Issues and recommendations of Dr Api Talemaitoga

1. Lack of (correct) Leadership
    - No one at the 'top' to 'command the show'
    - MoH officials seemed to be in disarray in terms of what policy the advice was based on
    - At AoG, they all deferred to 'Health' and no one seemed to call the DG aside to ask about helping MoH operationalize the strategy/plan (Brendan Boyle and Mike Bush seemed to think it was Brook Barrington's job??)
    - AOG – described functions as 'evolutionary'. Huge operational capacity under-utilised by MoH. MoH did not 'put out the welcome mat' when assistance offered

2. Lack of relationship with Ministry of Health (seen as the lead agency) by outside organisations/companies. Most of these agencies/companies talked about risk stratification, lack of a risk-based framework and their lack of relationship centrally with MoH
    - Air NZ – 'we have had no relationship with Moh' - this does not engender trust between the two organizations. Limited consultation with the 'Orders'. Air NZ would prefer a co-design approach based on risk stratification. Are looking and getting more help from international partners (IATA etc)
    - Auckland airport describes relationship with MoH as 'challenging' with unclear objectives. Found the DHBs easier to deal with, more pragmatic. No health people at weekly MoT meetings. Looks after it's workers in 4 separate risk categories
    - Ports of Auckland – risk profiles all it's workers. DHBs more useful than MoH – where there is 'no one in charge'. MoH vs Worksafe NZ – no clear guidance/advice
    - Ministry of Transport – Insufficient focus on implementation from MoH, no risk-based framework to work with and lack of clarity from AoG and MoH. 'Not enough free and frank at AOG'

3. Workforce

- Health workers – appropriate with language (and cultural competency), managing worker fatigue. How often are they tested and is it standardized
  Some refused to work (Geneva nurses) due to the type of work and testing requirements
  Need regular surveillance testing

- Border facing workers – most of whom may come from lower-paid jobs like cleaning, security personnel and need to be closely supported and monitored for regular testing and use of PPE as may still come to work if unwell; and if unwell, may pass on virus to family
  Need regular surveillance testing

4. Data - that can inform decisions in real-time and is reliable. E.g at NRHCC in Auckland has done it for the region. Can the MoH do this for the country?

5. Employers' accountability – Impressive coordination seen with private companies like Air New Zealand, Auckland Airport and Ports of Auckland (I missed the Port of Tauranga meeting)

- Support for staff to do testing during work hours/shift
- Support staff for paid sick leave if needing to self-isolate
- Finding the solutions with their staff to make it work for them

6. Allowing for local and ethnic-specific solutions

- Auckland DHBs frustrated with the slowness of decisions from MoH. They want the ability to go ahead and contract providers as they see fit (Comment was that they felt decisions from MoH were 2-3 weeks or more behind!)
- Maori Providers (on the other hand) felt DHBs reactive in telling them where to set up testing centres and came across as adhoc rather than organized about where testing needs to be done/set up and timing. Case definition and constant changing criteria unhelpful for providers and needs to be minimized. As usual, providers delivered way more then what they were contracted to do – contract was to do flu vaccinations – they did this and also assessed for sore throats, measles and covid 19 testing too
- Pacific team at NRHCC mentioned learnings from the first wave assisted them this time: Contact tracing for Pacific led by an embedded Pacific team (with cultural competency and language skills) in ARPHS; mix of 'drive through' testing centres and mobile clinics – worked better for large families. Question of adding additional capacity to Pacific providers now that can surge upwards if needed in another wave/vaccination etc
- Pacific team at MoH found a community focused design and delivery with good clinical leadership and inter-agency collaboration helped build trust and support for a Pacific-led response (first wave). Helped in setting things up during the second wave
- Pacific whanau-ora commissioning agency (Pasifika Futures Ltd) gets direct referrals from ARPHS to support Pacific families going into isolation. The importance of Pacific speaking clinicians to assist with the level of stress/anxiety, explaining the reasons behind isolation/quarantine and contact tracing cannot be underestimated. Using the community infrastructures within the Pacific community is helpful – Pacific churches and Ministers, Pacific Health and Social providers that are respected in the community etc

Other Issues:

- Vulnerable communities like Maori, Pacific peoples and those from lower socio-economic backgrounds need special attention in terms of support – health messaging, social care packages with lost employment due to isolation/quarantine and attention to the non-Covid related conditions (chronic diseases, mental health, psychosocial 'stress').
- Housing as may come from over-crowded housing (Stats NZ – 40% Pacific families live in overcrowded houses)
- Education for 2020 severely interrupted. Implications on low decile schools with less access to home/remote learning devices
- New type of covid test that is less invasive – saliva ?cost ?reliability
- Bringing covid 19 testing into BAU (Maori provider asks how we can normalize surveillance into routine checks like BP, weight and BSL?)

Issues and recommendations of Dr Rawiri McKree Jansen:

Theme

Coordinated and comprehensive pandemic response

Issue

Regulatory roles, statutory roles, and complex governance settings

Recommendation

The resolution is likely to be mostly about how to get all of the moving parts in alignment and collaborating in deliberate ways. That is a leadership function rather than a structural solution.

