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A strategic framework to ease community-wide Covid-19 suppression measures

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Abstract:

To date, physical distancing and societal closure has proven highly effective at reducing community transmission and deaths due to Covid-19. However, staying in 'lockdown' indefinitely is problematic due to the wider health, social and economic damage arising from the control measures . The challenge now is how to ease restrictions in the absence of a 'silver bullet' therapy or vaccine. We outline a strategy for a phased progression from 'suppress' to 'release' and 'restore' stages that focuses on optimising the application of our existing tools and strategies coupled with improved pathways for community engagement and multi-sectoral cooperation.

Introduction

With over 2.8 million reported infections globally, the novel SARS-Cov-2 pandemic is an unprecedented global health challenge in modern times. The countries that have most successfully controlled the local spread of Covid-19 have invariably had well developed public health care systems and strong health infrastructure. Supported by these systems, they have promptly applied traditional outbreak response measures at scale. This has included concerted efforts to detect and isolate those infected and quarantine their contacts, coupled with varying degrees of social and physical distancing measures, travel restrictions and societal closures or "lockdowns"(1-4).

Given the lack of SARS-Cov-2 knowledge and the limited availability of effective "tools" - no treatment, no vaccine and limited diagnostics - most countries have adopted some form of community-wide 'lockdown'. While this blunt suppression measure is clearly effective and has saved many thousands of lives, it comes at a huge economic, social and non-Covid-19 health cost that makes it difficult to sustain indefinitely. As a result, several states, including Australia which has so far managed to avoid high mortality rates seen in other countries, are now considering their options for relaxing these measures in a phased manner.

The challenge remains of how to balance relaxing current control measures while minimising ongoing community transmission of the virus. This is especially difficult as we have not yet established ways to effectively measure and track community transmission and still have an incomplete understanding of the disease itself and the risk factors for significant community transmission. For example, the degree of asymptomatic and pre-symptomatic spread, the optimal size of social gatherings, the degree of risk in different workplaces, schools and other congregate settings. Vulnerable populations remain especially at risk, as evidenced by disease resurgence in several settings, such as in migrant workers in Singapore.

To calibrate a safe path out of 'lockdown' requires a clear appreciation of the tools and strategies currently available to us. These are unlikely to include "silver bullets" of therapies or a vaccine with estimated timelines beyond 2020 for these to pass clinical trials(5). Assuming that an immediate full restoration of all social and economic freedoms as advocated by some economists(6) is off the table, there are differing opinions about whether an elimination or a suppression strategy should be pursued(7). Elimination would keep the maximum social distancing measures in place for longer, but success is uncertain and will be continually challenged, especially when international borders are re-opened. Suppression, a balance of the least restrictive social and economic constraints to maintain an R0 of below 1 without quickly eliminating the infection, would allow an earlier release of control measures. Australia has adopted a "suppression" strategy(8) with Stage 3 restrictions currently in place at a federal level, but has indicated that elimination may be possible in some geographical areas.

We provide here a **strategic framework for research and public health action (Figure 1)** as a platform for decision-making to 'exit the lockdown'. This framework has three main elements.

1. Additional stages

The framework builds directly on the Australian Health Sector Emergency Response Plan for Covid-19(9) by proposing three **additional stages** before we enter the Stand Down and

Recovery stages. This provides a structure to define in detail the pre-requisite information needs, public health and clinical capacities, and non-Covid-19 related considerations for transitioning between stages. Key to release are clearly defined 'trigger' points: milestones that need to be reached before there is control measures are changed (rather than arbitrary pre-defined dates).

Key aspects of the Covid-19 Community Recovery Model are summarised in **Figure 1.**

The stages are:

- **Suppress**: During the current Suppress stage the application and coverage of existing tools are upgraded and enhanced. Planning to identify and prioritise segments of the community to be 'released' is finalized. A mechanism is established to enable a flexible and adaptive approach to move through each phase of the step down based on effective monitoring and the rapid application of new information.
- **Release**: In the Release stage there is limited restoration of socio-economic activity. This would potentially prioritise economic and education freedoms (schools, universities, workplaces) before many recreational freedoms (such as sporting events, concerts, festivals). However, these decisions should be based on highly sensitive surveillance of and empiric data on community transmission risk, informed by appropriate transmission and economic models and extant data on social mixing and behaviours(10, 11). Vulnerable groups (health care workers, aged care facilities, detention centres, prisons, rural/remote and Indigenous communities) need to be systematically monitored for disease resurgence.
- **Restore:** The Restore stage is a prelude to Stand Down and full Recovery, with broader restoration of normal activities, continued protection of health workers and vulnerable people, maintenance of community support for disease control measures, and further preparation for or introduction of novel tools and strategies. Travel, especially overseas travel, is likely to remain curtailed during this period, although the opening of selected low-risk routes supported by strict quarantine may be feasible.

