

# COVID-19

## **COVID-19 Disease Indicators**

Version 2

Effective from 1 August 2021

This document has been approved for release by:

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On: 10 June 2021

## Version History

Version	Date	Summary of Changes
1.0	22/4/2020	Initial development
1.1	25/5/2020	Incorporation of external reviewers' comments and feedback from public health units. Addition of three new indicators S004, S005 and P005. Removal of test positivity indicator
1.2	09/6/2020	Added appendices to provide more technical detail on indicators <ul style="list-style-type: none"><li>• Technical Summary of Indicators</li><li>• Handling of missing dates</li><li>• Data sources and fields</li></ul>
1.2a	25/06/2020	Update to Appendix A to note that case interview date and close contact reached date fields have now been created in NCTS.
1.2b	31/07/2020	Changes to utilise new fields in NCTS <ul style="list-style-type: none"><li>• Case interview date and time</li><li>• Contact reached date and time</li></ul>
2	31/05/2021	Incorporating feedback from the review of the indicators, including changes to existing indicators, new indicators, removal of existing indicators.

## Purpose

The Provisional Covid-19 Disease Indicators provide an end-to-end view of the public health response to COVID-19. They will provide timeliness and outcome measures of public health interventions.

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The proposed changes were distributed to sector groups for consultation. Feedback was considered in the development of these revised technical specifications.

## Summary of indicators

The indicators have been grouped by focus area:

- System level indicators, these provide end to end impacts of the public health response and often bring together the collective efforts of a range of parties (indicators prefixed with a S#).
- Community level indicators, these focus on community behaviours and provide measures of the impacts of communication, education and societal attitudes (indicator prefixed with a C#).
- Laboratory sector indicators, these provide insights into the effectiveness of the testing facilities and programmes (indicators prefixed with a L#).
- Public health sector indicators, these focus on contact tracing and case and contact management (indicators prefixed with a P#).

Indicator	Target
S001: Time from exposure to contact isolation / quarantine	≥80% within 96 hours
S002: Time from case first symptom to contact isolation / quarantine	≥80% within 96 hours
S003: Time from test sample taken to close contact isolation / quarantine	≥80% within 72 hours
C001: Time from first symptom to test sample taken for positive cases	≥80% within 48 hours
C002: Average number of NZ COVID Tracer App scans during a 7-day period	Previous highest 7-day average
L001: Time test sample taken to notification of positive result	≥80% within 24 hours
L002: Time receipt sample at lab to notification of positive result	≥80% within 24 hours
P001: Time notification to case interview	≥80% within 24 hours
P002: Time case notification to isolation / quarantine of contact	≥80% within 48 hours
P003: Time from close contact identification to isolated/quarantined	≥80% within 24 hours
P004: Proportion of close contacts	≥80% within 48 hours
P005: Regular monitoring and follow-up of cases and contacts completed	≥90% monitoring of contacts is successful
P006: Time from exposure event create date to identification of contacts	≥80% within 24 hours

## Reporting

The review undertaken in April 2021 considered the frequency and format of future indicator report publication. This review assessed whether alternatives to current fortnightly reporting would better ensure transparency of information to best support public awareness of

system performance. Fortnightly reports were introduced during the August 2020 outbreak when case numbers were high. Given the low number of community cases per month, fortnightly snapshots of data are not useful. Fortnightly reporting also does not provide the ability to view system performance by outbreak and can often overlap between multiple outbreaks.

Changes to reporting frequency and report from August 2021 onwards include:

- a subset of the available indicators will be reported on. The remaining indicators will be available for diagnostic investigations and supporting evidence if the targets for the reported indicators are not met. The indicators which are reported on include: S001, C001, C002, L001, P002, P005.
- Outbreak reports will be published which will focus on community cases or potential in-facility transmission. Multiple outbreak reports for concurrent outbreaks may be required. Publication expected 2-3 weeks post the last case in an outbreak being confirmed as recovered
- National quarterly summary reports that provide a view of the impacts on the system of concurrent outbreaks, frequency of outbreaks, cases not confirmed as outbreaks, and Border Managed Isolation/Quarantine cases. Specific timeframes will be set according to key financial quarters and other regular reporting needs.

