e.g. Australian Health Protection Principal Committee (AHPPC) and other agencies advising Government) have effectively managed approaches to date. However, rising social and economic costs will bring political pressure upon State, Territory and Federal governments to relax social distancing faster than the data may suggest. It may help to create an independent, multi-sectoral body to advise on the relaxation of social distancing with agreed targets, to reduce this political pressure in the medium to long term.

However, rising social and economic costs will bring political pressure upon State, Territory and Federal governments to relax social distancing faster than the data may suggest.

Chapter 3: The "Controlled Adaptation" Strategy

Risks and benefits of this strategy?

Benefits of controlled adaptation	Risks of controlled adaptation
Controlled adaptation is a flexible strategy, and allows policies to quickly pivot in response to new information	
Allows a progressive re-opening of sectors of society, up to the set target of manageable infection rates	Impacts of climate on transmission of COVID-19 are uncertain, but reducing restrictive measures in the next 1–3 months, precisely co-incident with the known period of maximal transmission of respiratory viruses in Australia, could be a risk
Allows a much-needed earlier economic recovery to be initiated, thus alleviating widespread economic and personal hardship	
Calibrate restrictions to COVID-19 case load and health system capacity	Calibration of relaxed distancing policies to infection rates may go awry, and outbreaks may not be able to be contained without moving to full lockdown
Contact tracing capacity enhanced	Compliance with contact tracing app may be suboptimal leading to pressure on manual contact tracing, potentially exceeding available resourcing
Testing is available on a significantly wider basis, and results are available more rapidly	Development of a rigorous, rapid and comprehensive testing system will require significant resourcing and infrastructure

Benefits of controlled adaptation	Risks of controlled adaptation
More rapid return to normal operations by the healthcare system	
There is evidence that individuals are delaying or forgoing medical care, potentially leading to poorer health outcomes in the long term (Tam et al 2020)	
If we aim for elimination and fail, we may lose community responsiveness to hand-washing and social distancing messages, meaning that next time extreme distancing measures are needed to avoid an impending exponential growth in cases, we may not succeed	Success of the strategy depends on long-term societal acceptance of, and compliance with, behavioural restrictions. This includes the prospect of localised escalation of distancing requirements in response to outbreaks
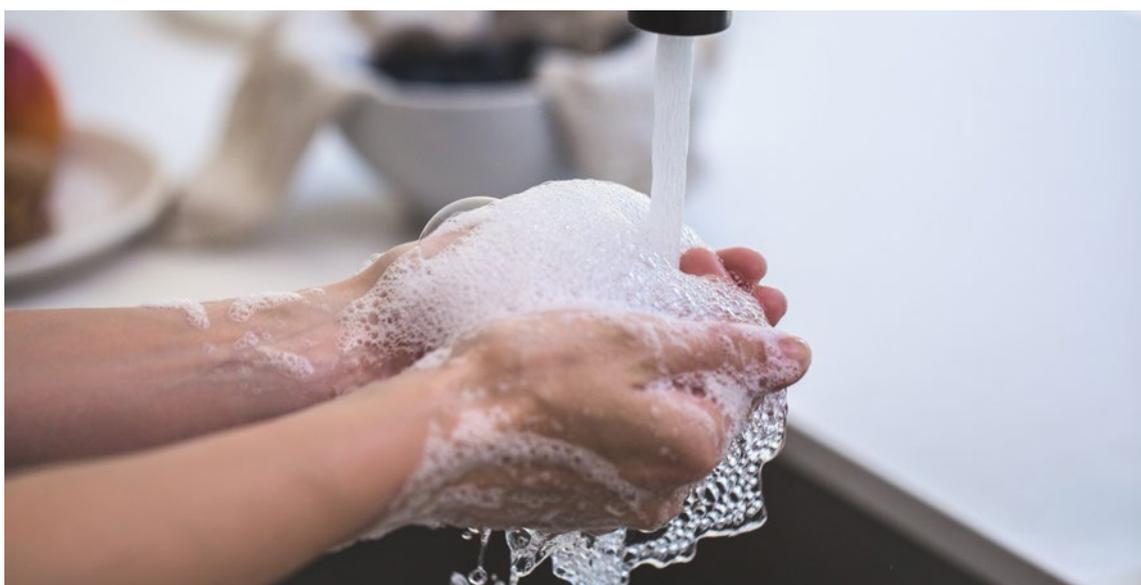
References

Arima Y et al. Severe Acute Respiratory Syndrome Coronavirus 2 Infection among Returnees to Japan from Wuhan, China. *Emerging Infectious Diseases*, 2020; 26(7). Early release (https://wwwnc.cdc.gov/eid/article/26/7/20-0994_article) Australian Bureau of Statistics (2020) Labour Force, Australia, Mar 2020. https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6202.0Main+Features1Mar%202020?OpenDocument

Australian Government (2020) Impact of COVID-19: Theoretical modelling of how the health system can respond https://www.health.gov.au/resources/publications/impact-of-covid-19-in-australia-ensuring-the-health-system-can-respond

Calvo RA, Deterding S, Ryan RM. Health surveillance during covid-19 pandemic. *BMJ* 2020;369:m1373 doi: 10.1136/bmj.m1373 (Published 6 April 2020)

Chomik, R (2020), COVID-19 and Vulnerable Populations: A Preliminary analysis of the health and economic risks. *CEPAR Fact sheet*, forthcoming

Cumming R, Handelsman D, Seibel MJ, Creasey H, Sambrook P, Waite L, Naganathan V, Le Couteur D, Litchfield M. *International Journal of Epidemiology*, Volume 38, Issue 2, April 2009, Pages 374–378, https://doi.org/10.1093/ije/dyn071

Day, M. Covid-19: identifying and isolating asymptomatic people helped eliminate virus in Italian village. *BMJ* 2020a; 368 :m1165

Day M. Covid-19: four fifths of cases are asymptomatic, China figures indicate. *BMJ* 2020b; 369 :m1375

Department of Prime Minister and Cabinet, (2014) "Best Practice Regulation Guidance Note Value of Statistical Life", https://www.pmc.gov.au/sites/default/files/publications/Value_of_Statistical_Life_guidance_note.pdf

Ferretti L et al. Quantifying SARS-COV-2 transmission suggests epidemic control with digital contact tracing. *Science* 2020, 10.11.26/science.abb6936.

Fox GJ, Trauer JM, McBride E. Modelling the impact of COVID-19 upon intensive care services in New

South Wales, *Medical Journal of Australia*, 2020 https://www.mja.com.au/journal/2020/212/10/modelling-impact-covid-19-upon-intensive-care-services-new-south-wales

Groendahl B. Austrian study shows coronavirus infection more than 3 times higher. April 10, 2020 [Internet news] https://www.bloomberg.com/news/articles/2020-04-10/austrian-study-shows-coronavirus-cases-more-than-3-times-higher

Huang L, Zhang X, Zhang X, Wei Z, Zhang L, Xu J, Liang P, Xu PY, Zhang C, Xu PA. Rapid asymptomatic transmission of COVID-19 during the incubation period demonstrating strong infectivity in a cluster of youngsters aged 16-23 years outside Wuhan and characteristics of young patients with COVID-19: a prospective contact-tracing study. *J Infect*. 2020 Apr 10. pii: S0163-4453(20)30117-1. doi:10.1016/j.jinf.2020.03.006.

IBIS World. *Accommodation and Food Services – Australia Market Research Report*, 2020. Available at: https://www.ibisworld.com.au/industry-trends/market-research-reports/accommodation-food-services/

Kissler et al., Projecting the transmission dynamics of SARS-VpV-2 through the postpandemic period, *Science* 10.1126/science.abb5793 (2020)

McCloskey B, Zumla A, Ippolito G, Blumberg L, Arbon P, Cicero A, Endericks T, Lim PL, Borodina M; WHO Novel Coronavirus-19 Mass Gatherings Expert Group. Mass gathering events and reducing further global spread of COVID-19: a political and public health dilemma. *Lancet*. 2020 Apr 4;395(10230):1096-1099. doi:10.1016/S0140-6736(20)30681-4.

McKibbin W, Fernando R. The Global Macroeconomic Impacts of COVID-19: Seven Scenarios. In: *CAMA working paper 19/2020*, 2020, Australian National University

Mizumoto K, Kagaya K, Zarebski A, Chowell G. Estimating the asymptomatic proportion of coronavirus disease 2019 (COVID-19) cases on board the Diamond Princess cruise ship, Yokohama, Japan, 2020. *Euro Surveill*. 2020 Mar;25(10). doi:10.2807/1560-7917.ES.2020.25.10.2000180.

Chapter 3: The "Controlled Adaptation" Strategy

National Tourism Satellite Accounts 2019 https://www.tra.gov.au/Economic-analysis/economic-value. And https://www.abs.gov.au/ausstats/abs@.nsf/mf/6302.0

Nishiura H, Kobayashi T, Suzuki A, Jung SM, Hayashi K, Kinoshita R, Yang Y, Yuan B, Akhmetzhanov AR, Linton NM, Miyama T. Estimation of the asymptomatic ratio of novel coronavirus infections (COVID-19). *Int J Infect Dis*. 2020 Mar 13. pii: S1201-9712(20)30139-9. doi: 10.1016/j.ijid.2020.03.020.

OECD. Evaluating_the_initial_impact_of_COVID-19 containment measures on economic activity, 2020. Available at: https://read.oecd-ilibrary.org/view/?ref=126_126496-evgsi2gmqj&title=Evaluating_the_initial_impact_of_COVID-19_containment_measures_on_economic_activity

Oke J, Heneghan C. *Global Covid-19 case Fatality rates*, 2020, CEBM, Oxford University. Available at: https://www.cebm.net/covid-19/global-covid-19-case-fatality-rates/

Onder, G. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy, *Journal of the American Medical Association*, 2020; E1-E2.

Roy Morgan (2020) Unemployment and Underemployment March 20202 http://www.roymorgan.com/findings/8363-roy-morgan-unemployment-and-under-employment-march-2020-202004080900

https://www.ibisworld.com.au/industry-trends/market-research-reports/accommodation-food-services/

Tam Chor-Cheung Frankie, Cheung Kent-Shek, Lam Simon, et al. Impact of Coronavirus Disease 2019 (COVID-19) Outbreak on ST-Segment–Elevation Myocardial Infarction Care in Hong Kong, China. *Circulation: Cardiovascular Quality and Outcomes*. 0(0):CIRCOUTCOMES.120.006631. doi:10.1161/CIRCOUTCOMES.120.006631

Zhou, Xian et al. Follow-up of the asymptomatic patients with SARS-CoV-2 infection, *Clinical Microbiology and Infection*, 21 March 2020 [In Press] doi: https://doi.org/10.1016/j.cmi.2020.03.024

4 Border Protections and Travel Restrictions

Key issue: What regime of border protection and travel restrictions will be needed in the short and medium term? How should Australia coordinate its response to the changing realities of the pandemic elsewhere?

This crisis is a pandemic which means that Australia's ongoing success in containing the spread of the SARS-CoV-2 virus is also contingent on what other countries do to contain their respective epidemics. A clinically proven, efficacious, vaccine will be important to aiding both Australian and global recovery. Until a vaccine is developed and widely available border measures and travel restrictions remain critical to Australia's health security and economic recovery.

Recommendations and Key Findings

- **Recommendation:** A two-week period of enforced and monitored quarantine and isolation is maintained for all incoming overseas travellers, irrespective of origin and citizenship, for a minimum of the next six months.

- **Recommendation:** International travel bans remain on all Australians, other than those sanctioned for "essential" travel, for the next six months and any returning essential travellers be subject to the quarantine restrictions.

- **Recommendation:** In the event the Australian Government enters into an agreement with another country to permit entry of its citizens and/or permanent residents (i.e. New Zealand), the border control policies of the other country must be identical to Australia's and stringently enforced.

- **Recommendation:** The Australian Government initiates discussions and policy development with the World Health Organization for the creation of a new internationally-accepted vaccination certificate for clinically-proven COVID-19 vaccine candidate(s).

- **Key Finding:** Approximately two-thirds of Australia's COVID-19 cases have arisen from either international travellers or close contacts of international travellers. As a result, the risk of reintroduction of the virus into Australia from international travellers remains very high.

Border measures that are too restrictive will adversely harm Australia's economy not only via reduced tourism, but also through Australia's balance of payments and export industries.

- **Key Finding:** Based on the evidence to date, travel restrictions including travel bans appear to have been effective internationally in slowing the spread of the virus. Retaining a ban on Australian citizens travelling overseas will reduce the risk of travellers potentially re-introducing the virus on their return to Australia, as well as reduce the risk that Australian citizens may become sick overseas, requiring repatriation and/or consular assistance.

General Background

The World Health Organization has tended to advise against the use of travel restrictions in disease outbreaks and epidemics. This position has been adopted on the basis of the International Health Regulations (2005) to which Australia is a signatory. The evidence surrounding the effectiveness of trade and travel restrictions has historically been very weak, with what limited studies that have been done revealing they prove economically costly, require considerable resources to implement, and have limited benefit in delaying the start of a local epidemic, eg., by only a few days or weeks (Ryu, Gao, Wong, et al 2020; Mateus, Otete, Beck, et al 2014; Otsuki and Nishiura 2016); although others have noted that a delay of even two or three weeks can be important for preparedness (Epstein, Goedecke, Yu, et al 2007). Further, travel restrictions and flight cancellations in particular have been observed to harm public health efforts by preventing or delaying the arrival of healthcare workers and supplies such as personal protective equipment into affected countries (Tambo 2014).

Following the announcement by the World Health Organization of a novel coronavirus – now known as SARS-CoV-2 – a number of countries implemented travel restrictions against China before expanding these measures to include the worst-affected countries. The Australian Government was one of the first countries to implement travel restrictions, initially against residents of China's Hubei province (29 January) before extending this to all of China (1 February), Iran (1 March), South Korea (5 March), and Italy (11 March). On 19 March, the Prime Minister announced Australia was closing its borders to all non-citizens and non-residents from 9pm on 20 March.

Current Context

Irrespective of the pathways taken by State and Territory Governments to relax social distancing measures internally within their respective jurisdictions, the decision regarding national border controls and travel restrictions remains firmly within the authority of the Federal Government. Border measures that are too restrictive will adversely harm Australia's economy not only via reduced tourism, but also through Australia's balance of payments and export industries. Conversely, if border measures and travel restrictions are too loose, Australia will face the ongoing risk of re-introducing the virus after it has been largely controlled and contained. For these reasons, the Australian Government must strike the right balance between reducing the risk of further importation of COVID-19 cases and the commensurate risk to our healthcare system arising from significant human morbidity and mortality, with Australia's economic recovery and a return to normal social functioning as much as possible.

Although the evidence on the use of travel restrictions and border closures during the COVID-19 pandemic remains preliminary and has yet to be sufficiently peer-reviewed, there is nevertheless sufficient indication that travel-related measures have proved effective in slowing the international spread of the virus. Maintaining restrictions on incoming and outgoing travellers gives the Australian Government flexibility to pursue either a full elimination strategy or suppression strategy.

Evidence and Analysis to support Recommendations and Key Findings

In this section the main Recommendations and Key Findings are expanded upon.

> ## Recommendation
>
> A two-week period of enforced and monitored quarantine and isolation is maintained for all incoming overseas travellers, irrespective of origin and citizenship, for a minimum of the next six (6) months.

This is based on the evidence to date that two-thirds of Australia's COVID-19 cases are international travellers or close contacts of international travellers. Modelling studies have identified that between 45.6% and 64% of infected incoming travellers may not exhibit symptoms on arrival or be pre-symptomatic (Quilty, Clifford, CMMID nCoV Working Group, et al 2020; Wells, Sah, Moghadas,

et al 2020). Accordingly, an ongoing focus on limiting the ability for incoming travellers to circulate amongst the wider community during a 14-day incubation period is essential to ensure that the virus is not re-introduced after it has been controlled or contained across Australia (Leung, Wu, Liu, et al 2020). In addition, maintaining a focus on quarantining incoming travellers in hotels allows Australia to lift the ban on all non-citizens, non-residents and international students allowing for the progressive recovery of the tourism, hospitality and education sectors.

One of the considerations in maintaining this policy is whether the cost of the 14-day period of quarantine is met by the State or Territory of disembarkation (current policy), the Federal Government, or the individual traveller. This is an important issue to resolve as it has implications for the long-term sustainability of this policy, as well as impacting the viability of additional policies such as creating special travel arrangements with individual countries (**Recommendation** below).

At the moment we do not find any good evidence for the popular idea of a "immunity passport." There may be other innovative ways of managing safe travel (e.g testing in the embarking country, or part quarantine in the embarking country). However, none of these have been rigorously tested or proven. Given the critical importance of travel for Australia, for Australians and for our economy – the Government is encouraged to support further research into these initiatives. Any such initiatives should only be adopted after they have been thoroughly tested.

Recommendation

International travel bans remain on all Australians, other than for sanctioned "essential" travel, for the next six months and any returning essential travellers be subject to the quarantine restrictions.

Exceptions could include travel for essential purposes or compassionate grounds (i.e. to attend a funeral of a close family member); but returning travellers must then enter a 14-day period of quarantine as per the earlier Recommendation. In the event the current travel ban is not maintained, it is considered highly likely we will see Australian citizens seek to travel overseas for leisure or business. Given 185 countries have documented COVID-19 cases, no overseas destination can currently be considered safe for travellers. There is a high-risk Australians travelling overseas during the next six months will be exposed to the virus. Further, most Australian travellers will travel for short periods and then want to return to Australia, increasing the risk of reintroducing the virus, or become unwell while overseas, necessitating medical repatriation and/or high levels of consular assistance. This situation is likely to persist until a vaccine becomes available, or a significant proportion of the world's population develops a level of immunity to the virus preventing onward transmission.

Chapter 4: Border Protections and Travel Restrictions

<div style="background-color:#c8941e; color:white; padding:1em">

Recommendation

In the event that the Australian Government enters into an agreement with another country to permit entry of its citizens and/or permanent residents (i.e. New Zealand), the border control policies of the other country must be identical to Australia's and stringently enforced.

</div>

This recommendation is predicated upon the assumption that an effective vaccine is not yet widely available.

In this context, should the Australian Government agree to permit international travel from any country in order to help re-invigorate the Australian travel and tourism industry and support economic recovery, it is essential that a number of conditions are met. The first is that any country seeking relaxation of Australia's border controls must be certified as free from COVID-19 infections for a minimum of 28 days (i.e. double the length of the incubation period). Second, the requesting country must commit to implement external border

control policies identical to Australia, such as mandatory quarantine for all international travellers other than Australian citizens and permanent residents. This is to both protect each respective country while also ensuring costs are shared equitably (i.e. if the other country requires mandatory quarantine costs be recovered from international travellers but Australian States and Territories

… any country seeking relaxation of Australia's border controls must be certified as free from COVID-19 infections for a minimum of 28 days …

meet these costs, it could result in disproportionate costs to Australian taxpayers). Third, these policies must be strictly adhered to and enforced. Any deviation would result in the suspension of any special arrangements given the risk of re-introduction of the virus into Australia.

Recommendation

The Australian Government, via the Department of Health, initiates discussions and policy development with the World Health Organization for the creation of a new internationally-accepted vaccination certificate for clinically-proven COVID-19 vaccine candidate(s).

Key Finding

Approximately two-thirds of Australia's COVID-19 cases have arisen from either international travellers or close contacts of international travellers. As a result, the risk of reintroduction of the virus into Australia from international travellers remains very high.

This recommendation is based on the Yellow Fever vaccination certificate model, which required internationally agreed standards on certification of vaccination to avoid unnecessary disruption to international travellers (Barnett, Wilder-Smith and Wilson 2008; Gear 1948). An internationally agreed vaccination certificate will be critical to global economic recovery.

As the virus is now present in 185 countries and there are now multiple epicentres, the risk of reintroduction into Australia from international travellers remains very high and without quarantine measures in place the virus will spread given pre-symptomatic cases are unlikely to be detected by exit and entry screening. Border measures such as strict quarantine and isolation of all incoming travellers are essential to limiting the overall number of COVID-19 cases in Australia.

… the risk of reintroduction into Australia from international travellers remains very high …

Chapter 4: Border Protections and Travel Restrictions

Key Finding

Based on the evidence to date, travel restrictions including travel bans appear to have been effective internationally in slowing the spread of the virus. Retaining a ban on Australian citizens travelling overseas will reduce the risk of travellers potentially re-introducing the virus on their return to Australia, as well as reduce the risk that Australian citizens may become sick overseas, requiring repatriation and/or consular assistance.

The general consensus is that travel restrictions help delay the international spread of COVID-19 and give countries time to prepare and strengthen their public health response. Without these restrictions remaining in place, there is a high risk the virus will be re-introduced via returning Australian travellers. In addition, Australians travelling overseas are at increased risk of contracting the virus given there are multiple epicentres that are common destinations for many Australians.

This increases the risk of Australian travellers becoming seriously unwell, potentially necessitating medical repatriation, or dying. Either scenario requires considerable consular support, placing multiple persons at increased risk of infection. Given that COVID-19 cases are also still present in Australia, it is possible that Australian travellers may inadvertently spread the virus to other countries in the event they are permitted to travel, which would reflect negatively on Australia especially within our immediate region.

References

Elizabeth Barnett, Annelies Wilder-Smith and Mary Wilson (2008) Yellow fever vaccines and international travellers. *Expert Review of Vaccines* 7(5): 579-587.

Edward De Brouwer, Daniele Raimondi, Yves Moreau (2020) Modeling the COVID-19 outbreaks and the effectiveness of the containment measures adopted across countries. Pre-print *MedRxiv*, https://doi.org/10.1101/2020.04.02.20046375.

Ramses Djidjou-Demasse, Yannis Michalakis, Marc Choisy, et al (2020) Optimal COVID-19 epidemic control until vaccine deployment. Pre-print *MedRxiv*, https://doi.org/10.1101/2020.04.02.20049189.

