As restrictions ease, here are 5 crucial ways for Australia to stay safely on top of COVID-19

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As Australia's coronavirus restrictions are gradually lifted, we may well see an upswing in cases of COVID-19. The World Health Organisation has warned of the need for "extreme vigilance" in countries that are now

emerging from lockdown.

A vaccine remains the best possible tool to guard against the virus. But with a vaccine still months or even years away, we will have to rely on other epidemic control measures, of which there are five key pillars.

1. Finding every new case

We need to find and isolate every new case of COVID-19, to prevent transmission. Testing is the way we identify cases. Because even people without symptoms can transmit the virus, the testing regime should include high-risk, asymptomatic people.

Expanded testing criteria in some states allow any doctor to order a test if they suspect COVID-19, but national criteria still do not recommend testing of high-risk people (such as family contacts) who do not have symptoms.

In closed settings where COVID-19 cases have been identified—such as an aged care facility, cruise ship or household—everyone exposed should be tested, as there is a high rate of asymptomatic and pre-symptomatic infection that would otherwise be missed.

This was not done aboard the Ruby Princess cruise ship, where only those with symptoms were tested. This may have resulted in missed infections and further outbreaks. It is vital to avoid further incidents like this as we move out of lockdown.

2. Rigorous contact tracing

Every person who has come into contact with a known COVID-19 case needs to be traced and quarantined for two weeks. Ideally, they should

be tested. Using the COVIDSafe app will help identify all contacts more thoroughly.

3. Continued social distancing

Extreme social distancing measures such as home lockdowns are now coming to an end in Australia. But we should keep practising lesser measures, such as maintaining a distance of 1.5 metres from other people.

4. Ongoing travel bans

Travel bans prevent infections being imported from countries with severe epidemics. In Australia, more than 60% of cases up to May 12 were imported through travel. Keeping the borders closed will allow further lifting of restrictions within Australia.

It is also important to continue quarantining return travellers, and testing Australians arriving home from high-risk countries. The Emirates airline has gone further, announcing COVID-19 testing for all passengers.

5. Face masks

Everyone in the United States has been advised to wear a face mask, because peak transmission occurs in the two days before symptom onset or on the first day. This can help flatten the curve, even if mask use is only modestly effective, especially if combined with social distancing.

It is not a recommendation at this stage in Australia, but masks can also help ease restrictions safely, and may be something to consider in the coming months in crowded public places.

Know your enemy

Besides on-the-ground tactics such as widespread testing and contact tracing, we also need a clear understanding of infectious disease epidemiology, and defined criteria to alert us when we may be heading into an epidemic period.

In countries that have flattened the curve and achieved low incidence of COVID-19, such as Australia and New Zealand, there has been talk of "elimination" of the disease.

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But because of the low total infection numbers in these countries, most people remain susceptible to COVID-19. This means fresh outbreaks are possible in the 12-24 months or longer until we have a vaccine.

The concepts of "elimination," "eradication" and "control" arose from vaccination programs. Eradication is global, whereas elimination is national or regional, and "control" is a goal when elimination is not possible. For measles, outbreaks may still occur during elimination, usually imported through travel, but do not lead to sustained transmission .

The World Health Organisation criteria for the elimination of measles include:

- low incidence with an R0 below 1 (meaning each person with the disease infects less than one other)
- high-quality surveillance
- high population immunity.

But with no vaccine for COVID-19, low incidence and high population immunity are mutually exclusive propositions. For a novel disease with no vaccine, it is premature to talk about eradication.

Ideal infections for elimination and eradication have no presymptomatic transmission and no animal host—for these reasons, eradication of COVID-19 is unlikely.

This means for the time being at least, we need to aim for "control" of COVID-19—keeping the disease at a manageable level. For this, we need to differentiate between sustained community transmission and sporadic, non-sustaining outbreaks.

Widespread testing is the key to this. It will tell us how much infection is present, and if it is increasing. A stark reminder of the consequences of failure to test is the case of the United States, where the growth of the epidemic was not detected until it was too late.

How do we distinguish between sustained and non-sustained outbreaks? One possible definition of a sustained outbreak would be a certain number of generations of transmission from an original case. Another would be demonstrating ongoing community transmission over a defined period of time (such as three months), or a rise in the R0 value, a measure of how strongly the outbreak is growing. Contact tracing will clearly be vital to assessing this.

Detection of a sustained outbreak would be a warning sign that we are potentially heading into another epidemic period. This might therefore signal the need for increased testing, stronger social distancing, and other measures.

It is likely we will face alternating epidemic and non-epidemic periods, and will need to continue to manage COVID-19 with intermittent returns

to stronger restrictions. That is, until we have a vaccine, at which point we can begin working towards bringing the COVID-19 crisis to a genuine close.

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