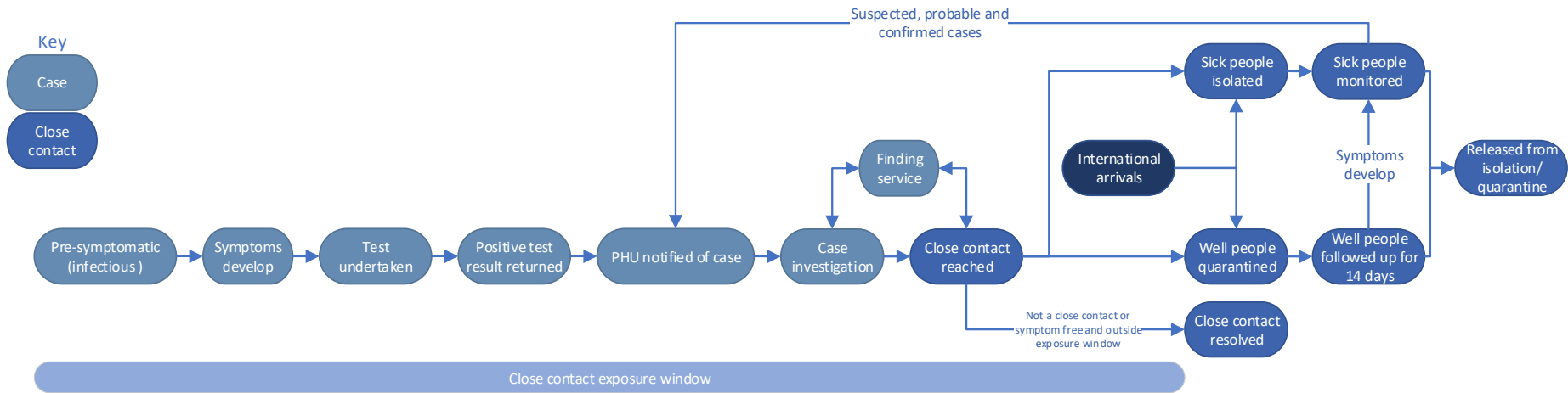
## Limitations

Not all data is currently available for all indicators. Reporting on these indicators will be made available when possible.

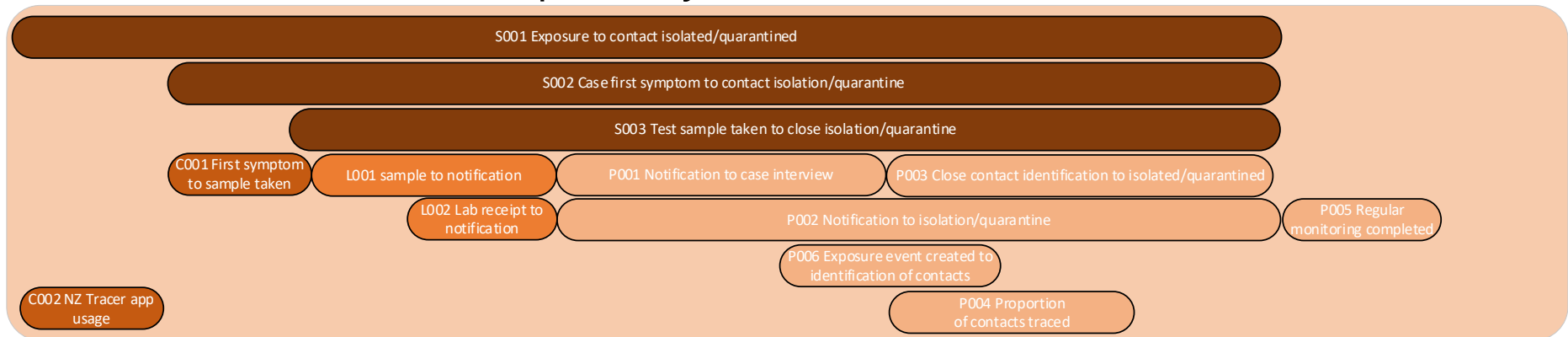
Data elements will need to be added or changed to provide robust monitoring of the indicators. Clear information will be provided to those effected by the changes as to when this will be required.