Joshua Epstein, Michael Goedecke, Feng Yu, Robert Morris, Diane Wagener, Georgiy Bobashev (2007) Controlling Pandemic Flu: the Value of International Air Travel Restrictions. *PLoS Med* 5: e401.

H S Gear (1948) Problems of International Travel. *BMJ* 1(4561): 1092-1094.

Kathy Leung, Joseph Wu, Di Liu, et al (2020) First-wave COVID-19 transmissibility and severity in China outside Hubei after control measures, and second-wave scenario planning: a modelling impact assessment. *The Lancet*, published online 8 April 2020, https://doi.org/10.1016/S0140-6736(20)30746-7.

Ana Mateus, Harmony Otete, Charles Beck, Gayle Dolan and Jonathan Nguyen-Van-Tam (2014) Effectiveness of travel restrictions in the rapid containment of human influenza a systematic review. *Bull World Health Organ* 92(12): 868-880.

Shiori Otsuki and Hiroshi Nishiura (2016) Reduced Risk of Importing Ebola Virus Disease because of Travel Restrictions in 2014: A retrospective Epidemiological Modeling Study. *PLoS One* 11(9): e0163418.

Billy Quilty, Sam Clifford, CMMID nCoV working group, et al (2020) Effectiveness of airport screening at detecting travellers infected with 2019-nCoV. *Eurosurveillance* 25(5): 2000080.

Sukhyun Ryu, Huizhi Gao, Jessica Wong, Eunice Shiu, Jingyi Xiao, Min Whui Fong, and Benjamin Cowling. Nonpharmaceutical Measures for Pandemic Influenza in Nonhealthcare Settings – International Travel-Related Measures. *Emerg Infect Dis*. 2020 May – early release article.

Earnest Tambo (2014) Non-conventional humanitarian interventions on Ebola outbreak crisis in West Africa: health, ethics and legal implications. Infectious *Diseases of Poverty* 3(42): https://doi.org/10.1186/2029-9957-3-42.

Chad Wells, Pratha Sah, Seyed Moghadas, et al (2020) Impact of international travel and border control measures on the global spread of the novel 2019 coronavirus. *PNAS* 117(13): 7504-7509.

5 The Importance of Public Trust, Transparency and Civic Engagement

Key issue: The ongoing success of Australia's pandemic response points to the critical importance of public trust, transparency, and civic engagement as part of the Government's optimal approach.

The most promising evidence-informed strategy is only possible if public involvement and cooperation can be sustained. Here, we focus on importance of transparency and civic engagement, *Chapter 11: Communications* elaborates further on the specific forms of encouragement, support and communication needed to control COVID-19.

Federal, State and Territory governments have responded quickly and at scale, and a recent Newgate Australia survey (2020) reports that 76% of the public strongly supports social distancing measures, bans on mass gatherings, and limiting outdoor activity to essential tasks.

Recommendations

- **Recommendation:** Prioritise transparency and trust by acknowledging uncertainty and communicating clearly and with empathy.

- **Recommendation:** Communicate rationale for decisions including what evidence is being used, who was consulted, and what impacts were considered and why a course was chosen.

- **Recommendation:** Involve communities, industries, organisations, and other stakeholders in decisions about options for strengthening and/or relaxing containment measures.

- **Recommendation:** Consideration should be given to the establishment of a funded national service program for younger Australians (e.g. *Aussies All Together*) to inclusively engage the young from across the nation in the process of social reconstruction across the country.

Background/Context

Australian efforts to contain transmission of the SARS-CoV-2 virus and achieve a 'flattening of the curve' have so far been successful. Federal, State and Territory governments have responded quickly and at scale, and a recent Newgate Australia survey (2020) reports that 76% of the public strongly supports social distancing measures, bans on mass gatherings, and limiting outdoor activity to essential tasks. These strategies have been enabled by strong pandemic planning and public health workforce infrastructure and high levels of cooperation from all sectors. In the months ahead however, Australians will have a less immediate sense of risk while continuing to feel the impact of public health measures on all parts of their lives. The ongoing success of Australia's pandemic response points to the critical importance of public trust, transparency, and civic engagement as part of the Government's optimal approach.

Evidence and Analysis to support Recommendations

Public trust

Trust is a key resource in harnessing public cooperation and sustaining the behaviours needed for pandemic management. Trust is affected by perceived competence, objectivity, fairness, consistency, sincerity, faith and empathy (Renn and Levine, 1991). A lack in one area may be compensated if there is a surplus of the other. Credibility and trust are key factors in effective crisis communication (Briñol & Petty, 2009) and can be expressed at the messaging, personal, institutional and political/cultural levels (Renn, 2008).

Levels of trust in Government differ between socio-economic and demographic groups (Stoker et al., 2018). For this reason, broad messaging aimed at the general public must be complemented with more targeted communication and involvement. While policy decisions should be announced

Chapter 5: The Importance of Public Trust, Transparency and Civic Engagement

and articulated by political figures, public health officials and other relevant experts must continue to provide public communications, to help communicate that such policies are underpinned by appropriate evidence. Where possible, appropriately summarised abstracts of this evidence should be made publicly available on the Government COVID-19 websites. The Commonwealth Dashboard, and the various State Dashboards, are welcome developments – keep them current.

Inconsistency between jurisdictions in policies may sometimes be justified but cause confusion because they result in different emphases on risk and the 'right' approach. When Federal, State and Territory approaches are not in alignment, the reasons must be clearly explained to the public. Furthermore, since 'evidence' is facts plus values, both should be clearly articulated (Carter et al., 2011).

When communicating, leaders should express genuine empathy and concern (Reynolds & Quinn, 2008). The more Australians believe that leaders empathise with them and are genuinely concerned for their wellbeing, the more likely they will respond favourably to Government advice. Leaders should also communicate respect and a belief that they trust the public, as this is more likely to elicit cooperation (Van Bavel et al 2020).

Transparency

Trust in government and organisations is enhanced when there is transparency of information, evidence, and a clear decision-making process. Governments and organisations should therefore seek to provide access to accurate information, both positive and negative, so that people may build accurate expectations. Change should be communicated early, even with incomplete information, as acknowledging uncertainties does not undermine trust in the information or its source (van der Bles et al., 2020). While people dislike uncertainty, a perception of obfuscation is worse because it diminishes trust. Moreover, withholding information can motivate people to look for information elsewhere, which can foster belief in misinformation (Kovic & Füchslin, 2018).

There should be appropriate levels of transparency in decision-making processes. This includes *what* evidence is used in decisions, *who* was consulted, and *what* impacts were considered. Where risk is inherent, acknowledgment of risks and their magnitude enhances trust. Strong risk negations (e.g., it's perfectly safe) may make people more risk averse (Betsch & Sachse, 2013). It is better to acknowledge a risk when it is present including information about its magnitude, even if outweighed by the benefits.

Governments should prioritise transparency and trust in situations where the State acts rapidly and with limited consultation for the greater good, as is often the case in health emergencies. Elimination and controlled adaptation scenarios both require significant data collection, analysis, and sharing to reduce ongoing chains of transmission. Aggregated anonymised data from telecommunications, social media and satellite-based systems have the potential to improve traditional public health data collection approaches (Buckee, 2020; George & Taylor et

al., 2019), however, digital tracking applications also raise justified concerns by experts and some members of the public. Using data-driven approaches, including new tracking applications to accelerate contact tracing, has the potential for perceived and actual Government overreach. The public will have many legitimate questions. Government transparency on *what* information is collected, *how* it is encrypted,

Change should be communicated early, even with incomplete information, as acknowledging uncertainties does not undermine trust in the information or its source.

who has access, *where* the data is stored, and whether dual-use of health-related data is allowed, must be addressed by the Government **in advance of** deploying mobile tracking applications. Addressing these issues is especially important with respect to data collection relating to First Nations peoples (Kukutai and Walter, 2019; Mann, DeVitt and Daly, 2019).

Chapter 5: The Importance of Public Trust, Transparency and Civic Engagement

In relation to the use of citizen-generated data (i.e., from mobile contact tracing applications), Governments must address real and perceived privacy concerns and data ethics, and mitigate the potential for misuse, including the politicisation of health-related data (Daly, Devitt, and Mann, 2019). There should be sound evidence justifying data surveillance especially if less imposing measures would be sufficient. Consultation on the use of surveillance technologies should include cybersecurity experts, data ethicists, public health researchers and other stakeholders.

Civic engagement is about enabling communities and social networks to be involved in the decisions that will affect them.

With respect to anonymised public health data, there should be a strong commitment to data sharing, exchange, and interoperability (Wilkinson et al., 2016; Research Data Alliance COVID19 Working Group, 2020).

Civic engagement

As the threat of COVID-19 becomes less immediate but costs continue to be felt, Australia will need to prioritise active and ongoing engagement with communities, industries, organisations and other stakeholders. Civic engagement is about enabling communities and social networks to be involved in the decisions that will affect them (Miranti & Evans 2019; Adler & Goggin 2005). However, this can be challenging in times of crisis when Governments must make rapid, life-saving decisions that may require imposing strict measures with little or no time for community involvement.

Australia's initial success in reducing the rate of transmission has provided a valuable window of opportunity to establish deliberative processes in which social groups, businesses, and organisations can influence the containment measures that are likely to affect them (Cammett & Lieberman 2020). Meaningful stakeholder engagement will improve the effectiveness of containment measures (Renn 2008). It will encourage greater ownership of

decisions and accordingly more chance of public cooperation (Head 2011).

Community groups, businesses, and organisations also have specific expertise and local knowledge that is needed to devise implementable containment measures over the long-term (Wynne 2002). An excellent example of this is the way in which the major Australian supermarket chains have translated a set of general social distancing requirements into specific, workable shop-floor practices. Stakeholder engagement also permits input from those groups who are likely to shoulder the consequences and risks of a potential cause of action and, as the subsequent chapters describe in some detail, some communities and professions are more vulnerable than others.

Australia's approach must, therefore, be a collaborative one.

The specific consultative process will depend on measures being considered and the types of groups that are likely to be involved. When options for strengthening or relaxing containment measures are being considered, it is important to identify which specific groups have a stake (Renn 2008). These could be groups whose health may be affected (such as older Australians, or teachers), or sectors that have a direct financial interest (such as the hospitality industry). Representatives from these groups, identified via community organisations, professional or industry associations, unions, or

When options for strengthening or relaxing containment measures are being considered, it is important to identify which specific groups have a stake.

patient advocacy groups, should then be considered as participants in a deliberative process. It may be useful to establish COVID-19 community reference groups to represent key groups that could then provide ongoing guidance for the duration of the pandemic (see for example, the Aboriginal and Torres Strait Islander Advisory Group on COVID-19).

Chapter 5: The Importance of Public Trust, Transparency and Civic Engagement

Groups should be provided with an opportunity to delineate and appraise the risks as they perceive them (Renn 2008). They could be provided with decision parameters, permissible options and methods for minimizing harm. Industry representatives could be encouraged to consult more widely and present a plan for commencing commercial activity in a way that minimises risk.

Research shows that young people are influenced by "top down" signals from policies and programs, and are motivated by grassroots or "bottom up" programs to support communities.

Establish a funded national service program

Due to the COVID-19 response in Australia, the young have been particularly displaced by the social distancing policies and many will find it hard to get a foothold in the economy. As social distancing begins to be relaxed, they will have an increased capacity to serve Australian communities, but potentially few options. Civic engagement, including both community and industry, has been a purposeful component of Australian policymaking for several decades (Head 2011). There also exists a wealth of expertise and experience among governments, communities, industry and academia in public policy focused on volunteering (Volunteering Australia, 2014; Walsh & Black 2015).

Aussies All Together (suggested title) could be an inclusive program that provides opportunities for skills development and engagement in the aftermath of emergencies *within* Australia's borders. Participants will receive culturally appropriate training to support communities in order to improve health and wellbeing, (re) build infrastructure, provide peer-tutoring, perform conservation and wildlife preservation. Such a program could offer meaning, purpose and social connectedness to those involved, and will contribute

to Australia's long-term national health and education strategy. Research shows that young people are influenced by "top down" signals from policies and programs, and are motivated by grassroots or "bottom up" programs to support communities (Walsh & Black, 2015). There is considerable empirical evidence on the benefits of fostering youth volunteerism in Australia and New Zealand (Black, 2012; Lewis, 2013).

References

Adler, R. P., & Goggin, J. (2005). What do we mean by "civic engagement"? *Journal of Transformative Education*, 3(3), 236–253. doi: 10.1177/1541344605276792

Betsch, C., & Sachse, K. (2013). Debunking vaccination myths: strong risk negations can increase perceived vaccination risks. *Health Psychol*, 32(2), 146-155. doi:10.1037/a0027387

Black, R. (2012). Educating the reflexive citizen: making a difference or entrenching difference. Melbourne: The University of Melbourne

Briñol, P. & Petty, R. E. (2009). Source factors in persuasion: A self-validation approach. European Review of Social Psychology, 20, 49-96. doi:10.1080/10463280802643640

Buckee, Caroline (2020) Improving epidemic surveillance and response: big data is dead, long live big data, Lancet Digital Health, https://doi.org/10.1016/S2589-7500(20)30059-5

Cammett, M. & Lieberman, E. Building Solidarity: Challenges, Options and Implications for COVID-19 Responses. https://www.ethics.harvard.edu/files/center-for-ethics/files/safrawhitepaper4c.pdf. Accessed 18-Apr 2020

Carter, S. M., Rychetnik, L., Lloyd, B., Kerridge, I. H., Baur, L., Bauman, A., Zask, A. (2011). Evidence, Ethics, and Values: A Framework for Health Promotion. *Am J Public Health*, 101(3), 465-472. doi:10.2105/ajph.2010.195545

Daly, A., Devitt, S.K., Mann, M., eds (2019). *Good Data*. ISBN 978-94-92302-27-4

Chapter 5: The Importance of Public Trust, Transparency and Civic Engagement

George, DB and Taylor, W et al (2019) Technology to advance infectious disease forecasting for outbreak management, *Nature Communications*, https://doi.org/10.1038/s41467-019-11901-7.

Head, B. (2011). Australian Experience: Civic Engagement as Symbol and Substance. *Public Administration and Development* 31: 102-112.

Kovic, M, & Füchslin, T. (2018). Probability and conspiratorial thinking. *Applied Cognitive Psychology, 32*, 390-400. doi:10.1002/acp.3408.

Kukutai, T and Walter, M. Recognition and Indigenizing Official Statistics: Reflections from Aotearoa New Zealand and Australia. *Statistical Journal of the IAOS* 31.2 (2015)Lewis, K. V. (2013). The power of interaction rituals: The Student Volunteer Army and the Christchurch earthquakes. International Small Business Journal, 31(7), 811-831.

Mann, M., DeVitt, K., and Daly, A. (2019) What is (in) good data? *Good Data*. ISBN 978-94-92302-27-4, https://networkcultures.org/blog/2019/01/23/out-now-tod-29-good-data/ Accessed 16-Apr 2020

Miranti, R. & Evans, M. (2019). Trust, sense of community, and civic engagement: Lessons from Australia. *Journal of Communication Psychology*. 47:254-271.

Newgate Australia survey (2020). Australia's Response to COVID-19 Has Reached Rare Consensus, As Community Wants to Stay the Course on Virus Fight, 16-Apr 2020 https://www.newgatecomms.com.au/australias-response-to-covid-19-has-reached-a-rare-consensus-as-community-wants-to-stay-the-course-on-virus-fight/

Renn, O. (2008). *Risk governance : Coping with uncertainty in a complex world*. Earthscan: Sterling UK.

Renn, O., & Levine, D. (1991). Credibility and trust in risk communication. In R. E. Kasperson & P. J. M. Stallen (Eds.), *Communicating risks to the public: international perspectives* (Vol. 4). Dordrecht: Kluwer.

Research Data Alliance COVID-19 Working Group, https://www.rd-alliance.org/groups/rda-covid19

Reynolds, B., & Quinn, S. C. (2008). Effective communication during an influenza pandemic: the value of using a crisis and emergency risk communication framework. *Health Promotion Practice, 9*, 13S-17S.

Stoker, G., Evans, M. & Halupka, M. (2018). Trust and Democracy in Australia: Democratic decline and renewal. Institute for Governance & Policy Analysis, University of Canberra.

Van Bavel, Jay J., Katherine Baicker, Paulo Boggio, Valerio Capraro, Aleksandra Cichocka, Molly Crockett, Mina Cikara, et al. (2020). Using Social and Behavioural Science to Support COVID-19 Pandemic Response. *PsyArXiv.* March 24. doi:10.31234/osf.io/y38m9.

van der Bles, A. M., van der Linden, S., Freeman, A. L. J., & Spiegelhalter, D. J. (2020). The effects of communicating uncertainty on public trust in facts and numbers. *Proceedings of the National Academy of Sciences*, 117(14), 7672-7683. doi:10.1073/pnas.1913678117 Volunteering Australia (2014). Policy and Best Practice. Retrieved from: http://www.volunteeringaustralia.org/policy-and-best-practise/

Walsh, L., & Black, R. (2015). Youth volunteering in Australia: An evidence review. Report prepared for the Australian Research Alliance for Children and Youth. Canberra: ARACY.

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., … Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data*, 3, 160018. doi:10.1038/sdata.2016.18.

Wynne, B. (2002) 'Risk and environment as legitimatory discourses of technology: Reflexivity inside out?' *Current Sociology*, vol 50, no 30, pp459–477.

6 Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

Building and supporting our health system requires focus on **two interrelated key aims:**

1. resuming and optimising routine, comprehensive health care; and

2. simultaneously managing COVID-19 across the healthcare system using ongoing preparedness and readiness to re-escalate crisis management.

Recommendations and Key Findings

Recommendations

- **Recommendation:** Agree and optimise national guidelines, training (including evidence-based use of PPE and other infection control approaches) and supply chains for managing SAR-CoV-2 and COVID-19 screening, testing and management that strengthens primary and hospital care collaboration.

- **Recommendation:** Establish a national real-time health data repository starting with COVID-19 related data that links primary, secondary and acute care that can be extended to other areas of heath care.

- **Recommendation:** Maintain e-health (e.g. video/telehealth and apps) as an important part of routine health care, supported by nationally agreed standards and quality indicators.

- **Recommendation:** Support community messaging to seek medical care in managing existing conditions and diagnosis and treatment of both COVID-19 and non-COVID-19 conditions.

- **Recommendation:** Provide the flexibility in health care worker training requirements that will ensure the viability of Australia's essential health workforce pipeline.

- **Recommendation:** Provide accessible mental health care support specifically designed for health care workers.

Key Findings

- **Key finding:** Lack of transparency, inconsistent messaging and uncertainty undermine confidence and performance in health care.

- **Key finding:** Australia has a strong, Government-supported primary and community health sector led by general practice and supported by PHNs. Voluntary patient registration would further strengthen the ability of general practices to engage with their patients on an ongoing and proactive basis.

- **Key finding:** Australia has a strong public hospital sector combined with a private sector

that particularly supports elective surgery. The public sector could maintain, and if needed escalate, COVID-19 care while elective care (public and private) is escalated in collaboration with private care providers.

- **Key finding:** PPE is vital for both staff protection and to maintain health services across the spectrum from community to hospital care. Uncertainty about appropriate use and supply are therefore obvious major stressors for health care workers and the system. Misuse includes both inadequate PPE and overuse of PPE.

- **Key finding:** The pandemic is threatening both educational opportunities for students and the health care workforce pipeline and this must be rectified.

- **Key finding:** As with the likely ongoing uptake of videoconferencing in the broader community, video or other eHealth options are likely to be able to offer high value care when used appropriately.

Chapter 6: Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

- **Key finding:** There has been marked reductions in pathology testing and clinical presentations for non-COVID-19 problems indicating a possible delay in the management of existing conditions and lack of attention for new problems.

- **Key finding:** Electronic health records and data linkage are key to comprehensive COVID-19 surveillance as well as managing non-COVID-19 clinical problems.

- **Key finding:** All critical care specialties have previously supported advanced care planning for patients likely to have poor outcomes, COVID-19 has further emphasised this need.

- **Key finding:** Medical research integrates laboratory, epidemiological and clinical trial-based programs aimed at understanding the fundamental molecular, biological and biochemical characteristics of COVID-19 and for devising treatments and vaccines.

- **Key finding:** Epidemiological modelling of the dissemination and spread of COVID-19 in an

Australian context has been critical in informing strategies to minimise the number of infections and optimise the treatment of Australians who have already been infected. More Health Services Research is now needed to prepare for the changes in the healthcare system to deal with COVID-19 and its consequences.

General Background

Current Context

The COVID-19 crisis challenges all aspects of health care and all overlapping sectors of our system. For patients with COVID-19, 80% can be adequately cared for in the community, 15% require hospital inpatient acute care; and 5% require critical care (ICU) usually for respiratory support. Health care professionals are also at increased risk of contracting COVID-19. Dealing with the crisis has led to delaying non-urgent elective surgery; i.e. surgery unlikely to lead to death or significant harm within 30-days. Also, many patients are avoiding the health care system for non-COVID-19 problems.

Evidence and Analysis to support Recommendations and Key Findings into Australia's recovery phase

ARS-CoV-2 testing and screening and vaccination

With the dual aims of managing the pandemic and increasing clinical activity for non-COVID-19 needs, both community and hospital sectors require agreed expert evidence-based guidance on testing and screening for SARS-CoV-2, as epidemiology and antibody and antigen tests evolve.

This advice should include managing those who screen or test positive. Escalating elective surgery will be highly dependent on this advice including Australian epidemiology. Similar guidance will be needed should a vaccine become available.

Analysis:

- Ensure updated national guidelines on managing SARS-CoV-2 and COVID-19 screening and testing in community and hospital settings.