Each step down would be preceded by a short **transition period** of gradual releasing of restrictive actions with intense monitoring for evidence of increased community transmission of Covid-19. The transition periods require an iterative review process based on clearly defined performance indicators to determine if and when further release can proceed or if a return to peak control measures is needed. A data-driven, evidence-based approach with in-built evaluations of the effectiveness and acceptability of countermeasures, the quality of communications and community actions, as well as practical assessments of the feasibility of swiftly re-instituting higher-level restrictions is required to maintain a malleable trajectory to 'exit'. Depending on the detail of the information available, different geographical areas may be able to release restrictions at different times.

2. Optimisation

The framework is premised on the notion that the **optimisation** of the application of all of our existing tools and strategies is the immediate priority. This includes:

- Optimised platforms to improve our understanding of the virus and its spread domestically to guide our responses

- Optimised detection and monitoring systems to track community spread (testing and surveillance)
- Optimised physical and social distancing measures to prevent transmission
- Optimised communications with the public for community support and engagement with the response
- Optimised rapid response capacity for disease resurgence
- Optimised hospital and primary care systems that have surge capacity to deal with increased cases of Covid-19 and can sustain and adapt existing services under varying levels of restrictions
- Optimised platforms for the rapid application of new learning and novel tools such as diagnostics, digital technologies and medical therapies

3. Whole-of-society response

The strategy adopts a **whole-of-society approach** to address the many challenges of both Covid-19 and our responses to control it by harnessing, integrating and facilitating the application of the collective expertise and capability across government, non-government and private sectors, and our community. This means that not only are the primary tools and strategies sharpened, but that the current human, material and organizational limitations of our public health responses are overcome. This involves the following components:

- *Having the right information* - Information needs for policy makers and response implementers must be prioritized. The novel nature of Covid-19 necessitates the rapid collation and synthesis of information from a diverse range of sources including enhanced surveillance, amplified testing, experience from overseas, rapid integration of research into the response, and broad community consultation. The impacts and unintended consequences of the pandemic across Australia (and our region) need to be better understood(12-15). Assessing people's understanding of Covid-19 and government actions to reduce transmission, and how this influences individual behaviours is not yet well documented. Modelling enables us to examine a range of Covid-19 and non-Covid-19 outcomes of sustaining, releasing and re-applying public health measures and introducing new tools and strategies. In fact, Australia is one of the few countries in a position to consider ambitious prospective data gathering exercises during the 'exit' to determine the optimal way(s) to do this and prepare for local disease resurgence, new introductions if the virus, future pandemics and to share knowledge with the rest of the world. This is key to responding to a crisis that *"…is beyond our current arrangements, thinking, experience and imagination"*(16).

  A taskforce to provide and continually update evidence-based clinical guidelines, and a Covid-19 expert database have already been formed(17, 18). Similar mechanisms to guide public health actions and develop more sophisticated and relevant Covid-19 models, as well as for applied research and evaluations of the domestic responses are needed to supply the 'right' information.

- *Having the right governance and operational mechanisms* can ensure effective collaboration, cooperation and coordination across disciplines and sectors to support rapid innovation and learning in real-time, unlock system bottlenecks, address emerging issues particularly those related to impacts of the response, enable high-speed information flows and fast decision-making, and ultimately to ensure rapid translation into policy and

practice. Critical for success, is the full engagement of the community. For instance, the effectiveness of the current self-isolation, quarantine and physical distancing strategy requires ongoing community cooperation, which will only happen if people are equipped with the necessary knowledge, skills and resources to respond to government requirements(19).

Existing disaster management frameworks provide templates for effective governance during emergencies and the cultivation of effective partnerships that are coordinated with and can inform policy and emergency response arms of government(16).