Theme

Public confidence

Issue

Mis-communications or frequently changing communications and messaging

Discussion

Coherent and consistent messaging of the strategy (from early in pandemic response and remains at this time, the goal is elimination rather than suppression).

Messages are then aligned in predictable ways to the alert levels.

- People returning from overseas and in managed isolation will be tested.
- Border workers, MIF workers and health workers are essential workers. They need to be tested regularly.
- Symptomatic – get tested, and stay at home.
- And, testing in the community is needed for early detection of any cases.

Testing will be based on risk stratification, as the list above demonstrates. Testing sites need to be aligned to and informed by the impact stratification. Static sites are useful across both outbreaks and when there is no community transmission. Mobile and pop-up sites are helpful when there is any border breach, outbreak or community transmission. Border testing and MIF testing is best maintained at the border/MIF by dedicated workers.

Social distancing, hygiene, use the Covid tracer app or keep a diary.

Border workers, MIF workers and health workers should generally have only one work location.

Theme

Coercion

Issue

Mandatory isolation settings. Coercion settings in contact tracing.

Discussion

DG announcement of mandatory isolation was sudden and may have been precipitous. The 100 days of no community transmission provided opportunity to develop a more nuanced approach to

provide for and properly resource accommodation options[1]. It seems likely that this has been developed in any case over outbreak two, but comes at a risk in terms of public goodwill.

Cultural concordance and linguistic concordance are important to have effective and acceptable Public Health Units and contact tracing services.

Theme

Māori participation in the design (and co-design), delivery and monitoring.

Issue

Maori providers have had variable involvement in design and delivery of pandemic responses. Maori providers have innovative approaches, are well connected to communities especially high needs/vulnerable communities, and have capability to work with these communities.

Discussion

Maori should be involved at all levels in the pandemic response[2]. Maori providers mobilised early, and developed comprehensive responses. These approaches can inform other providers. These providers and these responses do need to inform the pandemic response. The decisions at the centre should inform and align with the responses at local levels. Maori communities need to have confidence in the testing plan to feel safe and not targeted.

Theme

Equity

Issue

The pandemic response needs to protect Maori, in both the exposure to the pandemic and the impact from any outbreak as well as the impact of the pandemic response.

Discussion

The surveillance and testing strategy that Maori require will be commensurate with the exposure risk for Maori (including occupational settings and household crowding and other social settings) and the impact risk for Maori (health conditions so that the Crown achieves equitable health outcomes for Māori. Consideration for different testing (PCR, saliva, antigen, point-of-care) and how different combinations of tests can provide coverage, or address differential risk.

[1] Principle of Options

[2] Partnership, active protection

Notes from MIQF and AIA Border

Issue	Policy implication	solution
Drinking fountain at airport	Fomite/Infection control	Close the fountain, check that shared surfaces are either closed where possible, cleaned otherwise
Chairs at MIF	Fomite/infection control	Regular cleaning after each person
Face shields for health staff at airport	Infection control	Staff facing risk of covid positive need to have best practice PPE.
Bus for unwell travellers	Infection control	Can the bus be single purpose and cleaned
Cleaning staff at airport	Contractors responsibilities	Consider exiting contractor arrangements, staff need infection control training, credentialing, auditing and sick leave
Cleaners on planes	Contractors responsibilities	Consider exiting contractor arrangements, staff need infection control training, credentialing, auditing and sick leave
PPE - procedures	Staff training and credentialing	Need standardised training, updates and auditing
Clinical care in MIQF	Standard operating procedures	A predictable range of medical conditions and presentations need to be managed safely for patients and for health staff, including ambulance/emergency

Notes. Endpoint recommendations.

1. Surveillance strategy refresh.
    a. This was heralded previously, and so can be recommended and agreed without resistance.
    b. include guidance for the external reviewer processes
    c. Include guidance for including agility as new testing technologies can be rolled out
        i. Thinking about test and hold versus test and track versus test and release
    d. include guidance to how the communication needs to be coherent and consistent while also aimed at the specific audience (ie the owner of the strategy as well as the system players who will implement the strategy, and the public who need broad confidence in the strategy)
    e. advice about how monitoring of the strategy takes place
2. Testing Plan
    a. Informed by the emerging evidence
    b. Stratified by risk
        i. MIQF guests (from return to NZ or mandatory Covid positive)
        ii. Border workers/MIQF workers/Health workers
        iii. Residential settings (include ARC, corrections, youth etc)
        iv. Symptomatic – everyone with symptoms should be tested
        v. Community early detection
            1. range of populations to be sampled
            2. range of tests (include agility and new tech as above, but also sewerage)
            3. fixed site capacity
            4. pop-ups and mobile
    c. Agile to include and prepare for new testing technology
    d. Coherent and clear
    e. Well communicated
3. Leadership
    a. Organising the current capacity, there are a really impressive number of very capable people, but not quite aligned, leading to some predictable but preventable dysfunction
    b. Public Health Directorate/COVID Directorate should have the MOH capacity and capability in hand, organised and contributing, leading PHUs in regions and directing/leading/guiding DHB responses on the ground.
        i. Does this need review of Covid Act
    c. CE group across AOG should include DG Health, and this should be the key organising, coordinating and decision making space.