- Link screening and testing data to enhance national surveillance.

The central role of primary care in the "Roadmap to Recovery"

The centrality of primary care has been re-enforced during the COVID-19 pandemic as countries with strong primary care have demonstrated greater capacity to flexibly respond. Recovery will be prolonged – this is a marathon, not a sprint. Primary care has a key role in preventing, testing, tracing and managing COVID-19. Primary Health Networks have played a vital role in supporting primary care in the response.

For patients with COVID-19, 80% can be adequately cared for in the community, 15% require hospital inpatient acute care; and 5% require critical care (ICU) usually for respiratory support.

The understandable focus on COVID-19 has led to the unintended consequence of a reduction in those seeking health support for non-

Chapter 6: Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

COVID-19 care. Tele(video)health (with new MBS item numbers) has helped to some extent. Many hospital-based ambulatory services including outpatient clinics have also moved to telehealth. Concern remains that we will see increased morbidity and mortality from the current altered focus of health care workers and from patient reluctance to engage on non-COVID-19 problems. This is also likely to be disproportionately the case in socioeconomically marginalised groups.

As hospital services, particularly elective surgery resume, the severity of both comorbidity and the underlying reasons for the patient requiring surgery may have worsened increasing risks of complications and mortality. This places greater demands on all three areas: primary community care, acute hospital care and critical care.

Analysis:

- Primary care should be supported as the central component of the health system including care for conditions well managed using care in the community.

- Collecting, curating and linking health data across the health care system should be supported including MyHR.

Hospitals as Partners in the "Roadmap to Recovery"

To date, Australian hospitals have avoided the nightmare of other countries such as the UK, Spain, and the US. Our acute and critical care sectors are treating an unexpectedly small number of COVID-19 patients but are prepared for many more. There is now a need to resume elective diagnostic and therapeutic procedures (medical and surgical) in low risk patients as soon as possible. There is concern that following the pandemic there will be the adverse effects of neglecting other health issues, including worsening mental health. This is a public health problem.

Primary care and hospital clinicians need to increase collaboration to improve patients' chronic conditions that may have deteriorated during the pandemic and ensure that access to procedures is based on need rather than the loudest voices. Escalating elective diagnostic and therapeutic procedures will require Government

facilitated collaboration between the public and private sectors.

Due to our timely response, the Australian health care system has been provided with time to plan. It is well documented that older Australians are more likely to require intensive care and ventilation than younger Australians. Now is the time for general practitioners, emergency medicine, anaesthetists, intensivists to promote there being early goals of care discussions for patients at high risk of death or severely impaired functional recovery. Some patients who have died in ICU from COVID-19 may have benefitted from goals-of-care discussions before their final illness.

The health care system needs to be primed for a COVID-19 resurgence as has been seen in other countries and to be able to pivot quickly in response. Primary care and public hospitals will need to maintain COVID-19 readiness and the ability to escalate.

Analysis:

- The public must be supported to seek medical care for existing conditions and diagnosis and treatment of non-COVID-19 conditions.

- Support community-based "goals-of-care" discussions for patients at risk of poor outcomes – so patients are better prepared should circumstances so require.

- Facilitate public and private sector collaboration in escalating elective diagnostic and therapeutic procedures.

Now is the time for general practitioners, emergency medicine, anaesthetists, intensivists to promote there being early goals of care discussions for patients at high risk of death or severely impaired functional recovery. Some patients who have died in ICU from COVID-19 may have benefitted from goals-of-care discussions before their final illness.

- Priorities for resuming care must be based on need – and may require a communications campaign to build momentum.

Chapter 6: Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

Mental Health and Wellbeing of Healthcare Workers in the Recovery phase

Supporting the wellbeing of healthcare workers at elevated risk of experiencing psychological distress and adverse mental health symptoms is vital for both their health

The psychological harm of the pandemic for healthcare workers is a continuum from stress and burnout to post-traumatic stress and other mental health symptoms.

and for managing the pandemic. The intensive workload, uncertain PPE, fear of infection and spread to family members, saturation media coverage, inconsistent messaging and reduced contact with loved ones all contribute to the added mental burden on healthcare workers. The psychological harm of the pandemic for healthcare workers is a continuum from stress and burnout to post-traumatic stress and other mental health symptoms.

Analysis:

A targeted mental health plan for healthcare workers is essential including:

- Optimising informal and formal support networks and education on the possible psychological impact of COVID-19.

- Screening of healthcare workers for psychological distress and mental health symptoms.

- Access to free evidence-based eHealth mental health interventions, and face-to-face treatment for individuals requiring more intensive support.

Personal Protective Equipment (PPE)

Personal protective equipment has been an important and emotive subject during this COVID-19 pandemic. However, PPE is only one part of protecting staff and other patients from COVID-19 cross-infection.

PPE is a collective term for differing levels of protection, and it has been complicated by the lack of any agreed terminology. There has also been uncertainty about when to use

the various levels of PPE, and also uncertainty about availability of PPE with a marked disparity of access across community and hospital care.

Appropriate PPE use significantly reduces risk of viral transmission. PPE should be matched to the SARS-CoV-2 risk, which will depend on location, and should be based on national case definitions and guided by local infectious diseases and public health advice. It should also be matched to the potential mode of viral transmission occurring during patient care – contact, droplet, or airborne.

Suggested Levels of PPE based on mode of transmission risks:

1. Low risk: Standard work clothes and procedures;

2. Contact precautions: Gloves and plastic apron;

3. Droplet precautions: Gloves, plastic apron, surgical mask and eye protection;

4. Airborne precautions: Gloves, fluid repellent long sleeved gown, goggles or full-face shield and N95 mask. (Purified Air Powered Respirators (PAPRs) with training.)

Availability of PPE is dependent on both supply and use. Unnecessary use (misuse) does not enhance safety and undermines availability. Clear understanding of the levels of PPE and when they are needed is required to sustain stocks and de-escalate use of PPE during the return to pre-pandemic clinical activities. **Adhering to guidelines such as those from the College of Anaesthetists (ANZCA) should help de-escalate use of PPE and re-escalate if needed**.

Analysis:

- Use of consistent terminology of levels of PPE based on method of transmission

- Ensure a nationally coordinated PPE stockpile with reliable, accessible estimates of different PPE components and greater certainty about adequate access for hospital and community workforce.

- Develop agreed national guidelines in collaboration with relevant professional bodies (such as the medical Colleges) for appropriate use of PPE for each level of transmission risk, including: an agreed list of aerosol-generating procedures.

Chapter 6: Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

Managing the Professions and the training pipeline within the "Roadmap to Recovery"

Prior to the COVID-19 pandemic Australia was already facing major challenges in maintaining and sustaining a health workforce to meet the growing and distributed demand for health care. Workforce strategies to address these pre-existing imbalances in supply and demand, particularly in nursing and midwifery, will not be sufficient to meet the added immediate and longer-term impacts of the COVID-19 pandemic.

The immediate surge in workforce demand from the pandemic along with any subsequent waves, will continue to require rapid up-skilling and re-deployment of large numbers of health professionals to the frontline for up to 18 months. Interruptions are anticipated through natural attrition, work stress, burnout, sick leave, isolation leave, and added caring responsibilities.

Further, healthcare workers will access annual and long service leave which will have been limited during the pandemic. Workforce disruption is expected due to loss of required clinical training. Universities and other training organisations are working within jurisdictions to leverage existing resources, capability and capacity in order to provide scalable, high quality, interdisciplinary, evidence-based training solutions to rapidly upskill the health workforce and support workforce supply while providing career pathways that aid retention.

Analysis:

- Professional regulators should consider removing minimum mandatory hours as a requirement for registration and adopt a flexible approach to the assessment of work readiness that includes work experience, scope of practice and clinical competence and recognise and promote innovative approaches to clinical education within new models of care (such as telehealth).

- Pandemic preparedness should be compulsory curriculum for all health care courses and students should be trained to the highest standards in the correct use of PPE and consideration to how students

can be safely involved in learning about COVID-19, including the use of virtual health care placements.

- Ongoing in-person clinical placements should recommence when there are sufficient supplies of appropriate PPE. Final year students should be prioritised to be involved in COVID-19 related care as they will commence practice in 2021 and must be prepared for their role.

The National Principles for Clinical Education during the COVID-19 recently published by the Australian Government are a helpful contribution in this space. It is important the professional accreditors now conform to these principles.

The silver lining of a digitally connected health care system as we move into a recovery phase

COVID-19 has catapulted our health care systems into the digital delivery of health care. This has been largely welcomed by the public and the health care workforce. There is an opportunity to build upon the experience of tele and video consultations and incorporate these permanently into health care, yet this must be accompanied by appropriate standards and guidelines for training, and quality indicators and management. Virtual healthcare can be extended beyond voice/video interaction to include asynchronous communication, consumer empowerment and biomedical monitoring.

The COVID-19 pandemic has also demonstrated the importance of real-time health data in the planning response and management of the crisis. The engagement of the public in following the daily data updates has been unprecedented. The time is ideal to capitalise on the alignment of the public, practitioner and policy need for data.

Analysis:

- eHealth (virtual Healthcare) should become routine health care. Standards and Quality indicators should be developed in conjunction with the relevant professional bodies to support the integration of virtual healthcare into routine care. Consider how to integrate virtual healthcare into training health care professionals.

Chapter 6: Australia's Optimal Approach for Building and Supporting a Health System within the "Roadmap to Recovery"

The contribution of medical and health research to Australia's capacity to manage the COVID-19 pandemic

Australia's medical research community has made significant contributions to Australia's response to the COVID-19 pandemic through universities, medical research

Australia has been at the cutting edge being one of the first outside China to isolate the virus, develop virus-detection tests, publish on the immune response to the virus and lead in developing innovative Vaccine candidates.

institutes, hospitals and other research institutions. Australia has been at the cutting edge being one of the first outside China to isolate the virus, develop virus-detection tests, publish on the immune response to the virus and lead in developing innovative Vaccine candidates.

Analysis

- Medical research integrates laboratory, epidemiological and clinical trial-based programs aimed at understanding the fundamental molecular, biological and biochemical characteristics of COVID-19 and is critical for treatments and vaccines.

- Medical research models the projected dissemination and spread of COVID-19 in an Australian context, to inform strategies to minimise the number of infections and optimise the treatment of Australians who have already been infected.

- Health services research will be critical in supporting the health system more broadly in the recovery from COVID-19.

References

Babbage S. COVID-19: Impacts and opportunities for Australia's Health Care System. Price Waterhouse Coopers, Sydney, Australia, 20/3/2020. https://www.pwc.com.au/important-problems/coronavirus-covid-19/healthcare-system-impacts-opportunities.html

Horton R, COVID-19 and the NHS—"a national scandal". The Lancet, Volume 395, Issue 10229, 2020, Page 1022, doi.org/10.1016/S0140-6736 (20)30727-3

Cook TM. Personal protective equipment during the COVID-19 pandemic – a narrative review. Anaesthesia. 2020

Australian and New Zealand College of Anaesthetists (ANZCA). Recommendations for PPE according to SARS-CoV-2 risk status. 2020. http://www.anzca.edu. au/documents/anzca-covid-ppe-statement-v24-09042020-(1).pdf

Burns, H., Hamer, B. & Bissell, A. (2020). COVID-19: Implications for the Australian healthcare workforce. Retrieved from: https://www.pwc. com.au/important-problems/coronavirus-covid-19/australian-healthcare-workforce.html

Australian Government (2020). Impact of COVID-19. Theoretical modelling on how the health system can respond https://www.health.gov.au/sites/default/files/documents/2020/04/impact-of-covid-19-in-australia-ensuring-the-health-system-can-respond-summary-report.pdf

Australian and New Zealand College of Anaesthetists (ANZCA), Royal Australasian College of Surgeons (RACS): Medical colleges support resumption of selective elective surgery for low-risk patients. http://www.anzca.edu.au/communications/media/media-releases-2020/medical-colleges-support-resumption-of-selective-e

Choosing Wisely. ANZCA, ANZICS, ACEM. https://www.choosingwisely. org.au/recommendations

Australian and New Zealand Intensive Care Society. COVID-19 resources for critical care professionals. https://www.anzics.com.au/coronavirus/

The Australian Commission on Safety and Quality in Health Care. A guide to the potentially preventable hospitalisations indicator in Australia. 2017.https://www.safetyandquality. gov.au/sites/default/files/migrated/A-guide-to-the-potentially-preventable-hospitalisations-indicator-in-Australia. pdf

7 Preparing to Reopen

Key issues: What are the special considerations, preparations and support needed to assist the reopening of businesses and workplaces, schools and tertiary education institutions?

Recommendations and Key Findings

Businesses and Workplaces

- **Recommendation:** Create a national risk diagnostic tool with review criteria for businesses to review and self-assess their own shortage of resources, ability to reopen/reform, challenges and limitations in post-COVID-19 situations.

- **Recommendation:** Develop a health tracking system and new hygiene standards to ensure reopening practices are safe for the workforce and public.

- **Recommendation:** Develop a staged approach to a return to work, taking account of geographic location, occupation/industry type, and characteristics of workers which might indicate high risk of serious infection.

- **Recommendation:** Diversify opportunities for new employment styles and extend the criteria for receipt of the JobKeeper allowance.

Tertiary Institutions

- **Key finding:** Losses in research and teaching capacity of post-school educational institutions (universities, colleges, VET providers) as a result of the current crisis will greatly hinder economic recovery and long-term prosperity.

- **Recommendation:** Federal and State Government support the post-school education sector to help prevent researcher and teacher job losses, and support a swift return to capacity in both teaching and R&D.

- **Key finding:** It is important that post-school educational institutions account for gaps in syllabus knowledge and work/vocational placement skills through students' first year of candidature.

- **Recommendation:** Post-school educational institutions make appropriate accommodations and take necessary actions to assist the transition of incoming first year

students who may not have all the assumed syllabus knowledge or expected work/vocational skills.

- **Key finding:** Students in accredited programs due to graduate in 2020 and research students collecting data and undertaking fieldwork in 2020 are at significant risk of disruption.

- **Recommendation:** Australia develop a coordinated, national (or state-based, as appropriate) response to graduating students and apprentices/trainees from accredited programs agreed by the relevant accrediting bodies.

- **Key finding:** Australia's response needs to balance consideration of the priority of domestic students, with the important benefits that come from a strong, vibrant international education sector.

- **Recommendation:** Balanced with critical health and epidemiological considerations, there is a need for early decision-making about when and how international students return to Australia for on-campus learning.

Schools

- **Key finding:** Online and remote learning remain useful temporary measures, but place significant burdens on students, families and educators. Continued use of remote learning for some or all students, as opposed to school-based in-class teaching, may deepen existing inequalities in educational attainment and engagement.

Australia's response needs to balance consideration of the priority of domestic students, with the important benefits that come from a strong, vibrant international education sector.

- **Key finding:** Schools face several major challenges in the return to full operations in terms of addressing student well-being, mental health concerns, as well as other operational issues.

- **Recommendation:** Any resumption/ expansion of in-class school operations should be contingent upon physical distancing measures appropriate to each school context. A staged return of school operations should consider the social, emotional, developmental and academic needs of different groups.

- **Recommendation:** To support academic, mental health, and school to post-school transitions, government should provide schools with adequate funding, resources, and coordination support to facilitate adaptive responses to current circumstances and emergent contingencies.

In order to realise the projected 6.1% real GDP growth forecast by the IMF in 2021, government needs to support businesses in a number of ways.

Context

Businesses and Workplaces

The Australian economy, in common with most of the rest of the world, will confront serious recession in coming months, and will probably not regain levels of activity recorded at the end of 2019 for two years or more (Ketchell, 2020). Updated forecasts from the International Monetary Fund suggest real GDP growth of −6.7% in 2020. This indicates the recession Australia is facing will dwarf those that came before it. In order to realise the projected 6.1% real GDP growth forecast by the IMF in 2021, government needs to support businesses in a number of ways.

Tertiary Institutions

The Australian Higher Education sector comprises over 1.5 million students enrolled in 136 universities and non-university higher education institutions (Department of Education, Skills and Employment, 2019), with about half a million of them from overseas (DESE, n.d). More broadly across the tertiary education sector

the Australian Bureau of Statistics estimates that in May 2019 there were over 2.1 million people in Australia aged 15–64 studying for a non-school qualification at Certificate III level or above (ABS, 2019a). Many of the educational challenges and recommendations relevant to the tertiary education sector are substantially the same as the ones for schools. However, there are also issues particular to the tertiary education sector and the contributions this sector makes to Australia's national benefit.

Universities play a vital societal/economic role in research and development (R&D), contributing $41 billion to the national economy and employing 259,100 full-time equivalent staff (Deloitte, 2018). International education brought in around $40 billion in 2019 (ABS, 2020). Despite amounting to around 40% of Australia's exports of services and nearly 10% of all goods and services, Commonwealth funding has fallen from 37% to 30% (DESE, 2020) as the share of university revenue from international students has risen (between 2003 and 2018 from 14%

to 26% or more). At the same time, there has been a collapse in gross Australian expenditure on R&D, falling from 1.88% in 2015–16 to 1.79% of GDP in 2017–18 (ABS, 2019),

Universities play a vital societal/economic role in research and development (R&D), contributing $41 billion to the national economy and employing 259,100 full-time equivalent staff.

while the OECD average annual R&D spend was 2.37% of GDP in 2017 (OECD, 2020). While universities' role as a major export industry is increasingly recognised, this is not always so with R&D activities which also support significant innovation-driven economic growth. Independent modelling by London Economics estimates that Go8 research activity alone contributed $24.5 billion to the economy each year, with an estimated $10 return to the private sector for every $1 of Go8 research income (London Economics, 2018).

Chapter 7: Preparing to Reopen

The COVID-19 crisis has directly and substantially impacted the tertiary sector through closures of campuses, cessation of in-class learning, and a rapid shift to remote online learning. Even though off-campus learning already represented part of the regular experience for one in three higher education domestic students in Australia (Norton, Cherastidtham & Mackey, 2018), that applied mostly to adult learners and postgraduate students.

Rapidly developing policies surrounding the operations of schools within the COVID-19 pandemic context have been a flashpoint for public media debate.

The COVID-19 crisis has also highlighted the crucial need for innovation and productivity-driven growth for our national economy and the health of our citizens. A strong tertiary education sector is one of our greatest assets, strongly positioned to provide a pathway through the current crisis and return to wellness and prosperity. Australian health and medical researchers are engaged in world-leading programs to develop effective treatments and vaccines for COVID-19, with Australian universities training the future workforce in ways that are crucial to responding to this crisis. Our vocational colleges and TAFEs are also providing critical workforce training needed for this recovery. Perhaps the greatest demand on universities and other post-school institutions comes at a time when they are also most under threat.

The following Key Findings and Recommendations take into account all post-school educational institutions and pathways.

Schools

In 2019, nearly four million students were enrolled in 9,503 Australian schools (ABS, 2020). While the re-opening of schools to face-to-face operations needs to be considered from the public health perspectives, it is also vital that the diverse *educational* impacts of moves to

remote online teaching and learning on young people, educators, education systems and the broader Australian economy are recognised. This report examines the key educational issues that must be considered alongside epidemiological factors when determining the reopening of schools around Australia.

Schools play a complex role in society, integrating the production of both public and private goods (Labaree, 1997), and balancing multiple, overlapping purposes of academic learning, socialisation, and individual development (Biesta, 2015). Considerations for the re-opening of schools need to remain aware of this complexity.

Rapidly developing policies surrounding the operations of schools within the COVID-19 pandemic context have been a flashpoint for public media debate. Federal and State/Territory governments have at times appeared at odds over strategy,[1] and teachers and education unions have expressed strong concerns regarding the health and safety of staff, especially those with relevant pre-existing health conditions, as schools remained open into late March.[2] Anecdotal reports from mid-March have attendance rates at only 35% to 50%.[3] Numerous medical experts and the Federal Government have not been entirely supportive of families removing children from schools in the absence of illness or other specific concerns (Creagh, 2020),[4] drawing on modelling and epidemiological support (e.g., Viner et al 2020) – though positions on this shifted with rapid change in the national and international situations.

1 https://www.abc.net.au/news/2020-03-23/federal-and-state-governments-school-closures-amid-coronavirus/12080062

2 https://www.abc.net.au/news/2020-03-19/coronavirus-why-is-australia-keeping-schools-open/12070702

3 https://www.theage.com.au/national/victoria/parents-are-voting-with-their-feet-school-attendance-rates-in-freefall-20200317-p54aw0.html

4 https://www.abc.net.au/news/2020-04-15/coronavirus-covid19-education-schools-scott-morrison-response/12149984

Chapter 7: Preparing to Reopen

By the end of Term 1 and immediately following Easter, schools moved students to remote online learning. Schools remain open for in-school remote learning for children of essential service workers and vulnerable students; however, there has been some confusion as to what constitutes an essential service worker, with contrasting messaging from Federal and State/Territory levels.[5] Currently, it is envisaged that students will start returning to in-class learning some time in TermTwo, but it is unclear who, how many, and when they will return to in-class learning. Thus, Australian schools seem to be transitioning to a mix of in-class, remote, and flexible learning arrangements—with precise arrangements and plans varying between states, and likely, between schools.[6]

Evidence and Analysis to Support Recommendations and Key Findings

Businesses and Workplaces

Recommendation

Create a national risk diagnostic tool with criteria for businesses to review and self-assess their own shortage of resources, ability to reopen/reform, challenges and limitations in post-COVID-19 situations.

Recommendation

Government should facilitate information-sharing to support business reopening and recovery with centralised information sharing platforms to be developed at State and Federal Government levels.

