Evaluation of COVID-19 point-of-care testing in remote and First Nations communities

Department of Health and Aged Care

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Nous Group acknowledges First Nations people as the First Australians and the Traditional Custodians of country throughout Australia. We pay our respect to Elders past, present and emerging, who maintain their culture, country and spiritual connection to the land, sea and community.

This artwork was developed by Marcus Lee Design to reflect Nous Group's Reconciliation Action Plan and our aspirations for respectful and productive engagement with First Nations people and communities.

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Glossary

Australian Bureau of Statistics	The Australian Bureau of Statistics (ABS) is an independent statutory agency responsible for statistical collection, analysis and publishing evidence-based information.
Aboriginal and Torres Strait Islander Advisory Group on COVID-	The Aboriginal and Torres Strait Islander Advisory Group on COVID-19 (the Advisory Group) provided clinical expertise to advise and inform decisions on COVID-19 related health issues for First Nations peoples and communities.
19	Aboriginal and Torres Strait Islander Health Protection (NATSIHP) Sub- committee of the Australian Health Protection Principal Committee (AHPPC).
Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program	The Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing (POCT) Program is funded by the Department of Health and Aged Care and administered by the Kirby Institute and the International Centre for Point-of- Care Testing (ICPOCT). The Program aims to provide a tool to improve public health responses, reduce transmission and morbidity in these remote communities.
Aboriginal Community Controlled Health Service	An Aboriginal Community Controlled Health Service (ACCHS) is an incorporated First Nations organisation initiated by and based in a local First Nations community. They are responsible for administering the POCT Program at many of the sites.
Australian Health Protection Principal Committee	The Australian Health Protection Principal Committee (AHPPC) is the key decision-making committee for public health emergencies in Australia. It is comprised of all state and territory Chief Health Officers and is chaired by the Australian Chief Medical Officer.
Australian Immunisation Register	The Australian Immunisation Register (AIR) is a national register that records vaccines given to all people in Australia.
Department of Health and Aged Care	The Department of Health and Aged Care (formerly the Department of Health) is a department of the Australian Government responsible for developing and delivering policies and programs promoting health and wellbeing in Australia.
First Nations	This document will use the term 'First Nations' to describe Australia's Aboriginal and Torres Strait Islander peoples. This includes reference to data collected during the pandemic where people have identified as 'Aboriginal or Torres Strait Islander'. We may use the term 'Aboriginal and Torres Strait Islander' or 'Indigenous' when referring to the name of an organisation or Program.
GeneXpert system	The GeneXpert system is the equipment, consumables, and software for running tests and viewing results selected for the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program. The GeneXpert system produces results within 45 minutes of the test sample being taken.

Health service	Health services refer to the health services that were responsible for administering point-of-care testing for the Program. Point-of-care testing was administered by both ACCHS and state/territory health services.
Key lines of enquiry	Key lines of enquiry (KLEs) are high-level questions that have guided the evaluation and are indicative of the evaluation objectives.
Local government areas	Local government areas are spatial boundaries defined by the Australian Bureau of Statistics approximating the boundaries of local governments. These spatial boundaries do not always match official legal boundaries and are only used for statistical purposes.
National Aboriginal Community Controlled Health Organisation	The National Aboriginal Community Controlled Health Organisation (NACCHO) is the national leadership body for Aboriginal and Torres Strait Islander health in Australia.
National Notifiable Diseases Surveillance System	The National Notifiable Diseases Surveillance System (NNDSS) is a coordination of surveillance data on over 70 notifiable diseases that present a risk to public health in Australia. Notifications are supplied to the Department of Health and Aged Care by state and territory health authorities.
Personal protective equipment	Personal protective equipment (PPE) is equipment used or worn to minimise exposure to hazards and risks that cause severe injury or illness. In the context of minimising exposure to SARS-CoV-2, PPE includes surgical masks, gloves, goggles, glasses, face shields, gowns and aprons.
POCT Program	See Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program.
Point-of-care testing	Point-of-care testing (POCT) is a form of testing in which the analysis is performed where health care is provided close to or near the patient.
Polymerase chain reaction	Polymerase chain reaction (PCR) is a testing technique to detect the presence of genetic material from a specific organism, such as the SARS-CoV-2 virus. The overall process, including collection, preparation, transport, testing, and return of results, can take several days or more in remote areas if performed in a centralised laboratory setting.
Primary Health Networks	Primary Health Networks (PHNs) are independent organisations funded by the Australian Government responsible for improving patient care and health care services in Australia.
Public Health Laboratory	The Public Health Laboratory Network (PHLN) is Australia's leading network of public health laboratories that have expertise and provide services in public health microbiology in Australia.
Network	The PHLN consists of state and territory, Australian government, expert, national and observer members.
Rapid antigen test	A rapid antigen test (RAT) is a rapid diagnostic test detecting the presence or absence of an antigen. In the context of this evaluation, rapid antigen tests

	detect the presence or absence of SARS-CoV-2, providing a result within 5 to 30 minutes.
Respiratory syncytial virus	Respiratory syncytial virus is a common virus that usually causes mild respiratory infections but can be more severe in young children and the elderly.
Severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2)	SARS-CoV-2 is the virus that causes the COVID-19 disease.
Statistical area level 2	Statistical areas level 2 are medium-sized general purpose spatial boundaries. Their purpose is to represent social and economic statistics at a community- level.
Test Treat ANd GO (TTANGO)	TTANGO was a research randomised controlled trial conducted from 2013 to 2015 aiming to determine the acceptability, performance, and health outcomes of the GeneXpert point-of-care testing machine for the detection and treatment of sexually transmitted infections in regional and remote settings in Australia.
TTANGO2 and TTANGO3	The TTANGO2/3 programs built upon the TTANGO trial aiming for the wider implementation of the program. TTANGO3 extends point-of-care testing for chlamydia, gonorrhoea, and trichomonas to a wider network of services in regional and remote Australia, while transition processes to integration point-of- care testing to routine care are finalised.
Therapeutic Goods Administration	The Therapeutic Goods Administration is the regulatory authority in Australia for evaluating, assessing and monitoring therapeutic goods such as medicines, medical devices, diagnostic tests and vaccines.
Virtual Working Group	The Virtual Working Group (VWG) was established to undertake an ongoing and dynamic assessment of cartridge allocation based on need.

1 Executive Summary

This report presents an evaluation of the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program (the POCT Program, or the Program) which has been implemented in remote First Nations communities in 2020 to 2022 in response to the COVID-19 pandemic. The Australian Government Department of Health and Aged Care (the Department) commissioned Nous Group (Nous) to undertake the evaluation to assess the appropriateness, implementation and effectiveness of the POCT Program and identify any lessons learned.

Specifically, the evaluation aims to determine the extent to which the:

- Program and the training framework have been delivered as intended and has achieved its objectives.
- Program ensured analytical quality of SARS-CoV-2 POCT results were comparable with laboratory PCR testing results.
- Program improved health outcomes for First Nations people through better access to COVID-19 testing.

This evaluation provides a description of Program design and implementation, and documents lessons. It has been conducted over a compressed timeframe and has interviewed a small group of stakeholders for their perspectives and canvassed many others through a survey. The evaluation does not attempt an indepth epidemiological analysis of health data, or any analysis of results at the level of individual sites. Analysis of Program results have been done through modelling, with assumptions of varying delays in testing and extent of compliance with public health measures. No location specific or individual health data has been accessed for the analysis presented.