Having the right principles and approaches - A precautionary approach to stepping down or reinstituting restrictions needs to be adopted where residual uncertainties remain. People most at-risk of infection and severe outcomes of infection need ongoing shielding. A decision on whether a least restrictive approach to maintain disease suppression or a more conservative approach to minimize the chance of disease resurgence must be made either nationally or at sub-national levels. Ethical and legal concerns have been raised with numerous aspects of the outbreak response(14, 20, 21); consensus is needed on the ethical principles and values guiding decision-making during the 'step down'. While the Australian Health Sector Emergency Response Plan for Covid-19(9) outlines an ethical framework, this was formulated by the Australian Health Protection Principal Committee in 2008; adaptations in our responses to the pandemic need to account for and specifically address prevailing ethical concerns. A pro-active approach to engaging citizens in the response and supporting community resilience is needed. Inequities must be looked for and addressed. Health authorities and politicians must be transparent to engender trust and enable community cooperation with public health directives that may require backtracking with re-imposing of restrictions if outbreaks recur.

Conclusion

In a recent opinion piece, Richard Horton quoted Goethe in decrying the global science policy failure in preparing and responding to SARS-CoV-2: "Knowing is not enough; we must apply. Willing is not enough; we must do"(22). Over the past few months, Australia has implemented a series of measures that appear to have successfully suppressed the ongoing transmission of Covid-19. In the coming months, as we look to recover from the direct health impacts of Covid-19 and the indirect health, social and economic impacts of the control measures, it is vital to take a strategic, evidence-based and cohesive approach, with full engagement with the community. A research and public health action framework can propel Australia toward a more agile cooperative effort to generate the information needed to act and react to this unprecedented challenge both here and overseas.

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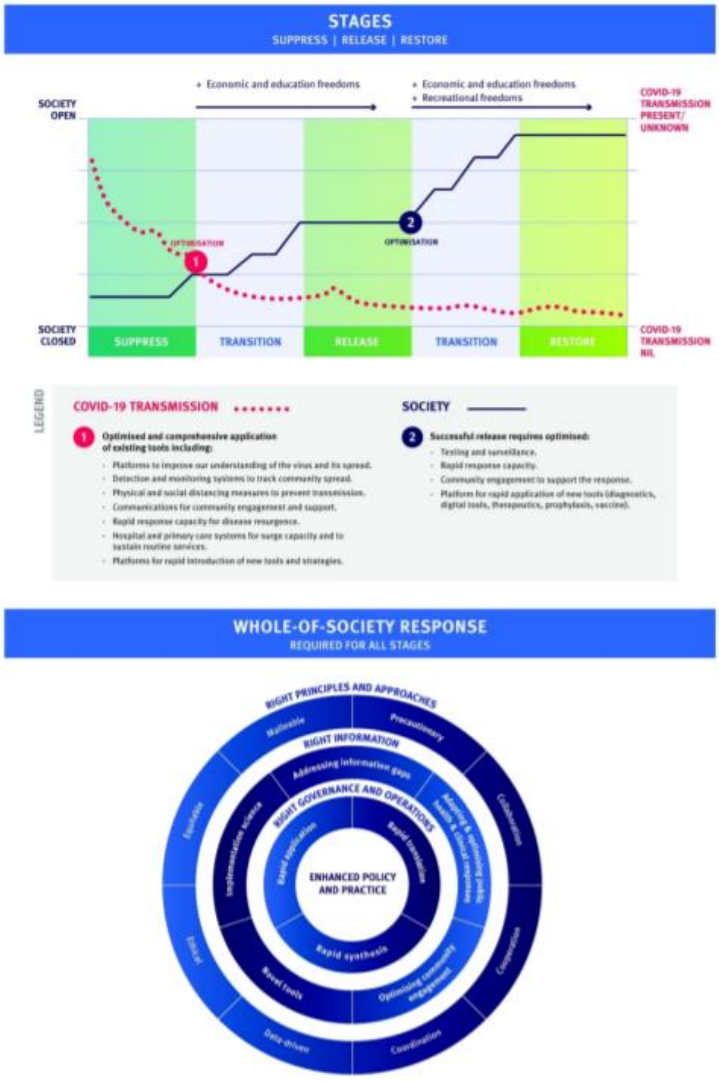

Figure 1. A strategic framework for research and public health action for Covid-19

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