---

5   https://www.theguardian.com/commentisfree/2020/mar/27/more-harm-than-good-the-cases-for-and-against-closing-schools-during-the-coronavirus-pandemic

Argoon, A. (2020) Victorian schools will close and childcare centres have rigid rules eased Herald Sun Newspaper, Victoria March 24, 7.29am heraldsun.com.au

6   https://www.abc.net.au/news/2020-04-15/coronavirus-covid19-education-schools-scott-morrison-response/12149984

For those firms with cash reserves, the hibernation policy will work. However, firms without sufficient cash reserves will not have the ability to pivot to adapt to the changing business environment, nor pay the accountants and other business professionals required to develop business strategies (Sneader and Singhal, 2020).

The advice of financial professionals with expertise in business strategy could be of assistance. Government could encourage and facilitate legal and financial advisory assistance for small and medium sized businesses at low cost, through subsidies to the service providers. The $100,000 cash flow support for small and medium businesses the Government has already implemented is an appropriate strategy to assist in this area.

In addition, an exit strategy for firms with high risk of financial distress can be an important foundation for strategic renewal (Ren, Hu and Cui, 2019) as they free up committed resources and, therefore, contribute to the formation of new ventures (Carnahan, 2017).

Another important tool in helping businesses to recover are revenue-contingent loans (RCL). This facility could, for example, be deployed to continue wage support as the JobKeeper scheme is wound down through the recovery period for firms not at risk of financial distress (Botterill, Chapman and Kelly, 2017).

Government could encourage and facilitate legal and financial advisory assistance for small and medium sized businesses at low cost, through subsidies to the service providers.

It can also be useful to consider strategies that have worked in the past. Following the Great Depression, the United States introduced Federal Government programs to provide employment and support businesses, such as the Reconstruction Finance Corporation that loaned or invested billions of dollars to rescue important parts of the economy.

Chapter 7: Preparing to Reopen

The Corporation was able to push assistance beyond banks into local economies thus restoring confidence in the financial system (Vossmeyer, 2014), and has been used as a stabilisation agency and device to redirect the flow of capital investment to socially desirable enterprises such as small businesses (Sprinkel, 1952).

In general Government needs to simplify, where possible, the process and complexity of supporting resources *(such as business loans, grants, or other stimulus schemes)* **to increase the uptake and engagement of small businesses who have limited time dealing with operational issues.**

Recommendation

Develop a health tracking system and new hygiene standards to ensure reopening practices are safe for the workforce and public.

Basic temperature testing can be implemented at public places to prepare for reopening. A health colour code – such as the system being used in China or a tracking app – such as the TraceTogether used in Singapore,[7] can be used to slow the coronavirus spread and limit any further outbreak when the mass population attempts to return to work and mass gatherings.

Hand sanitizers at entry and egress points in business should be mandated and installed at minimal cost to ensure basic health standards.

Contactless service rules and maintenance of social distancing is required until reliable preventative vaccines or effective treatments are available at scale

Recommendation

Develop a staged approach to a return to work, taking account of geographic location, occupation/ industry type, and characteristics of workers which might indicate high risk of serious infection.

---

7   https://www.zdnet.com/article/singapore-introduces-contact-tracing-app-to-slow-coronavirus-spread/

Links between prevalence of medical condition, geographic area, and occupational type could be used to formulate a staged opening by area, or, if a geographically uniform re-opening is undertaken, where medical resources might be needed. While observed prevalence of COVID-19 in a given area is clearly a relevant risk factor, other considerations are also important (Chomik, 2020).

Workers with co-morbidities are probably more at risk of serious infection than older workers, and should be guided appropriately in returning to work. There is a significant fall in infections in men with no medical condition between the 70–74 age group compared to later age groups (Cumming et al., 2009). Pre-existing medical conditions appear to be present in almost all serious infections (Onder, 2020).

Recommendation

Diversify opportunities for new employment styles and extend the criteria for receipt of the JobKeeper allowance.

Many owner-operators do not take wages or salaries from their businesses, but instead rely on drawings or dividends for their income. Where evidence can be provided that these owner-operators are losing income from lost work opportunities, eligibility criteria for the JobKeeper allowance should be extended.

Workers with co-morbidities are probably more at risk of serious infection than older workers …

Mass layoffs across a range of business and projections from the International Monetary Fund of unemployment of 8.9%, up from 5.2% in 2019, [15] signifies the need for redeployment of the labour force. This will also require many individuals to upskill or reskill in order to adapt to the new business landscape post COVID-19 restrictions. Many businesses around the world are already requiring staff to improve their skills to refocus in longer term preparations [16].

Chapter 7: Preparing to Reopen

Retraining and upskilling programs could be geared towards providing a workforce able to deliver on building up national supply chains for health-related essential goods with less reliance on international markets. International trade flows, however, should not be impeded with moves towards old protectionist trade policies.

Tertiary Education

Key finding

Losses in research and teaching capacity of post-school educational institutions (universities, colleges, TAFEs) as a result of the current crisis would greatly hinder economic recovery and long-term prosperity.

Recommendation

Federal and State Government support the post-school education sector to help prevent researcher and teacher job losses, and support a swift return to capacity in both teaching and R&D.

As a case in point, universities play a key role in delivering high-level training in critical nation-building skills such as education, medicine, psychology, minerals and engineering, and research and development (R&D) activities (Deloitte, 2018). A loss in R&D and teaching capacity as a result of this crisis would greatly hinder economic recovery and long-term prosperity *(Universities Australia, 2020)*. Continued isolation threatens both, especially as critical aspects of tertiary education and research cannot be conducted in an online environment. Universities will play a significant role in developing the evidence base, treatments, and policies, as well as in training the professionals of the future (Universities Australia, 2019), but remaining closed hampers those endeavours. Universities have been set back markedly in their capacity to deliver on these objectives (Universities Australia, 2020). Post-school colleges and TAFEs face similar challenges in preparing the tradespeople of the future.

Key finding

It is important that post-school educational institutions account for gaps in syllabus knowledge and work/vocational placement skills through students' first year of candidature.

Recommendation

Post-school educational institutions make appropriate accommodations and take necessary actions to assist the transition of incoming first year students who may not have all the assumed syllabus knowledge or expected work/vocational skills.

Due to disruptions to in-class learning in 2020, there may be students entering university, college, or TAFE from school who do not have all the assumed syllabus knowledge or who may not have the met all the required work/vocational placement hours/days. To the extent this is the case, these students' pathways through post-school education may be hampered. Possible mitigating strategies include institutions offering a pre-university/college bridging week or revision in Week 1 (specific to a course to ensure subject-specific readiness), and using teaching staff to monitor and attend to identified knowledge or skill gaps as courses proceed through first year. Vocational colleges and TAFEs may offer pre-college or Week 1 practical instruction to address practical skill gaps (arising from lost work placements in Year 12). This may also require institutions offering first year students expanded support through learning/counselling support units.

Possible mitigating strategies include institutions offering a pre-university/college bridging week or revision in Week 1 (specific to a course to ensure subject-specific readiness) …

Chapter 7: Preparing to Reopen

Recommendation

Australia develop a coordinated, national (or state-based, as appropriate) response to graduating students and apprentices/trainees from accredited programs agreed by the relevant accrediting bodies.

Students due to graduate in 2020 are most at risk. Research students collecting data in 2020 are also at risk. Strong coordination between Government services, industry (major employers), accrediting bodies, and universities is essential to ensure staff are available to teach and conduct research, as well as to manage the transition of 2020 graduating students into the workforce or further study. This is especially critical for accredited university programs (e.g. engineering, medicine, exercise science, psychology, podiatry, teaching, etc.) and also apprenticeships and traineeships. There are inconsistencies and instances of inflexibility across accrediting bodies' response to this issue. If there is delay in achieving practice/placement hours, some students may require significant revision of preparatory units. Some students may have to wait so long to achieve those hours that they risk dropping out. This could leave Australia short of the very specialists and skilled tradespeople needed to rebuild post COVID-19. Australia requires a coordinated, national response (or state-based response if appropriate) to graduating students from relevant programs agreed by the accrediting bodies in a given profession. Similar considerations will be needed for final year apprentices and trainees.

If there is delay in achieving practice/placement hours, some students may require significant revision of preparatory units.

Key finding

Australia's response needs to balance consideration of the priority of domestic students, with the important benefits that come from a strong, vibrant international education sector.

Recommendation

Balanced with critical health and epidemiological considerations, there is a need for early decision-making about when and how international students return to Australia for on-campus learning.

Whilst the recovery focus is and should be on domestic students, international education is a key export for Australia and must be safeguarded. Australian university degrees are highly regarded around the world and Australian tertiary education is thus a highly attractive export opportunity (Universities Australia, 2018). If the shift to remote, online learning persists there may be a decreased incentive for international students to choose

Australian educational institutions, rather than other international competitors, ceasing to occupy the third position among the favourite countries to study abroad (UNESCO-UIS, 2017). That scenario would threaten the viability of the Australian

If the shift to remote, online learning persists there may be a decreased incentive for international students to choose Australian educational institutions, rather than other international competitors ...

tertiary education sector; in the case of universities, one-fourth of total university revenue comes from overseas student fees (Universities Australia, 2019). Alongside critical health and epidemiological considerations, there is a need for early decision-making about when and how international students return to Australia for on-campus learning.

Chapter 7: Preparing to Reopen

Schools

> **Key finding**
>
> Online and remote learning remain useful temporary measures, but place significant burdens on students, families and educators. Continued use of remote learning for some or all students, as opposed to school-based in-class teaching, may deepen existing inequalities in educational attainment and engagement.

There is growing concern about the 'digital divide' in education, and the corresponding likelihood that online learning will lead to deepening existent inequalities among students (Karp & McGowan, 2020). There are considerable gaps in terms of the proportion of internet access at home between areas (88.3% access in greater capital cities versus 77.1% in remote or very remote areas) and by incomes (88.9% access in the highest quintile versus 67.4% in the lowest quintile) (ABS, 2018). Students in early childhood settings, including prep/kindergarten and Years one to three also face additional challenges engaging in a purely online environment without significant help and face-to-face support, as do young people with developmental delay, such as ADHD or autism (Tanner et al., 2010). Australian teachers may not have sufficient time, resources or expertise to adequately and promptly shift teaching into online modes (Reimers & Schleicher, 2020). Failure to ensure learning continuity can lead to learning gaps that adversely impact in-school, post-school transition outcomes, mental health, and post-education employment (Cutler & Lleras-Muney, 2014).

> **Key finding**
>
> Schools face several major challenges in the return to full operations in terms of addressing student well-being, mental health concerns, as well as other operational issues.

Pandemic conditions, physical distancing and remote learning may exacerbate youth wellbeing issues, in a context where evidence shows

that one in four students already suffer from mental health issues (Mission Australia, 2017). For some the current crisis comes after the devastating bushfire season along with other extreme weather events (floods and cyclones), traumatic disruptions which may lead to increased family and sexual violence and mental health issues which all impact life at school (Cahill, 2020). Students' elderly family members may have passed away or remain very sick. Reduced social mixing with friends and peers over extended periods will itself have negative effects (Collington & McLaws, 2020; Brooks et al 2020). Schools, universities, and colleges are uniquely placed to provide a safe and supportive space and to help emotional and social recovery post emergencies (Cahill 2020), but this will be reliant on sufficient resources, training and support. This confluence of significantly disruptive circumstances highlights the need to provide ongoing social and emotional interventions as part of a wide-ranging school-based response to young peoples' wellbeing (Recommendation 2).

Recommendation

Any resumption of school operations should be contingent upon physical distancing measures appropriate to each school context. A staged return of school operations should consider the social, emotional, developmental and academic needs of different groups.

Limited evidence exists regarding the use of social distancing measures within schools in response to communicable disease, beyond the strategy of closure. However, a recent review (Uscher-Pines et al, 2018) provides a good account of the types of practices which schools could consider as they resume substantial face-to-face operations:

- Cancellation of all non-essential and high-mixing activities (e.g. field trips, camps, assemblies, performances)

- Students remain in constant class groupings (where possible) and remain in the same classroom, while teachers move between rooms where necessary.

- Well-defined walking paths within school buildings.

- Separating individual desks within classrooms to the maximum amount possible.

- Grade or class dismissal instead of full school dismissal in case of registered infection.

- Staggered start/end to the school day.

- Staggered break times for different student groups; allocating groups of students to classrooms for break times.

- Enhanced cleaning and disinfection of school buildings.

Final year secondary students face a high-stakes period of their education which has been thrown into significant uncertainty with the disruption to schooling.

Hand-hygiene practices could be integrated more intensively into school routines, for example using hand sanitizer when entering and leaving classrooms. Close and sustained contact of students on public transport services to/from school, university, etc. potentially poses a significant issue to be addressed.

Three groups may deserve special consideration in the return to face-to-face schooling. Young people and older staff with pre-existing medical conditions, who face the possibility of more severe COVID-19 disease if infected (Sinha et al, 2020; Centers for Disease Control and Preventions, 2020), may not elect to return to school campuses, and will require continuing remote and online support. Final year secondary students face a high-stakes period of their education which has been thrown into significant uncertainty with the disruption to schooling (Roberts, 2020). Students in the early primary school years have additional needs regarding socialisation, emotional and academic support in comparison to older students, and while at home have a greater impact on the working capacity of parents. These student groups may be prioritised if a staged return to face-to-face schooling is instituted.

Recommendation

To support academic, mental health, and school to post-school transitions, government provides schools with adequate funding, resources, and coordination support to facilitate adaptive responses to current circumstances and emergent contingencies.

To address the academic, mental health and personal wellbeing issues identified under Key Findings, school systems may need to coordinate a range of additional resources and training. This includes funding for school-psychologists, but also up-skilling of staff in areas such as trauma-informed education (Brunzell et al, 2016). Teachers will need time and professional development support to identify and address learning gaps, identify mental health issues among students and to deal with them both from a referral perspective and with targeted in-class support. Staff also will need to receive mental health and wellbeing support (Beltman et al 2016) as workloads will be highly demanding and variable. The

development of national or state-based taskforce(s) integrating key school stakeholders could assist in effectively managing the complexities of resuming school operations (Reimers & Schleicher, 2020), and maintain adaptive preparedness in regards to a potential second wave of COVID-19 infections (Wood & Geard, 2020).

There is strong evidence exposure to adversity can be encoded in the developing child and be expressed as a range of physical and mental health throughout their lifetime and subsequent generations.

Children require special consideration with respect to the current crisis and its management. There is strong evidence exposure to adversity can be encoded in the developing child and be expressed as a range of physical and mental health throughout their lifetime and subsequent generations (Shonkoff et al., 2012).

The social changes caused by the COVID19 crisis and associated social distancing measures are and will be accompanied by an increased likelihood of such exposure for Australia's children. This exposure is likely to be manifest as increased mental, physical and social health costs for this generation. Ensuring the health of children during this crisis by minimising exposure to adversity should be a priority investment in Australia's future and a preventative measure against future burden.

Australia leads the world in the development and dissemination of parent support strategies that empower parents to provide a positive child caregiving environment.

Positive parenting is the clean water of child mental health and support for parents is potentially the best, and most evidence-based method for maximising children's health through this crisis (Boparai et al., 2018; Rae & Zimmer-Gembeck, 2007).

Australia leads the world in the development and dissemination of parent support strategies that empower parents to provide a positive child caregiving environment. These programs improve parent mental health, reduce parent-child conflict, and improve child mental health over the course of several parent support sessions (Rae & Zimmer-Gimbeek, 2007; Sanders et al., 2017).

Further, recent evidence shows that these treatments are equally effective when delivered online as either therapist assisted programs (Dadds et al., 2019) or self-directed programs (Piotrowska et al., in press). Thus, a major initiative should be a public campaign to steer parents toward these programs during this phase.

References

Workplaces and businesses

[1] Ketchell, M. 2020. "How will the coronavirus recession compare with the worst in Australia's history?" The Conversation. Retrieved from https://theconversation.com/how-will-the-coronavirus-recession-compare-with-the-worst-in-australias-history-136379

[2] International Monetary Fund. Retrieved from https://www.imf.org/en/Countries/AUS

[3] Vossmeyer, A. 2014. "Treatment effects and informative missingness with an application to bank recapitalization programs." American Economic Review Vol. 2014, No. 5, pp. 212-217.

[4] Sprinkel, B.W., 1952. "Economic consequences of the operations of the Reconstruction Finance Corporation." The Journal of Business Vol. 25, No. 4, pp. 211-224.

[5] Sneader, K., and S. Singhal. 2020. "Beyond coronavirus: The path to the next normal." McKinsey and Company https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/beyond-coronavirus-the-path-to-the-next-normal

[6] Wenzel, M., S. Standske, and M. Lieberman. 2020. "Strategic Response to Crisis." Strategic Management Journal, Virtual Issue. Retrieved from https://onlinelibrary.wliey.com/pb-assets/smj.3161-1585946518840.pdf

[7] Ren, C.R., Y. Hu, and T.H. Cui. 2019. "Responses to rival exit: Product variety, market expansion, and preexisting market structure." Strategic Management Journal 40(2): 253-276.

[8] Carnahan, S. 2017. "Blocked but not tackled: Who founds new firms when rivals dissolve?" Strategic Management Journal 38(11): 2189-2212.

[9] Linda Botterill, Bruce Chapman and Simon Kelly (2017), 'Revisiting Revenue Contingent Loans for Drought Relief: Government as Risk Manager' (2017), Australian Journal of Agriculture and Resource Economics, Vol. 61(3): 367-384.

[10] Inside China's Smartphone 'Health Code' System Ruling Post-Coronavirus Life, retrieved 16 April 2020 https://time.com/5814724/china-health-code-smartphones-coronavirus/

[11] Singapore introduces contact tracing app to slow coronavirus spread, retrieved 16 April 2020 https://www.zdnet.com/article/singapore-introduces-contact-tracing-app-to-slow-coronavirus-spread/

Chapter 7: Preparing to Reopen

[12] Chomik, R (2020), COLVD19 and Vulnerable Populations: A Preliminary Analysis of the Health and Economic Risks, CEPAR Factsheet

[13] Cumming, R., David Handelsman, Markus J Seibel, Helen Creasey, Philip Sambrook, Louise Waite, Vasi Naganathan, David Le Couteur, Melisa Litchfield, International Journal of Epidemiology, Volume 38, Issue 2, April 2009, Pages 374–378, https://doi.org/10.1093/ije/dyn071

[14] Onder, G. (2020), Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy, Journal of the American Medical Association, pages E1-E2.

[15] International Monetary Fund DataMapper, retrieved 16 April 2020 https://www.imf.org/external/datamapper/LUR@WEO/OEMDC/AUS?year=2019

[16] Reeves, Faeste, Chen, Carlsson-Szlezak, and Whitaker. 2020. "How Chinese Companies Have responded to Coronavirus." Retrieved from https://hbr.org/2020/03/how-chinese-companies-have-responded-to-coronavirus

Tertiary Education

Australian Bureau of Statistics (2019). Education and Work, Australia, May 2019. Retrieved from: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6227.0May%202019?OpenDocument

Australian Bureau of Statistics (2019). Research and Experimental Development, Businesses, Australia, 2017-18. Retrieved from: https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/8104.0Main%20Features22017-18?opendocument&tabname=Summary&prodno=8104.0&issue=2017-18&num=&view=

Australian Bureau of Statistics (2020). International Trade in Goods and Services, Australia, Jan 2020. Retrieved from: https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5368.0Jan%202020?OpenDocument

Australian Education Network (2018). Student Numbers at Australian Universities. Retrieved from: https://www.australianuniversities.com.au/directory/student-numbers/

Australian Government. Department of Education, Skills and Employment (n.d.). UCube. Retrived from: http://highereducationstatistics.education.gov.au/

Australian Government. Department of Education, Skills and Employment (2019). 2018 List of higher education institutions. Retrieved from: https://docs.education.gov.au/node/53031

Australian Government Department of Skills and Employment. (2020, March 31). *2008 to 2017 Finance Publications and Tables*. https://www.education.gov.au/2008-2017-finance-publications-and-tables

Deloitte Access Economics report commissioned by Universities Australia. https://www.universitiesaustralia.edu.au/wp-content/uploads/2020/04/200325-Deloitte-one-pager-FINAL.pdf

Conlon, G, Halterbeck, H, and Julius, J (2018). The Economic Impact of Group of Eight Universities, London Economics.