In summary the Program has been highly successful. It has achieved its intended aim of improved health outcomes for First Nations people through better access to COVID-19 testing. It is estimated that the Program has averted **between 23,000 and 122,000 infections** that would be likely to have arisen in the 40 days after the first infection was identified in a remote First Nations community. It is estimated that the Program has avoided **between \$337 million and \$1.8 billion in health costs**. The key factors that underpinned this success were well informed and culturally competent governance, the GeneXpert system and the technical support given by the Kirby Institute and Flinders University International Centre for Point-of-Care Testing, and the model of care provided by the ACCHS sector.

COVID-19 presents serious risks for remote First Nations communities.

The COVID-19 pandemic poses particularly serious risks to First Nations people in remote communities. The Program was initiated because COVID-19's highly infectious nature was expected to interact with high burdens of chronic disease and over-crowded housing to make transmission difficult to prevent once a first case occurred. At the early stages of the pandemic there were no preventative or disease-modifying treatments, it was likely that the community health services would be overwhelmed and unable to deliver care.

Poor access to rapid and accurate testing exacerbated these risks. Remote communities are a long way from laboratory testing facilities and could expect to wait for many days to get results back from COVID-19 tests. During this wait time infections could be expected to spread rapidly.

Minimising the delay in getting test results helps to reduce the spread of COVID-19, as infected people can isolate earlier after receiving a positive test result. As well, quick test results minimise the risk that a person is falsely reassured by a negative test result, when in fact they have become infected during the lag time between test and result. Rapid identification of cases also allows time for a public health response.

The Program was established in March 2020 and expanded rapidly.

The decision was taken to use the experience gathered through TTANGO and TTANGO 2/3 programs that were implemented via the National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infections Strategy 2018–2022 (the Strategy). This experience had shown that POCT could a be safe and effective way of testing in remote First Nations communities. The COVID-19 test could deliver an almost immediate (45 minute) result that was highly accurate. There was a well-developed set of expertise, relationships and understandings that had evolved during the implementation of the Strategy. These became the foundation to launch the Program.

In April 2020 the (then) Australian Government Department of Health contracted the Kirby Institute to support the delivery of the Program in remote First Nations communities. By May 2020 the first COVID-19 POCT was conducted. By September 2020 a total of 86 remote health clinics with high populations of First Nations peoples had formally registered for the Program. Of these remote health clinics, 55 services were run by Aboriginal Community Controlled Health Services (ACCHS), and 31 were run by state/territory health services.

Governance was provided by the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 (the Advisory Group). The group provides leadership on health issues related to COVID-19 for First Nations people and has provided input to elements of the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program. The Advisory Group consisted of representatives from the National Aboriginal Community Controlled Health Organisation (NACCHO), several CEO's and public health medical officers from Aboriginal Community Controlled Health Services (ACCHS), state/territory ACCHS peak bodies, as well as First Nations medical directors and Australian federal, state and territory government health representatives. This was a major strength of the Program, enabling a trusting environment where lessons were shared, and practices continually improved.

The Advisory Group reported to the Australian Health Protection Principal Committee (AHPPC), becoming a formal and ongoing subcommittee on 17 October 2022. This meant that they had timely access to a wide range of information and data that facilitated high quality and timely decision making.

The Program delivered training, testing supplies and support.

The essential elements of the Program were the supply of GeneXpert machines, personal protective equipment (PPE) and testing cartridges, the training of test operators, quality management processes, and the provision of 24-hour support for how to manage testing results. Support was delivered by the Kirby Institute and Flinders University International Centre for Point-of-Care Testing. The contract cost of the delivery of the Program until 31 December 2022 is approximately \$27 million.

As of 31 August 2022 the Program carried out a total of 72,624 tests across remote First Nations communities, resulting in 4,391 COVID-19 positive results. Of these total tests, more than two thirds (67.1%) were among to First Nations peoples.¹ The training of testing operators was a major component of the Program, as it enabled the testing to be conducted safely and to standards comparable to those achieved in laboratory testing environments. As of 31 August 2022, a total of 908 staff members (Aboriginal Health Workers/practitioners, nurses, and doctors) have been trained and have subsequently conducted testing.²

¹ Aboriginal and Torres Strait Islander COVID-19 Point-of -Care Testing Program Outputs Report, Kirby Institute, 30 September 2022, p. 7. ² Ibid, p. 13.

Rapid and accurate testing facilitated a public health response.

Rapid and accurate testing conducted on-site enabled a timely public health response. When a first case was detected in a remote community the state/territory health services and ACCHS subsequently moved quickly to implement public health responses. This included lockdowns, vaccination drives, supported isolation³ and timely access to antivirals once these were available. This was essential in the early stages of the pandemic where vaccination did not exist and the virus was novel. The impact of the Program became less crucial in the latter stages of the pandemic when the higher infectivity of the Omicron variant meant initiatives aimed at suppressing community transmission were not feasible, hence the reliance on early testing was lessened, and rapid antigen testing (RAT) became widely available.

The Program was highly successful, resulting in decreased transmission and avoided health impacts.

Modelling demonstrates the impact of rapid, accurate testing in limiting transmission in remote First Nations communities. It shows that with delays of six days between specimen collection and receiving the result, transmission would have reached 21% of the population of remote First Nations communities within the first 40 days of detecting the first case, with a 100% compliance level with community lockdown. This proportion increases to 87% in a scenario with 70% compliance level with community lockdown.

With an estimated population size of 150,123⁴, it is estimated that between 23,000 and 122,000 infections were averted within 40 days of the first infection in a remote community.

Analysis of testing numbers and positivity rates show the different shape of the pandemic in different locations, and that despite smaller numbers at the start of the Program, there was still a need for testing throughout the pandemic. This is presented in detail at page 30.

Health services increased testing numbers and compliance with isolation resulting in reduced infections.

Modelling demonstrates the impact of having the Program implemented by services with strong and trusting relationships with their communities. Delivery through well-established local health services make it more likely that residents will both seek testing and comply with isolation requirements. Scenarios with high compliance levels (80% and 100%) and high proportion of infected individuals seeking testing (75% and 100%) usually lead to lower infection numbers, compared with low compliance levels and proportions of infected individuals seeking testing.

Public health measures were instrumental in reducing transmission.

The modelling described above predicted that delayed public health responses (due to a delay in identification of the first cases) could lead to a substantial and rapid increase in the proportion of infected individuals in a short period of time. The Kirby Institute (based on analysis of point-of-care positive results) and peak bodies have advised that many clinics in the Program described experiencing only small clusters of cases, as public health responses were implemented quickly.

Reduced transmission means reduced risk of health complications.

The experience of the COVID-19 pandemic has clearly demonstrated that COVID-19 can have serious health consequences, particularly for the elderly and those with chronic health conditions. This means that reduced transmission in remote First Nations communities can be expected to have a considerable impact on avoided hospitalisations and associated negative impacts on quality of life.

³ Supported isolation refers to the work of ACCHS in supporting those in isolation with essentials such as food and providing access to treatment where available.

⁴ This is the expected number of people, including First Nations people and non-Indigenous people, that the Program is servicing across Australia. The Kirby Institute requested that all health services provide the number of First Nations clients currently registered with their service. Approximately five health services were unable to provide this data, so the First Nations population data from the ABS were used instead.

