

Clinical guidance on testing for possible COVID-19 reinfection

V2 29th June 2022

Executive Summary

- At all times after a COVID-19 infection, those who have symptoms consistent with a COVID-19 infection should stay home. Those who are higher risk, or becoming more unwell, should seek healthcare advice.
- **At 28 days or less** after a previous infection (day 0 is the day of symptom onset or positive test) testing for reinfection is discouraged, as reinfection within this period is uncommon and difficult to confirm without specialist input. Those who are higher risk, or becoming more unwell, should seek advice from their healthcare provider or Healthline.
- **At 29 days or more** after a previous infection, individuals with symptoms consistent with COVID-19 will be recommended to test with a Rapid Antigen Test (RAT) and upload a positive or negative result to My Covid Record. Isolation and household quarantine guidelines are the same as for first COVID-19 infections.
- For patients with potential COVID-19 reinfection, healthcare providers are recommended to assess the context of possible reinfection. Further testing with a RAT or Polymerase Chain Reaction (PCR) test may be indicated. Consultation with a Microbiologist may be required for higher risk or very unwell patients.
- Asymptomatic testing, other than for specified surveillance, is not recommended within 90 days.
- It is noted that Māori and Pacific people are amongst our highest risk populations and that their clinical management should continue to be prioritised because of this.

Introduction

This guidance provides clinical advice to healthcare providers about how to manage people who present with COVID-19 symptoms, or a positive COVID-19 RAT after a previous COVID-19 infection.

Changes have been made to the Interim Guidance (5th May 2022) based on emerging evidence and to incorporate feedback from primary care, microbiologists and public health units. This advice has also been aligned with the change to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022.

Expert opinion in New Zealand about the correct management of reinfection is varied. This guidance may be subject to review as further evidence becomes available.

COVID-19 reinfection within 90 days: Current evidence

A positive RAT for SARS-CoV-2 meets the definition for a probable case of COVID-19. An individual will have a positive RAT result during the acute phase of the illness. RAT results correlate well with viral culture studies and are usually, but not always, negative by day 10. Rebound of symptoms, with a positive RAT, is known to occur. PCR test results may remain positive for weeks after infection, although Cycle Threshold (CT) values increase during this time, and this is used in the identification of historical infections. The meaning of any repeat positive RAT or PCR test must be interpreted in the light of the clinical context.

RATs may generate false positive results, amounting to 1-2% of all tests. This guidance relates only to testing of symptomatic individuals, in whom the pre-test probability of infection is sufficiently high so that the false positive rate is unlikely to be clinically significant. PCR seldom generates false positives.

Reinfection with COVID-19 is well-recognised and is becoming increasingly common. Reinfection is more common in unvaccinated individuals.

Guidelines on what constitutes a reinfection varies between jurisdictions, with minimum limits varying from 45-90 days, but most commonly 90 days. As a result of this, evidence about the prevalence, testing and management of reinfection at less than 90 days is sparse. Current evidence shows:

- In Belgium the rate of reinfection during a 9-week testing window was 0.16% for Delta to BA.1 and 0.01% for BA.1 to BA.2.
- In the United Kingdom, of all BA.2 infections, 0.8% were SARS-CoV-2 reinfection within 28-59 days, 1.2% occurred at an interval of 60 – 89 days and 7.7% occurred after 90 days from a previous infection (UKHSA data).

Understanding possible reinfection in individual patients

For most people illness caused by reinfection is no more severe than a first infection. A diagnosis of reinfection with COVID-19 can be important particularly for those who are elderly, immunosuppressed, have high risk conditions, and Māori or Pacific people or those who have frequent close contact with higher risk people.

Diagnosing reinfection may be significant for several reasons:

- for access to COVID-19 therapeutics,
- to enable provision of wrap-around support/manaaki,
- to enable isolation and quarantine,
- for protection of whānau/family, workmates, clients, and businesses,
- to enable compliance with isolation requirements, such as access to financial support,
- to enable monitoring of COVID-19 cases,
- surveillance for variants of concern.