Comment

The elimination goal is current. I agree with it, but it would be good to have the fall back of suppression organised. As in chess the aim is to not lose; overcommitting, pushing too hard or becoming impatient are all possible after a good opening. A draw is better than a loss. In COVID19 a dramatic but well organised pivot defence may be necessary and prevent an uncontrolled outbreak having sacrificed all resources.

Building some routines. The last few months has seen the urgency and intensity and frantic pace. That is not helpful now, and a standard reliable approach would be more helpful – releasing information in timely predictable ways, better organised and more crafted to audiences.

Clarity of messaging. High level announcements have the key ideas and allow for teams closer to communities to deliver the services with clear monitoring, data collection, reporting and explicit auditing.

Issues and recommendations of Professor Philip Hill

Major general points

New Zealand is in a good position thanks to a huge amount of work at all levels. Government work has been complemented by non-government providers and the public in extraordinary ways, formally and informally, with a huge amount of goodwill, initiative and creativity.

The current outbreak was detected later than it could have been, with major economic consequences. Changes to the surveillance and testing approach and documentation are needed, with input from New Zealand's leading public health and human disease epidemiology experts, maybe international experts and leaders of those who directly carry out the work. Documentation should be simple, regularly updated, brief, clear and operationalisable.

At the border the approach to who should be tested should adopt a proper risk framework and those needing to be tested should be tested at least once a week if possible. Informations systems should be optimised to ensure completeness of testing.

With RNA-based testing of specificity of around 100%, it is completely reasonable and advisable to test everyone with symptoms in NZ even during level 1. Access to testing should be optimised. In preparation for winter next year and the possibility of testing capacity being overwhelmed, a new approach should be developed that could be implemented if needed, using high level epidemiological thinking around optimal selection of who should be tested in the community in a way the public can understand and relate to. Specific sub-populations, such as rest home workers, should be considered for regular testing.

A clear approach to symptomatic, repeated and asymptomatic strategic testing during an outbreak should be produced.

There have been at least two further border breaches of the virus that have been picked up through testing of staff at Managed Isolation facilities. These should be regarded as border breaches, sharpening the focus on these facilities as needing attention. Testing is a safeguard and should not in any way be a substitute for ongoing optimisation of infection control measures. And infection control should not be compromised in the systems around the testing procedures.

Command/control structures of the overall response and of a specific outbreak response are not clear and rely on collegiality. This is especially dangerous for a fast moving large outbreak and may be contributing to many of the issues identified. The New South Wales approach to outbreak leadership should be explored.

Problems with contextualisation and operationalisation of decisions around testing are very strong common themes and continue to crop up regularly.

Saliva testing has been in operation in places like Hong Kong for several months and it appears to have similar performance characteristics to Naso-pharyngeal testing. It looks like a 'no-brainer' for New Zealand and help from those overseas who have been running saliva testing well may be needed to rapidly establish the test quickly. Pooling of samples is likely to be a crucial component of the strategy at the border and in the community.

Specific major issues for Māori, including co-design and leadership, providers etc.....

Specific major issues for Pasifika, including provider engagement, consultation, church networks etc....

Vaccines may well not completely block infections occurring. Rather most of their effect is likely to be in reducing mortality, once infected. Therefore, testing for COVID-19 may be needed for years to come, at least for surveillance purposes.

Issue	Recommendations/suggestions
Ministry of Health internal issues and issues with its engagement with government and non-government entities related to testing	
There have been significant improvements in the interactions between the Ministry of Health and other entitities inside and outside of the government over the COVID response. Issues have included: -Ministry of Health appearing to have a superiority complex and actively excluded some other parties from decisions, while the Ministry of Health staff themselves sometimes felt pre-judged and received unhelpful negativity. They struggled to explain why an operational framework proposed by another agency did not fit the health approach. While it was perceived that the Ministry of Health did not take full advantage of the huge operational expertise available to them. -there were different cultures between different departments/ministries, which clashed at times. -Lack of creativity and innovation in the Ministry of Health with respect to considering other ways of doing things across multiple sectors. -changes to exemptions to policies were not nimble enough -documents produced by the Ministry of Health were not well integrated and decisions often did not include representation of all the key stakeholders -there were repeated issues with the Ministry of Health's inability to connect operationally. Often Ministry of Health decisions and orders had not been consulted upon and checked by those required to carry them out. Some orders had unrealistic time frames in particular, which could easily have been predicted. Some instructions seemed to be poorly formulated, requiring them to be changed, including up to 3 times in one day on occasion. -predictably, Ministry of Health staff began with very little understanding of the actual operations at the border and there continues to be room for consultation and improvement in	Very clear decision making processes need to be prescribed/established if there is no one 'leader' of the covid response and no one 'lead agency'. Cross-government arrangements should be formalised as much as possible with respect to the COVID-19 response. Ministry of Health advice to the government needs to have mandatory operationalisation checks with short reports by affected agencies submitted at the same time. For example, input from airport, airlines, MBIE and Ministry of Transport should be mandatory. Ministry of Health orders should have proper consultation and operationalisability checks. Enhance innovation capacity in the Ministry of Health, if possible. Ensure Ministry of Health representation is on all key meetings with stakeholders. While the Ministry of Health needs to have better capacity fit for purpose for COVID-19, it also needs rationalisation and simplification of its staffing and groupings. At the interface with other agencies and stakeholders there should be a small operational committee of the right experts meeting daily when responding to an outbreak. There should be an industry task force for the application of health principles into practice, to which the Ministry of Health is invited to participate. Actively identify issues that need to be resolved quickly and establish processes accordingly.