Costs to the health system have been avoided.

The hospitalisation rate is estimated at 19.8%⁵ with a 7.6%⁶ ICU admission rate, while the medivac rate is at 5% among the non-hospitalised patients over the same period. The costs associated are conservatively estimated to be \$62,670⁷ per hospitalisation, \$15,230⁷ per ICU admission and \$50,000⁸ per medivac (including accommodation, food and staff costs).

Note that the costs avoided only relate to the first 40 days following the appearance of the first case across all communities in Australia. This excludes deaths and other costs associated with supporting non-hospitalised patients.

It is estimated between \$337 million and \$1.8 billion in health costs were avoided in the first 40 days, with more savings accruing over the life of the Program.

Key Line of Enquiry	Summary finding
KLE 1.1 Has the overall running of the Program been delivered as it was intended to be and achieved its objectives?	Yes, the Program was implemented and delivered effectively over a short period of time. The overall aim of delivering rapid and accurate testing to remote First Nations communities was realised, preventing the spread of COVID-19 and saving costs.
KLE 1.2 Did the training framework delivered by the Program adequately prepare operators to safely, accurately and confidently conduct SARS-CoV-2 testing?	Yes, the training Program was effective in preparing test operators to conduct tests to the required standards. Training was delivered successfully at scale which meant point-of-care operators were well-prepared to conduct COVID-19 testing.
KLE 2.1 Was the Program delivered in a way that ensured analytical quality of SARS-CoV-2 POCT results were comparable with laboratory PCR testing results?	Yes, the overall non-success rate (including ERROR, INVALID and NO RESULT error codes) for conducting tests was just 0.7%, similar to figures observed in a laboratory, and the external quality assurance program showed very high concordance with the expected results.
KLE 2.2 How effective was the roll-out of the Program? What were the enablers and barriers to implementation and roll-out?	The Program was rolled out rapidly and effectively supported by the Advisory Group and the ability of the POCT Program to quickly pivot to deliver POCT for COVID-19. Enablers included robust governance arrangements, reuse of existing infrastructure, and Program delivery through established local health services. Barriers included staffing issues, a worldwide shortage of

Table 1 | Summary of findings against Key Lines of Enquiry

⁵ This was calculated using the NNDSS COVID-19 data up to 31 August 2022. Out of 43,637 First Nations patients with available data on hospitalisation status, 8,641 of them reported having been hospitalised due to COVID-19.

⁶ This was calculated using the NNDSS COVID-19 data up to 31 August 2022. Out of 32,716 First Nations patients with available data on ICU status, 502 reported being admitted to an ICU, constituting 7.6% of those who were hospitalised.

⁷ \$62,670 = \$48,767 emergency evacuation cost + \$13,403 hospital costs + \$500 non-emergency return flight cost; \$15,230 intensive care unit costs. B A Spaeth, B Kaambwa, M D S Shephard, R Omond, Economic evaluation of point-of-care testing in the remote primary health care setting of Australia's Northern Territory, Clinicoecon and Outcomes Research: COER, 2008; J B Foster, D Judge, D Mendez, B Marais, D Peniyamina, E McBryde, Cost of tuberculosis-related aeromedical retrievals in the Torres Strait, Australia, medRxiv, 2022; B Liu, P Spokes, M Alfaro-Ramirez, K Ward, J M Kaldor, Hospital outcomes after a COVID-19 diagnosis from January to May 2020 in New South Wales Australia, Communicable Diseases Intelligence, 2018; A J Burrell, B Pellegrini, F Salimi et al., Outcomes for patients with COVID-19 admitted to Australian intensive care units during the first four months of the pandemic, Medical Journal of Australia, 2021; Independent Hospital Pricing Authority, 2019; Reserve Bank of Australia, Inflation Calculator Sydney, Australia, Reserve Bank of Australia, 2019.

⁸. Financial Counselling Australia, Quarantine Fees and Hardship Summary Jan 2021 Quarantine Fees and Hardship – States/Territory Breakdown. Melbourne: Financial Counselling Australia, 2021.

Key Line of Enquiry	Summary finding	
	testing cartridges, and the lack of streamlined communication to health services.	
KLE 3.1 Has the Program had any impact in maintaining the health and wellbeing of First Nations communities throughout the COVID-19 pandemic?	Yes, however the Program made up just one part of the broader Australia-wide response to COVID-19. Point-of-care testing acted as a 'trigger' for measures such as testing of close contacts, vaccinations drives, antiviral treatment, and enforcement of isolation and community lockdowns. Collectively, these measures led to low mortality rates and limited the spread of COVID before RATs and vaccines were widely available.	
KLE 3.2 Has the Program had any impact on reducing the burden of disease associated with COVID-19 in regional and remote First Nations communities?	Yes, modelling estimates predicted that delayed public health responses (due to a delay in receiving the COVID-19 test result) could lead to a substantial and rapid increase in the proportion of infected individuals in a short period of time.	
	It is estimated that between 23,000 and 122,000 infections were averted within 40 days of detection of a first case within a remote community due to the POCT Program. ⁹	
KLE 3.3 Have the resources that have been made available been utilised effectively to make a change or improvement in First Nations communities?	Staff went above and beyond the call of duty to deliver high-quality services and support their communities. However, staffing was a constant challenge throughout the pandemic. Almost all evaluation participants reported that a lack of staff to administer testing and care was a significant barrier to delivering the Program.	
	Physical resources such as testing infrastructure, training materials, and cartridges were largely utilised effectively to deliver the Program. Key challenges included cartridge shortages and clinics that could not easily support respiratory testing.	
KLE 3.4 Did the Program contribute to a reduction in medical evacuations, contributing to overall cost avoided?	Yes, modelling estimates predict that between 900 and 4,900 medical evacuations were avoided in total in the first 40 days, contributing to between \$46 million and \$245 million in costs avoided.	
	Including hospitalisations and ICU admissions, it is estimated that between \$337 million and \$1.8 billion in health costs were avoided in the first 40 days, with more savings accruing over the life of the Program. ¹⁰	
KLE 4.1 What can we learn from this evaluation that could help inform decision- making on a potential broader roll-out of the Program to include other notifiable diseases?	The evaluation has surfaced several lessons that can inform decision- making on a potential broader roll-out of the Program. Most notably, point-of-care testing should be considered as part of the response to infectious diseases in remote First Nations communities. Additionally, First Nations groups need a seat at the main tables where key decisions impacting the health of Aboriginal and Torres Strait Islander people occur.	

 ⁹ See section 6.3 for detailed assumptions on the modelling of health impacts.
 ¹⁰ See section 6.4 for detailed assumptions on the modelling of financial outcomes.

