Surveillance and Testing Plan
Coronavirus Disease 2019 (COVID-19)

DECEMBER 2020

Te Marae Ora
Cook Islands Ministry of Health

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1 Introduction

A structured and fit for purpose surveillance and testing regime is required to ensure the Cook Islands response to Coronavirus Disease 2019 (COVID-19), avoids amplifying health, social and economic disparities, and leads to equitable population health outcomes.

Since 22 January 2020, Te Marae Ora Cook Islands Ministry of Health (Te Marae Ora) has led the national health response against COVID-19. These have included border restrictions, the decentralisation of health services, and the strengthening of health systems and services in community settings. While the Cook Islands is one of only a few countries that have not reported a COVID-19 case, beyond the Cook Islands' borders, COVID-19 is accelerating worldwide with increases in cases and deaths. Access to valid and timely surveillance data (sources: Annex 1) will guide decisions regarding the prioritisation of resources to mitigate the impact of COVID-19 on the Cook Islands population.

2 Purpose

This Plan outlines Te Marae Ora Cook Islands Ministry of Health's (Te Marae Ora) approach to surveillance and testing for COVID-19 as a critical component of Te Marae Ora's Containment and Mitigation Plan, to keep out, control, and/or eliminate the virus in the Cook Islands.

3 Legislative Framework

Several legislative tools guide the national response:

- Public Health Act 2004 - COVID-19 notifiable and dangerous condition (Feb 2020)
- International Health Regulations 2005 (IHR)
- Ministry of Health Act 2013
- Ministry of Health (IHR Regulations Compliance) Regulations 2014
- COVID-19 Act 2020
- Disaster Risk Management Act 2007

4 COVID-19 Case definition

4.1 Clinical criteria

ANY acute respiratory infection with **at least one** of the following symptoms:
new or worsening cough, sore throat, shortness of breath, coryza[1], anosmia[2]
with or without fever[3]

4.2 Higher Index of Suspicion (HIS) criteria

Within 14 days prior to illness onset have:

- had contact with a *confirmed* or *probable* case
- had international travel
- had direct contact with a person who has travelled overseas (e.g. Customs and Immigration staff, staff at quarantine/isolation facilities)
- worked on an international aircraft or shipping vessel
- cleaned at an international airport or maritime port in areas/conveniences visited by international arrivals,

[1] Coryza - head cold e.g. runny nose, sneezing, post-nasal drip
[2] Anosmia – loss of sense of smell
[3] Consistent with New Zealand Ministry of Health definition

- exited a Supervised Quarantine facility (excluding recovered cases), or
- any other criteria requested by the Secretary of Health

Less typical symptoms

Some people may present with less typical symptoms such as only: fever, diarrhoea, headache, myalgia, nausea/vomiting, or confusion/irritability. If there is not another likely diagnosis, and they meet the HIS criteria then they should be tested.

4.3 Laboratory criteria

- **Laboratory definitive evidence requires at least one of the following:**
  - detection of SARS-CoV-2 from a clinical specimen by NAAT (PCR) and confirmed by NAAT on a second specific genomic target
  - detection of coronavirus from a clinical specimen using pan-coronavirus NAAT (PCR) and confirmation as SARS-CoV-2 by sequencing
  - significant rise in IgG antibody level to SARS-CoV-2 between paired sera (when serological testing becomes available).
- **Laboratory suggestive evidence requires** detection of coronavirus from a clinical specimen using pan-coronavirus NAAT (PCR).
- **Note:** If all laboratory tests are negative, other respiratory pathogens should be excluded

4.4 Case and Contact classification

4.4.1 Under investigation case

A case that has been notified where information is not yet available to classify it as suspect, *confirmed*, *probable* or not a case.

4.4.2 Suspected case

The person is classified as a suspected case, pending further investigation, if they satisfy both the clinical and epidemiological criteria.

4.4.3 Probable case

- A close contact of a confirmed case that has a high exposure history, meets the clinical criteria and for whom testing cannot be performed, or
- A close contact of a confirmed case that has a high exposure history, meets the clinical criteria, and has a negative PCR result but it has been more than 7 days since symptom onset before their first negative PCR test was taken.

4.4.4 Confirmed case

A case that has laboratory definitive evidence. Laboratory definitive evidence requires at least one of the following:

- detection of SARS-CoV-2 from a clinical specimen using a validated NAAT (PCR)
- detection of coronavirus from a clinical specimen using pan-coronavirus NAAT (PCR) and confirmation as SARS-CoV-2 by sequencing
- significant rise in IgG antibody level to SARS-CoV-2 between paired sera (when serological testing becomes available).

4.4.5 Recovered case

Recovered cases are people who had the virus, where at least 10 days have passed since their symptoms started and they have not had symptoms for 72 hours, and they have been cleared by the health professional responsible for their monitoring.

4.4.6 Not a case

An *under investigation* case who has a negative test and has been assessed as not a case.

4.4.7 Close Contact[4]

Close contacts are those that are likely to be at a higher risk of being infected.