this regard. At times, Ministry of Health provided no one to participate in weekly calls with stakeholders. -some issues that are urgent seem to be impossible to have decisions made in time for adequate resolution and seem held back unnecessarily eg. the labour market problem of the lack of specialised workers for specific tasks. -there have been large turnovers of staff in the Ministry of Health, All of Government Group and DPMC, affecting continuity in particular. -There were multiple points of contact in the Ministry of Health, with unclear roles and accountabilities from the perspective of those outside of the Ministry -while there was a narrative about lack of willingness of border workers to be tested, this was largely not the case at any stage. -some Ministries/other entities did their own scenario planning, which they felt was lacking at the All of Government level, especially with respect to regional level changes. There was a strong perception that the Ministry of Health lacked appreciation of the complete end to end testing process. -A key weakness in the Ministry of Health, with respect to this outbreak, has been deployment of a highly efficient and effective delivery arm. Adding in individuals to address specific issues has led to a large number of individuals engaged, with complex and often ill-defined inter-relationships and accountabilities. Providers/stakeholders are confused over who is responsible for what and receive instructions from many different people, from advisors themselves up to the DG. -The All of Government group initiated 23 different workstreams, indicating the size and scope of the overall COVID-19 response. -there has been a lack of agility in decision-making in general and in response to an evolving outbreak. The rushed decisions do not seem to have the right checks and balances processes in place to avoid mistakes. -there may be too many documents covering the response -while DPMC play a role in helping make sure things get done that are needed, this relies on a	All key documentation around the response should be reviewed and rationalised A more clearly stated and specific mandate for the DPMC across the whole response should be articulated, documented and monitored. The role of the Director of public health and her team should be reviewed and defined clearly, especially responsibilities and accountabilities. All aspects of the response that have a public health component should have a relationship of some sort with this office of the Ministry of Health. Specific responsibilities should really include the Surveillance plan, testing strategy and testing criteria, including changes and updating of documentation. But there are many other aspects that benefit from public health and epidemiology specialist input, including the work of the All of Government unit.

collegial model and lines of authority are not always clear. This is a risk for a fast moving outbreak situation in particular. In particular, the quality of the connection with the Ministry of Health has been variable. -there has been a lack of clarity of the role of the team of the Director of Public Health. The office was not involved in the construction of Alert levels or early decisions around mask use, for example. There is no official chain of command between this office and the public health units. -there may not be adequate public health expertise around the decision-making table of the All of Government work. -there is a perception in the Ministry of Health that the August outbreak was detected early, but it is clear that the source case was never identified, the person who initially presented was twice not tested, and the virus had spread to all parts of Auckland well before it was brought under control. There seems to be relatively little appreciation of the enormous economic implications of late detection of an outbreak requiring a level 3 lockdown. -The Ministry of Health is in danger of having a vicious cycle whereby weaknesses and management challenges in the overall response are patched with extra people, who may not be a perfect match for the problems, while adding complexity to the response team, which leads to more management challenges.	
Overall Surveillance plan	
The surveillance plan was created in May by a contracted veterinary epidemiologist, as no human disease epidemiologist was available. It was signed off by key parties in the Ministry, including the Director of Public Health. It was not necessarily fit for purpose with respect to properly informing the testing strategy. It was supposed to be a living document ie. to be regularly updated as needed. No changes have been made, however.	The surveillance plan for COVID-19 in New Zealand should be revised and updated. It should be clear if it is an enduring strategy or a more regularly changed plan. The revision should be led by the Director of Public Health in consultation with other parties and it should be formally peer reviewed by leading human disease public health specialists. It should include a specific focus on surging in relation to an outbreak. Compared to the present document it could be much shorter and clearer and serve the need to be a lead-in document to the testing plan.
Overall Testing strategy/plan	