Table 2 | Evaluation recommendations



PROGRAM ELEMENT	RECOMMENDATION	RATIONALE
Design	Reporting requirements need to be automated between the managing organisation and states/territories health systems.	Reporting requirements often overlapped, and as systems were not integrated this led to duplication of time and effort for reporting. <i>See section 4.2</i> .
Training	Expand training to relevant staff to include cartridge disposal and cleaning practices.	In general, high implementation standards meant that false positive results were infrequent during the POCT Program. However, the disposal of cartridges and inadequate cleaning practices were a source of risk. <i>See section 5.1</i> .
Staff	Responses to future pandemics need to consider the capacity of services to deliver testing and how to best support increases in capacity when needed.	The Kirby Institute and Flinders University International Centre for Point-of-Care Testing, ACCHS staff members, and representatives from state/territory health departments reported that staff members worked long hours, often up to 16 hours per day, to deliver the Program in addition to providing regular services to the community. <i>See section 5.2.</i>
Communication	Communication to participating health services should be streamlined where possible, particularly when guidance	Many ACCHS staff members and state/territory health department representatives reported being overwhelmed by the amount of communication materials that they received from a range of sources.
	changes.	Some sites reported experiencing confusion in the processes following tests, especially with positive results. This challenge was more prevalent for services who had long periods between positive cases, which reduced their familiarity with the relevant protocols. <i>See section 5.3.2.</i>

2 Introduction

This section briefly describes the context and background of the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program and its importance in remote First Nations communities, as well as the purpose and structure of this report.

2.1 COVID-19 in remote First Nations communities

Coronavirus disease (COVID-19) is a highly infectious disease communicable disease caused by the SARS-CoV-2 virus. COVID-19 transmits when people breathe in air contaminated by droplets and small airborne particles containing the virus. The risk of breathing these in is highest when people are in close proximity. Infected persons are typically contagious for up to ten days depending on the strain (variant) of the virus, and can spread the virus even if they do not develop symptoms. Mutations have produced many strains with varying degrees of infectivity and virulence.

The novel virus was first identified from an outbreak in the Chinese city of Wuhan in December 2019. Attempts to contain it there failed, and the virus to spread to other areas of Asia and later worldwide. The World Health Organization declared the outbreak a public health emergency of international concern on 30 January 2020 and a pandemic on 11 March 2020. The COVID-19 pandemic has many phases marked by different variants and the availability of vaccines, rapid antigen tests (RATs) and treatments. This Program began prior to the availability of vaccines, and has run well into the 'Omicron' phase of the pandemic. The role and impact of point-of-care testing machines in the management of COVID-19 has varied over time, particularly as RATs became more widely available.

COVID-19 poses an especially serious threat to many First Nations people who live in remote communities. The high burden of chronic disease in these communities increases the risk of illness and death from COVID-19. The risk is magnified in some First Nations communities due to limited access to health care and COVID-19 treatments. As well, high housing densities increase the risk of transmission making isolating at home difficult and more likely to be ineffective.¹¹

Many remote First Nations communities are hundreds of kilometres away from services where laboratory COVID-19 testing is carried out. Prior to this Program, swabs taken in these remote communities had to be transported (usually by air) to the nearest testing centre. As flights do not go daily some remote communities could expect to wait for up to ten days to get the result of a test. Requesting someone to isolate for this length of time before they get a result is difficult. An example of the difficulties of managing COVID-19 in remote First Nations communities is illustrated by one Aboriginal Community Controlled Health Service (ACCHS). They reported that they were chartering flights for symptomatic individuals to the nearest town where testing occurred. Individuals were tested and then put up in hotels while they waited for a result. This was in line with the Communicable Diseases Network Australia policy for a suspected case at the time. Although ACCHS acknowledged that although this approach was expensive and labour intensive, it was better than allowing infection to spread in the community.

Another source of risk for many First Nations communities was lower vaccination rates than the general Australian population, due to high fear of the vaccine, social media misinformation, and lack of trust in governments and medical organisations.¹² This substantially increased the risks of illness and death from a

¹¹ <u>https://www.health.gov.au/sites/default/files/documents/2022/02/cdna-national-guidance-for-remote-aboriginal-and-torres-strait-islander-communities-for-covid-19.pdf.</u>

¹² S Graham, M Blaxland, R Bolt et al Aboriginal peoples' perspectives about COVID-19 vaccines and motivations to seek vaccination: a qualitative study. BMJ Global Health, 2022.

COVID-19 outbreak. First Nations staff who work at health clinics were deeply concerned about the potential for infection through a work contact and expose their family and community.

Another risk related to outbreaks is the limited capacity of health services to deliver care. Healthcare services in remote First Nations communities are small and could struggle to respond to a COVID-19 outbreak, often relying on services provided by ACCHS. ACCHS play a significant role in providing effective and culturally appropriate health care for First Nations people. They deliver comprehensive primary care using a holistic model that focuses on the whole person and their wellbeing. However, these health clinics have limited capacity to respond to large numbers of infections of COVID-19, particularly if staff become infected.

2.2 Predecessors of the COVID-19 Point-of-Care Testing Program

The GeneXpert Point-of-Care Testing machine (POCT machine), manufactured by Cepheid Inc, has been used in First Nations health clinics as part of the *National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infections Strategy 2018–2022.* Starting in 2011, the Test Treat And GO (TTANGO) and TTANGO2/3 programs have used the POCT machine in remote First Nations clinics to test for sexually transmitted infections. ACCHS staff report that access to rapid testing led to increased rates of testing and timely treatment, which supported improved control of sexually transmitted infections in some remote settings.

2.3 Establishment of the COVID-19 Point-of-Care Testing Program

In light of the risks that COVID-19 posed to remote First Nations communities, the National Aboriginal Community Controlled Health Organisation (NACCHO) and the Australian Government Department of Health and Aged Care (the Department) recognised the importance of taking measures to manage the potential transmission and outbreak of COVID-19 in remote First Nations communities. In April 2020, the Department funded the Kirby Institute and the Flinders University International Centre for Point-of-Care Testing (FUICPOCT) to implement the Aboriginal and Torres Strait Islander COVID-19 Point-of-Care Testing Program (the 'POCT Program' or the 'Program') in remote First Nations communities across Australia. Figure 1 overleaf presents a timeline of the initial roll-out of the POCT Program from 31 March 2020 to 25 November 2020.



At the start of the Program, 86 ACCHS and state/territory health services were selected to host a GeneXpert machine. Services were initially selected based on their distance from laboratory testing facilities, community size and First Nations demographic, in addition to on-site professional clinical staff available for training as point-of-care operators. This was eventually expanded to 105 services across New South Wales, Victoria, Queensland, South Australia, Western Australia, and the Northern Territory. A small number of services that did not meet the criteria for distance to laboratory facilities were added to the Program after the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 (the Advisory Group) determined there would be a benefit to the community.¹³

The Program is large in its size and scale. As of 31 August 2022, a total of 908 staff members (Aboriginal Health Workers/practitioners, nurses, and doctors) had been trained in theory and practical components.¹⁴ The Program carried out a total of 72,624 tests across all sites, resulting in 4,391 COVID-19 positive results as of 31 August 2022. Of these total tests, more than two thirds (67.1%) were conducted among First Nations peoples.¹⁵

In June 2022, the POCT Program began transitioning to 4-Plex testing for other respiratory illnesses including COVID-19, Flu A, Flu B and respiratory syncytial virus (RSV). As at 31 August 2022, 46 sites had transitioned to 4-Plex testing.

Figure 2 overleaf illustrates the locations of the POCT Program sites and the density of the First Nations population in the Program regions.

¹³ Inclusion criteria for site selection: At least two hours drive away from a laboratory testing facility, AND (i) provide services to a single community of at least 500 Aboriginal and/or Torres Strait Islander people; or (ii) a health hub service which provides testing to spoke communities with a total population of at least 500 people and reasonable road access to the hub community; or (iii) a health service on an island, and (iv) at least 3 clinical staff members at the service.