Creagh, S. (n.d.). *Schools are open during the coronavirus outbreak but should I voluntarily keep my kids home anyway, if I can? We asked 5 experts*. The Conversation. Retrieved 16 April 2020, from http://theconversation.com/schools-are-open-during-the-coronavirus-outbreak-but-should-i-voluntarily-keep-my-kids-home-anyway-if-i-can-we-asked-5-experts-134022

Norton, A., Cherastidtham, I. and Mackey, W. (2018). Mapping Australian higher education 2018. Grattan Institute. Retrieved from: https://grattan.edu.au/wp-content/uploads/2018/09/907-Mapping-Australian-higher-education-2018.pdf

OECD (2020). Gross domestic spending on R&D. Available at: https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm

TAFE Queensland (2020). Health advice COVID-19. Advice to our students and community. April 2020. Retrieved from: https://tafeqld.edu.au/current-students/health-advice.html

Chapter 7: Preparing to Reopen

TAFE New South Wales (2020). Update for students about coronavirus (COVID-19). April 2020. Retrieved from: https://www.tafensw.edu.au/urgent-updates

UESCO-Institute for Statistics (2020). Education: Inbound internationally mobile students by continent of origin. Retrieved from: http://data.uis.unesco.org/index.aspx?queryid=169

Universities Australia (2018) *INTERNATIONAL STUDENTS INJECT $32 BILLION A YEAR INTO AUSTRALIA'S ECONOMY – BOOSTING AUSSIE JOBS AND WAGES*. (n.d.). Retrieved 17 April 2020, from https://www.universitiesaustralia.edu.au/media-item/international-students-inject-32-billion-a-year-into-australias-economy-boosting-aussie-jobs-and-wages/

Universities Australia (2019). Clever collaborations: the strong business case for partnering with universities. Retrieved from: https://www.universitiesaustralia.edu.au/wp-content/uploads/2019/06/Clever-Collaborations-FINAL.pdf

Universities Australia (2019). Higher education: facts and figures. July 2019. Retrieved from: https://www.universitiesaustralia.edu.au/wp-content/uploads/2019/08/190716-Facts-and-Figures-2019-Final-v2.pdf

Universities Australia (2020). UA welcomes first steps in securing universities' viability. Retrieved from: https://www.universitiesaustralia.edu.au/media-item/ua-welcomes-first-steps-in-securing-universities-viability/

Universities Australia (2020). Certainy for year 12 students vital. April 2020. Retrieved from: https://www.universitiesaustralia.edu.au/media-item/certainty-for-year-12-students-vital/

Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. The Lancet Child & Adolescent Health, 0(0). https://doi.org/10.1016/S2352-4642(20)30095-X

Schools

Australian Bureau of Statistics. (2020, February 6). *Schools, Australia, 2019—Main Features—Key statistics*. c=AU; o=Commonwealth of Australia; ou=Australian Bureau of Statistics. https://www.abs.gov.au/ausstats/abs@.nsf/mf/4221.0

Beltman, S., Mansfield, C. F., & Harris, A. (2016). Quietly sharing the load? The role of school psychologists in enabling teacher resilience. *School Psychology International*, *37*(2), 172–188. https://doi.org/10.1177/0143034315615939

Biesta, G. (2015). What is Education for? On Good Education, Teacher Judgement, and Educational Professionalism. European Journal of Education, 50(1), 75-87. https://doi.org/10.1111/ejed.12109

Brunzell, T., Stokes, H., & Waters, L. (2016). Trauma-Informed Positive Education: Using Positive Psychology to Strengthen Vulnerable Students. *Contemporary School Psychology*, *20*(1), 63–83. https://doi.org/10.1007/s40688-015-0070-x

Centers for Disease Control and Prevention. (2020). Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19)—United States, February 12–March 16, 2020. *MMWR. Morbidity and Mortality Weekly Report*, *69*. https://doi.org/10.15585/mmwr.mm6912e2

Cutler D., and Lleras-Muney A. *Education and Health*. In: Anthony J. Culyer (ed.), Encyclopedia of Health Economics, Vol 1. San Diego: Elsevier; 2014. pp. 232-45

Dadds, MR., Thai, C., Mendoza Diaz, A., Broderick, J., Moul, C., Tully, LA., Hawes, DJ, Davies, S., Burchfield, K., & Cane, L. (2019). Therapist-assisted online treatment for child conduct problems in rural and urban families: Two randomized controlled trials. *Journal of Consulting and Clinical Psychology*, 87, 706-719.

Labaree, D. F. (1997). Public Goods, Private Goods: The American Struggle over Educational Goals. *American Educational Research Journal*, *34*(1), 39–81. https://doi.org/10.2307/1163342

Chapter 7: Preparing to Reopen

Mission Australia (2017). Youth mental health report: Youth Survey 2012-2016. Available at: https://www.missionaustralia.com.au/news-blog/blog/the-five-year-youth-mental-health-report-has-launched

Piotrowska, P. J., et al. (in press). ParentWorks: Evaluation of an online, father-inclusive, universal parenting intervention to reduce child conduct problems and improve parenting practices. *Child Psychiatry and Human Development*.

Rae, T & Zimmer-Gembeck, M (2007). Behavioral Outcomes of Parent-Child Interaction Therapy and Triple P—Positive Parenting Program: A Review and Meta-Analysis. *J Abnorm Child Psychol*, 35:475–495.

Reimers, F. & Schleicher, A. (2020). A framework to guide an education response to the COVID −19 Pandemic of 2020. OECD Publishing. Retrieved from: https://globaled.gse.harvard.edu/files/geii/files/framework_guide_v2.pdf

Roberts, P. (n.d.). *COVID-19 has thrown year 12 students' lives into chaos. So what can we do?* The Conversation. Retrieved 17 April 2020, from http://theconversation.com/covid-19-has-thrown-year-12-students-lives-into-chaos-so-what-can-we-do-134891

Sanders, M.R., Burke, K., Prinz, R.J. et al. (2017). Achieving Population-Level Change Through System-Contextual Approach to Supporting Competent Parenting. *Clin Child Fam Psychol Rev*, 20, 36−44. https://doi.org/10.1007/s10567-017-0227-4

Shonkoff, J. et al. (2012). The Lifelong Effects of Early Childhood Adversity and Toxic Stress. P*ediatrics,* 129 (1) e232-e246; DOI: https://doi.org/10.1542/peds.2011-2663.

Tanner, K., Dixon, R. M. & Verenikina, I. (2010). The Digital Technology in the Learning of Students with Autism SpectrumDisorders (ASD) in Applied Classroom Settings. In J. Herrington & B. Hunter (Eds.), Proceedings of World Conference onEducational Multimedia, Hypermedia and Telecommunications 2010 (pp. 2586-2591). Chesapeake, VA: AACE)

Viner, R. M., Russell, S. J., Croker, H., Packer, J., Ward, J., Stansfield, C., Mytton, O., Bonell, C., & Booy, R. (2020). School closure and management practices during coronavirus outbreaks including COVID-19: A rapid systematic review. The Lancet Child & Adolescent Health, 0(0). https://doi.org/10.1016/S2352-4642(20)30095-X

Wilson, C. K., Thomas, J., & Park, S. (2018, March 29). *Australia's digital divide is not going away*. The Conversation. http://theconversation.com/australias-digital-divide-is-not-going-away-91834

Wood, J., & Geard, N. (2020, April 9). *Coronavirus: What causes a 'second wave' of disease outbreak, and could we see this in Australia?* The Conversation. http://theconversation.com/coronavirus-what-causes-a-second-wave-of-disease-outbreak-and-could-we-see-this-in-australia-134125

8 Mental Health and Wellbeing

Key question: What are the expected impacts and needed interventions for maintaining societal well-being and individual mental health through this process?

Recommendations and Key Findings

- **Key Finding:** The universal nature of the COVID-19 pandemic has implications for whole of society wellbeing.

- **Key Finding:** People with psychological vulnerabilities and pre-existing mental illness are at higher risk of experiencing worsening mental health.

- **Key Finding:** COVID-19 has placed unprecedented demand on Australia›s mental health system and its capacity to respond to that demand, which will continue throughout the recovery phase.

- **Recommendation:** Coordinated and sustained public health messaging on the risks associated with COVID-19 and actions that can be taken in response to maintain mental health and wellbeing.

- **Recommendation:** Rapid and stepped scaling of secure evidence-based eHealth and Telehealth mental health interventions for people who require treatment and support in addition to strengthened provision of community-based support.

- **Recommendation:** Strengthen provision of community-based support to maintain individual health and societal wellbeing.

- **Recommendation:** Increased capacity to ensure timely assessment and clear care pathways to effective treatment and support is essential for people with mental illness and those at risk of suicide.

Current Context

The measures being implemented to manage the threat of COVID-19 will have broad short and long-term effects across the whole population, beyond the fear of contracting and spreading the virus. These include:

- As individuals and families retreat to their homes, feelings of confusion, anxiety, stress and loneliness can arise (Brooks et al 2020).

- Social isolation can negatively affect a person's social, emotional and physical health (Relationships Australia 2018; Holt-Lundstad et al., 2015).

- Economic insecurities and financial hardship cause stress and increase the risk of conflict and violence, particularly to women and children (Peterman et al., 2020).

- Increased risk of self-harm and suicide may result from the combination of home confinement and increased economic and mental stressors (Gunnell et al., *in press*).

- Disruption to ability to earn and work will lead to loss in sense of purpose and identity for many (Harms et al., 2015).

- Grief and bereavement will be experienced beyond the pandemic from loss of lives, from losing, autonomy and sense of purpose, and from being socially disconnected. The grief process ranges from anticipatory grief, complicated grief to disenfranchised grief (Wallace et al., 2020).

- Early reports of increased suicides associated with COVID-19 are concerning (Montemurro, 2020).

Economic insecurities and financial hardship cause stress and increase the risk of conflict and violence, particularly to women and children.

Most importantly, these various factors interact and intersect to produce and reinforce the consequences from the pandemic, requiring a comprehensive and holistic approach to managing the road to recovery.

People with previous or existing mental health problems are at particular risk:

- A higher likelihood of suicidal thoughts and self-harm from health, social and economic consequences (Reger et al., 2020);

Critically, there is evidence supporting the utility of self-guided internet-based interventions …

- People with mental illness are also at increased risk of physical comorbidities (Copeland et al., 2007; Seminog & Goldacre, 2013; Firth et al., 2019), which in turn places them at high risk of negative health outcomes from COVID-19;

- Physical distancing strategies may increase loneliness and exacerbate or trigger the onset of mental health problems;

- People with mental illness experience barriers in accessing health services due to stigma and discrimination in healthcare settings (Yao et al., 2020), which can be exacerbated with COVID-19.

The Australian mental health system was struggling with demand before the COVID-19 crisis and has limited capacity to cope in the face of escalation of demand. Mobilising and redeploying the health workforce to test, treat and care for individuals with COVID-19 reduces resources available to manage individuals with other health conditions. Reforms are required to ensure the mental health system can cope with the increased demand.

Tele- and digital mental health service provision provides some response capacity (Wind et al., 2020) with the unique benefits of accessibility, flexibility and scalability. Critically, there is evidence supporting the utility of self-guided internet-based interventions (Karyotaki et al., 2018), telephone counselling, (Leach et al., 2006), internet-based cognitive behavioural therapy (Titov et al., 2018), and psychological therapy delivered via video conferencing software for the treatment of mental health problems such as depression, anxiety, PTSD, insomnia and substance misuse (Bashshur et al., 2016; Totten et al., 2016; Zhou et al., 2020). These conditions are likely to arise from

and be exacerbated by COVID-19. Examples of these programs have been shown to be effective in Australia and are scalable (Titov et al., 2019; Rice et al 2018; D'Alfonso et al. 2017; Hickie et al.; 2019). In addition, other low intensity services such as the Improving Access to Psychological Therapies (IAPT) program that have been shown to be successful in Australia and could also be expanded, as demonstrated in the UK (Cromarty et al., 2016; Clark, 2018).

Child Mental Health

The key factor in child mental health is parenting. Australia leads the world in parenting interventions for child mental health and they are available in e-delivery form. Currently hundreds of thousands of parents are isolated at home caring for children many of whom have severe behaviour, emotional and developmental disorders. Rates of conflict and abuse are at risk of escalating. Rolling out these interventions, if parents will be isolated at home with their children, may be a first-line evidence-based response.

Evidence and Analysis to Support Recommendations

A stepped care model of service delivery is recommended which is consistent with the directions in the Fifth National Mental Health and Suicide Prevention Plan (Commonwealth of Australia, 2017). This will ensure interventions are provided at the right time and level of intensity to meet the needs of the target population or the individual.

Recommendation

Coordinated and sustained public health messaging on the risks associated with COVID-19 and actions that can be taken in response to maintain mental health and wellbeing.

All communication should be in simple and clear language, such that it is accessible to all Australians …

Clear and concise public communication across a range of media platforms likely to be accessed by different demographics is essential to foster preparedness for facing the problem; increase knowledge through education and provide outreach for those most affected. The likely impacts of COVID-19 (stress, grief

Public communication should explain symptoms that indicate a need for additional support; and provide clear guidance on where support can be sourced.

and loss, risk of violence) should be articulated and normalised. Public communication should explain symptoms that indicate a need for additional support; and provide clear guidance on where support can be sourced. All communication should be in simple and clear language, such that it is accessible to all Australians, including those with low levels of health literacy and from culturally and linguistically diverse backgrounds.

Recommendation

Rapid and stepped scaling of secure evidence-based eHealth and Telehealth mental health interventions for people who require treatment and support in addition to strengthened provision of community-based support.

Significant national investment and well-designed, accessible and flexible national service infrastructure will be required. Due consideration must also be given to quality standards for adjunctive digital mental health tools (e.g., apps) and personalised digital literacy for culturally and linguistically diverse populations.

Recommendation

Strengthen provision of community-based support to maintain individual health and societal wellbeing.

Individuals should be better assisted to maintain their health and wellbeing, including assisting in self-management of chronic physical and mental health conditions, as well

as a broader whole of population support aimed at maintaining healthy living. Strategies include healthy diet, exercising, meditation, and engaging in daily activity. Interventions for delivering these strategies with allied health professionals can be accessed to help to maintain mental health. Active community involvement is helpful for both individual mental health and community wellbeing.

<div style="background-color:#c8912a; color:white; padding:1em;">

Recommendation

Coordinated and sustained public health messaging on the risks associated with COVID-19 and actions that can be taken in response to maintain mental health and wellbeing.

</div>

A multi-faceted approach is essential. Face-to-face assessment and treatment by specialist mental health clinicians, at times including hospitalisation, cannot be effectively provided via the phone or internet. Individuals with mental illness, particularly those with suicidal thoughts or behaviours require clear care pathways. Public health messaging needs to focus on risk

factors for self-harm. These include campaigns about safe and responsible drinking, increased risk of violence to women and children and the importance of checking in on friends, neighbours and work colleagues (Gunnell et al., *in press*). Maintaining and expanding the paid (e.g. crisis helplines, safe houses, shelters) and volunteer workforce to provide services to support individuals is urgently needed during this transition from responding to recovering from COVID-19. In addition, flexible work options and mobilising other support services to supplement and complement the existing workforce will be necessary.

References

Aldrich, D. P., & Meyer, M. A. (2015). Social Capital and Community Resilience. *American Behavioral Scientist*, *59*(2), 254–269. https://doi.org/10.1177/0002764214550299

Andersson, G., Cuijpers, P., Carlbring, P., Riper, H., & Hedman, E. (2014). Guided Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: a systematic review and meta-analysis. *World Psychiatry*, *13*(3), 288-295.

Chapter 8: Mental Health and Wellbeing

Australian Bureau of Statistics (2020) Business Indicators, Business Impacts of COVID-19, *Cat. No. 5676.0.55.003*, March, Canberra, ABS.

Australian Institute of Health and Welfare (AIHW) 2020, *Mental health services in Australia*, viewed 8 April 2020, https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia

Bashshur, R., Shannon, G., Bashshur, N., & Yellowlees, P. (2016). The empirical evidence for telemedicine interventions in mental disorders. Telemedicine Journal & E-Health, 22, 87-113.

Borland, J. 'Which jobs are most at risk from the coronavirus shutdown', 26 March 2020, The Conversation, https://theconversation.com/which-jobs-are-most-at-risk-from-the-coronavirus-shutdown-134680

Brooks, S.K., et al., The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*, 2020. 395(10227): p. 912-920.

Clark, D. M. (2018). Realizing the mass public benefit of evidence-based psychological therapies: the IAPT program. *Annual Review of Clinical Psychology*, *14*.

Commonwealth of Australia, 2017. The Fifth National Mental Health and Suicide Prevention Plan, Department of Health, Canberra p 20.

Copeland, L.A., Mortensen, E.M., Zeber, J.E., Pugh, M.J., Restrepo, M.I. and Dalack, G.W., 2007. Pulmonary disease among inpatient decedents: Impact of schizophrenia. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, *31*(3), pp.720-726.

Cromarty, P., Drummond, A., Francis, T., Watson, J., & Battersby, M. (2016). NewAccess for depression and anxiety: adapting the UK improving access to psychological therapies program across Australia. *Australasian Psychiatry*, *24*(5), 489-492.

Deady, M., Choi, I., Calvo, R. A., Glozier, N., Christensen, H., & Harvey, S. B. (2017). eHealth interventions for the prevention of depression and anxiety in the general population: a systematic review and meta-analysis. *BMC psychiatry*, *17*(1), 310.

Druss B.G. Addressing the COVID-19 Pandemic in Populations With Serious Mental Illness. JAMA Psychiatry. Published Online: April 3, 2020. doi:10.1001/jamapsychiatry.2020.0894

Firth, J., Siddiqi, N., Koyanagi, A., Siskind, D., Rosenbaum, S., Galletly, C., Allan, S., Caneo, C., Carney, R., Carvalho, A.F. and Chatterton, M.L., 2019. The Lancet Psychiatry Commission: a blueprint for protecting physical health in people with mental illness. *The Lancet Psychiatry*, *6*(8), pp.675-712.

Foster, H. and Fletcher, H. (2020) Women's Safety NSW: Impacts on COVID-19 on Domestic and Family Violence in NSW, New South Wales.

Gallagher, H. C., Block, K., Gibbs, L., Forbes, D., Lusher, D., Molyneaux, R., … & Bryant, R. A. (2019). The effect of group involvement on post-disaster mental health: A longitudinal multilevel analysis. Social Science & Medicine, 220, 167-175.

Goldmann, E. and Galea, S., 2014. Mental health consequences of disasters. *Annual Review of Public Health*, *35*, pp.169-183.

Gunnell et al (In press) Suicide risk and prevention during the COVID-19 pandemic. *Lancet Psychiatry*.

Harms, L., Block, K., Gallagher, H.C., Gibbs, L., Bryant, R.A., Lusher, D., Richardson, J., MacDougall, C., Baker, E., Sinnott, V. and Ireton, G., 2015. Conceptualising post-disaster recovery: Incorporating grief experiences. *British Journal of Social Work*, *45*(suppl_1), pp.i170-i187.

Helliwell, J. F., Huang, H., & Wang, S. (2014). Social capital and well-being in times of crisis. *Journal of Happiness Studies*, *15*(1), 145-162.

Hobfoll, Stevan E., et al. "Five essential elements of immediate and mid−term mass trauma intervention: Empirical evidence." *Psychiatry: Interpersonal and Biological Processes* 70.4 (2007): 283-315.

Holmes et al., 2020, Lancet Psychiatry, https://doi.org/10.1016/S2215-0366(20)30168-1.

Holt-Lundstad, J., Smith, T., Baker, M., Harris, T., & Stephenson, D. (2015). Loneliness and Social Isolation as Risk Factors for Mortality. Perspectives On Psychological Science, 10(2), 227-237. doi;10.1177/1745691614568352

Karyotaki, Eirini, David Daniel Ebert, Liesje Donkin, Heleen Riper, Jos Twisk, Simone Burger, Alexander Rozental et al. "Do guided internet-based interventions result in clinically relevant changes for patients with depression? An individual participant data meta-analysis." *Clinical psychology review* 63 (2018): 80-92.

Chapter 8: Mental Health and Wellbeing

Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976

Leach, L.S. and Christensen, H., 2006. A systematic review of telephone-based interventions for mental disorders. *Journal of telemedicine and telecare*, *12*(3), pp.122-129.

Liu et al. (2020). Online mental health services in China during the COVID-19 outbreak. Lancet Psychiatry, 7, e17.

Montemurro, N. (2020). The emotional impact of COVID-19: from medical staff to common people. *Brain, behavior, and immunity*.

Peterman, A., Potts, A., O'Donnell, M., Thompson, K., Shah, N. Oertelt-Prigione, S. on behalf of the Gender COVID-19 Working Group (2020) *Pandemics and violence against women and children*, Center Global Development Working Paper 528.

Reger MA, Stanley IH, Joiner TE. Suicide Mortality and Coronavirus Disease 2019—A Perfect Storm? *JAMA Psychiatry*. Published online April 10, 2020. doi:10.1001/jamapsychiatry.2020.1060

Relationships Australia (2018) *Is Australia experiencing an epidemic of loneliness? Findings from 16 waves of the Household Income and Labour Dynamics of Australia Survey*. Canberra: Relationships Australia.

Sander, L., Rausch, L., & Baumeister, H. (2016). Effectiveness of internet-based interventions for the prevention of mental disorders: a systematic review and meta-analysis. *JMIR Mental Health*, *3*(3), e38.

Schuch FB, Vancampfort D, Firth J, et al. Physical Activity and Incident Depression: A Meta-Analysis of Prospective Cohort Studies. *Am J Psychiatry* 2018;175(7):631-48

Seminog, O.O. and Goldacre, M.J., 2013. Risk of pneumonia and pneumococcal disease in people with severe mental illness: English record linkage studies. *Thorax*, *68*(2), pp.171-176.

Spek, V., Cuijpers, P. I. M., Nyklíček, I., Riper, H., Keyzer, J., & Pop, V. (2007). Internet-based cognitive behaviour therapy for symptoms of depression and anxiety: a meta-analysis. *Psychological medicine*, *37*(3), 319-328.

Titov, N., Dear, B., Nielssen, O., Staples, L., Hadjistavropoulos, H., Nugent, M., Adlam, K., Nordgreen, T., Hogstad Bruvik, K., Hovland, A., Repal, A., Mathiasen, K., Blom, K., Svanborg, C., Lindefors, N. and Kaldo, M. (2018), 'ICBT in routine care: a descriptive analysis of successful clinics in five countries.', *Internet Interventions*, vol. 13, pp. 108–115.

Titov, N., Rock, D., Bezuidenhout, G., Webb, N., Kayrouz, R., Nielssen, O., … Staples, L. G. (2019). Evaluation of The Practitioner Online Referral and Treatment Service (PORTS): the first 18 months of a state-wide digital service for adults with anxiety, depression, or substance use problems. *Cognitive Behaviour Therapy*. https://doi.org/10.1080/16506073.2019.1666162

Torous et al. (2020). Digital mental health and COVID-19: Using technology today to accelerate the curve on access and quality tomorrow. JMIR Mental Health, 7(3), e18848.

Totten, A., Womack, D., Eden, K., McDonagh, M., Griffin, J., Grusing, S., & Hersh, W. R. (2016). Telehealth: Mapping the evidence for patient outcomes from systematic reviews. Agency for Healthcare Research & Quality. Technical Brief 26.