'Close contact' is defined as any person with the following exposure to a *confirmed* or *probable* case during the case's infectious period[5][6], without appropriate personal protective equipment:

- direct contact with the body fluids or the laboratory specimens of a case
- presence in the same room in a health care setting when an aerosol-generating procedure is undertaken on a case
- living in the same household or household-like setting (e.g. shared section in a hostel) with a case
- face-to-face contact in any setting within two metres of a case for 15 minutes or more
- having been in a closed environment (e.g. a classroom, hospital waiting room, or conveyance other than aircraft) within 2 metres of a case for 15 minutes or more; or in a higher-risk closed environment for 15 minutes or more as determined by the Secretary of Health (SOH)*.
- having been seated on an aircraft within 2 metres of a case (for economy class this would mean 2 seats in any direction including seats across the aisle, other classes would require further assessment)
- aircraft crew exposed to a case (a risk assessment conducted by the airline is required to identify which crew should be managed as close contacts).

*The SOH will determine whether an environment is higher-risk. Considerations include the nature of the gathering, the level of contact between individuals and the ability to observe physical distancing/hygiene measures.

4.4.8 Casual contacts

Any person who has had contact with a person while they were infectious with COVID-19, but does not meet the criteria for a close contact.

5 Establishing a comprehensive surveillance and testing regime

The World Health Organization (WHO) states that the primary aim of COVID-19 surveillance is to limit the spread of disease, enable public health authorities to manage risks, and thereby enable economic and social activity to resume safely. This will require scaling up surveillance capacity and using digital technology for rapid reporting, data management and analysis. Establishing a comprehensive surveillance system will enable Te Marae Ora to rapidly detect, contain and mitigate new cases and clusters of cases before widespread transmission occurs. Testing regimes should also be integrated with contact tracing and community engagement,

Foundations for establishing a comprehensive surveillance and testing regime include:

- Adapting and strengthening existing surveillance systems
- Strengthening laboratory and testing capacity
- Early detection and notification of suspected cases

[4] Consistent with New Zealand Ministry of Health definition

[5] The infectious period is considered to be two days before and 14 days after onset of symptoms.

[6] For confirmed asymptomatic cases, the period of contact is 2 days before through to 14 days after the date on which the sample was taken which led to confirmation.

- Contact tracing of close contacts of confirmed cases combined with quarantine and testing
- Containing and mitigating outbreaks among vulnerable groups and high risk settings
- Implementing immediate reporting.

5.1 Key components of a national COVID-19 surveillance regime

WHO outlines the key components of a national COVID-19 surveillance regime (Table 6.1)

Table 5-1: Key components of the national COVID-19 surveillance regime

Key components	Te Marae Ora action	Training	Readiness
Establish a dedicated phone for EBS that is reachable and staffed/monitored 24 hours a day, seven days a week by a trained individual	ESR and on-call Health Protection Officer		
Communicate this number broadly through public communications and other targeted channels	Public Health Protocol contact numbers		
For at-risk groups, e.g. international travelers. Toll-free numbers are ideal to facilitate reporting	0800 numbers On-call PH Doctor		
Reinforce existing ILI, SARI surveillance as part of the PSSS	Public Health Protocol		
Reinforce and report any unusual pneumonias via EBS – including immediate notification of any unusual disease patterns (cluster of cases, deaths).	Public Health Protocol Clinical guidelines		
Ensure health workers understand and know how to apply case definitions and to report immediately any suspected cases	Public Health Protocol		
Establish and train rapid response teams (RRT) capable of immediate isolation/quarantine, infection control and case management	Containment and Management Plan		
Conduct contact tracing focused on household members of cases and community contacts	Public Health Protocol		
Integrate surveillance analysis and risk assessments into decision-making	Public Health Protocol Surveillance and Testing Plan		

5.2 Cook Islands surveillance system

With COVID-19 a notifiable disease, surveillance systems were adapted early to enable he detection of potential cases and/or clusters in the Cook Islands. This system allowed for progressive and enhanced targeting and expansion of case investigation and detection to facilitate access to people with acute respiratory illness and vulnerable groups. Information from this system identifies key demographic characteristics, illness severity, and risk factors for disease, sources of infection and how the disease is spreading.

The Cook Islands COVID-19 surveillance system is multi-sourced and population-based to ensure there is sufficient canvasing and representation of the general population in particular those who are vulnerable. This extends beyond securing population numbers by age and sex, and includes the geographical spread of the population and positioning of health services in the community.

A range of surveillance systems are required to respond to the COVID-19 threat, including: case notification, contact tracing, syndromic and sentinel surveillance, cluster investigations, mortality surveillance and serosurveillance. The Event Surveillance and Response (ESR) unit

is established within Te Marae Ora to collect surveillance data, including case notifications, conduct routine and enhanced surveillance, and produce reports.