¹⁴ Aboriginal and Torres Strait Islander COVID-19 Point-of -Care Testing Program Outputs Report, Kirby Institute, 30 September 2022, p. 13. ¹⁵ ibid, p. 7.



Figure 2 | Proportion of First Nations people, by Statistical Area Level 2 (SA2)¹⁶, with POCT site locations

2.4 Funding for the POCT Program

The Remote Community Preparedness and Retrieval package was announced on 11 March 2020, as part of a \$2.4 billion health plan to address COVID 19.17 The health package included \$58.7 million for increased capacity to prevent outbreaks in remote locations, including First Nations communities.

¹⁶ Statistical Areas Level 2 (SA2s) are medium-sized general-purpose areas from the ABS Australian Statistical Geography Standard (ASGS). Their purpose is to represent a community that interacts together socially and economically. SA2s generally have a population between 3,000 and 25,000 with an average of about 10,000 people. SA2s in remote and regional areas generally have smaller populations than those in urban areas. ¹⁷ \$2.4 billion health plan to fight COVID-19, 11 March 2020, accessible at:

https://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressrel%2F7234737%22.

An additional \$2 billion was announced by the Prime Minister on 18 September 2020 to extend critical health services across Australia, including the POCT Program.¹⁸

From 2019-20 to 2021-2022, more than \$167.25 million targeted direct funding has been provided for First Nations-specific elements of the health response to COVID-19, with further funding allocated for 2022-23. Funding for the POCT Program was part of the broad COVID-19 funding arrangements. This ensured funds were available to respond to the changing needs of remote communities throughout the pandemic. The total approximate cost of the POCT Program from inception to 1 December 2022 is \$27 million, which was provided in 6-month cycles.

A detailed analysis of funding is out of scope for this evaluation.

2.5 Background to the evaluation

The Department has engaged Nous Group (Nous) to evaluate the appropriateness, implementation, effectiveness, and lessons learned of the Program. The evaluation also aims to understand the lessons that can be applied to a broader roll-out of the Program or for other future POCT programs. The focus is on improved health outcomes for First Nations people in remote communities due to improved access to testing.

COVID-19 infections are likely to be recurring for some time to come. This evaluation is an important opportunity to analyse the contribution of the Program and ensure it can be extended or strengthened.

2.6 Purpose and structure of this report

The final evaluation report builds on Nous' emerging insights report and presents the overall findings and analysis. This report presents these insights according to the following structure:

- Evaluation approach and scope (section 3).
- Program design (section 4).
- Program implementation (section 5).
- Program outcomes (section 6).

¹⁸ \$2 billion to extend critical health services across Australia, 18 September 2020, accessible at: https://pmtranscripts.pmc.gov.au/release/transcript-43026

3 Evaluation approach and scope

This section provides an overview of the evaluation approach and methodology, including the key guestions to be answered.

3.1 Scope of the evaluation

As described above, the purpose of the evaluation is to provide an analysis of the Program's implementation and to surface insights and lessons learned from a range of participants involved. Given the short timeframes and limited data availability, the focus of the Final Report is on how the Program was implemented and the effects on Program outcomes.

The evaluation does not contain an in-depth analysis of epidemiological data or an analysis of individual site/person data.

3.2 Program logic

The Program logic was developed by Nous after the roll-out of the Program for the purpose of the evaluation. It sets out the expected mechanisms through which the inputs, investments, and activities lead to the desired outputs and outcomes. It is a useful tool to show the thinking behind a Program. However, as a post-hoc Program logic, it has been developed with hindsight and may not capture all original elements or expected outcomes of the Program. The Program logic guided the evaluation by helping the analysis of what happened compared to what was expected. The Program logic for the Program is detailed at Figure 3 overleaf.

Figure 3 | Program logic for the POCT Program

SITUATION (What is the need?): Isolated First Nations communities experienced delays in receiving COVID-19 test results which prevented time-sensitive actions such as isolation to reduce the spread of COVID-19 in the community.

OBJECTIVE (*What is the initiative aiming to achieve?*): Timely access to test results to enable a rapid response to positive COVID-19 cases to avoid transmission in the community. Furthermore, the rapid response aims to reduce the risk of transmission and support early identification of COVID-19 among First Nations people with high comorbidities.

CONTEXT	INPUTS	ACTIVITIES	OUTPUTS	ουτο	COMES
First Nations	Department of Health funding of \$27 million over	 Site selection and rollout. Engagement with partners and community (Kirby Institute, NACCHO, FUICPOCT, ACCHS). Governance of program. Development of 	 Sites with the highest need are prioritised for access. Access to SARS- CoV-2 testing that is no more than a two-to- three-hour drive away from those in remote 	SHORT-TERM	LONG-TERM
likely to suffer				PATIENT OUTCOMES	
from a serious illness and experience complications if they contract	 the duration of the program. An initiative of the Kirby Institute, in partnership with 			 Morbidity associated with COVID-19 was reduced. Mortality associated with COVID-19 was reduced. Continuity of care and 	 High quality care was received in the most appropriate setting.
Many rural and remote Australian	FUICPOCT. • Knowledge on the			management of complex chronic needs was improved.	
communities have	platform and	policies and	Australia.	COMMUNI	TY OUTCOMES
housing shortages and overcrowding, making physical distancing virtually impossible and increasing the risk	 platform and equipment. Existing network of Aboriginal health services with extensive experience in offering point-of- care testing for STIs in rural and remote communities. Physical and digital material, equipment and infrastructure for COVID-19 Point-of- care testing. Conduct training and develop protocols. Provision of testing equipment. Specimen collection and storage, transport testing, communication of results. Connectivity and reporting systems. Supply management and costs. 	 guidelines, risk and quality management. Conduct training and develop protocols. Provision of testing equipment. Specimen collection and storage, transport, torting 	 guidelines, risk and quality management. Timely access to test results to facilitate appropriate Provision of testing equipment. Specimen collection and storage, transport, testing Reliable guality Timely access to test results to facilitate appropriate The spread of COVID- transmission was brok these remote communication services in remote communities during the pandemic was improv 	 The spread of COVID-19 transmission was broken in these remote communities. Sustainability of health services in remote communities during the pandemic was improved. 	 Confidence in the communities' capacity to handle COVID-19 was improved. Confidence in the health service was improved and people were more willing to engage with treatment and care.
of rapid				SYSTEM	OUTCOMES
 Geographic dispersion of small populations across islands and other rural and remote settings presents a key barrier to testing access. 		specimen collection and testing leading to valid test results.	 Unnecessary medical isolations or evacuations were avoided. POCT machines were rapidly deployed to other locations of epidemiological concern. 	 Costs and impacts on other health services (e.g. hospital admissions, primary care interactions) were reduced. Provision of support to remote health services created networks and built knowledge of support for future pandemics. Capacity and autonomy in the testing of other infectious diseases was enhanced. 	

3.3 Key lines of enquiry

The evaluation has been guided by key lines of enquiry (KLEs) focusing on the appropriateness, implementation, effectiveness, and lessons learned from the Program.

The KLEs are high-level questions developed by the Department that have worked with the Program logic to guide the evaluation. They show the evaluation's objectives. The KLEs are supported by research questions, a more specific set of questions which support an in-depth and holistic evaluation. The Evaluation Plan, delivered by Nous in September 2022, details the approach and methodology used to answer the KLEs in Table 3 below. Note that, following recommendations from the Department, KLE 3.1, KLE 3.2 and KLE 3.4 have been amended to account for changes in the quantitative methodology due to restricted data access.