Wallace, C., Wladkowski, S. Gibson, A. and White, P. (2020) Grief during the COVID-19 Pandemic: Consideration for Palliative Care Providers, *Journal of Pain and Symptom Management,* doi.org/10.1016/j.jpainsymman.2020.04.012

WHO (World Health Organization). (2006). Constitution of the World Health Organization. *Basic Documents. 45th edition Supplement*.

Wind et al. (2020). The COVID-19 pandemic: The 'black swan' for mental health care and a turning point for e-health. *Internet Interventions*, in press.

Yao, H., Chen, J.H. and Xu, Y.F., 2020. Patients with mental health disorders in the COVID-19 epidemic. *The Lancet Psychiatry*, 7(4), p.e21.

Zhou et al. (2020). The role of telehealth in reducing the mental health burden from COVID-19. Telemedicine and e-Health, 26(4), 1-3.

9 The Care of Indigenous Australians

Current Context

The disproportionate impact of pandemics on Indigenous populations worldwide has been well documented. In responding to the global COVID-19 pandemic, Australian Indigenous organisations have shown exemplary leadership and innovation in their efforts towards preparedness. Urgent action is required to ensure Australia's indigenous community is protected from COVID-19, now and especially in the recovery phase as the nation 'reopens'. Plus, the inevitable recession will aggravate an already critical situation for many Indigenous people.

A failure to act decisively will have devastating consequences that not only compound existing traumas and disadvantage, but will also result in many needless Indigenous deaths and suffering on a catastrophic scale. The COVID-19 response must address four issues for Indigenous people: housing, workforce, data and organisational support.

During the COVID-19 pandemic, enormous efforts have been put in place to mitigate risks of COVID-19 for Aboriginal and Torres Strait Islander Communities. This has resulted in significant outcomes including at the time of writing just under 50 cases of COVID-19, representing 0.7% of all Australian cases. Just over half of these were acquired overseas and the remaining identified as local acquisition. This is a significant outcome thus far.

A key attribute of the COVID-19 response has been the banding together of Aboriginal leadership across all sectors (health, education land councils together with government agencies.).
This health response is also a clear demonstration of self-determination. The National Aboriginal Community

Controlled Health Organisation (NACCHO), their State and Territory Peak Organisations as well as member services across the country have participated in a national Advisory Group that reports directly to the Chief Medical Officer. The Advisory Group is Co-Chaired by NACCHO with the Australian Government's Department of Health. The group's outcomes have been significant, taking leads in developing a National Management Plan, clinical guidelines, and specific initiatives to mitigate risk and prepare communities for COVID-19.

Together these actions which were enacted early in the pandemic phase arising from Aboriginal and Torres Strait Islander Organisations, communities and individuals is an exemplary example of self-determination in practice in contemporary Australia. Recognising that there is some time to go before the COVID-19 pandemic is over, we make the following recommendations regarding the road to recovery in respect to Aboriginal and Torres Strait Islander peoples.

All sections contained within this report concern Aboriginal and Torres Strait Islander peoples and it is critically important to work with Indigenous organisations, Elders, communities, and public health sectors to appropriately implement the proposed recommendations outlined throughout the report.

Recommendations and Key Findings

It is recommended that the Government addresses four key issues to design the COVID-19 recovery roadmap for Aboriginal and Torres Strait Islander people and communities.

- **The right to self-determination & coordination**

- **Housing Supply**

- **COVID-19 Public Health and Clinical Responses should be maintained**

- **Aboriginal and Torres Strait Islander Health Workforce Review**

Chapter 9: The Care of Indigenous Australians

Recommendation

Self-determination & Coordination

The creation of the Indigenous COVID-19 planning force and taskforces in all jurisdictions led by Aboriginal Controlled Health Services to coordinate and implement effective localised responses to the pandemic has been a success. We recommend the continued financial and logistical support of Indigenous COVID-19 planning force and taskforces in all jurisdictions for the remainder of the pandemic. This will enable a single point of engagement with health services, police, education, and family and community services.

This recommendation is based on the right of self-determination to keep our communities safe, recognition of local cultural practices, and the need for efficient pandemic responses. Aboriginal and Islander health services are most familiar with the social determinants of our health in local areas, relevant cultural considerations, and are the most well-equipped to advise on the correct allocation of funding. The

effective allocation of resources, in light of an expected shortfall between emergency funding and community needs, is best undertaken in partnership with Indigenous health organisations. Supporting the expansion of jurisdictional Indigenous COVID-19 advisory groups to oversee this process during recovery would avoid navigating complex Federal and State responsibilities.

Recommendation

Housing Supply

The ability of families to self-isolate and quarantine effectively has been a significant issue with COVID-19. Many communities are limited by critical housing shortages in urban, regional and remote areas. Lack of adequate housing has a direct impact on the ability of local health services and communities to control virus spread, as well as exacerbating interrelated issues including child and family safety, pre-existing overcrowding and ageing infrastructure. During COVID-19 this has also been exacerbated by many people returning

to their traditional homelands. Many communities remain extremely vulnerable to COVID-19 without any ability to isolate or to quarantine suspected and/ or confirmed cases.

An immediate supply of alternative housing is needed in local communities to alleviate the pressure on over-crowded households and enable effective disease suppression.

Housing is a long-standing issue. Some communities have been able to work with government and business such as Minerals and Exploration companies to secure emergency and temporary housing, but for many this remains a significant risk for widespread disease transmission and disastrous outbreaks. In the medium-term an urgent supply of permanent housing infrastructure and sustainable supply of utilities is required to ensure that future outbreaks are containable. To this end, community infrastructure building projects should be awarded to Indigenous enterprises that provide jobs and skills training to Indigenous workers perhaps as alternatives to replacing schemes such as Community Development Programs.

It is recommended that the existing Aboriginal and Torres Strait Islander Health Advisory Group be maintained until Australia has fully recovered from COVID-19.

… community infrastructure building projects should be awarded to Indigenous enterprises that provide jobs and skills training to Indigenous workers …

Availability of reports of COVID-19 cases and outcomes: Particular efforts will be required to ensure adequate monitoring of COVID-19 cases and detailed epidemiology reports are reported regularly and publicly. Accurate data which includes notifications, testing numbers and rates, location of notifications at a local area level,

Chapter 9: The Care of Indigenous Australians

rates and types of complications, rates of hospitalisation, including ICU admissions, number of deaths, as well as the economic impacts, differential care burden and the incidence of family violence including child abuse notifications in all jurisdictions is required.

Public health messaging will need to be maintained throughout recovery. Timely, accurate and accessible information must be communicated regularly to the Indigenous public to develop strong health literacy.

Research into the effects of COVID-19 on community social and emotional wellbeing and mental health will be required to evaluate how Aboriginal and Torres Strait Islander peoples have fared through COVID-19 that will provide important learnings for future pandemics and crises. Such research must be Indigenous-led and based on scholarly and cultural ethical practices. To conduct this research and enable rapid decision-making, issues of data quality and sharing must be addressed quickly.

Recommendation

Aboriginal and Torres Strait Islander Health Workforce Review

The COVID-19 pandemic has exacerbated vulnerabilities in local health workforces who are dependent on staff from interstate and even New Zealand. Long-term initiatives to build local capacity are needed. This recommendation is made because significant issues have arisen for Aboriginal and Torres Strait Islander communities throughout the pandemic thus far relating to workforce. This issues have arisen for several reasons, such as the need to quarantine locum staff before they can provide clinical services; and the restrictions on Aboriginal and Torres Strait Islander people aged 50 and over with a chronic disease being isolated. We strongly recommend that NACCHO, as a lead agency, instigate a Health Workforce reform process in partnership with Commonwealth and State and Territory governments.

This will need to encompass the following:

- How to best increase and retain Aboriginal Health Practitioners in all areas of Australia to help reduce the reliance on overseas and interstate locum staff.

- How to scale up Aboriginal Public Health and Infectious Disease expertise so that each Federal and State Health Department has a senior Public Health Group.

- The need for surge workforces should outbreaks occur in communities.

In addition to the four primary recommendations, there are broader considerations that impact the roadmap to recovery, including:

- **Food security:** Continue efforts initiated during COVID-19 to guarantee grocery and medication supply, across communities and water for those communities still impacted by 2019–2020 natural disasters.

- **JobSeeker:** Maintaining the JobSeeker allowance at the present emergency levels to help reduce Aboriginal and Torres Strait Islander poverty and to stimulate economic activity throughout Australia.

- **Economic recovery:** Recognition that many Indigenous organisations including Aboriginal Community Controlled Health Organisations (ACCHOs) will require specific economic recovery and income support programs to help in the recovery from COVID-19.

This issues have arisen for several reasons, such as the need to quarantine locum staff before they can provide clinical services; and the restrictions on Aboriginal and Torres Strait Islander people aged 50 and over with a chronic disease being isolated.

Expansion of existing commitments for Indigenous businesses should be considered. This will assist in revitalising economies in Indigenous communities, supporting local businesses and improve the health and wellbeing of individuals both now and in the recovery phases.

Chapter 9: The Care of Indigenous Australians

General Background

At present, approximately 800,000 people, or 3% of Australia's population identify as Indigenous, and most Indigenous people (approximately 80%) live in cities and non-remote areas (Australian Bureau of Statistics, 2018). The median age of Indigenous people is significantly lower than non-Indigenous Australians (23 and 38, respectively), with higher mortality rates making early middle age and older Indigenous people and Indigenous Elders especially vulnerable (ABS 2018).

The discrepancy between Indigenous and non-Indigenous populations is particularly pronounced in Australia (United Nations, 2009). It is well established that Indigenous Australians have higher rates of health problems, such as high blood pressure, respiratory and circulatory disease, obesity and diabetes(Australian Institute of Health and Welfare, 2018; Australian Bureau of Statistics, 2019), as well as higher rates of psychological distress compared to other Australians (McNamara et al., 2018).

Due to the relative social and economic disadvantage, Indigenous peoples also experience significant barriers to accessing health care services (Peiris et al., 2018). Preventable hospital admissions and deaths (conditions which should have been prevented by primary healthcare services) are three times as high in Aboriginal and Torres Strait Islander people, due, in part, to failures in implementation of the "close the gap" policies (Australian Government, 2013). The health gap is the result of historical long-term systemic neglect and recurring social determinants of health.

Neither do remote Indigenous communities have a sufficient local workforce. Initiatives to build local capacity are needed.

Evidence and Analysis to support Key Findings

- In addressing the global challenges posed by pandemics it needs to be acknowledged that Indigenous populations are potentially highly vulnerable.

  » The disproportionate impact of pandemics on Indigenous

populations worldwide (La Ruche et al., 2009) and in Australia (Trauer et al., 2011; Flint et al., 2010; Rudge and Massey, 2010), was well documented during the 2009 H1N1 influenza and prior (Kelm, 1999). During the 2009 Influenza A H1N1, Indigenous communities in Australia were particularly affected with higher levels of hospitalisation and fatality from reduced and delayed access to care, cultural health approach differences, as well as healthcare-seeking behaviour. The poorer socioeconomic status of Indigenous peoples and the relational way of living and being means risk of exposure and transmission may have devastating effects.

» Current evidence from the US shows COVID-19 is more prevalent and fatal in African American[1] and Indigenous Americans[2,3].

» The rapid spread of COVID-19 on cruise ships has demonstrated that crowded living quarters facilitate the transmission of respiratory illness and create a high-risk environment. These case studies demonstrate that COVID-19 in over-crowded Australian Indigenous communities is likely to have dire consequences[4,5].

» There is a real concern that COVID-19 will compound existing health and mental health issues in Indigenous communities due to the restrictions on community mobility and interaction (United Nations, 2020); in addition to the higher risk of virus fatality in the presence of underlying health conditions. Youth vulnerability is a particular concern. Ensuring Indigenous children and youth have continuing access to quality education through the

1   https://www.bbc.co.uk/news/world-us-canada-52194018

2   https://www.kob.com/albuquerque-news/statewide-data-reveals-native-americans-are-disproportionately-impacted-by-covid-19-/5701649/

3   https://edition.cnn.com/2020/04/07/opinions/native-american-nations-risk-from-covid-19-sepkowitz/index.html

4   https://www.health.com/condition/infectious-diseases/coronavirus-cruise-ship-sickness

5   https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e3.htm

Chapter 9: The Care of Indigenous Australians

acute and recovery phase of COVID-19 is essential. Not all Indigenous households have ready access to technology or reliable internet and parents will need to be supported.

» Indigenous children and youth who are particularly vulnerable are those in out of home care and in juvenile justice detention. At 30 June 2019, about 18,000 Indigenous children were in out-of-home care—a rate of 54 per 1,000 Indigenous children, which was nearly 11 times the rate for non-Indigenous children (Australian Institute of Health and Welfare, 2020a). Additionally, on an average night in June 2019, 53% of juveniles in detention were Indigenous (Australian Institute of Health and Welfare, 2020b).

» The interrelationship between child abuse and neglect with domestic and family violence has long been established (Commission for Children and Young People, 2016). With concerns already raised about the increase in domestic and family violence during the acute phase of COVID-19 it is likely that mandatory reports of children's exposure to violence by police will increase. The need for clear and consistent messaging about what this means and what supports are available is essential, especially if children are being removed including commitment to the Aboriginal Child Placement Principle and keeping children on country.

» Children and young people are the subject of custody orders with shared parenting arrangements may also be vulnerable to changed circumstances that may put them in unsafe situations.

• The core requirement for both the acute phase and the recovery is sound evidence-based policy. That policy needs to be developed by and led by Indigenous peoples, based on Indigenous values, funded on a needs basis, with clear accountabilities and systematic evaluation.

- The level of need for health care in Indigenous Australians is approximately 2.3 times higher than other Australians. In response to COVID-19, there is a pressing need for the allocation of *needs-based* funding.

- Under the international norm of Indigenous peoples right to self-determination, the Food and Agriculture Organization of the United Nations (FAO) encourages Governments to include Indigenous peoples' representatives, leaders and traditional authorities in emergency and health response committees or any entity dedicated to the COVID 19 pandemic, both during the outbreak as well as in the aftermath/recovery.[6]

» Community controlled healthcare has shown commendable innovation in the COVID-19 crisis. The response from Indigenous communities[7,8,9] and organisations (e.g., NAACHO (Australian Department of Health, 2020), Kimberley Aboriginal Medical Services (KAMS)[10], CAAMA[11]) and affiliate member services has been swift and effective (planning, advocating, managing spread of virus, creating resources, health promotion), yet they still lack sufficient funding.

» Many Indigenous communities have restricted entry onto their lands and assumed responsibility to ensure health information is reaching their people.

6 http://www.fao.org/indigenous-peoples/news-article/en/c/1268353/

7 https://www.smh.com.au/national/nsw/we-treat-them-like-gold-aboriginal-community-rallies-around-elders-20200327-p54ekl.html?fbclid=IwAR3G7GtKb54cA0le917a-z5TYQQjeX8FbhxzYA6u1VB8rf4YamI2dSo5W0M

8 https://www.abc.net.au/news/2020-04-02/indigenous-dot-paintings-coronavirus-health-message-uluru/12110988?fbclid=IwAR17fg73d2rmCd8_uvBE3mSoGGPo2B1bSCPu635TSe2QEW-O4Jyg5lx6OMM

9 https://www.abc.net.au/news/2020-03-28/battle-to-keep-coronavirus-out-of-remote-communities-translation/12084886

10 http://kams.org.au/covid19/

11 https://www.gayaadhuwi.org.au/coronavirus/

- Indigenous leadership, worldviews and values should be at the forefront on the path to recovery.

  » There is a need to ensure Indigenous health workers are supported especially in areas where there are worker shortages and risk of infection could result in no care being available.

Valuing the Indigenous knowledges of Australia's First Peoples and especially the knowledge that our Elders possess.

  » Aboriginal and Torres Strait islander people in more remote areas must make final decisions about their readiness to, and the conditions under which, they will open their communities to non-essential workers and other visitors, such as FIFO workers and tourists, as well as when their schools should re-open. The health in these communities is poor, their elders in particular are highly vulnerable, and they are entitled to exercise their right to self-determination in these matters of life and death[12].

- Immediate health and mental health concerns need to be balanced with longer term cultural, social and emotional wellbeing of individuals and communities.

  » A whole-of-community approach to healing is needed, as well as culturally appropriate services for grief and community wellbeing.

  » Valuing the Indigenous knowledges of Australia's First Peoples and especially the knowledge that our Elders possess. Losing a number of Elders would be devastating to the ongoing practice and transmission of cultural practices. It would be a loss to the community and Australia.

---

12 https://www.un.org/development/desa/indigenouspeoples/declaration-on-the-rights-of-indigenous-peoples.html

References

Australian Bureau of Statistics (2018). *Estimates of Aboriginal and Torres Strait Islander Australians, June 2016,* Cat no: 3238.0.55.011. https://www.abs.gov.au/ausstats/abs@.nsf/mf/3238.0.55.001

Australian Bureau of Statistics (2019). *National Aboriginal and Torres Strait Islander Health Survey, 2018-19,* Cat no: 4715.0. https://www.abs.gov.au/ausstats/abs@.nsf/mf/4715.0

Australian Government (2013). *National Aboriginal and Torres Strait Islander Health Plan 2013-2023,* https://www1.health.gov.au/internet/main/publishing.nsf/content/B92E980680486C3BCA257BF0001BAF01/$File/health-plan.pdf

Australian Government (2020). *Australian Health Sector Emergency Response Plan for Novel Coronavirus (COVID-19),* Department of Health, https://nacchocommunique.files.wordpress.com/2020/03/management-plan-for-aboriginal-and-torres-strait-islander-populations.pdf

Australian Institute of Health and Welfare (2018). *Aboriginal and Torres Strait Islander Health Performance Framework (HPF) Report 2017,* https://www.aihw.gov.au/reports/indigenous-australians/health-performance-framework/contents/tier-1-health-status-and-outcomes

Australian Institute of Health and Welfare (2020a). *Child protection Australia 2018-19.* https://www.aihw.gov.au/reports/child-protection/child-protection-australia-2018-19/contents/table-of-contents

Australian Institute of Health and Welfare (2020b). *Youth detention population in Australia 2019.* https://www.aihw.gov.au/reports/youth-justice/youth-detention-population-in-australia-2019/contents/table-of-contents

Commission for Children and Young People (2016). *Always was, always will be Koori children.* https://ccyp.vic.gov.au/assets/Publications-inquiries/always-was-always-will-be-koori-children-inquiry-report-oct16.pdf

Chapter 9: The Care of Indigenous Australians

Flint, S.M., Davis, J.S, Jiunn-Yih, S., Oliver-Landry, E.P., Rogers, B.A., Goldstein, A., Thomas, J.H., Parameswaran, U., Bigham, C., Freeman, K., Goldrick, P., and Tong, S.Y.C. (2010). Disproportionate impact of pandemic (H1N1) 2009 influenza on Indigenous people in the Top End of Australia's Northern Territory, *Medical Journal of Australia*, 192 (10): 617-622. https://www.mja.com.au/journal/2010/192/10/disproportionate-impact-pandemic-h1n1-2009-influenza-indigenous-people-top-end

Kelm, M.E. (1999). British Columbia First Nations and the influenza pandemic of 1918-1919. BC Studies, 122, 23-47.

McNamara, Bridgette J., Banks, Emily, Gubhaju, Lina, Joshy, Grace, Williamson, Anna, Raphael, Barbara and Eades, Sandra (2018). Factors relating to high psychological distress in Indigenous Australians and their contribution to Indigenous-non-Indigenous disparities. *Australian and New Zealand Journal of Public Health*, https://doi.org/10.1111/1753-6405.12766

Peiris, David, Brown, Alex and Cass, Alan (2018). Addressing inequities in access to quality health care for indigenous people. *CMAJ,* November 04, **179** (10) 985-986; DOI: https://doi.org/10.1503/cmaj.081445

La Ruche, G., Tarantola, A., Barboza, P., Valliant, L., Gueguen, J., Gastellu-Etchegorry, M., epidemic intelligence team at InVS (2009). The 2009 pandemic H1N1 influenza and indigenous populations of the Americas and the Pacific. Euro Surveil Oct 22: 14(42), https://www.ncbi.nlm.nih.gov/pubmed/19883543

Rudge, S., and Massey, P.D. (2010). Responding to pandemic (H1N1) 2009 influenza in Aboriginal communities in NSW through collaboration between NSW Health and the Aboriginal community-controlled health sector, *New South Wales Public Health Bulletin* 21(2) 26-29, https://www.phrp.com.au/issues/volume-21-issue-1-2/responding-to-pandemic-h1n1-2009-influenza-in-aboriginal-communities-in-nsw-through-collaboration-between-nsw-health-and-the-aboriginal-community--controlled-health-sector/

Trauer, J.M., Laurie, K.L., McDonnell, J., Kelso, A., and Markey, P.G. (2011). Differential effects of Pandemic (H1N1) 2009 on Remote and Indigenous Groups, Northern Territory, Australia, 2009. *Emerg Infec Disease,* Sept: 17(9): 1615-1623, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3322054/

United Nations (2009). *State of the World's Indigenous Peoples, Department of Economic & Social Affairs,* https://www.un.org/esa/socdev/unpfii/documents/SOWIP/en/SOWIP_web.pdf

United Nations Declarati

United Nations Expert Mechanism on the Rights of Indigenous Peoples (EMRIP) 6 April 2020

10 Equity of Access and Outcomes in Health Support

What special considerations could be required for the vulnerable in society during an exit and recovery phase?

General Background

The impacts of COVID-19 are not felt equally across the community. The next steps of a recovery strategy will be critical to improving equity in outcomes. Special considerations will be required for: women who are pregnant and women at risk of family violence; children and young people,

The next steps of a recovery strategy will be critical to improving equity in outcomes.

specifically those living in out-of-home care; older adults and those living in residential aged care; the homeless; people with disabilities; people living with a life threatening illness(es); LGBTQI+ people; ethnic minorities and refugees and asylum seekers; and socioeconomically

disadvantaged groups. groups. It is also the case that those who are at the intersection of these attributes often bear the greatest brunt.