This strategy, which should really have been labelled as a plan, was developed by a working group and it was meant to be iterative and respond regularly to current data. However this did not happen. Testing expectations became disconnected from the testing strategy and a new 2-weekly strategy process and line of documentation developed. Separate 'brief' and 'technical' versions of the June strategy were produced. The two-weekly plans have improved in their operationalisability and clarity.	The approach to the documentation around testing strategies/plans should be revised and rationalised to one regularly updated testing plan. All documentation should be lined up and consistent with each other at all times, including the 'case definition' document. Testing plans can cover the approach under no transmission and to outbreaks, to the border, to symptomatic and asymptomatic screening, to hospital admissions and staff, sewage surveillance (eg. at resthomes), correctional facilities, self-testing, different types of testing platform, the border and the general community. A testing plan should be one document, with possible technical appendices, which should also be as brief and uncluttered as possible. The strategy should connect more overtly and seamlessly to operations, through consultation. If at all possible testing should be done on all those who develop symptoms in New Zealand over the remainder of the pandemic, not just those selected through clinician discretion outside of 'at risk' groups, eliminating the need for the High Index of Suspicion approach. The plan for testing during an outbreak should be very clear and spedific, focused on 'extra' strategic testing, including in those without symptoms (eg contacts), and repeat testing in individuals. The plans for the border should be very clear. The plan should include ongoing optimisation of access to testing, especially in highly socially connected urban populations and remote rural populations. Very clear and simple messaging to the public about what they should do, should be clear and consistent with the strategy at all times. The 1-page over-view diagram is a useful concept that could be continued. Similarly the 1-page overview of testing implementation is a useful document.

The new COVID-directorate see the surveillance and the testing team as operating (which are in charge of implementation) under the directorate, but have limited public health and epidemiological expertise and unclear accountabilities to the Director of Public health's team.	The Director of Public Health's team should play a significant leadership role in all aspects of surveillance and testing and the relationship with and accountabilities to and from the COVID directorate should be very clearly defined.
DHBs found the testing strategy too high level to inform their choices and planning adequately. It was not linked up enough to what happens operationally.	The testing plan should be revised in full consultation, including in an ongoing fashion, with those who operationalise it.
There are ongoing advances in testing options, some of which may enable very fast turnaround and more simplicity. Saliva testing should be fast tracked for use in New Zealand as an urgent priority to replace nasopharyngeal testing. These advances warrant strong capacity to monitor and implement testing initiatives in the Ministry of Health.	The government should ensure that the advice and expertise in New Zealand around new testing options is fit for purpose. In particular, specific consultation may be needed with those overseas who have successfully set up a high performing routine saliva test.
Specific port issues	
There were mixed messages around PPE and testing at the border, especially early on. These have improved.	Confirm that PPE issues have been resolved
There were mixed messages around how crew on ships could engage with doctors when needed – either by coming on shore or being visited on the ships	Confirm that standard procedures around crew engaging health care are in place and consistent across the country
There were mixed messages about shore leave, including port authorities being told off for not allowing crew to go on shore.	Confirm that standard procedures around crew coming on shore are in place and consistent across the country
The orders to ports of Auckland and Tauranga were not applied to other ports around the country	Public Health orders for ports need to be applied nationally
The statements about illness on ships that ships make is subject to risk of dishonesty.	The process whereby public health units make decisions on who is OK to enter should be reviewed for robustness.
With over 100 different parties that may go on board a ship, with many hundreds potentially going onto a ship, there are difficulties with accountability, as the ports authority has no direct contractual relationship with any of the parties.	
The ports of Auckland took it upon themselves to chase up trucking companies linked to the coolstore cases.	
A risk framework to who should be tested has not been finalised or applied. A risk based	A risk framework with respect to testing should continue to be finalised in proper consultation

approach to testing is being developed by the Ministry and advisors.	with stakeholders and applied to all individuals working at ports.
Ministry of Health orders tended to be knee-jerk decisions, without proper strategy or discussion. They were also not properly informed. For example, police inspected certain staff for PPE use, who were not required to use PPE, while the police themselves did not even wear masks during the process.	See other recommendations around orders.
Ports had variable and often insufficient input from DHBs on physical distancing, specific PPE needed for different roles, guidance on best practices and standard operating procedures, and how to approach testing fatigue. There have been issues with test result turnaround times, which are now largely resolved.	A key stakeholders group should be in place to guide all decisions at the ports, including MPI, police, worksafe, maritime NZ, DHB, Ministry of Health, etc.
Managed Isolation facilities	
Infection control practices have potential for improvement. Infection control audit is being rolled out, which has made a difference already. While we did not do a systematic inspection, in the Managed Isolation Facility we noticed several opportunities for improved infection control: - better monitoring of mingling - More mask wearing by staff - More separation of dirty linen from clean linen in all aspects of the laundry. - Cleaning of the plastic chairs that guests sit on in the testing room, between individual use. - Limits in smoking areas to one person at a time. While we did not do a systematic inspection, at the airport we noticed strong adherence to infection control measures, while we wondered if there are some areas for improvement: - considering that the health team are guaranteed to encounter travellers with COVID-19 regularly, we wondered whether their PPE gear is fit for purpose. In particular, whether plastic face visors should be used. - things like drinking fountains should be out of action and covered. - Employers of cleaners and other staff are responsible for their protection, meaning that the quality of practice across employed groups	Ongoing infection control optimisation should be adopted throughout the Managed isolation facilities and the airport and ports. This should include more standardisation of protective measures across employed groups, according to infection control principles. A culture of continual improvement is in place in some components of the border response, but should infiltrate into all components, including across all hotel staff. A review of standard operating procedures would be advisable. The practices of non-Air NZ airlines' staff in relation to NZ Ministry protocols should be audited. A review of the necessity of movement of staff between areas should be included.