KLEs Research questions KLE 1.1 Has the overall running of the Program been delivered as it was intended **KLE 1 Appropriateness** to be and achieved its objectives? Has the overall running of the KLE 1.2 Did the training framework delivered by the Program adequately prepare Program and the training framework been delivered as it operators to safely, accurately and confidently conduct SARS-CoV-2 testing? was intended to be and achieved its objectives? **KLE 2 Implementation** KLE 2.1 Was the Program delivered in a way that ensured analytical quality of SARS-CoV-2 POCT results were comparable with laboratory PCR testing results? Was the Program delivered in a KLE 2.2 How effective was the roll-out of the Program? What were the enablers way that ensured analytical quality of SARS-CoV-2 POCT and barriers to implementation and roll-out? results were comparable with laboratory PCR testing results? **KLE 3 Effectiveness** KLE 3.1 Has the Program had any impact in maintaining the health and wellbeing of First Nations communities throughout the COVID-19 pandemic? How effective was the Program in improving access to SARS-KLE 3.2 Has the Program had any impact on reducing the burden of disease CoV-2 testing in remote associated with COVID-19 in regional and remote First Nations communities? communities and improving KLE 3.3 Have the resources that have been made available been utilised health outcomes for First effectively to make a change or improvement in First Nations communities? Nations people? KLE 3.4 Did the Program contribute to a reduction in medical evacuations,

Table 3 | Key lines of enquiry (KLEs) in the evaluation

 KLE 4 Lessons
 KLE 4.1 What can we learn from this evaluation that could help inform decision

 What are the lessons learned from the evaluation?
 making on a potential broader roll-out of the Program to include other notifiable diseases?

3.4 Summary of engagement

The evaluation employed a mixed methods approach to data collection and analysis.

To conduct a thorough and holistic evaluation, Nous has drawn upon a range of quantitative and qualitative methods to collect and analyse data. This included a combination of document review, health data and cost analysis, consultation with people and organisations involved with the Program, and a

survey distributed to ACCHS and state/territory health services across Australia. This has enabled us to develop findings and provide a balanced and objective evaluation of the Program.

Engagement with people and organisations involved with the Program was a crucial aspect of the evaluation.

Nous engaged with a wide range of people and organisations involved with the Program to understand their experiences. Engagement was conducted through virtual consultations and a survey distributed to all NACCHO affiliated ACCHS across the country, and state/territory health services who were part of the POCT Program. Extensive consultation provided valuable insights from the perspectives of people and organisations involved in different aspects of the Program.

Our engagement included the development of five case studies. These case studies involved consultation with five services across three jurisdictions to develop an understanding of how these sites managed COVID-19 testing. Four of the case study sites participated in the Program, while one non-participating site was used as a comparator. Due to circumstances beyond the control of the evaluation all these services were ACCHS. No state run health services were interviewed. Case study sites were chosen in consultation with the Kirby Institute and the Department to achieve a balance of levels of remoteness, the accessibility of key staff, and consent to participate.

The case studies provided an opportunity for these ACCHS to tell the story of how they managed COVID-19 in their community. Insights from these interviews have been included to support evaluation findings in this report, however case study interviews did not follow strict adherence to the evaluation KLEs and should not be viewed from the same evaluative lens.

The survey was distributed to 194 services, including all 143 NACCHO affiliated ACCHS across Australia (regardless of their participation in the Program), and 51 state/territory health services who were part of the Program. The survey aimed to inform understanding of how services managed and tested for COVID-19. Questions were designed to draw comparison between the experiences of services that were participating in the Program and those that were not. The survey was distributed by NACCHO and the Department to ensure complete coverage and was open from 26 September to 17 October 2022. The survey questions and accompanying participant information sheet are included in Appendix B. A summary of our engagement can be found in Figure 4 below.



Figure 4 | Summary of engagement

Documents and data supplied by the Department and the Kirby Institute provided context.

The Department provided information on governance and funding arrangements. The Kirby Institute and FUICPOCT provided Program materials such as training packages and communications material. The document review provided valuable contextual information and informed the understanding of the implementation and management of the Program.

The Department supplied de-identified Australian Immunisation Register (AIR) COVID-19 data and National Notifiable Diseases Surveillance System (NNDSS) COVID-19 data. These data were used to understand the vaccine uptake and spread of COVID-19 in remote communities. The Kirby Institute provided Program testing data at the state/territory level, which informed understanding of the number of tests taken and the number of positive tests across the six participating jurisdictions. The Kirby Institute also facilitated access to a simulation model that was used to predict the impacts of COVID-19 in remote regional settings early in the pandemic. Further information of the model is provided from section 6.3.

Figure 5 below describes all documents and data received by Nous for the evaluation.

Figure 5 | Documents and data received

DEPARTMENT OF HEALTH AND AGED CARE	KIRBY INSTITUTE	
DOCUMENTATION:	DOCUMENTATION:	
 Full site list from 18 May 2020 to 12 September 2022 Timeline of contract extensions Aboriginal and Torres Strait Islander Advisory Group on COVID-19 documents COVID-19 – Communicable Disease Network Australia National Guidelines for Public Health Units DATA: Deidentified AIR COVID-19 data Deidentified NNDSS COVID-19 data 	 COVID-19 POCT Program Report, prepared by the Aboriginal and Torres Strait Islander COVID-19 Point-of care testing Program team, 30 September 2022 Communications with staff and sites Educational material Risk assessment documents Testing guidelines Training packages OUTPUTS: Testing, case and outbreak data at the jurisdictional level Trends in point-of-care testing and positive results at the first health service in the community in each jurisdiction Modelling testing and response strategies for COVID-19 outbreaks in remote Australian Aboriginal communities¹ 	
1 B Hui et al, Modelling testing and response strategies for COVID-19 outbreaks in remote Australian Aboriginal communities, BMC Infectious Diseases, 2021.		

3.5 Summary of quantitative analysis

Due to limited access to site-level or patient-level testing data from the Program. and the short timeframe to conduct the evaluation, Nous used the existing theoretical modelling work¹⁹ undertaken by the Kirby Institute and the Doherty Institute to conduct a quantitative analysis. This was used to produce scenario estimates to establish counterfactuals for metrics comparison against the actual experience of Program sites.

This is a theoretical modelling of how the health system can respond by investigating the impact of COVID-19 in remote and regional settings under various conditions. This modelling work was commissioned by the Australian Government and guided with inputs from the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 (the Advisory Group).

The existing theoretical modelling provides a strong foundation for Nous' quantitative analysis.

The agent-based simulation model²⁰ used is a tool to represent individual behaviours and their interactions. It allows users to explore 'what if' questions and scenarios without having to experiment on the population itself. It also helps reveal the typically far-from-intuitive consequences when multiple causal factors act in combination. In practice, that means it is possible to simulate the effect of these relationships on the dynamics of public health problems at the community level. This is critical as there were no genuine comparators in Australia, as the Program has almost full coverage across remote First Nations sites across Australia.

COVID-19 data from the National Notifiable Diseases Surveillance System and the COVID-19 – Communicable Diseases Network Australia National Guidelines for Public Health Units²¹ were used to update the parameters used in the modelling.

Figure 6 outlines the approach overview with details on how data from various sources fit together.