Visibility of the population and the health system improves 'line of sight', and lifts the ability of the system to support rapid response containment and mitigation strategies to COVID-19. Table 6.2 outlines how surveillance systems can be combined across various sites.

Table 5-2: National surveillance system and surveillance sites

Surveillance system	Surveillance sites					
	Community	Primary care sites	Hospital	Sentinel ARI, ILI, and SARI sites	Closed settings*	Health care-associated infection
Immediate case notification <24hrs	✓	✓	✓	✓	✓	✓
Contact tracing	✓				✓	✓
Syndromic sentinel surveillance		✓	✓	✓		
Cluster investigations	✓	✓	✓		✓	✓
Mortality surveillance	✓		✓		✓	✓
Serosurveillance	✓		✓		✓	
NZ MIF testing surveillance					✓	

* Including but not limited to long-term living facilities, prisons and hostels

5.3 Surveillance sites

5.3.1 Community-based surveillance

Community-based surveillance involves active community participation in detecting, reporting, responding to and monitoring COVID-19 events in the community. Community-based health care workers and Puna leads can support early detection and reporting of any person exhibiting the following:

1. Fever, dry cough and difficulty breathing OR
2. Unusual cluster of illnesses or deaths in a community

5.3.2 Primary-care based surveillance

Surveillance in primary care settings is essential to detect potential cases and clusters in the community. Patients presenting to primary care clinics with ILI symptoms should be tested for influenza (and COVID-19) when required.

5.3.3 Hospital-based surveillance

Patients with SARI, probable or confirmed COVID-19 admitted to hospitals should be notified to public health within 24 hours. Minimum essential data from hospital settings should include:

- Age, gender, place of residence
- Date of illness onset, date of sample collection, date of admission
- Type of laboratory test and test result
- If the case is a health care worker or not
- Severity of patient at the time of reporting (admitted and treated with ventilation or requires intensive care unit care)
- Outcome of patient after illness (date of discharge or death).

5.3.4 Syndromic, sentinel and event-based surveillance

This system includes surveillance of patients presenting with the following syndromes:

- Influenza like illness (ILI) in the community; and
- Severe Acute Respiratory Infection (SARI) in the hospital

This supports the early detection of emerging COVID-19 cases in the Cook Islands.

Enhanced syndromic surveillance and event based surveillance (EBS) will enable early detection of potential ILI outbreaks to increase the sensitivity of ILI surveillance. Patients meeting the case definition for ILI may be required to receive testing for influenza, and COVID-19 as required.

Monitoring Healthline calls for ILI will also enable Te Marae Ora to monitor community trends. However, there are limitations with using the Healthline as an early warning system as these can be subject to bias (e.g. demography-related, COVID-19 response related, media influence on health seeking behaviours etc.).

Sentinel SARI surveillance may continue through Rarotonga Hospital.

5.3.5 Closed-settings surveillance

Enhanced surveillance for high-risk or vulnerable groups in closed settings such as prisons, is important to ensure prompt detection of cases and clusters faster than through primary care and hospital surveillance. Enhanced surveillance activities include:

- Active case finding through daily screening for signs and symptoms
- Daily temperature monitoring
- Daily zero reporting

An additional setting includes the New Zealand managed isolation facility, for those arriving from the Cook Islands.

5.3.6 Reporting surveillance data

Reporting of surveillance data is a critical part not only to inform national action but also for onwards reporting to other stakeholder agencies such as WHO or SPC (Pacific Public Health Surveillance Network). Regular situation reports are also important to provide a global and regional view of the COVID-19 state in other parts of the world. (Annex 4)

Case-based reporting

- Any suspected, probable and confirmed cases of COVID-19 must be reported immediately to the Public Health doctor and national IHR focal point for further investigation.
- Case-based data reporting is recommended until it is not feasible due to high number of cases when you should switch to daily aggregated data.

Daily aggregated data

It should include the following information:

- Number of new confirmed cases
- Number of new probable cases
- Number of new deaths due to COVID-19 disease
- Number of new COVID-19 cases that were hospitalised
- Number of new COVID-19 cases referred for mechanical ventilation or extracorporeal membrane oxygenation or admitted to the intensive care unit

- Number of new cases and new deaths by age group in years using the groups 0 to <2, 2 to <5, 5 to <15, 15 to <50, 50 to <65 and >65 years, or similar
- Cumulative sex ratios of confirmed cases and deaths
- Total number of laboratory tests conducted
- Total number of tests that were positive for the virus that causes COVID-19; and the number of contacts being followed up and the number of newly identified contacts
- Address in the site/settlement and the site name.

5.4 Surveillance approaches

5.4.1 Case notification

COVID-19 is a notifiable and dangerous condition under the Public Health Act. An effective and efficient case notification system allows for early detection of a potential COVID-19 outbreak in the Cook Islands. This will require clinicians to support official and timely reporting of disease occurrence (within 24 hours) to generate appropriate public health action.

5.4.2 Contact tracing

Surveillance of contacts of confirmed cases is critical to control efforts. Rapid identification, evaluation and quarantine of asymptomatic contacts and prompt isolation of those found to be ill can prevent further disease transmission.