Public advice for symptomatic individuals after COVID-19 infection

- People who have symptoms consistent with COVID-19 **at 28 days or less** from a COVID-19 diagnosis are advised 'don't test'. COVID-19 reinfection is unusual at this stage and symptoms may be related to the first infection, or to a different upper respiratory infection. They should stay at home whilst symptomatic.
- People who have symptoms consistent with COVID-19 **at 29 days or more** from a previous COVID-19 diagnosis are recommended to 'self-test with RAT'.
- People who test positive for COVID-19 should isolate for 7 days and their household contacts should quarantine for 7 days. People who test negative for COVID-19 should retest at 48 hours if symptoms persist.
- All symptomatic people should stay at home until they have been symptom free for 24 hours.
- People who are higher risk or who are becoming increasingly unwell should seek advice from their healthcare practitioner or Healthline.

If an individual uploads a positive RAT result at 28 days or less from their first infection it will be considered to be related to the first infection. They will be directed to advice about the possibility of persistent symptoms and advised to seek help if they are becoming more unwell.

Individuals who upload a positive RAT 29 days or more from being a previous case will receive the same text message as for a first infection. It will say that they are a case, ask them to fill in the case self-serve form and advise them to isolate.

Healthcare practitioner advice

For each person with potential COVID-19 reinfection healthcare providers are recommended to assess the context of possible reinfection, including the risk profile of the person, the symptomatology, epidemiology and results of the prior and current infections.

Within 28 days: reinfection is considered unlikely. If COVID-19 reinfection is plausible, and a definitive diagnosis is necessary, consider further testing. Testing may be either/both repeat RAT and PCR, depending on context and availability.

Discussion with a Microbiologist may be necessary for advice regarding interpretation of test results. Consideration may also be given to testing for other respiratory pathogens.

At 29 days or more: if a patient who had a prior confirmed or probable COVID-19 infection has new symptoms consistent with a COVID-19 infection, recommend test with RAT. People who have underlying health conditions or are becoming more unwell have been advised to see healthcare advice. In these cases, PCR should be considered.

Asymptomatic patients at less than 90 days: current advice is to not perform asymptomatic surveillance, or screening, within 90 days of a confirmed, or probable, diagnosis of COVID-19.

If patients are asymptomatic but have tested positive, further testing will depend on the clinical context.

Interpretation of a positive test result in cases of possible reinfection

It is possible to have a positive test result for COVID-19 within 90 days of having an earlier positive result through a RAT, or nucleic acid amplification test (NAAT)/ PCR test. This does not confirm a new infection and has several potential causes.

The interpretation of a COVID-19 RAT requires an understanding of RAT test performance. False positives and false negatives are possible, and positive and negative predictive value will vary according to test performance and community prevalence of COVID-19. This interactive [webpage](#) is useful in explaining these themes.

Re-categorising a reinfection case after clinical review and further testing

In some cases, despite a positive RAT, a GP may consider that it is unlikely that a person is acutely infected with COVID-19.

It may be important for some individuals to be re-categorised as historical or 'not a case', for example for return to work, travel, employment, for release from isolation or to stop automated messaging regarding being 'a case'.

If, after clinical review and further testing, a healthcare provider is able to establish that a person who has already uploaded a positive RAT within 90 days is a historical case, or 'not a case', the person can be re-categorised by contacting the local Care in the Community hub. Some patients may require a medical certificate for work or travel.

Creating a case record

0 to 28 days	A case record can only be created by a GP in Covid Clinical Care Module (CCCM).
>29 days	A case record can be created by uploading a positive RAT in My Covid Record or by a GP creating a case in CCCM or by a positive laboratory result.

Reinfection isolation requirements

Household contacts of the case with confirmed reinfection:

- Are required to quarantine for seven days following the date of the case's positive test result or symptom onset (whichever occurred first) and undertake a RAT on days 3 and 7, if they themselves have not previously been infected,
- Are not required to quarantine if they themselves have previously been a household contact within 10 days (RAT test if symptomatic),
- Are not required to quarantine if they themselves have been previously infected within the past 90 days (RAT test if symptomatic).