Determining an exposure window is problematic as it could be a single point in time (for example a meeting) or it could be multiple contacts (for example a co-worker) or regular contact (for example a household member) with the index case. In situations where there have been multiple or ongoing exposure it is not possible to determine when the transmission occurred. The approach taken is to take the last date of the exposure window to calculate the point of exposure.

# Disease and contact tracing pathway



# Performance indicators on pathway





# Indicators descriptions

## System level indicators

S001: Time from exposure to contact isolation / quarantine

Description	A person is at risk of transmitting the disease from shortly after exposure to an index case until they are isolated / quarantined. This indicator measures the 'risk period' from exposure to isolation / quarantine.
Target	≥80% within 96 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	If isolation / quarantine is too slow it means onwards transmission could occur. Ensuring that contacts exposed to an infected person are isolated/quarantined as fast as possible, reduces the likelihood that they could infect further people should they be incubating the disease. This is a high-level system measure that measures the impact of the whole system from advice and information to the public, availability and speeds of testing facilities, contact identification and finally reaching the contact to isolate / quarantine them.
Potential remedial action	Community, Laboratory and Public Health indicators should be used to understand the specific components of the system to contribute to this measure.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>Start event: 'Exposure event end date and time' if available, otherwise 'Exposure event end date and time'.</li> <li>End event: 'Contact reached date and time'.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>Cases with no symptom onset date, or an onset date prior to 10 April 2020. On 10 April 2020 the case definition changed. This exclusion allows reporting to take place based on the revised case definition.</li> <li>Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>Confirmed or Probable cases</li> <li>Close Plus and Close contacts only</li> <li>Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	This is a system level measure and as such reports on the whole system, other more detailed indicator should be used to identify specific sector performance. The exposure period could occur over a wide range of time (2 days period to the case developing symptoms until the case is isolated). While a valuable indicator it can be problematic to infer implications across a range of cases which will all have different exposure event points.

S002: Time from case first symptom to contact isolation / quarantine

Description	The speed at which contacts are traced is critical to limiting the risk that a person could transmit the disease to others. This indicator measures the 'risk period' from case symptom development to isolation / quarantine of the close contact.
Target	≥80% within 96 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	If isolation / quarantine is too slow it means onwards transmission could occur. Ensuring that contacts exposed to an infected person are isolated/quarantined as fast as possible, reduces the likelihood that they could infect further people should they be incubating the disease. This is a high-level system measure that measures the impact of the whole system from advice and information to the public, availability and speeds of testing facilities, contact identification and finally reaching the contact to isolate / quarantine them.
Potential remedial action	Community, Laboratory and Public Health indicators should be used to understand the specific components of the system to contribute to this measure.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>• Start event: 'symptom onset date' as reported in Episurv</li> <li>• End event: 'close contact reached date and time' in NCTS.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Cases with no symptom onset date, or an onset date prior to 10 April 2020. On 10 April 2020 the case definition changed. This exclusion allows reporting to take place based on the revised case definition.</li> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>• Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Confirmed or Probable cases</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	There could be some close contacts for whom the time to isolation is negative (effectively zero) as they could have been in home quarantine already i.e. due to alert level 3 or 4 or exposure to other cases

S003: Time from test sample taken to close contact isolation / quarantine

Description	This measures the health systems ability to respond to cases of disease incorporating the identification, investigation and contact tracing components of the health system.
Target	≥80% within 72 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	If isolation / quarantine is too slow it means onwards transmission could occur. Ensuring that contacts exposed to an infected person are isolated/quarantined as fast as possible, reduces the likelihood that they could infect further people should they be incubating the disease. This is a high-level system measure that measures the impact of the whole system from advice and information to the public, availability and speeds of testing facilities, contact identification and finally reaching the contact to isolate / quarantine them.
Potential remedial action	Improve time from sampling to PHU notification of result and time to contact isolation / quarantine of close contacts.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>• Start event: Swab taken from case date/time, (as a proxy the laboratory receipt date/time of swab at the laboratory is used)</li> <li>• End event: close contact reached date and time in NCTS.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Cases with no symptom onset date, or an onset date prior to 10 April 2020. On 10 April 2020 the case definition changed. This exclusion allows reporting to take place based on the revised case definition.</li> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>• Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> <li>• Excludes serology test results</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Confirmed or Probable cases</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	Laboratory receipt date/time of swab is used as a proxy for Swab taken from case date/time. Swab taken datetime will be used once e-ordering has been fully rolled out.