The Cook Islands established a voluntary contact tracing programme, CookSafe to help track movements of people. This programme relies on people registering and receiving a unique QR code which they can scan at registered venues. Personal information is stored in a secure centralised database which only health officials have access to. This will not replace manual contact tracing efforts but it will inform surveillance and testing regimes for close contacts of confirmed cases. Blue tooth capability is being explored.

5.4.3 Syndromic and sentinel surveillance

Routine syndromic surveillance for other infectious diseases, especially acute respiratory illnesses (ARI) or diseases should be maintained for influenza-like illness (ILI) and severe acute respiratory infection (SARI). (Annex 2) Syndromic surveillance collects data on clinical features of people without a diagnosis. Monitoring patients visiting primary care sites (e.g. Community Health Clinics) with ILI symptoms or admitted to hospital due to SARI can be precursor of a potential case or cluster of cases of COVID-19. As a result, anyone who meets the case definition for ILI and SARI should be tested for influenza and SARS-CoV-2.

Sentinel surveillance involves using selected health clinics to collect data on the prevalence of the disease in the population, particularly among vulnerable groups and high risk settings. Sentinel surveillance requires actively testing for infections among symptomatic and asymptomatic persons. Effective testing regimes should focus on testing people with a high likelihood of infection and high risk settings such as health clinics and prisons. Patients admitted to hospital with SARI should be notified to public health within 24 hours.

5.4.4 Cluster investigations

Clusters (defined as two or more linked COVID-19 cases or single case in high risk settings such as prison) may be identified early through surveillance systems. Enhanced surveillance of vulnerable groups or high risk settings such as prisons and churches is recommended. Community-based surveillance is also essential to detect cases and clusters in the community. Community Health Workers and members of local Puna on Rarotonga and the Pa Enua can support the early detection and reporting of persons in the community who may be unwell or present to Community Health Clinics in each Puna with ILI symptoms.

5.4.5 Mortality surveillance

Mortality surveillance data provides essential information on the outbreak response and impact. This involves obtaining data on the number of deaths due to COVID-19 (age, sex, location) in hospitals and community settings which should be reported daily within 24 hours. Deaths due to non-specific respiratory causes (un-specified pneumonia) must also be monitored.

A medical death certificate for COVID-19 deaths should be issued as described in the International guidelines for certification and classification (coding) of COVID-19 as cause of death[7] and reported to the Statistics Office as per usual process.

5.4.6 Serosurveillance

Serosurveillance is important to identify what proportion of the population has COVID-19 antibodies and to identify hotspots and high risk groups. This information enables Te Marae Ora to evaluate the effectiveness of the outbreak response and targeted steps to prevent further spread of COVID-19. Serosurveillance can also help determine priority groups for vaccination when vaccine supplies become available. This surveillance system also helps capture asymptomatic, mild cases, those that do not present to health clinics or are not tested when ill. With rollout of the COVID-19 vaccine, serosurveillance may be useful to determine an immune response.

5.4.7 New Zealand managed isolation facility surveillance

Cook Islands surveillance strategies have extended to New Zealand since New Zealand introduced testing (Day 3 and Day 11) of all arriving passengers including those arriving from the Cook Islands. Testing of arriving Cook Islands residents in the New Zealand managed isolation facilities have been negative.

5.4.8 Triggers for investigation

- Clusters* of cases of unexplained acute lower respiratory illness;
- Severe, unexplained lower respiratory illness occurring in a health care worker who provides care for patients with respiratory disease;
- Changes in the epidemiology or mortality associated with the occurrence of ILI/URTI or LRTI for example, a change in the age distribution of severe respiratory illness, an increase in deaths observed from respiratory illness or an increase in the occurrence of severe respiratory illness in previously healthy adults or adolescents;
- Cases beyond the alert threshold and beyond seasonality of the disease;
- Persistent changes noted in treatment response or outcome of severe lower respiratory illness;
- Suspected COVID-19 case

**A cluster is defined as two or more persons presenting with manifestations of unexplained acute lower respiratory illness with fever (>38°C) (or who died of an unexplained respiratory illness) are detected with onset of illness in a two-week period and in the same geographical area and/or are epidemiologically linked.*

<u>Alert threshold</u>

The alert threshold for URTI and LRTI occurs when reported cases are 1.5 times the average for the previous 3 weeks. These trends should be monitored on a weekly basis to determine if the incidence rate is beyond the alert threshold.