is likely to be variable. Cleaners could be a particular focus given their frequent possible exposures. - There was an issue raised around whether the rigour that Air NZ are practicing with respect to their staff when in NZ or stay-over overseas, was being replicated by non-Air NZ airlines.	
At the jetpark, Pasifika guests identified that there was no one point of contact for them, placements were rushed and preparations around their moves there were poor.	The movement of people to Jetpark should be streamlined and a process put in place to assist with the implications for people and their households of such a move. A needs based approach should be in place, taking into account multiple generations affected, cost of transport to the facility, other health needs, schooling and employment issues.
Testing at the border	
Urgency of the evaluation and possible implementation of saliva testing. If saliva testing is introduced it would have far-reaching consequences for testing at the border, including with respect to the number able to be tested, testing compliance, and quality of life for the staff.	The evaluation of saliva testing to replace naso-pharyngeal testing is a matter of some urgency and should be accelerated.
The frequency of testing needed has been unclear at times	Epidemiologically, it is important to test those categorised as requiring testing, at least once a week. Once a fortnight is not frequent enough. It is better to test more frequently with a test that has slightly lower sensitivity, than to test less frequently with a test of higher sensitivity.
Timing of testing results	As identified in the contact tracing review, maintaining rapid turnaround times consistently during high testing volume periods, is crucial.
Pre-boarding testing was suggested by some as important to consider. It is being recommended in Hong Kong.	The possibility of mandatory pre-boarding testing should be reviewed.
It is clear that testing at the border benefits from a mixture of onsite testing and testing by General practitioners. There has been good progress on enabling onsite testing.	A mixture of onsite and offsite testing options should be maintained.
At times there has been a lack of clarity about who should be tested at the border	A risk based framework should be applied across the border to all individual workers in relation to need for testing or not.

For some staff, especially airline pilots and crew, the amount of testing that they are subjected to seems excessive and impinges on their quality of life. Air NZ has not opted to give these staff mandatory time off to accommodate this.	There should be ongoing discussion with Air NZ about the amount of testing that their pilots and air stewards are having every month and whether there should be more rostered paid time off to cope with this.
There appears to be scope for Air NZ in particular to be empowered to design their own testing regime and coordinate it within clear guidelines.	DHBs should be encouraged to provide a pathway whereby Air NZ can design their own testing regime and reporting within clear guidelines.
Standard operating procedures do vary by facility. Some of this is necessary, as facilities are not all the same. However the standards that they need to show they have met, should be specified. Some progress has already been made on this.	The standards that all facilities need to prove they have met, should be finalised. Standard operating procedures should be standardised where possible, across the facilities, while some will have to be adapted to fit with specific facilities.
The information systems are not adequate to provide robust data on the proportion of those who should be tested that are tested at the border. For example, we identified at the airport that those responsible for running testing are not sure that all those who are supposed to be tested, are actually being tested. Each employer appears to be responsible for making sure their staff are being tested, but the systems for achieving this appear to be separate, often manual, and not integrated with those of the health teams. It is not possible to have 100% testing as, for example, some people are on annual leave at any one time.	An information system is needed that enables robust data to be available on the proportion of those who should be tested that are tested. This needs to take into account issues identified by all the employers, any privacy issues, and the health system.
There have been issues with rigour around data recording and labelling with respect to tests of border workers. This led to significant delays and staff time to fix.	Ongoing checks of the quality of testing procedures and labelling at the border are needed.
Some testing platforms, such as GeneXpert, can turnaround RNA based testing in less than 2 hours. At some point there may be capacity within a testing platform to test a whole plane load on arrival, but this is not yet practical.	Ongoing monitoring of testing capability and capacity advances should be aligned to new possibilities for the testing approach at the border.
There was some discussion about the creation of a model to enable all providers of services to organise testing themselves, if they meet pre-determined criteria/accreditation.	Not sure if we should recommend this??
Testing strategy and case definition in the community	