## Community level indicators

C001: Time from first symptom to test sample taken for positive cases

Description	The speed at which a person recognises their symptoms and accesses testing is critical to limiting the spread. This takes into consideration the two issues of public education and health literacy as well as availability and access to testing facilities.
Target	≥80% within 48 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type
Rationale	This indicator measures the effectiveness of public education campaigns, public awareness, access to testing facilities and ability to obtain a test (in line with criteria in the case definition). Delayed identification of symptoms and access to testing facilities will increase the risk of transmission to other people.
Potential remedial action	Raise awareness to promote early presentation. Adjustment of case definition to emphasise early symptoms. Increase availabilities to testing facilities (increase in number of or location of facilities, reduction in barriers to test i.e. transportation)
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>• Start event: symptom onset date/time as reported in EpiSurv</li> <li>• End event: Swab taken from case date/time, (as a proxy the laboratory receipt date/time of swab at the laboratory is used)</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Cases with no symptom onset date, or an onset date prior to 10 April. On 10 April the case definition changed. This exclusion allows reporting to take place based on the revised case definition.</li> <li>• Exclude serology test results</li> <li>• Invalid cases</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Only includes laboratory confirmed cases</li> </ul>
Limitations	<ul style="list-style-type: none"> <li>• Does not separate the recognition of symptoms and decision to get tested, the availability of testing facilities and the ability to obtain a test.</li> <li>• People may develop symptoms but not meet the case definition and be denied tests until further symptoms develop</li> <li>• Identification of the point in time when the first symptom developed can be difficult to determine</li> </ul>

## C002: Average number of NZ COVID Tracer App scans over a 7-day period

Description	Having a high proportion of New Zealanders using the NZ Covid Tracer app is important to enhance our ability to contact trace when there is a community case. The longer contact tracing takes the more likely that the virus will spread.
Target	Previous highest 7-day average
Analysis	TBC
Rationale	Poor use of the app risks delays in contact tracing and may increase transmission from unknown contacts.
Potential remedial action	Dropping below the target will prompt a review of the app campaign tactics and efforts
Technical description	This indicator will measure the average number of scans over a 7-day period (Monday to Sunday).
Exclusions	
Inclusions	Manual entries and scans
Limitations	There has already been extensive promotion of the benefits in using the app, and still there is 'complacency' outside of times of an outbreak.

## Laboratory sector indicators

### L001: Time test sample taken to notification of positive result

Description	Measures the health system ability to take samples, transport the sample to the laboratory, analyse and report positive result to Medical Officer of Health.
Target	≥80% within 24 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	The speed at which people are tested to when the result is known, so that contact tracing can commence, is a critical part of the pathway.
Potential remedial action	Adjustment to sample transport or laboratory analysis and notification processes.
Technical description	It measures the time between the following events: <ul style="list-style-type: none"> <li>Start event: Swab taken from case date/time</li> <li>End event: Episurv Report Date</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>Invalid cases</li> <li>Serology test results</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>Includes laboratory confirmed cases only (not including historic or unknown case types)</li> </ul>
Limitations	At present this indicator is unable to be reported on because the swab taken datetime is not recorded in national éclair. This information will be available following the national implementation of e-ordering.

## L002: Time receipt of swab at lab to notification of positive result

Description	Measures the laboratory systems ability to analyse and report a positive result to the Medical Officer of Health.
Target	≥80% within 24 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	The speed at which results are processed to when the result is known, so that contact tracing can commence, is a critical part of the pathway.
Potential remedial action	Adjustment to laboratory analysis and notification processes.
Technical description	<p>It measures the time between the following events:</p> <ul style="list-style-type: none"> <li>Start event: Swab received at laboratory date/time</li> <li>End event: Report date of confirmed case date/time in Episurv</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>Invalid cases</li> <li>Serology test results</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>Includes laboratory confirmed cases only</li> </ul>
Limitations	