[7] https://www.who.int/classifications/icd/Guidelines_Cause_of_Death_COVID-19.pdf?ua=1

6 COVID-19 Testing

Ongoing, population-based surveillance of COVID-19 is essential throughout all phases of the pandemic in order to inform prevention and mitigation strategies. Respiratory symptoms for COVID-19 cases are often indistinguishable from those for influenza and other respiratory viruses. Therefore, where there is ongoing widespread transmission of respiratory infections across a country or region, monitoring the number of consultations involving people with COVID-19 symptoms, ILI and SARI is critical in order to identify all possible cases for testing. The proportion of possible cases with COVID-19 compatible symptoms, ILI or SARI testing positive for SARS-CoV-2 or influenza gives an indication of the positive predictive value of the syndrome for these infections. It might not be possible to test all specimens from primary care patients with respiratory symptoms

Elements of a comprehensive testing regime include access to testing, supply and logistics. Sustainable testing strategies for COVID-19 helps mitigate its impact on vulnerable populations and the health system, while ensuring the society and economy can continue to function. Testing strategies should be flexible and rapidly adapt to change, depending on local epidemiology, transmission, population dynamics and resources.

- Monitor SARS-CoV-2 transmission rates and severity
- Mitigate the impact of COVID-19 in health and community settings
- Detect clusters or outbreaks in specific settings
- Maintain sustained control and mitigation of COVID-19

6.1 Laboratory testing data surveillance

Laboratory surveillance with in-country molecular (RT- PCR) testing capabilities for COVID-19 will be available by January 2021. Until then, specimens will continue to be sent to Auckland Hospital LabPlus (or ESR in New Zealand) as required. There are limited supplies of GeneXpert cartridges in-country.

Specimens (nasopharyngeal and oropharyngeal) are collected in accordance with national protocols, and require appropriate use of personal protective equipment by health care workers, and infection prevention protocols are followed. Tests using saliva specimens are being used in some countries.

6.2 Testing strategies

- All people with COVID-19 symptoms should be tested as soon as possible after symptom onset. (Annex 3) This requires easy access to testing for all. Test turnaround time should be minimised, people testing positive should be placed in isolation and timely contact tracing must be carried out, to ensure all close contacts are tested, irrespective of symptoms.
- All patients with acute respiratory symptoms in hospitals and other health settings, and all specimens from sentinel primary care surveillance should be tested for both SARS-CoV-2 and influenza to monitor incidence and trends over time.
- Health care and high risk settings (e.g. border or frontline workers) require intensive testing when there is documented community transmission. Periodic and comprehensive testing of all staff and residents/patients is recommended to prevent nosocomial (originating in hospital) transmission. Furthermore, all patients/residents should be tested upon or immediately prior to admission.
- Clusters or outbreaks may occur in certain settings, such as workplaces, educational facilities, and prisons. Testing should be in place for rapid detection and control to

protect the relevant populations in these settings and the community from amplified transmission.

- Countries experiencing high SARS-CoV-2 transmission in a local community should consider testing the whole population of the affected area. This would enable identification of infectious COVID-19 cases and allow for their prompt isolation to interrupt chains of transmission. Depending on the epidemiological situation, size and population density of the affected area, such an approach could be less disruptive for society than having to introduce and ensure compliance with more stringent public health measures.
- To prevent re-introduction, countries that have achieved sustained control of SARS-CoV-2 circulation, in addition to quarantine/isolation measures, consider targeted testing and follow up of individuals coming from other areas within the same country with cases, including those from countries that have not yet achieved sustained control of the virus.

6.3 Testing priority in case of limited resources

In situations where testing is limited and the number of cases exceed testing capacity, the following groups should be a priority:

- Health care workers visiting patients in order to reduce risk of transmission to patients and impact on the health care worker.
- Elderly people and those with underlying medical conditions e.g. cancer, heart failure, diabetes, asthma
- Hospitalised patients with SARI

6.4 COVID-19 free and testing strategies with limited resources

With the Cook Islands a COVID-19 free zone since 16 April 2020, in-country testing capability limited to a small number of geneXpert cartridges, a range of testing strategies have been undertaken mostly focussed on protecting the Cook Islands border.

A range of border restrictions and testing regimes have been implemented, these being dependent on disease transmission patterns in New Zealand. The ongoing COVID-19 incursions at the New Zealand border reflects widespread community transmission in other parts of the world. This remains a serious concern for the Cook Islands given quarantine-free travel for returning Cook Islanders and permit holders to the Cook Islands since 31 October 2020.

Surveillance at the borders (air/sea) include:

- Monitoring the numbers of arrivals and their COVID-19 status (no infection, new infection and possibly past infection)
- Detecting and monitoring cases among those who are at risk of border exposure because of their employment (such as seaport/airport staff and airline crew)
- Monitoring the timing and results of any COVID-19 tests, and any cases and contacts.

The current testing strategy is for all arrivals from Auckland, undertaking a pre-departure test within 96 ours fo the flight departing Auckland and then another test undertaken 1 week after arrival – the test is transported to New Zealand. All passengers departing Rarotonga for the Pa Enua are required to complete departure health declarations and a temperature check. Passengers travelling to the Northern group islands and Palmerston island also require a test at least 24 hours before the flight departs Rarotonga.