Saliva testing, if introduced, would have far-reaching impact, including the number of tests possible per day, the type of staff required to do the test and even the possibility of self-testing. Some clinical oversight would still be required at testing facilities.	As per the section on testing at the border, testing in community would benefit from a high-performing saliva test.
At level 1, when a state of 'zero community transmission' is reached, testing in the community needs to be carefully thought through. The presence of an ongoing threat at the border, in the context of a policy of elimination, demands ongoing high testing rates in the community in New Zealand. The availability of a test with near-100% specificity makes ongoing testing in a community, that normally has zero cases, epidemiologically sound and important in the context of ongoing risk of incursion and an elimination approach. Ideally, all those with symptoms should be enabled to have a test in the most convenient manner. If there is a period of time where capacity is expected to be overloaded (possibly over winter), high level epidemiological expertise is needed to create the best approach to selecting who should be tested and public consultation/piloting may be needed.	The NZ COVID-19 testing strategy and case definition should be urgently revised to fit with the application of epidemiological principles in the context of an elimination approach and an ongoing threat at the border. This revision should include all aspects of the documentation and be peer reviewed by the whole of the epidemiology reference group linked to the TAG and a limited number of senior external peer reviewers (in New Zealand and/or overseas). Ideally, it should focus on all those with symptoms being tested in the community. Saliva testing and pooling should be a high priority to make this possible. In anticipation of a time, such as winter 2021, whereby testing capacity could be overwhelmed, a line of work should be set in place, engaging high level epidemiological thinking, to develop a strategy for selective sampling of those with symptoms. This could include, for example, developing a scale of symptoms according to specificity and yield, or some form of statistical random sampling for testing of those who call Healthline, along with testing more fully in populations at risk of a major outbreak and high mortality. The approach should be subject to wide consultation, especially with respect to public messaging and buy-in.
The changes to the COVID-19 testing criteria and case definition in June led to a significant reduction in the number of tests being done in the community, while the latest outbreak was evolving undetected (it probably started in July). The first individual to present with symptoms to the health system in the outbreak in South Auckland, was not tested despite two visits to the doctor. The person's spouse was subsequently tested, because of having one of the high index of suspicion criteria (diabetes).	The approach to testing in the community should focus on the early detection of an outbreak and, as stated above, all those who have symptoms across the country . Ongoing optimisation of access to testing for populations with relatively less access should be undertaken. This includes mobile units and strategic placement of CBACs in consultation with providers and stakeholders.

This outbreak was detected much later than it could have been.	Feeding into this approach should be the availability of data regarding the locations where border workers tend to live and data describing measles hotspots from the previous year. These can be used to guide the location of testing facilities.
Where a treatment is available for certain individuals and it is most beneficial when given early, such individuals should be prioritised for testing. However, there is no clear evidence that early treatment of those who are unwell with COVID-19, as opposed to normal hospital care in response to deterioration, are particularly beneficial to any group with increased risk of death. There are however sub-populations at increased risk of rapidly evolving outbreaks and facilities with large numbers of vulnerable people, such as aged-care facilities.	The High index of suspicion concept is not justified for COVID-19. However, the testing plan could include regular asymptomatic testing in workers or residents in a resthome, hospital workers, hospital admissions, and caregivers of vulnerable people.
The new testing strategy and case definition were not peer reviewed as extensively as they could have been. They were not reviewed by the whole of the epidemiology reference group to the TAG, or by senior external epidemiologists. The language used in the testing criteria and case definition documentation is confusing and messy in places. The case definition changed several times over July, August and September. On several occasions the change was not practical or reasonable, while the intention was understandable.	Any changes to the testing plan and case definition, including during an outbreak, should include the Director of Public health's team and be subject to the following: • Rapid peer review by the epidemiology reference group and possible other external experts • Consultation in relation to the ability to operationalise the change • Formal adjustment of all relevant documentation • A proper process to ensure all messaging and Healthline guidance is adjusted in real-time and is appropriate.
The implementation of changing case definitions was, at times, suboptimal. For example, there are reliable reports that Healthline was, at least at times, advising people with symptoms that they didn't need a test when the latest case definition was that all those with symptoms should get a test. There was a wrong communication around asymptomatic testing over a whole weekend in Auckland, inconveniencing and confusing many thousands of people. And the advice for asymptomatic testing, if requested by the patient, across the whole country, was simply	Changes to the definitions that may occur under different scenarios should be anticipated and the documentation around these should be prepared in advance, along with full peer review and the other consultations noted above. These changes will then be able to be implemented as needed. Changes should be signalled as early as possible to those who have to implement them, enabling optimal set up and communication with the public about what is going to happen in their area.