## Public health sector indicators

### P001: Time notification to case interview

Description	This indicator measures the resource capacity of the public health system undertake investigate cases in a timely manner.
Target	≥80% within 24 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	The capacity to investigate cases is fundamental to identifying close contacts. Delays in the initial investigation have a material impact on the ability to isolate / quarantine close contacts in a timely manner who could infect more people.
Potential remedial action	Increase capacity to undertake case interview. The introduction of technology to assist in the rapid identification of close contacts. Venues, facilities, and other places where people gather are to maintain accurate registers of people attending.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>Start event: notification of confirmed case date/time in Episurv</li> <li>End event: case interview date/time</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>Invalid cases</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>Confirmed cases</li> </ul>

	<ul style="list-style-type: none"> <li>All case types to enable determination of classification, excluding International and Unknown case types</li> </ul>
Limitations	The respective targets for indicators P001, P003, P006 are all 80% within 24 hours. This allows for fluctuation in timeliness across these parts of the pathway. However, the overall performance measure (P002) remains at 80% within 48 hours.

#### P002: Time case notification to isolation / quarantine of contact

Description	This indicator measures the resource capacity of the public health system to investigate cases, identify close contacts and contact those close contact and ensure that they are isolated / quarantined.
Target	≥80% within 48 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	The capacity to investigate cases and rapidly isolate / quarantine their close contacts is fundamental to limiting the spread of the disease.
Potential remedial action	Increase capacity to undertake case interview. The introduction of technology to assist in the rapid identification of close contacts. Venues, facilities, and other places where people gather are to maintain accurate registers of people attending.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>Start event: notification of confirmed case date/time in EpiSurv</li> <li>End event: close contact reached date and time in NCTS.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>Contacts associated with Confirmed or Probable cases</li> <li>Close Plus and Close contacts only</li> <li>Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	The respective targets for indicators P001, P003, P006 are all 80% within 24 hours. This allows for fluctuation in timeliness across these parts of the pathway. However, the overall performance measure (P002) remains at 80% within 48 hours.

#### P003: Time from close contact identification to isolated/quarantined

Description	The case interview and subsequent investigation leads to the identification of close contact who should be contacted and isolated/quarantined as fast as possible to limit the risk of secondary transmission.
Target	≥80% within 24 hours

Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	Timeliness of contact tracing will prevent secondary transmission
Potential remedial action	Increase capacity to undertake contact tracing. The introduction of technology to assist in accessing contact details were not known.
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>• Start event: Close contact create date/time in NCTS</li> <li>• End event: Close contact reached date and time in NCTS.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>• Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Contacts associated with Confirmed or Probable cases</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	<ul style="list-style-type: none"> <li>• The identification of non-household contacts is often complex and involves further investigation of events and the use of investigative techniques to find contact names and numbers e.g. tracing people who attended a function/bar/restaurant or who travelled on an aircraft/bus/taxi. This is recognised through the use of the <math>\geq 80\%</math> target.</li> <li>• Contacts may be identified by the case over several days as they remember exposure events that they haven't previously mentioned</li> <li>• The respective targets for indicators P001, P003, P006 are all 80% within 24 hours. This allows for fluctuation in timeliness across these parts of the pathway. However, the overall performance measure (P002) remains at 80% within 48 hours.</li> </ul>

#### P004: Proportion of close contacts identified and traced within 48 hours

Description	Once a close contact is identified as many as possible should be reached and isolated/quarantined as soon as possible. This indicator measures the proportion of contacts who are identified within 48 hours of case notification who are traced within that 48 hours.
Target	$\geq 80\%$ within 48 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	Failure to complete contact tracing increases the likelihood of secondary transmission.
Potential remedial action	Review systems for interviewing case. Options for use of other govt datasets
Technical description	$\frac{\# \text{ close contacts traced}}{\# \text{ close contacts identified}}$ <p>Where</p>



	<ul style="list-style-type: none"> <li>• 'close contacts traced = Number of close contacts with reached date/time as at 48 hours after case notification date/time (That is, close contact has been contacted either by the PHU or the NCCS)</li> <li>• Close contacts identified = number of close contacts created in NCTS within 48 hours of case notification date/time.</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>• Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Contacts associated with Confirmed or Probable cases</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	