7 Contact tracing

The monitoring of close and casual contacts can be found in the Te Marae Ora Public Health Protocol for COVID-19. Other factors to consider are:

- Information regarding contacts will be collected and recorded in a systematic way on Go.data (including travel history, signs and symptoms, potential places of exposure).
- Contacts will be monitored by public health officials for 14 days.
- Monitoring will be done daily where possible via phone calls or through household visits to check for symptoms.
- Contacts will be instructed to call the Healthline if they feel unwell.
- Contacts will be instructed to limit travel and movements, and arrangements will be made to support individuals in quarantine (home/facility).
- Contacts who become ill and meet the case definition will be treated as a probable case and will be tested and isolated.
- New suspected/confirmed cases will be interviewed to identify contacts.
- CookSafe will be used to assist in determining other contacts. Blue tooth technology may also be available shortly.

8 Transmission scenarios and surveillance priorities and response measures

Surveillance priorities will shift according to disease transmission patterns. Five transmission scenarios highlight the focus and aim of the surveillance system in aiding the respective response measures (Table 9.1).

Table 8-1: Transmission scenarios and response measures

Transmission scenarios	Response measures
NO CASES	• Implement enhanced surveillance at Point of Entry (POE) • Prepare measures to support self/supervised quarantine • Test selected ILI/SARI samples to identify undetected virus circulation • Test hospital admissions with respiratory presentations • Educate the population on outbreak control measures, including contact tracing, quarantine, physical distancing
SPORADIC CASES	• Intensify surveillance at POE • Conduct contact tracing • Test all ILI/SARI cases from sentinel surveillance systems • Test hospital admissions with respiratory presentations • Test all contacts • Conduct rigorous case investigation to identify and quarantine close contacts
CLUSTERS OF CASES	• Intensify contact tracing and adherence to quarantine/isolation • Test all contacts • If limited resourcing, intensify focus on rapid detection, diagnosis and isolation of cases • Test hospital admissions with respiratory presentations • Expand testing to all SARI cases around each cluster to identify any undetected transmission chains
COMMUNITY TRANSMISSION	• Focus contact tracing on selected outbreaks • Use syndromic case definition to count cases • Test hospital admissions with respiratory presentations • Test to investigate unusual or specific clusters • Test ILI/SARI specimens as a marker of COVID-19 burden
POST PEAK, ADDITIONAL WAVES	• Intensify surveillance at POE • Conduct contact tracing • Test selected ILI/SARI samples to identify undetected virus circulation • Test hospital admissions with respiratory presentations • Test all contacts • Conduct rigorous case investigation to identify and quarantine close contacts

WHO provides a framework highlighting surveillance objectives, activities and reporting based on transmission scenarios (Table 9.2)

Table 8-2: Transmission scenarios of COVID-19 and surveillance activities

Transmission Scenario	NO CASES	SPORADIC CASES	CLUSTERS OF CASES	COMMUNITY TRANSMISSION	POST PEAK ADDITIONAL WAVES
Definition	No reported cases	One or more cases, imported (+/- at the border) or locally detected	Cases clustered in time, geographic location and/or common exposures	Larger outbreaks of local transmission with no link to transmission chains, or sentinel laboratory surveillance or multiple unrelated clusters	Reduction in cases but anticipating resurgence as control measures relax, new transmission chains, new cases/waves after several months
Aim	Rapidly identify, investigate and isolate imported cases and clusters and conduct rapid contact tracing and quarantine	Rapidly identify, investigate and isolate imported cases and clusters and conduct rapid contact tracing and quarantine	Rapidly identify, investigate and isolate imported cases and clusters and conduct rapid contact tracing and quarantine	Minimise morbidity and mortality, monitor disease trends, virus spread and transmission, monitor impact on health system	Rapidly identify, investigate and isolate new or imported cases and clusters and conduct rapid contact tracing and quarantine
Surveillance objectives	Detection of first case(s)	Early detection of clusters	Early detection of transmission in community	Monitor epidemiological trends, disease severity, health system impact	Early detection of resurgence/reintroduction of case(s) and clusters
Focus of efforts	**Containment**	**Containment**	**Containment**	**Mitigation**	**Containment**
Surveillance system components	ILI, SARI, EBS Sentinel populations Active surv. Lab surv.	ILI, SARI, EBS Sentinel populations Active surv. Lab surv.	ILI, SARI, EBS Sentinel populations Active surv. Lab surv.	ILI, SARI, IBS case and mortality Lab surv.	ILI, SARI, EBS Sentinel populations Lab surv.
Specific groups under surveillance	Travellers, Frontline staff: Health, Border, hospitality, Airline/Maritime	Case contacts Sentinel populations	Case contacts Sentinel populations	Vulnerable and Elderly Health care workers	Travellers, Case contacts Sentinel populations Vulnerable and Elderly
Data sources	PSSS, Healthline POE screening Patient records Media/Social media	PSSS, Healthline POE screening Patient records Media/Social media	PSSS, Healthline POE screening Absenteeism Patient records	PSSS, Healthline Hospital and Lab data Mortality statistics	PSSS, Healthline POE screening Hospital and Lab data Mortality statistics Absenteeism
Reporting	Daily sitrep, NZ MOH PPHSN – linelist PSSS	Daily sitrep, NZ MOH PPHSN – linelist PSSS	Daily sitrep, NZ MOH PPHSN – linelist or case report form, PSSS	Daily sitrep, NZ MOH PPHSN – linelist Aggregated data, PSSS	Daily sitrep, NZ MOH PPHSN – linelist Aggregated data, PSSS

EBS: Event-based surveillance, IBS-Indicator based surveillance, PSSS-Pacific Syndromic Surveillance System

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Annex 1: Regional and Global information sites

Various websites provide COVID-19 information, some specific to the Pacific region.