not sensible. The lack of notice of an order with respect to placement of a mobile unit was problematic – this is not ideal for achieving good uptake by the community.	Communication with the public about testing should be revised and optimised, aiming for everyone to understand clearly whether they should be seeking a test and how to go about this in the easiest way possible.
General testing issues	
There has not been a policy to systematically catalogue the genome sequences of all cases of COVID-19 in NZ.	Whole genome sequencing should be mandatory for all diagnosed COVID-19 cases and the results should be systematically and routinely catalogued, with the data held at ESR. This will enable completeness of information and no delays in an outbreak situation.
There is no proper strategy for serological testing	A plan for serological testing should be created, for between outbreaks and during outbreaks.
There have been inconsistencies about how DHBs applied the testing criteria.	There should be consistency across the country in how DHBs apply testing criteria
There have been changes over time as to how DHBs procured and reimbursed for testing. Providers sometimes were asked to stand up a testing facility without clarity on how payment would work. Providers could experience delays of up to 8 weeks for payment. Some providers were asked to pay money to a DHB if they had organised a test that the DHB regarded as not fitting the DHB criteria for reimbursement. On the other side of the coin, there were opportunities to 'exploit' the system financially, which a few providers did take advantage of.	The procurement and reimbursement models now put in place by DHBs should be audited and they should be consistent across the country. The process by which DHBs investigate and expose exploitation of the systems should be reviewed and optimised.
There has been good engagement of research/university lab staff during the response. However, they are not likely to be continually available to step up at short notice in this way sustainably for 2 years	A standing 'army' of lab staff should be resourced, if possible, in consulation with the routine labs, to eliminate the risk from loss of availability of research/university lab people for testing.
Scaling up of demand has not always been matched by a clearly articulated plan/approach	The testing plan should include more specifics about who scale up should occur and under what scenarios.
When samples were sent to Christchurch, there were significant delays in receiving results back, mainly due to a disconnect between information systems.	The connectivity between laboratory reporting systems across regions in relation to test results should be reviewed and optimised.
Pooling of tests	New Zealand has achieved high testing capacity with pooling. There are reports overseas that pooling could be in greater numbers than the 4-5 samples per test that are currently included. This should be actively explored as it enables very high volumes of samples to be taken.

Elimination Strategy issues	
There is some catch-up required from the elimination strategy published in April. These include identifying operational gaps, a harm mitigation plan, an equity analysis, a risk analysis around each control measure, and definitions of containment boundaries.	The uncompleted work envisaged in the April strategy should be completed, taking into account any issues that have arisen since then. This may need specific staff resourcing and allocation.
Issues specifically arising from Māori engagement	
There has at times been limited consultation around various aspects of the COVID response	Co-design and co-governance should be applied, wherever possible across the response, especially with respect to any aspect that affects Māori.
There was a period where Māori mobile units were tasked with helping with testing at the Managed isolation facilities, diverting them away from their primary target population. This has been rectified and the units are largely now focused where they should be.	Ongoing monitoring should have a focus on the placement of Māori mobile units to make sure they are operating in the right place in consultation with Māori leadership.
The location of testing facilities has not always been decided on the basis of proper consultation.	Proper consultation around the placement of testing facilities should occur at all times.
The funding and decision-making models have not always enabled fast-activation of mobile testing, nor have the expectations been reasonable – for example there has been expectation of 7-day a week service and 9am to 6pm hours.	The process around activating mobile testing units should be reviewed and optimised. Māori provider capacity should be enhanced to meet the need, in consultation. The expectations of the units should be reasonable.
Models of Māori health provision have paved the way and are relevant to other under-served populations in New Zealand.	Māori health providers could have a bigger leadership role in mobile health provision in particular across New Zealand.
There have been challenges with keeping adequate numbers of Māori staff by providers	The funding model around provision of testing through Māori health providers should actively take into account the need to maintain staffing.
Māori have not always been represented around key decision-making tables	Māori representation around all key decision-making tables should be ensured.
Issues specifically arising from Pasifika engagement	
There has been strengthening of the Pacific staff numbers (n=3) in the ARPHS and in other units around the country, at least in relation to contact tracing. However, there is a strong reliance on Pacific Health Providers to step up at short notice and on short term contracts, and sometimes before any new contract is	The mechanism of provision of Pasifika COVID-19 services should be reviewed in consultation, including maintenance of a steady provider workforce over the remainder of the pandemic, with surge capacity, rather than just to rely solely on surge capacity in providers (ie. with no support in between times).

created. Three Pasifika mobile testing units have been established.	
The funding for provision of Pacific services should take into account the nature of Pacific households – funding that anticipates three calls to the household and 4 human contacts, should not be applied to Pacific households which may require many more calls and many more human contacts.	Household based funding models should match Pacific household realities.
Since 90% of Pasifika people are linked to a church, there are opportunities to engage churches in the COVID-19 response and to focus more testing activities on weekends.	Engagement of Pacific churches in the COVID-19 response should be optimised.
Mobile testing units are seen as particularly effective for Pasifika people.	The availability of mobile testing units for Pasifika communities should be optimised.
The response for Pasifika has included a broader approach to health need, including provision of food and utilities to those affected.	The broader approach to health need should be embraced, including diversification of activities across public health interventions.
Many different players have been involved Pacific comms. The government approach is disjointed. Families do not want 3 different types of people ringing them throughout the day.	A more comprehensive integrated approach to communication with Pasifika communities around COVID-19 testing should be established.
At times there have been inadequate staff to address health literacy issues for Pasifika people	Staff involved in contact with Pasifika people should be Pasifika people themselves as much as possible, or be actively consulting Pasifika colleagues.
Much of the work done for the DHBs and Ministry of Health has been unpaid.	There should be active review of work done for DHBs and the Ministry of Health to make sure it is appropriately paid for.