Figure 6 | Summary of quantitative analysis

¹⁹ <u>https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-021-06607-5.</u>

²⁰ An agent-based simulation model is a computational model for simulating the actions and interactions of autonomous agents (both individual or collective entities such as organisations or groups) to understand the behaviour of a system and what governs its outcomes.

²¹ https://www.health.gov.au/resources/publications/coronavirus-covid-19-cdna-national-guidelines-for-public-health-units.

This agent-based simulation model uses information currently known in the world about COVID-19, and about how remote First Nations communities live and interact, to make predictions of what might happen under certain scenarios. This includes real information about:

- How COVID-19 has spread in Australia and other countries.
- How long it takes for people to feel sick, noting that some people do not feel sick at all.
- How First Nations people may live in a remote community, for example; how many people there are in each house and how many households they spend time in with extended family.
- The different ways that an individual may come into contact with someone with COVID-19.
- The gender and age population distribution of First Nations people living in remote regions.

Nous then altered the model parameters over a range of values to investigate the impact that had on the model outputs of interest. These model parameters included the:

- Number of days of delays between SARS-CoV-2 testing and result.
- Level of individual compliance with community lockdown measures.
- Proportion of infected individuals seeking SARS-CoV-2 testing.
- Different variants of concern for SARS-CoV-2.

Nous then turned the model's predictions (such as the number of infections) into scenario estimates to establish counterfactuals for comparison against the actual experience of Program sites with similar community size in order to assess the effectiveness of the Program in impacting health outcomes.

3.6 Limitations

There are several limitations related to the availability and quality of engagement and data that are important to consider when interpreting the quantitative findings of this report.

Site-level or patient-level conclusions cannot be drawn with high confidence.

At the inception of the Program, there was no arrangement for identifiable site-level or patient-level data records to be used for an external, independent evaluation. However, the public dashboard hosted on the COVID-19 point-of-care testing website provided access to aggregate data, sorted by two to three attributes: jurisdiction, age group, gender, ethnicity (First Nations status), and time period. The Kirby Institute provided a draft program report that contained data outputs from six deidentified health services (one in each jurisdiction) that were the first to detect COVID-19 in the community. This included the daily use of point-of-care testing and daily positive results from these six health services, spanning up to approximately 100 days from the detection of the first case of COVID-19 in the community.

The Kirby Institute also provided jurisdictional-level data, including the number of patient tests, the number of positive tests, the number of negative tests, the number of unsuccessful tests, and cumulative population size, sorted by epidemiology week and jurisdiction.

Due to this setup, this evaluation lacks the ability to investigate relationships between variables of interest among the 105 active sites.²² Consequently, it is impossible to have an accurate, confident sense of true service coverage and health outcomes by more granular geographic units, such as local government area

²² Information loss occurred during the data aggregation process often ignores individual variation as if it were only a type of statistical noise or measurement error. This increases the probability of drawing inaccurate inferences.

or statistical area level 2. This means site-level or patient-level conclusions cannot be drawn with high confidence.

Models only approximate natural phenomena and are inherently inexact.

The mathematical description of inputs and assumptions used in the model can be imperfect, or our understanding of COVID-19 may still not be complete at this point. The mathematical descriptions of parameters are empirically determined or represent multiple processes. Further limitations about the model are detailed in the research paper mentioned in Section 3.5.²³ In particular, it is worth highlighting the following:

- Other than household structure, 'real-world' mixing opportunities such as schools and workplaces have not been explicitly included.
- Certain assumptions regarding transmission dynamics are derived from non-First Nations populations.
- It is assumed that there is perfect sensitivity and specificity of testing throughout the infectious period. In practice, that means zero false positives and zero false negatives.
- Morbidity and mortality outcomes have not been estimated in this model, nor has the anticipated demand on health resources (testing requirements aside).
- It is assumed that the population is wholly susceptible to COVID-19 and unvaccinated. This assumption has been made because this was the case at the commencement of the Program.

Engagement and consultation were limited by availability of participants.

Consultation with ACCHS was limited to the five case study sites across three jurisdictions (six case studies across four jurisdictions were originally planned). Four sites were ACCHS participating in the POCT Program, and one was a non-participating ACCHS used as a comparator. The interview scheduled for a state health site did not eventuate, so no in-depth consultation with a state/territory health service is represented. Consultation with state and territory officials was limited to four health departments and four ACCHS peaks bodies.

To deliver good coverage across the six jurisdictions, consultations were scheduled with other people and organisations involved with the Program. These included representatives from Primary Health Networks (PHNs) and other regional health organisations. The consultations provided coverage across the six jurisdictions that received the Program.

Care was taken to ensure a diverse range of perspectives were accessed. However, given the limited number of consultations, and the fact that participation was optional, participants cannot be considered a representative sample of the whole population of parties involved in the Program. There is a risk that their views may not fully reflect the views of other parties.

The survey response rate was lower than hoped.

A target of 86 survey responses was outlined in the Evaluation Plan. This target was based on sending out approximately 190 surveys, and expecting a 20 to 30% response rate from staff of services with a POCT machine and a ten to 15% response rate from staff of services without a POCT machine. The survey received 72 responses – 46 from services with a POCT machine and 26 from services without a POCT machine. There is a risk that the views of survey respondents may not fully reflect the views of non-respondents. However, it is likely that those with 'something to say' responded.

While survey findings still inform the evaluation, it is important to keep in mind the low response rate when drawing out insights. As such, the emphasis on the survey has been reduced in this report. The

²³ https://bmcinfectdis.biomedcentral.com/articles/10.1186/s12879-021-06607-5#:~:text=Limitations

survey findings in this report have mostly been informed by questions answered by a significant proportion of the respondents and free text responses.

4 Program design and setup

This section provides an overview of the Program, and its design and governance.

4.1 Program overview

The Program made up just one part of the broader Australia-wide response to COVID-19, with testing acting as a 'trigger' for measures such as testing of close contacts, vaccinations drives, timely access to antiviral treatment once available, and enforcement of isolation and community lockdowns. Additionally, restrictions on entry limited the introduction of COVID-19 into remote communities in the first instance. Collectively, these measures led to low mortality rates and limited the spread of COVID before RATs and vaccines were widely available (see section 6.3).

The Program was guided by the Advisory Group, which included senior leaders and executives with expertise and strong relationships in remote and First Nations communities. The Program was delivered by state/territory health services and ACCHS and, who were able to incorporate testing into their holistic approach of delivering healthcare services in their community. Services used the Program Hotline to interpret and report a positive case. The Kirby Institute and services then took steps to support state/territories health services to dispatch a public health response. The Program Hotline was available 24 hours a day, seven days a week. Figure 7 below provides a high-level overview of the Program.