COVID-19

Operational guidance: TESTING FOR POSSIBLE REINFECTION OF A COVID-19 INFECTION FOR GENERAL PRACTICE (Version 2)

29th June 2022

Purpose

This guidance provides clinical advice to healthcare providers about how to manage patients who present with clinical symptoms of suspected COVID-19 and/or a positive COVID-19 Rapid Antigen Test (RAT) within 90 days of a prior probable COVID-19 infection.

This guidance replaces the Interim Guidance (5th May 2022) and is based on emerging evidence and incorporates feedback from primary care, microbiologists and public health units. This advice has also been aligned with the change to the COVID-19 Public Health Response (Self-isolation Requirements and Permitted Work) Order 2022. The Ministry of Health (the Ministry) continues to monitor new variants and incidence of reinfection nationally and internationally and this guidance may be subject to review as further evidence becomes available.

COVID-19 reinfection: Current evidence

Reinfection with COVID-19 is well-recognised and is becoming increasingly common, particularly with a different variant. Reinfection is more common in unvaccinated individuals.

Evidence about the prevalence, testing and management of reinfection at less than 90 days is sparse. In Belgium the rate of reinfection during a nine-week testing window was 0.16 percent for Delta to BA.1 and 0.01 percent for BA.1 to BA.2. In the United Kingdom, of all BA.2 infections, 0.8 percent were SARS-CoV-2 reinfection within 28-59 days, 1.2 percent occurred at an interval of 60 – 89 days and 7.7 percent occurred after 90 days from a previous infection (UKHSA data).

An individual will have a positive RAT result during the acute phase of the illness. RAT results correlate well with viral culture studies and are usually, but not always, negative by day ten. Rebound of symptoms, with a positive RAT, is known to occur. Polymerase Chain Reaction (PCR) test results may remain positive for weeks after infection, although Cycle Threshold (CT) values increase during this time, and this is used in the identification of historical infections. The meaning of any repeat positive RAT or PCR test must be interpreted in the light of the clinical context.

Key points

- At all times after a COVID-19 infection, those who have symptoms consistent with a COVID-19 infection should stay home. Those who are higher risk or becoming more unwell should seek healthcare advice.
- **At 28 days or less** after a previous infection (day zero is the day of symptom onset or positive test) testing for reinfection is discouraged, as reinfection within this period is uncommon and difficult to confirm without specialist input. Those who are higher risk, or becoming more unwell, should seek advice from their healthcare provider or Healthline.
- **At 29 days or more** after a previous infection, individuals with symptoms consistent with COVID-19 will be recommended to self-test with RAT and upload a positive or negative result to MyCovidRecord. They will receive the same text message as for a first infection. It will say that they are a case, ask them to fill in the case self-serve form and advise them to isolate.
- For patients who present to or contact general practice with potential COVID-19 reinfection, healthcare providers are recommended to assess the context of possible reinfection. Further RAT or PCR testing may be indicated. Consultation with a Microbiologist may be required.
- Asymptomatic testing, other than for specified surveillance, is **not** recommended within 90 days.
- It is noted that Māori and Pacific people are amongst our highest risk populations and that their clinical management should continue to be prioritised because of this.

Clinical assessment

Testing for possible COVID-19 reinfection is important for several reasons:

- to enable provision of wrap-around support/manaaki
- for access to COVID-19 therapeutics
- to allow protection of vulnerable family members, workmates, clients and businesses
- to enable compliance with isolation requirements
- to allow notification and monitoring of COVID-19 cases
- it may allow identification of new variants of concern.

Testing principles

Test to:

- inform public health management, such as when it is necessary for a case or a household contact to isolate
- inform patient management, such as access to antivirals, ensuring timely access to care in the community or admission to hospital, if required
- return/continue activity, such as through the Close Contact Exemption Scheme.