P005: Regular monitoring and follow-up of cases and contacts completed

Description	Service providers are expected to contact and confirm isolation (monitoring of unwell people) and quarantine (follow-up of well people), health status and welfare check on people in isolation and quarantine at regular intervals. This indicator measures the proportion of people in isolation/ quarantine who have been contacted at the expected frequency identified.
Target	≥90% monitoring/follow-up contacts is successful
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	Regular monitoring and follow-up are critical to ensure that isolation/quarantine is maintained and that the health and welfare of these people are reviewed.
Potential remedial action	Review of service providers capacity. Review of guidance information and support systems.
Technical description	<p>The number of completed follow-ups divided by the number of total follow-ups scheduled</p> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Invalid cases</li> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Confirmed cases</li> <li>• Community cases (Community or MIQ staff)</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>

Limitations	
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P006: Time from exposure event identification to contact identification

Description	The case interview and subsequent investigation leads to the identification of close contacts who should be isolated/quarantined as fast as possible to limit the risk of onward transmission.
Target	≥80% within 24 hours
Analysis	Ethnicity (Maori/Pacific/Asian/Other), rural/urban, DHB, management organisation, case type, event type, cluster
Rationale	Timeliness of identifying contacts will prevent onward transmission
Potential remedial action	Provides insights into the public health engagement to support gathering information
Technical description	<p>This indicator will measure the time between the following events:</p> <ul style="list-style-type: none"> <li>• Start event: Exposure event create date and time in NCTS</li> <li>• End event: Close contact create date and time in NCTS</li> </ul> <p>The date the case is recorded as confirmed or probable in EpiSurv determines the date against which the case is reported.</p>
Exclusions	<ul style="list-style-type: none"> <li>• Invalid contacts (or if contacts are connected to invalid cases or exposure events)</li> <li>• Contacts closed as 'Existing Case' as indicates the current exposure event is not the relevant one)</li> </ul>
Inclusions	<ul style="list-style-type: none"> <li>• Contacts associated with Confirmed or Probable cases</li> <li>• Close Plus and Close contacts only</li> <li>• Contacts associated with community cases (Community or MIQ staff)</li> </ul>
Limitations	<ul style="list-style-type: none"> <li>• This indicator is often reliant on community preparedness and not easily influenced by public health interventions</li> <li>• The identification of non-household contacts is often complex and involves further investigation of events and the use of investigative techniques to find contact names and numbers e.g. tracing people who attended a function/bar/restaurant or who travelled on an aircraft/bus/taxi.</li> <li>• Contacts may be identified by the case over several days as they remember exposure events that they haven't previously mentioned</li> <li>• The respective targets for indicators P001, P003, P006 are all 80% within 24 hours. This allows for fluctuation in timeliness across these parts of the pathway. However, the overall performance measure (P002) remains at 80% within 48 hours.</li> </ul>

## Appendix A: Handling of missing dates

In some instances the date for a start or end event may not be present, or the start event takes place after the end event. These are handled as follows in the indicator processing:

No start event – exclude

- Where there is no start event date (i.e. it is blank) the observation will be excluded from the indicator. For example, if a case has no symptom onset date, it will be excluded from S002, symptom onset to close contact reached.

No end event date – treat as target not reached

- Where there is no end event date, the observation will be included in the denominator, but it will be deemed as NOT having met target, i.e. not included in the numerator. Using S002 again as an example, where the close contact reached date is not specified, the close contact will be included in the denominator, but will be deemed as not having been reached.

Negative elapsed times – assign to zero days

- Where the start date is later than the end date - giving rise to a negative elapsed time – an elapsed time of zero days will be assigned for the indicator reporting. For example, for P002 - notification to close contact reached, a negative elapsed time can arise if the close contact is given advice to self-quarantine before the case is notified in EpiSurv.

## Appendix B: Data Sources and Fields

Indicator reporting requires data from different sources. Sources include laboratory systems, EpiSurv (ESR), and the NCTS. This section provides more detail about those sources and how specific data fields are obtained from those different sources.

### Data Sources

Source	Comment
NCTS	This system was commissioned April 2020 for the National Close Contact Service, a spill-over capacity for close contact tracing. Since August 2020 all PHUs use this system for case investigation and contact tracing
Lab	Lab data is being obtained via ESR.
EpiSurv data	EpiSurv is the system of record for case notifications.