There are key community groups deserving of targeted policy support as Australia works to manage COVID-19 recovery. There follows a number of recommendations on how those groups can be supported, each backed by evidence-based key findings and subject specific research.

Recommendations and Key Findings

- **Recommendation:** Government advances its policies against family violence by recognising an additional $180 million is needed to fund the 'Keep Women Safe in Their Homes' program which is designed to address the scale of need. That it develops tailored responses to address the specific and diverse needs of: women with disabilities,

indigenous women, and women from culturally and linguistically diverse (CALD) backgrounds who are experiencing family violence.

- **Recommendation:** That maternity health services and postnatal care should be virus free and safe for women screened as high risk to attend in person; to reduce their stress. Women pregnant during disasters such as a pandemic and at risk of family violence require extra support while women's needs before during and after giving birth should not be de-prioritised because of COVID-19 healthcare.

- **Recommendation:** An infant, child and youth reference committee[20] to provide expert advice (i.e. educational, mental health and social aspects) be established as children and young people may require tailored support to manage the stress of COVID-19. Support for young people's pathways to employment through government funded projects, such as construction projects employing young people as trainees is another key recommendation as an investment in Australia's future.

- **Recommendation:** Funding for the evidence-informed "Home Stretch[26]" program to offer in-care and post-care support to children in OOHC until they are 21 to foster their COVID-19 recovery process because those are young people who are forced to live out of home (OOHC). It is also recommended that police are conscious of the vulnerability of those in OOHC.

- **Recommendation:** Government support community service organisations and health services to help older adults self-isolate by providing access to in-home medical care, medication, and regular assessment of social isolation risk.[32] It is critical that online and telephone strategies are available to foster social connections with family, friends and volunteers.[33] Health security methods that support safe visitation from select primary visitors or informal carers to older adults who will suffer undue distress from social distancing measures is a prime need.

- **Recommendation:** For LGBTQI+ people, pharmaceutical companies ensure the provision of gender affirming hormone products and

Chapter 10: Equity of Access and Outcomes in Health Support

PrEP, and clarification regarding what products are available, what PBS covers, and whether products can still be shipped into Australia.

- **Recommendation:** The continued funding of services such as Foodbank and Community Meals programs, community outreach, healthcare programs, and legal aid to support refugee and migrant groups is required.

- **Recommendation:** Compassionate policies for the homeless with a continuation of funding of Isolation and Recovery Facilities to ensure they have a safe place to self-isolate and quarantine and that we ensure the homeless are not targeted for breaching social distancing regulations.

- **Recommendation:** That there be flexibility, sensitivity and responsiveness to modifying, managing and implementing NDIS plans and other support for people with disabilities.

- **Recommendation:** Policies such as JobKeeper and the increased JobSeeker allowance are kept in place to ensure that these

investments achieve their goals, especially for those disadvantaged by socio-economic issues.[46,47,48,49]

- **Recommendation:** COVID-19 responses should not be at the expense of, or result in a reduction of, capacity to treat existing acute care needs.

Key findings

- Reports suggest that web searches on domestic violence are up by 75 %, and that family violence perpetrators were using COVID-19 restrictions as a new way of exercising coercive control over victims. Women in abusive domestic violence circumstances are at increased of harm.

- For pregnant women enduring high levels of stress (i.e. in a pandemic) and at risk of family violence it can be shown that their babies are often born small for gestational age due to restricted foetal growth and additional stress.[13,14] While pregnant women are more susceptible to COVID-19 than the general population.[15]

- The UN Convention on the Rights of the Child, ratified by Australia, stipulates that children have the right to participate in decisions that affect them.[16] A total of 50,000 children and young people of schooling age are known to already be fully disengaged (i.e., not enrolled) in school,[17] which may increase with schools currently disrupted and youth unemployment has increased as young people often work as casuals in hospitality and retail.[18,19] It is also known that children often experience mental health or learning issues following severe adversity, such as disaster and loss.[20, 21, 22]

- Young people living in out of home care, OOHC, experience higher rates of adverse physical and mental health outcomes and continue to experience disadvantage in educational achievements, employment, housing, and health after care, compared to other young people.[23,24]

- For older Australians superannuation is a key source of their household income allowance.[27] Social distancing is stressed during COVID-19 but immediate and urgent needs to support this must include access to medical support, affordable basic supplies and social support in homes.[28, 29] It is known that social isolation increases older adults' risk of morbidity/mental health concerns[30, 31] and that some aged care facilities have adopted discretionary policies of removing all visitor access.

A total of 50,000 children and young people of schooling age are known to already be fully disengaged (i.e., not enrolled) in school …

- For LGBTQI+: gender diverse populations report high levels of discrimination in mainstream healthcare settings[34] so may be less likely to report COVID-19 symptoms, that they are likely to experience mental illness, and suicidal tendencies.[35,36,37,38,39] Social distancing measures may be additionally challenging for those forced to isolate with family members who don't accept their sexual or gender identities.[38]

- Those from asylum seeker and migrant backgrounds faced social distancing measures that further isolated and compounded their stressors.[40,41] Also, many from refugee and asylum seeker backgrounds do not currently have access to any form of financial support, experience insecure housing and have no access to Medicare. COVID-19 information may not always be accessible to those people from non-English speaking backgrounds and there is also a concern that taking a COVID-19 test may mean risk of arrest or detention.

Also, many from refugee and asylum seeker backgrounds do not currently have access to any form of financial support, experience insecure housing and have no access to Medicare.

- Australia's homeless or those without secure accommodation and who cannot self-isolate or quarantine are at great risk of contracting COVID-19 while homeless groups and individuals are being fined by police for breaches of social distancing regulations and given 'move on' notices, when homeless individuals often congregate in groups for safety.

- Eighteen per cent of Australians live with physical or intellectual disability and face high health vulnerability if they became infected with COVID-19; while they may have reduced their support services within the home to reduce exposure to infection.[44] The current inability to attend regular support and health services outside home may result in a short- term increase in support needs during the COVID-19 recovery phase.

- Those with a socio-economic disadvantage are often in casual and insecure employment have greater risk of unemployment and that unemployment effects endure over individuals' careers and across generations if no sufficient support is offered to help.

- People with life threating illnesses face high risk of infection and

compromised immune systems, so are at greater risk of COVID-19 and that any neglect of existing acute care needs would increase mortality and morbidity risk beyond COVID-19.

- Women are at the "front line" in so many ways. Affected by every group in the above recommendations and the key findings they also:

- are more likely to work in front-line care occupations (e.g., 80% of all healthcare workers and 95.6% of the childcare workforce[7,8]), increasing their risk to infection.[9]

- more women than men live below the poverty line, and receive Centrelink are more likely than men live to below the poverty line, and receive Centrelink payments.[9,10]

- have a casual employment rate of 27%, without paid leave entitlements.[11]

- are affected by school closures that mean women who are the primary caregiver face a 'double burden' of working in formal employment and managing children's schooling.[12]

References

1. Crenshaw, K. (1991). Mapping the margins: intersectionality, identity politics, and violence against women of colour. *Stanford Law Review, 43*(6), 1241–1299.

2. Davis, K. (2008). Intersectionality as buzzword: a sociology of science perspective on what makes a feminist theory useful. *Feminist Theory, 9*(1), 67–85.

3. Gaillard, J. C., Sanz, K., Balgos, B. C., Dalisay, S. N. M., Gorman-Murray, A., Smith, F., & Toelupe, V. A. (2017). Beyond men and women: a critical perspective on gender and disaster. *Disasters, 41*(3), 429–447.

4. Jay, T., Barry, M., Thiagalingam, A., Redfern, J., McEwan, A., Rodgers, A., & Chow, C. (2016). Design considerations in development of a mobile health intervention program: The TEXT ME and TEXTMEDS experience. *JMIR mHealth and uHealth, 4*(4), e127.

Chapter 10: Equity of Access and Outcomes in Health Support

5. https://www.thesmithfamily.com.au/get-involved/partnerships/corporate-social-responsibility/our-current-partners/optus

6. https://askizzy.org.au/

7. Haddad, A. (2020). *COVID-19 is not gender neutral.* http://www.broadagenda.com.au/home/covid-19-is-not-gender-neutral/

8. Boniol, M., McIsaac, M., Xu, L., Wuliji, T., Diallo, K., Campbell., J. (2019). *Gender Equity in the Health Workforce: Analysis of 104 countries.* Working Paper 1. World Health Organization, Geneva.

9. Davies, S.E., & Bennett B. (2019). A gendered human rights analysis of Ebola and Zika: locating gender in global health emergencies. *International Affairs,* 92, 1041-1060.

10. Australian Bureau of Statistics (2019). *Australian Labour Markets and Related Payments*. Canberra: ABS.

11. Australian Bureau of Statistics (2018). *Gender Indicators Australia, Sept 2018*. Canberra: ABS.

12. Ruppaner et al. (2018)

13. Harville, E. W., Xiong, X. & Buekens, P. (2010). Disasters and perinatal health: a systematic review. *Obstetrical & Gynecological Survey*, *65*(11), 713-720.

14. King, S., & Laplante, D. P. (2005). The effects of prenatal maternal stress on children's cognitive development: Project Ice Storm. *Stress, 8*(1), 35-45.

15. Qiao, J. (2020). What are the risks of COVID-19 infection in pregnant women? *The Lancet, 395*(10226), 760-762.

16. UN Convention on the Rights of the Child

17. Watterstein & O'Connell (2019)

18. Borland, J. (2020). *The next employment challenge from coronavirus: how to help the young.* The Conversation, April 14, 2020.

19. Craig, L., Churchill, B., & Wong, M. (2019). Youth, Recession, and Downward Gender Convergence: Young People's Employment, Education, and Homemaking in

Finland, Spain, Taiwan, and the United States 2000–2013. *Social Politics: International Studies in Gender, State & Society,* 26(1), 59–86.

20. Emerging Minds & Australian Child and Adolescent Trauma, Loss and Grief Network. (2020). Submission to the Royal Commission into National Natural Disaster Arrangements.

21. Gibbs, L., Nursey, J., Cook, J., Ireton, G., Alkemade, N., Roberts, M., … & Forbes, D. (2019). Delayed disaster impacts on academic performance of primary school children. *Child development, 90*(4), 1402-1412.

22. Spuij, M., Reitz, E., Prinzie, P., Stikkelbroek, Y., de Roos, C., & Boelen, P. A. (2012). Distinctiveness of symptoms of prolonged grief, depression, and post-traumatic stress in bereaved children and adolescents. *European child & adolescent psychiatry, 21*(12), 673-679.

23. Australian Bureau of Statistics (2013*). Australian Health Survey: 2011–2012*. Canberra: ABS.

24. Smales, M., Savaglio, M., Morris, H., Bruce, L., Skouteris, H., & Green (nee Cox), R. (2020). "Surviving not thriving": Experiences of Health Among Young People with a Lived Experience in Out-of-Home Care. International Journal of Adolescence and Youth. Accepted April 20.

25. Baidawi, S. & Sheehan, R. (2019). 'Cross-over kids': *Effective responses to children and young people in the youth justice and statutory Child Protection systems.* Report to the Criminology Research Advisory Council. Canberra: Australian Institute of Criminology.

26. http://thehomestretch.org.au

27. Australian Bureau of Statistics. (2019). *Household Income and Wealth, Australia, 2017-18,* Cat No. 6523.0, Spotlight – Superannuation and investments as a main source of household income. Canberra, ABS.

28. Armitage, R., & Nellums, L. B. (2020). COVID-19 and the consequences of isolating the elderly. *The Lancet. Public health*.

Chapter 10: Equity of Access and Outcomes in Health Support

29. National Seniors Australia. (2019). *Australian Seniors speak about impacts of the COVID-19 pandemic*. 3rd National Seniors short report.

30. Santini, Z. I., Jose, P. E., Cornwell, E. Y., Koyanagi, A., Nielsen, L., Hinrichsen, C., … & Koushede, V. (2020). Social disconnectedness, perceived isolation, and symptoms of depression and anxiety among older Americans (NSHAP): a longitudinal mediation analysis. *The Lancet Public Health*, *5*(1), e62-e70.

31. Newman, M. G., & Zainal, N. H. (2020). The value of maintaining social connections for mental health in older people. *The Lancet Public Health*, *5*(1), e12-e13.

32. https://blogs.bmj.com/bmj/2020/04/09/the-effects-of-isolation-on-the-physical-and-mental-health-of-older-adults/

33. http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/4/supporting-older-people-during-the-covid-19-pandemic-is-everyones-business

34. Riggs, Coleman and Due (2014)

35. Gower et al. (2018)

36. McDermott, E., Hughes, E., Rawlings, V. (2016). Queer Futures: Understanding LGBT adolescents' suicide, self-harm and help-seeking behaviours (Final Report),

37. Janssen and Leibowitz (2018)

38. Katz-Wise, S. L., Rosario, M., & Tsappis, M. (2016). Lesbian, gay, bisexual, and transgender youth and family acceptance. *Paediatric Clinics of North America, 63*(6), 1011-1025.).

39. Thomas, J. (2020). LGB Youth, in P Gerber (ed.), *Worldwide Perspectives on Gays, Lesbians, and Bisexuals: History, Culture, and Law*, Praeger Press, California

40. Dowling, A., Enticott, J., Kunin, M., & Russell, G. (2019). The association of migration experiences on the self-rated health status among adult humanitarian refugees to Australia: an analysis of a longitudinal cohort study. International journal for equity in health, 18(1), 130.

41. Hynie, M. (2018). The social determinants of refugee mental health in the post-migration context: A critical review. The Canadian Journal of Psychiatry, 63(5), 297-303.

42. system: http://www.cclj.unsw.edu.au/article/open-letter-australian-governments-covid-19-and-criminal-justice-system

43. https://www.abc.net.au/news/2020-03-25/coronavirus-fears-asylum-seekers-plead-for-release-detention/12084604

44. ABS (2018)

45. Manzoni & Mooi-Reci (2018)

46. https://www.communities.qld.gov.au/community/place-based-approaches/framework-place-based-approaches

47. https://www.vic.gov.au/framework-place-based-approaches-start-conversation-about-working-differently-better-outcomes/place

48. https://www.dss.gov.au/families-and-children-programs-services/stronger-places-stronger-people

49. https://www.oecd.org/regional/oecd-regional-outlook-2019-9789264312838-en.htm

50. https://cid.org.au/our-stories/covid-19-governments-must-act-on-equal-treatment-for-people-with-disability/

51. https://pwd.org.au/covid-19-plan/

11 Clarity of Communication

The overall success of the recovery will depend upon engaging widespread public support and participation through partnership with civil society regardless of which strategy is chosen.

If the Elimination Strategy is pursued, it is important that the public understands the additional sacrifice needed, why it is worth it, and what benefits they can expect in return. It is also critical that the public understand that even with the Elimination Strategy, life will not return to the 'old normal'.

… it is critical that the public understand that in exchange for an earlier relaxation, there will be a need for ongoing adaptation.

With the Controlled Adaptation strategy, it is critical that the public understand that in exchange for an earlier relaxation, there will be a need for ongoing adaptation. Specific containment measures may be carefully relaxed in several phases to achieve a balance between constraining the infection rate and enabling economic activity. And if the infections increase, the measures may need to be reinstated.

Recommendations and Key Findings

- **Recommendation:** Communicate the approach and associated measures using clear, specific and empathetic language.

- **Recommendation:** Enrol individuals who are perceived as credible and trustworthy (e.g. healthcare workers and population health scientists) to convey key messages publicly.

- **Recommendation:** Enhance the cultural appropriateness and thus impact of communication. A number of community reference groups for this should be established that represent Australia's demographic and socio-cultural diversity.

- **Recommendation:** Define and implement a color-coded public health alert system. A color-coded public health alert system with four levels ("Prepare", "Reduce", "Restrict", and "Lockdown"), enables the community to see and plan for the restrictions that governments may be required to put in place. The public health alert system may be geo-targeted at the town, council, state/territory level, and shows increased or decreased limits on human contact, travel and business operations.

- **Key Finding:** Health professionals and population health scientists) are generally viewed as credible and trustworthy sources of public health-related information.

- **Key Finding:** Previous research illustrates that people's willingness to act on public health advice during a pandemic is driven by their sense of pragmatism as well as trust – they want to know what actions will benefit in their personal circumstances Hence, public health messaging has more impact if it helps with empowerment.

- **Key Finding:** Broad communications need to be supplemented with messages tailored to particular communities and social groups. Engagement with public health messaging is heavily influenced by socio-economic background, cultural and social identity, age, gender etc.

Australia's efforts to contain COVID-19 and 'flatten 'the curve' have been successful.

The Government responded quickly (Swerissen, 2020), and this resulted in the rapid and widespread uptake of a range of behaviours by the community.

Below is a communication strategy aimed at engaging maximum public support and participation in Australia's optimal approach going forward. This reflects decades of research into effective public communication from a range of inter-related disciplines, including psychology, sociology, risk communication, health promotion, and science and technology studies. This communication approach is one that occurs in a spirit of participation and consultation; which is attentive to the diversity of Australia community that and appeals to people's capacity to act.

Chapter 11: Clarity of Communication

Evidence and Analysis to support Recommendations and Key Findings

General Principles of Risk and Crisis Communication

Communication matters. There is evidence of a significant relationship between the communication strategies of agencies responding to a crisis and the level of public reassurance and compliance. (Carter et al., 2013). Some general principles

communication, while essential, is not sufficient to change behaviours because communication tends to focus on changing motivation. People also need to have the capability and opportunity to perform the needed behaviours and thus environmental factors are also relevant, along with having sufficient resources (Michie et al., 2020). Second, the unique communication needs of special and diverse audiences need to be respected; different audiences will to some extent benefit from distinct frames, messages, and messengers (Moser, 2010).

... the unique communication needs of special and diverse audiences need to be respected; different audiences will to some extent benefit from distinct frames, messages, and messengers.

of risk and crisis communication are summarised below (Covello, 2003; Reynolds, 2004; Seeger, 2006).

It is worth pointing out two constraints that will be elaborated on in the following sections: first,

As the development of such tailored communication strategies requires an investment of time and other resources, the following principles should form the backbone of immediate communication strategies.

Principle 1
Engage in clear, consistent communication

Principle 2
Strive for maximum credibility

Principle 3
Communicate with compassion, care, and empathy

Principle 4
Communicate with openness, frankness, and honesty

Principle 5
Recognise that uncertainty and ambiguity is inevitable

Principle 6
Help people to feel empowered to act

Principle 7
Consider health and statistical literacy in messaging

Principle 8
Be proactive in combating misinformation

Principle 9
Recognise and embrace diverse audiences

A communication strategy for maximum community support and participation

There are four specific recommendations which should form the basis of a strategy in which broad community messaging is supplemented with tailored communications for particular groups.

Recommendation

Communicate the approach and associated measures using specific and empathetic language that helps people feel empowered to act, rather than just passive recipients of instructions.

Provide a succinct and clear explanation as to why ongoing containment measures are necessary. Be explicit about the goals of the controlled adaptation approach, and the reasons for undertaking particular measures. The risks of pursuing the approach and specific measures also need to be clearly articulated. Empathise by explicitly recognising hardships of measures.

Chapter 11: Clarity of Communication

Recommendation

Enlist the support and assistance of independent, credible and trustworthy advocates (e.g. healthcare workers, educators, community leaders) to convey key messages.

Continue to use those from trusted professions to explain and justify the controlled adaptation approach. It is obviously highly appropriate that key policy decisions are announced and articulated by politicians while authoritative health officials (such as the Chief Medical Officer), and key public health and scientific experts must continue to provide public communications. This will help to convey that such policies are underpinned by 'apolitical' evidence.

… authoritative health officials, and key public health and scientific experts must continue to provide public communications.

Recommendation

Enhance the impact of communication by establishing community reference groups to provide ongoing input into the decisions that affect them and also how best to communicate them. Several community reference groups should be established so that collectively, they represent Australia's demographic and socio-cultural diversity.

Norms and modes of communication differ between social and cultural groups. In addition, some groups will be impacted much more severely than others by Australia's response to COVID-19. Communications should be tailored towards these groups by working closely with group representatives. The following groups in particular require tailored messaging:

- Young children (up to 12 years old) and their parents

- Secondary school children

- Young adults (18–30)

- Older adults (70+) and those living in residential care

- Aboriginal and Torres Strait Islanders

- Gender diverse / LGBTQ+ communities

- People affected by bushfires

- People with life-threatening illnesses (i.e. immunocompromised)

- Hearing-impaired community

- Vision impaired community.

Community reference groups would advise on: key messages and approaches; ensuring the framing and tone of messages would be most appropriate to ensure engagement; and the modes of communication (e.g. Auslan, TV broadcast, SMS, health messages on social media platforms) that will increase dissemination among their communities.

There is a likelihood that as different Governments and jurisdictions find themselves at different levels of risk that they use different labels and wording for risk. The different messages in different jurisdictions along with different restrictions in different areas will create confusion amongst the community, dilute the message and over time lead to fatigue and non-compliance. It is critical that the labels used and their implication be uniform across the country. Australia has long experience with fire-risk warnings and most of the population understands and responds to escalation and de-escalation of these warnings. It is recommended, that in consultation with experts and the different jurisdictions a uniform public health alert system be developed.

Recommendation

Define and implement a color-coded public health alert system. A color-coded public health alert system with four levels (e.g. "Prepare" [blue], "Reduce" [amber], "Restrict" [brown], and "Lockdown" [red]), enables the community to see and plan for the restrictions that governments put in place. The public health alert system may be geo-targeted at the town, council, state/territory level, and shows increased or decreased limits on human contact, travel and business operations.