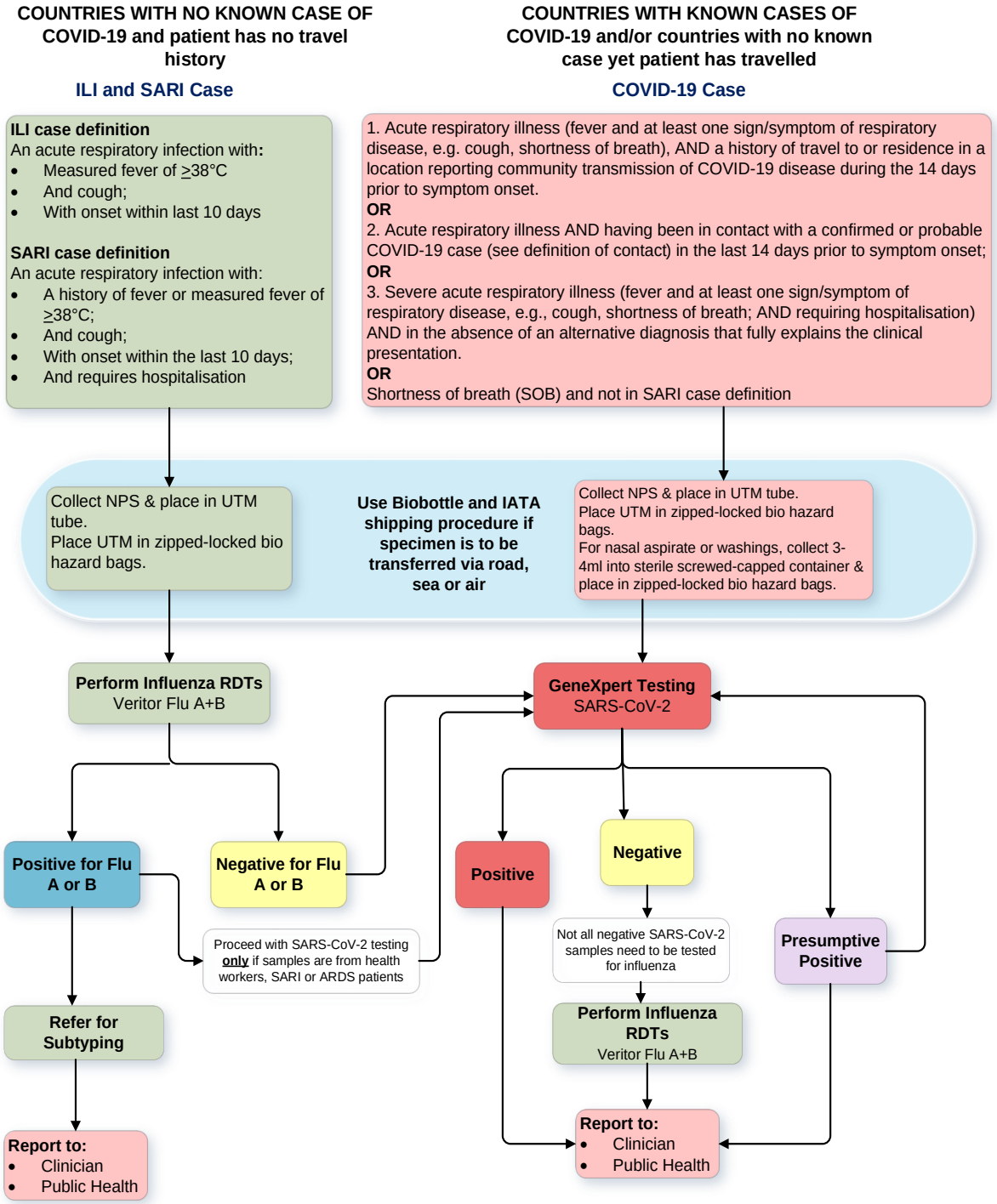
- SPC: https://www.who.int/westernpacific/emergencies/covid-19/covid-19-in-the-pacific
- WHO: https://www.who.int/westernpacific/emergencies/covid-19/covid-19-in-the-pacific
- New Zealand Ministry of Health - https://www.health.govt.nz/
- Australia Government Department of Health - https://www.health.gov.au/
- Johns Hopkins University - https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6
- Centres for Disease Control and Prevention - https://www.cdc.gov/
- European Centre for Disease Prevention and Control - https://www.ecdc.europa.eu/en