Possible explanations for a positive test result in patients less than 90 days from initial infection

	Symptomatic Person	Asymptomatic Person
Positive RAT	<ul style="list-style-type: none"> • Persistently positive RAT from previous infection (less likely than positive NAAT¹/PCR) • Current RAT could be false positive • COVID-19 reinfection 	<ul style="list-style-type: none"> • Persistently positive RAT from previous infection (less likely than positive NAAT/PCR) • Previous or current RAT could be false positive • COVID-19 reinfection
Positive NAAT/PCR	<ul style="list-style-type: none"> • Persistently positive NAAT/PCR from previous infection • A true primary infection occurring after a previous false positive RAT • COVID-19 reinfection 	<ul style="list-style-type: none"> • Persistently positive NAAT/PCR from previous infection • If previous positive test was RAT it could have been a false positive

This interactive webpage is useful: [Interpreting a covid-19 test result | The BMJ](#)

¹ Nucleic Acid Amplification Test (NAAT)

Testing plan

The following table outlines the testing plan for people who are suspected to be reinfected with COVID-19 and are likely to be seen in general practice and; have had a prior COVID-19 infection within 90 days, have symptoms consistent with a COVID-19 infection; or have a positive RAT test from surveillance testing (for example as required by their employer).

Days Since Last Positive Test	Indication	Test Type	Interpretation of RAT or PCR Result ²
0 – 28	Reinfection is considered unlikely. Undertake patient consult and monitoring if clinically indicated as part of the COVID-19 Care in the Community services. Reassure the patient to stay home whilst symptomatic and to not do further RAT self-tests.	No test	Advice given to a patient released from isolation from prior infection and who presents with new symptoms.
	If COVID-19 reinfection is plausible, and a definitive diagnosis is necessary, consider further testing. Discussion with a Microbiologist may be necessary for advice. Consideration may also be given to testing for other respiratory pathogens.	Either/or supervised RAT/PCR	The interpretation of a COVID-19 RAT requires an understanding of RAT test performance. False positives and false negatives are possible, and positive and negative predictive value will vary according to test performance and community prevalence of COVID-19.
29 - 90	If clinical assessment deems that testing is warranted, a RAT is recommended. If RAT is positive, interpret in the clinical context. People who test negative for COVID-19 should retest at 48 hours if symptoms persist. People who have underlying health conditions or are becoming more unwell have been advised to seek healthcare advice. Consideration may be given to testing with PCR, for COVID-19 and/or other respiratory pathogens. Discussion with microbiology may be necessary.	RAT And/or PCR	PCR CT interpreted within the clinical context is necessary to diagnose reinfection. A very low CT is consistent with reinfection, but a higher CT may be consistent with prior (historical) infection, resolving infection, or mild infection. Interpretation can be complex, and consultation with microbiology or public health may be required in cases of doubt. If reinfection is likely, then COVID-19 reinfection probable case can be created by the clinician in COVID-19 Clinical Care Module. Provide COVID-19 Care in the Community services as a new episode of infection.
91+	Refer to existing RAT and PCR guidance for the general population.	RAT/PCR	Refer to existing RAT and PCR guidance for the general population.

Funding

- As per the current testing funding, general practices will be funded \$120 (excluding GST) to undertake a combined clinical assessment and provide a PCR or supervised RAT test.
- Once a case is confirmed COVID-19 positive, general practices will have access to the COVID-19 Care in the Community general practice funding. This includes funding for further assessments, reviews and clinical escalation.
- All funding and claiming will be made available through existing payment mechanisms with district health boards and public health organisations.
- If, after clinical review and further testing, a health practitioner is able to establish that a person who has already uploaded a positive RAT within 90 days is a historical case, or ‘not a case’, the person can be recategorized by the provider contacting their local Care in the Community Hub. Some patients may require a medical certificate for work or travel. For patients that do not test positive for COVID-19, usual general practice co-payments will apply for any ongoing care needed beyond the clinical assessment and test.

Reinfection isolation requirements

Those who are diagnosed with a COVID-19 reinfection must follow standard isolation requirements, as per the Ministry website: health.govt.nz/covid-19-novel-coronavirus/covid-19-health-advice-public/advice-people-covid-19/covid-19-isolating-others.

Household contacts of the case with confirmed reinfection:

- Are required to quarantine for seven days following the date of the case’s positive test result or symptom onset (whichever occurred first) and undertake a RAT on days three and seven, if they themselves have not previously been infected,
- Are not required to quarantine if they themselves have previously been a household contact within ten days (RAT test if symptomatic),
- Are not required to quarantine if they themselves have been previously infected within the past 90 days (RAT test if symptomatic)

² Check COVID-19 funding available for consultation, even if no test required