Chapter 11: Clarity of Communication

References

ACSQHC (2014). Australian Commission on Safety and Quality in Health Care. Health literacy: Taking action to improve safety and quality. https://www.safetyandquality.gov.au/sites/default/files/migrated/Health-Literacy-Taking-action-to-improve-safety-and-quality.pdf

AHRC (2014). Face the facts: Cultural Diversity. Australian Human Rights Commission. Available at https://www.humanrights.gov.au/sites/default/files/FTFCulturalDiversity.pdf

ABS (2013) Australian Social Trends. Canberra: Australian Bureau of Statistics. Available at https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features30April+2013#back2

Baker, M (2020) The Conversation, 'Overjoyed': a leading health expert on New Zealand's coronavirus shutdown, and the challenging weeks ahead, https://theconversation.com/overjoyed-a-leading-health-expert-on-new-zealands-coronavirus-shutdown-and-the-challenging-weeks-ahead-134395, Accessed 16-Apr 2020

Bineham, J. L. (1991). Some ethical implications of team sports metaphors in politics. Communication Reports, 4(1), 35-42. doi:10.1080/08934219109367519

Briñol, P. & Petty, R. E. (2009). Source factors in persuasion: A self-validation approach. *European Review of Social Psychology, 20*, 49-96. doi:10.1080/10463280802643640

Burgess, J. & Green, J. (2013) YouTube: Online Video and Participatory Culture Policy, Cambridge UK.

Cameron, S. & McAllister, I. (2019). The 2019 Australian Federal Election: Results from the Australian Election Study. Canberra: The Australian National University.

Cammett, M. & Lieberman, E. (2020). Building solidarity: Challenges, options, and implications for COVID-19 responses. https://ethics.harvard.edu/building-solidarity

Carter, H., Drury, J., Rubin, G. J., Williams, R., & Amlôt, R. (2013). The effect of communication during mass decontamination. *Disaster Prevention and Management, 22*, 132-147. doi:10.1108/09653561311325280

Coates, M. (2020). Covid-19 and the rise of racism. BMJ, 369: m1384.

Cook, J., Lewandowsky, S., & Ecker, U. K. H. (2017). Neutralizing misinformation through inoculation: Exposing misleading argumentation techniques reduces their influence. *PLoS ONE, 12,* e0175799. doi:10.1371/journal.pone.0175799

Covello, V. T. (2003). Best practices in public health risk and crisis communication. *Journal of Health Communication, 8*, 5-8. doi:10.1080/7138519

Davis, M. (2019) 'Uncertainty and immunity in public communications on pandemics' in Bjorkdahl, K. and Carlsen, B. eds Pandemics, Publics and Politics: Staging Responses to Public Health Crises, Houndmills: Palgrave, pp. 29-42.

Davis, M., Flowers, P., Lohm, D., Waller, E and Stephenson, N. (2016) Immunity, biopolitics and pandemics: Public and individual responses to the threat to life, Body & Society, 22(4), 130-154.

Davis, M. and Lohm, D. (2020) Pandemics, Publics and Narrative, NYC: Oxford University Press.

Davis, M., Whittaker, A., Lindgren, M, Djerf-Pierre, M., Manderson, L. and Flowers, P. (2018) 'Understanding Media Publics and the Antimicrobial Resistance Crisis', Global Public Health, 13(9), 1158-1168. DOI: 10.1080/17441692.2017.1336248.

Devakumar, D., Shannon, G., Bhopal, S. S., & Abubakar, I. (2020). Racism and discrimination in COVID-19 responses. The Lancet, 395, 1194.

Dobson, A., Carah, N. & Robards, B. J., (2018) Digital Intimate Publics and Social Media: Towards Theorising Public Lives on Private Platforms. In A., Robards, B. & Carah, N. (eds.). Digital Intimate Publics and Social Media. Shields Dobson, Cham Switzerland: Palgrave Macmillan, p. 3-27 25 p.

Duckett, S., Mackey, W. & Stobart, A. (2020). Australia's response to the pandemic: the good, the bad, and the Ruby Princess. Grattan Institute – Health. Avialable at: https://grattan.edu.au/news/australias-response-to-the-pandemic-the-good-the-bad-and-the-ruby-princess/

Chapter 11: Clarity of Communication

Ecker, U. K. H., Hogan, J. L., & Lewandowsky, S. (2017). Reminders and repetition of misinformation: Helping or hindering its retraction? Journal of Applied Research in Memory and Cognition, 6, 185-192. doi:10.1016/j.jarmac.2017.01.014

Edwards R, Charani E, Sevdalis N, Alexandrou B, Sibley E, Mullett D, Loveday HP, Drumright LN, & Holmes A. (2012). Optimisation of infection prevention and control in acute health care by use of behaviour change: a systematic review. Lancet Infectious Diseases, 12(4), 318-32.

Everett, J. A. C., Colombatto, C., Chituc, V., Brady, W. J., & Crockett, M. (2020). The effectiveness of moral messages on public health behavioral intentions during the COVID-19 pandemic. doi:10.31234/osf.io/9yqs8

Gigerenzer, G., Gaissmaier, W., Kurz-Milcke, E., Schwartz, L. M., & Woloshin, S. (2007). Helping Doctors and Patients Make Sense of Health Statistics. Psychological Science in the Public Interest, 8(2), 53–96. https://doi.org/10.1111/j.1539-6053.2008.00033.x

Gould DJ, Moralejo D, Drey N, Chudleigh JH, Taljaard M. Interventions to improve hand hygiene compliance in patient care. Cochrane Database of Systematic Reviews 2017, Issue 9. Art. No.: CD005186. DOI: 10.1002/14651858.CD005186.pub4.

Grant, A. M. & Hofmann, D. A. (2011). It's not all about me: Motivating hand hygiene among health care professionals by focusing on patients. *Psychological Science, 22*, 1494-1499. doi:10.1177/0956797611419172

Han, P. K. J., Zikmund-Fisher, B. J., Duarte, C. W., Knaus, M., Black, A., Scherer, A. M., & Fagerlin, A. (2018). Communication of Scientific Uncertainty about a Novel Pandemic Health Threat: Ambiguity Aversion and Its Mechanisms. Journal of Health Communication, 23(5), 435-444. doi:10.1080/10810730.2018.1461961

Jolley, D. & Douglas, K. M. (2017). Prevention is better than cure: Addressing anti-vaccine conspiracy theories. *Journal of Applied Social Psychology, 47*, 459-469.

Jordan, J., Yoeli, E., & Rand, D. G. (2020). Don't get it or don't spread it? Comparing self-interested versus prosocially framed COVID-19 prevention messaging. doi:10.31234/osf.io/yuq7x

Lakoff, G. (2010). Why it matters how we frame the environment. *Environmental Communication, 4*, 70-81. doi:10.1080/17524030903529749

Lewandowsky, S., Ecker, U. K. H., & Cook, J. (2017). Beyond misinformation: Understanding and coping with the post-truth era. Journal of Applied Research in Memory and Cognition, 6, 353-369.

Lewandowsky, S., Gignac, G. E. & Vaughan, S. (2013). The pivotal role of perceived scientific consensus in acceptance of science. *Nature Climate Change, 3*, 399-404. doi:10.1038/nclimate1720

Lewandowsky, S., Risbey, J.S., Smithson, M., Newell, B., & Hunter, J. (2014). Scientific uncertainty and climate change: Part I. Uncertainty and unabated emissions. *Climatic Change, 124*, 21-37. doi:10.1007/s10584-014-1082-7

Kovic, M, & Füchslin, T. (2018). Probability and conspiratorial thinking. *Applied Cognitive Psychology, 32*, 390-400. doi:10.1002/acp.3408

Martin, A., & Baekkeskov, E. (2020). Enlisting the support of trusted cue-givers to tackle public policy problems: The case of antimicrobial resistance PLoS ONE 14(3).

MacFarlane, D., Hurlstone, M. J., & Ecker, U. K. H. (2020). Reducing demand for unsupported health remedies: A taxonomy for overcoming psychological barriers. Social Science & Medicine.

Massey, P. D., Pearce, G., Taylor, K. A., Orcher, L., Saggers, S., & Durrheim, D. N. (2009). Reducing the risk of pandemic influenza in Aboriginal communities. Rural Remote Health, 9(3), 1290.

Michie, S., van Stralen, M. M., & West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implement Sci, 6, 42. doi:10.1186/1748-5908-6-42

Chapter 11: Clarity of Communication

Michie, S., West, R., & Amlôt, T. (2020). Behavioural strategies for reducing Covid-19 transmission in the general population. https://blogs.bmj.com/bmj/2020/03/03/behavioural-strategies-for-reducing-covid-19-transmission-in-the-general-population/

Moser, S. C. (2010). Communicating climate change: History, challenges, process and future directions. *Wiley Interdisciplinary Reviews: Climate Change, 1*, 31-53.

New Zealand Government (2020). COVID-19 Alert System. https://covid19.govt.nz/assets/resources/tables/COVID-19-alert-levels-summary.pdf. Accessed 15-Apr 2020

Nie, J. B., Gilbertson, A., de Roubaix, M., Staunton, C., van Niekerk, A., Tucker, J. D., & Rennie, S. (2016). Healing without waging war: Beyond military metaphors in medicine and HIV cure research. The American Journal of Bioethics, 16, 3-11. doi:https://doi.org/10.1080/15265161.2016.1214305

O'Connell, E., & Hurley, F. (2009). A review of the strengths and weaknesses of quantitative methods used in health impact assessment. *Public Health, 123*, 306-310. doi:10.1016/j.puhe.2009.02.008

Painter, J. (2015). Taking a bet on risk. *Nature Climate Change,* 5, 288-289.

Pennycook, G., McPhetres, J., Zhang, Y., & Rand, D. G. (2020). Fighting COVID-19 misinformation on social media: Experimental evidence for a scalable accuracy nudge intervention. doi:10.31234/osf.io/uhbk9

Peters, G.-J. Y., Ruiter, R. A. C., ten Hoor, G. A., Kessels, L. T. E., & Kok, G. (2018). Towards consensus on fear appeals: a rejoinder to the commentaries on Kok, Peters, Kessels, ten Hoor, and Ruiter (2018), Health Psychology Review, 12:2, 151-156, DOI: 10.1080/17437199.2018.1454846

Peters, R. G., Covello, V. T., & McCallum, D. B. (1997). The determinants of trust and credibility in environmental risk communication: An empirical study. *Risk Analysis, 17*, 43-54. doi:10.1111/j.1539-6924.1997.tb00842.x

Petersen, M. B. (2020). The unpleasant truth is the best protection against coronavirus. https://pure.au.dk/portal/files/181464339/The_unpleasant_truth_is_the_best_protection_against_coronavirus_Michael_Bang_Petersen.pdf

Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020). The emotional path to action: Empathy promotes physical distancing during the COVID-19 pandemic. doi:10.31234/osf.io/y2cg5

Reynolds, B. (2004). Crisis and emergency risk communication: By leaders for leaders.Centers for Disease Control and Prevention, Atlanta, GA.

Reynolds, B., & Quinn, S. C. (2008). Effective communication during an influenza pandemic: the value of using a crisis and emergency risk communication framework. *Health Promotion Practice, 9*, 13S-17S.

Seeger, M. W. (2006). Best practices in crisis communication: An expert panel process. Journal of Applied Communication Research, 34(3), 232-244. doi:10.1080/00909880600769944

Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*, 429-434. doi:10.1111/j.1467-9280.2007.01917.x

Swerrissen, H. (2020). What now? It depends on the chance of an effective coronavirus vaccine. Grattan Institute – Health. Avialable at: https://grattan.edu.au/news/what-now-it-depends-on-the-chance-of-an-effective-coronavirus-vaccine/

Stoker, G., Evans, M. & Halupka, M. (2018). Trust and Democracy in Australia: Democratic decline and renewal. Institute for Governance & Policy Analysis, University of Canberra.

Thompson, G. (2014). Introducing Functional Grammar (3rd ed.). London and New York: Routledge.

van Bavel, J. J., Baicker, K., Boggio, P., Capraro, V., Cichocka, A., Crockett, M., … Willer, R. (2020). Using social and behavioural science to support COVID-19 pandemic response. doi:10.31234/osf.io/y38m9

Chapter 11: Clarity of Communication

van der Bles, A. M., van der Linden, S., Freeman, A. L. J., Spiegelhalter, D. J. (2020). The effects of communicating uncertainty on public trust in facts and numbers. *Proceedings of the National Academy of Sciences, 117*, 7672-7683; doi:10.1073/pnas.1913678117

Waszak, P. M., Kasprzycka-Waszak, W. & Kubanek, A. (2018)The spread of medical fake news in social media – The pilot quantitative study. Health Policy and Technology, 7(2): 115-118.

WHO (2017). Communicating risk in public health emergencies: a WHO guideline for emergency risk communication (ERC) policy and practice. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO

Wilson, D., & Sperber, D. (2002). Relevance Theory. UCL Division of Psychology & Language Sciences. Retrieved from http://www.phon.ucl.ac.uk/home/PUB/WPL/02papers/wilson_sperber.pdf

Wilson, S (2020). Three reasons why Jacinda Ardern's coronavirus response has been a masterclass in crisis leadership. The Conversation. Retrieved from https://theconversation.com/three-reasons-why-jacinda-arderns-coronavirus-response-has-been-a-masterclass-in-crisis-leadership-135541. Accessed 16-Apr 2020.

Wise, T., Zbozinek, T. D., Michelini, G., Hagan, C. C., & Mobbs, D. (2020). Changes in risk perception and protective behavior during the first week of the COVID-19 pandemic in the United States. doi:10.31234/osf.io/dz428

Yamagishi, K. (1997). When a 12.86% mortality is more dangerous than 24.14%: Implications for risk communication. Applied Cognitive Psychology, 11, 495-506. doi:10.1002/(SICI)1099-0720(199712)11:6<495::AID-ACP481>3.0.CO;2-J

Methodology

The Roadmap project was designed to provide considered and evidence-based responses to questions of critical and pressing national importance.

Experts were recruited from across the Go8 universities – Australia's leading research-intensive universities – in areas as diverse as epidemiology, statistical modelling, infectious diseases, public and mental health, psychology, economics, political scientists, Aboriginal and Torres Strait Islander expertise, business, international relations scholars and political scientists.

Individuals ranged from eminent professors to early career researchers, to capture the diversity of expertise across generations of talent.

The Task Force faced the challenge of articulating the collective wisdom of this large and diverse group on a complex set of questions in a short period, under conditions of great uncertainty and rapid change and where no members could physically meet.

Standard remote collaboration methods, such as circulating drafts by email, have many drawbacks such as the difficulty of keeping track of document versions, integrating edits and comments on many different versions, and ensuring that everyone can see the latest version. It seemed clear this approach would struggle with an expert group as large as the Roadmap Task Force.

The Steering Committee made the bold decision to try a new crowdsourcing-inspired approach. All members were given access to the SWARM cloud collaboration platform, a research prototype being developed by a team at the University of Melbourne's Hunt Lab for Intelligence Research. The platform is the result of a three-year research effort funded by the US Intelligence Advanced Research Projects Activity, aimed at developing better ways to support groups of analysts to work through difficult problems and produce high-quality reports. The platform's design is generic enough that it can support analytical work in many other domains.

Methodology

On the platform, all Task Force members were able to access nine workspaces, one for each of the main questions being addressed. Within a workspace they could view, create, and collaboratively edit contributions of various kinds, including draft section reports; rate and comment on contributions; and use real-time chat. While these activities are supported by many cloud platforms, a combination of design features makes the SWARM approach unique. These include:

- A "groupsourcing" model in which small teams from within the large expert pool coalesce and self-organise to tackle specific questions;

- Support for "contending analyses," where any member can put up a draft report and the group as a whole can select the most promising via "readiness" ratings;

- Use of pseudonyms, intended to mitigate social dominance effects arising from the differing status of members.

The Steering Committee understood from the outset that the approach would need to be carefully monitored and that adjustments may be required. In the second week, three such changes were made: addition of new Task Force members to cover expertise gaps; off-platform video-conferencing to accelerate coordination of small emergent teams; and, where appropriate, relaxation of anonymity.

By the end of week 2, draft reports were available for all nine questions. These were woven together into a single Final Report by a small editing team from the Group of Eight Directorate. Task Force members were briefly given a final opportunity to provide comments. The Final Report was then reviewed by a team of selected independent commentators and approved by the Go8 Board of Directors before being provided directly to Government.

The result is a comprehensive, independent, evidence-based report for Government that provides guidance as to how and when Australia can move to the recovery phase.

Dr Tim Van Gelder

Dr Richard De Rozario

Acknowlegements

Associate Professor Margo Barr
University of New South Wales

Dr Megan Blaxland
University of New South Wales

Dr Alexandra Bloch-Atefi
University of Adelaide

Dr Karen Block
University of Melbourne

Dr Noreen Breakey
University of Queensland

Associate Professor Julie Brimblecombe
Monash University and University of Queensland

Dr Timothy Broady
University of New South Wales

Professor Deborah Bunker
University of Sydney

Dr Beatriz Cardona
University of New South Wales

Dr Susan Carland
Monash University

Deputy CEO Dawn Casey
National Aboriginal Community Controlled Organisation (NACCHO)

Dr Andrzej Ceglowski
Monash University

Associate Professor Mark Davis
Monash University

Professor Simon Dennis
University of Melbourne

Professor Sara Dolnicar
University of Queensland

Associate Professor Frank Donnelly
University of Adelaide

Dr Antony Eagle
University of Adelaide

Dr Elizabeth Edwards
University of Queensland

Dr Thorlene Egerton
University of Melbourne

Dr Christian Ehnis
University of Sydney

Dr Megan Ferguson
Monash University and University of Queensland

Dr Tony Florio
University of New South Wales

Professor Pauline Ford
University of Queensland

Dr Paul Garrett
University of Melbourne

Dr Lynn Gillam
University of Melbourne

Professor Sharon Goldfeld
Murdoch Children's Research Institute

Professor Bronwyn Harch
University of Queensland

Associate Professor Ian Hardy
University of Queensland

Associate Professor Ben Harris-Roxas
University of New South Wales

Dr Trish Hill
University of New South Wales

Dr Jessika Hu
Murdoch Children's Research Institute

Associate Professor Janet Hunt
Australian National University

Professor Raja Junankar
University of New South Wales

Associate Professor Nicole Kaims
Monash University

Professor Yoshi Kashima
University of Melbourne

Professor Ilan Katz
University of New South Wales

Associate Professor Sabina Kleitman
University of Sydney

Professor Stephan Lewandowsky
University of Melbourne

Associate Professor Daniel Little
University of Melbourne

Professor Simon Loertscher
University of Melbourne

Professor Nigel Lovell
University of New South Wales

Dr Sue Lukersmith
Australian National University

Professor Guy Marks
University of New South Wales

Professor Greg Marston
University of Queensland

Miss Antje Martins
University of Queensland

Professor Kirsten McCaffery
University of Sydney

Dr Ros McDougall
University of Melbourne

Professor Alistair McEwan
University of Sydney

Dr Susan Mendez
University of Melbourne

Professor Patricia Morrell
University of Queensland

Dr Jack Noone
University of New South Wales

Dr Sze-Yuan Ooi
University of New South Wales

Associate Professor Roger Patulny
University of Wollongong

Associate Professor Amy Perfors
University of Melbourne

Dr Michelle Peterie
University of Queensland

Professor Ove Peters
University of Queensland

Dr Kate Power
University of Queensland

Dr Bridget Pratt
University of Melbourne

Associate Professor Gaby Ramia
University of Sydney

Professor Ian Ring AO
James Cook University

Mr Tyler Riordan
University of Queensland

Dr Penny Round
Monash University

Professor Richard Saffery
Murdoch Children's Research Institute

Professor Andreas Schloenhardt
University of Queensland

Dr Brett Scholz
Australian National University

Ms Naomi Schwarz
Murdoch Children's Research Institute

Professor Anthony Scott
University of Melbourne

Dr Jennifer Skattebol
University of New South Wales

Dr Pearl Subban
Monash University

Dr Stewart Sutherland
Australian National University

Dr Cathy Thomson
University of New South Wales

Associate Professor Cathy Vaughan
University of Melbourne

Professor Melissa Wake
Murdoch Children's Research Institute

Mr Josh White
University of Melbourne

Dr David Whyatt
University of Western Australia

Associate Professor April Wright
University of Queensland

Dr Yongxin Xu
Monash University

Professor Neville Yeomans AM
University of Melbourne

Professor Alison Young
University of Melbourne

Dr Adam Zulawnik
Monash University

Thank you to our independent reviewers:

- Mr Jeff Connolly, Chairman and CEO, Siemens Ltd

- Professor Glyn Davis AC, CEO of the Paul Ramsay Foundation

- Professor Stephen Duckett, FASSA, Grattan Institute

- Ms Kathryn Fagg, AO, FAATE

- Dr Alan Finkel AO, Australia's Chief Scientist

- Dr Cassandra Goldie, CEO, Australian Council of Social Service (ACOSS)

- Mr Andy Keough CSC, Managing Director, Saab Australia

- Ms Linda Nicholls, AO, Chair of Melbourne Health

- Dr Jennifer Westacott AO, CEO, Business Council Australia
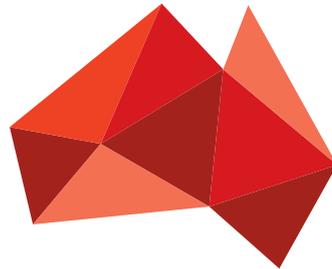
GROUP
OF EIGHT
AUSTRALIA

MEMBERS

THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

MONASH
University

Australian
National
University

THE UNIVERSITY
of ADELAIDE

THE UNIVERSITY OF
MELBOURNE

UNSW
SYDNEY

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

THE UNIVERSITY OF
SYDNEY

go8.edu.au