Annex 2: Case definitions for Surveillance URTI and LRTI

Upper Respiratory Tract Infection (URTI)	**Cough/Cold** (non-pneumonia) • Runny nose, cough and low-grade fever
	Influenza-like illness (ILI) case definition An acute respiratory infection with: • Measured fever of ≥38°C and cough; • With onset within the last 10 days
Lower Respiratory Tract Infection (LRTI)	**Adult (5 years or older):** • Temperature ≥38°C or subjective fever; and • Cough or sore throat; and • Breathing rate >20 breaths/minute
	Child (2 months to <5 years of age): • Cough or difficulty breathing; and • Any one of the following general danger signs: – Breathing rate >50 breaths/minute (infant 2-12 months) – Breathing rate >40 breaths/minute (child 1-5 years) – Chest in drawing – Stridor in a calm child – Unable to drink or breastfeed – Vomits everything – Convulsions – Lethargic or unconscious
	Infant (1 week to <2 months of age): • Breathing >60 breaths/minute • Severe chest in drawing • Nasal flaring (when an infant breathes in) • Grunting (when an infant breathes out)
	Severe Acute Respiratory Illness (SARI) An acute respiratory infection with: • History of fever or measured fever of >38°C and cough; • With onset within the last 10 days; • And requires hospitalisation.

Annex 3: Testing algorithm

Adapted from WHO



Notes: To **confirm influenza outbreak** test first few cases; then sampling to monitor trend and to confirm **end of outbreak**. There is no need to test all **negative SARS-CoV-2** samples for influenza. For **positive influenza** test results, proceed with SARS-COV-2 testing **only** if samples are from healthcare workers and SARI or ARDS patients. For **presumptive positive** results, retest with new cartridge. If result is still **presumptive positive**, advise for new sample and retest. If second specimen still gives **presumptive positive** result, then report result and consult with clinician if there is a need to refer specimen to L3 reference laboratory for further testing and confirmation based on clinical symptoms. Obtain new specimen and refer.

Bronchial wash & tracheal aspirate: Add extra 600ul of washing or aspirate using sterile transfer pipette provided in 3mls UTM tube and test in same manner for nasalpharyngeal swabs.

Influenza tests: Use other influenza tests that are available in the absence of Veritor Influenza test kits.

Annex 4: SitRep templates with data table and chart template

Included (Yes/No)	**Information**
	Number and date of situation report
	Identify presence of national coordination group/incident management team
	Key agencies, staff and roles including Emergency Operation Centre/National Joint IMT
	Highlights since the last situation report
OUTBREAK DESCRIPTION	
Number of total and new since last sitrep and in the past 24 hours (in a table):	
	Confirmed, probable and suspected COVID-19 cases by gender and age category*. Include age range, mean and median age. Include epidemic curve by date of onset. **Recommended age categories: 0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74,*
	COVID-19 deaths by gender and age*. Include age range, mean and median age. **Recommended age categories: 0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74,*
	Imported and local transmission COVID-19 cases
	Hospitalised COVID-19 cases: stable, ICU, ventilated, severe cases, beds available
	Persons under investigation (PUIs), people isolated/quarantined
	HCWs COVID-19 cases and Recovered COVID-19 cases
Description/narrative of:	
	Disease origin and transmission summary: importation, clusters, chains of transmission, evidence of community transmission.
	Case definition in use for confirmed, suspected and probable cases
	Geography of COVID-19 cases, disease clusters, chains of transmission, evidence of community transmission in terms of time (daily or weekly)
	Symptoms and pre-existing conditions of COVID-19 cases
OUTBREAK RESPONSE MEASURES	
	Identify presence of and describe the following government/legal advisories, including start and end dates associated with the declarations, if applicable: Declaration of state of emergency, travel restrictions, lockdown and physical distancing measures
	Laboratory results, if available, including type of tests (RT-PCR or GeneXpert), total samples tested, positive and negative results, including number of samples collected from contacts and probable cases by gender
	Inventory of supplies including laboratory, hospital and PPE
KEY ACTIVITIES/UPDATES	
	Surveillance including sentinel surveillance and screening activities, details of ILI, SARI and atypical ARDS presentations amongst public, and the number of influenza samples tested, positive results, negative results, type/subtype
	Contact tracing including number of contacts identified, number screened, number
	Quarantine and isolation including location of isolation (e.g. home or facility) and information on people who develop symptoms
	Points of Entry (PoE) measures including airports and seaports, and dates of
	Logistics
	Planning including recovery and plans for lifting current restrictions
	Infection prevention and control
	Risk communication
	Training
RESOURCES DEVELOPED OR REQUIRED	
	Reference laboratory referral
	SOP/Guidance developed e.g. rational use of PPE, etc.
	TA requirement, ventilator needs, challenges and other support needed etc.