POINT-OF-CARE TESTING IN ABORIGINAL COMMUNITIES				
The Point-of-Care Testing Program supported remote First Nations communities to have timely access to COVID-19 test results to enable a rapid public health response. Testing enabled rapid actions to protect the				
POLICY OBJECTIVES				
The program aims to leverage existing networks to achieve patient, community and system level outcomes to reduce morbidity and mortality associated with the transmission of COVID-19 in remote communities.				
PROGRAM (GOVERNANCE			
FUNDING BODY: Department of Health and Aged Care ADVISORY BODY: Aboriginal and Torres Strait Islander Advisory Group on COVID-19 PROGRAM DELIVERY • Kirby Institute • FUICPOCT • Health Services				
ONGOING ACTIVITIES				
• Manage stock at POCT sites • Conduct & complete training • Update & redeploy guidelines and protocols				
PRE TEST	ACTIVITIES			
 Donn PPE, sanitise room 	 Donn PPE, sanitise room, prepare testing materials 			
TEST ACTIVITIES				
• Conduct test a	nd wait for result			
POST-TEST	O POST-TEST ACTIVITIES			
 OPTION 1: NEGATIVE Treat patient for symptoms (other illness) Provide general health care Doff PPE Complete post-patient admin 	OPTION 2: POSITIVE • Seek advice from the Program Hotline • Discuss patient options • Conduct post-positive quality assurance activities • Doff PPE • Complete post-patient admin			
CHECK-IN ON PATIENTS Conduct home visits Check-in on symptomatic patients – new or old Retest if necessary				

Figure 7 | POCT Program Overview

The Kirby Institute and FUICPOCT brought deep expertise in Point of Care Testing.

Staff from ACCHS and state/territory health departments indicated that the expertise and high level of support provided by the Kirby Institute and FUICPOCT were instrumental to the implementation of the Program. The Kirby Institute and FUICPOCT were able to leverage their experience with the TTANGO2/3 programs which resulted in expertise in using POCT testing in remote First Nations communities. FUICPOCT brought specific expertise in training test operators.

Regular contact between Program organisers and delivery teams enabled a relatively smooth coordination of consumables such as personal protective equipment (PPE) and testing cartridges across all sites. Some ACCHS indicated that there were times when consumable resources did not align with demand (too much or too little); however, Program coordinators were able to amend supply on most occasions. FUICPOCT typically trained at least two or three staff members from the selected services to operate the GeneXpert machine so they could test for COVID-19 safely and confidently. Training is discussed in section 5.1.

Staff from Kirby and Flinders were elite...we were so well supported Peak ACCHS staff member

Some services operated as 'hubs' for more remote clinics that did not meet the eligibility criteria

Some services provided additional support to smaller nearby communities, which led to a 'hub-and-spoke' model. The hub-and-spoke model enabled 'hub' sites who hosted the machine to test specimens from 'spoke' sites who did not meet the criteria to host a GeneXpert machine. Feedback from ACCHS indicates that the model was most successful when 'spoke' communities were less than one to one and a half hours distant from the hub site. Feedback from the ACCHS sector reflected that 'spoke' sites further away than this struggled to provide regular staffing and vehicles to move specimens to the hub site, which limited access to testing for these communities.

4.2 Program design

This section provides an overview and analysis on the design and establishment of the Program.

4.2.1 Program governance

The Program was developed and implemented working in partnership and through shared decisionmaking. The Advisory Group provided advice on the evolving COVID-19 pandemic founded upon their expertise and relationships within First Nations communities. This group consisted of NACCHO, several CEO's from ACCHS and state/territory ACCHS peak bodies, as well as First Nations medical directors and Australian federal, state and territory government health representatives.

In March 2020, the Advisory Group was convened to discuss forthcoming vaccination and prevention plans for communicable diseases. The Advisory Group was repurposed to provide advice and input into the decision-making for every aspect of the COVID-19 response, including the Program. They reported to the Australian Health Protection Principal Committee (AHPPC), becoming a formal subcommittee on 17 October 2022. This status meant that they had timely access to a wide range of information that facilitated high quality and timely decision making.

The governance structures employed best practice representation and decision making.

Many people interviewed for the evaluation commented that the success of the Program was underpinned by the strong and trusting relationships in the Advisory Group. ACCHS were continually included in the conversation to guide the Program as it changed, which led to open communication enabling consistent refinement and improvement.

The governance structures are in line with Priority Reforms one and three from the National Agreement on Closing the Gap. Priority Reform one targets formal partnerships and shared decision making, through representative partnerships and shared decision making structures. Priority Reform three aims to transform government organisations by delivering services in partnership with First Nations organisations, communities and people.

The Department gave us the space and provided us the opportunity to co-design. They explained what the program is about, how it can help, how that works across different clinics, and how that works across different regions. ACCHS staff member

Lessons

- Working in genuine partnership with NACCHO and the ACCHS was essential for the successful roll-out of the Program. It enabled timely feedback loops to ensure that decision-making was based on up-to-date information from the service level.
- Including the Aboriginal and Torres Strait Islander Advisory Group on COVID-19 in mainstream arrangements for the response to COVID-19 was crucial in delivering the strong results. It enabled access to sufficient resources, up-to-date guidelines, and interaction with key decision-makers.
- The POCT Program was delivered in a culturally appropriate way because the ACCHS had access to decisionmakers which generated an atmosphere of trust, facilitating open communication, problem solving and creative use of scarce resources.

Learnings from TTANGO and reuse of GeneXpert machines ensured the Program could be formally commenced within weeks.

The existing partnership and governance structures from the TTANGO programs supported the initiation of the POCT Program and enabled its rapid acceptance by First Nations communities. The TTANGO2/3 programs provided much of the operational groundwork for the initial stages of the COVID-19 POCT Program. The repurposing of 33 GeneXpert machines was highly effective because machines were already available in one-third of the health services. Services trusted the results and clinicians were already familiar with point-of-care testing protocols. Similarly, the success of the TTANGO program gave decision-makers confidence that a similar approach could be applied for COVID-19 testing.

Prioritising POCT facilities for remote communities was first discussed at the Advisory Group meeting on 24 March 2020, and the Program was announced by the Minister for Health on 16 April 2020. The first point-of-care test was conducted in Western Australia in May 2020. Representatives from the Department reported that the Kirby Institute pivoted quickly to ensure that the transition to COVID-19 testing could occur.

The scope of the POCT Program was much broader and larger in scale than the TTANGO2/3 programs. While the reuse of infrastructure was useful in the initial stages of the roll-out, a significant amount of work from all stakeholders was required to effectively implement the POCT Program in a short period of time.

Because we had already rolled out the TTANGO project...we had a framework to work on Peak ACCHS staff member

Lessons

- The reuse of existing infrastructure from the TTANGO2/3 programs enabled a quick and effective roll-out in some sites.
- POCT can be quickly and successfully transitioned between diseases in remote First Nations settings.
- The POCT Program shows that complex procedures, specific handling requirements, and quality assurance can occur safely and to an acceptable standard in remote communities where the clinic has acceptable infrastructure.

The Program was part of a coordinated response that mobilised public health measures rapidly.

The speed and accuracy of the GeneXpert machines enabled health services and departments to enact rapid public health measures once the first positive COVID-19 case was detected in a community. Examples of this are community lockdowns, supported isolation²⁴ and an intense focus on vaccination. This public health response was a key adjunct to the Program. These dynamics changed as RATs became more widely available in May 2022.

The importance of the speed of receiving testing results was recognised, with nearly half (48%) of survey respondents from non-POCT Program sites reporting that delays in receiving test results increased the spread of COVID-19 within the community.²⁵ Over half of respondents from non-POCT Program sites (52%) reporting that these delays made it less likely that patients would isolate.²⁶

The response was coordinated among a wide range of involved organisations, engaged through an effective governance model.

Figure 8 overleaf demonstrates how key organisations supported services to deliver the Program.





²⁴ Supported isolation refers to the work of ACCHS in supporting those in isolation with essentials such as food and providing access to treatment where available.

²⁵ Survey question 6 found in Appendix B.5

²⁶ Survey question 5 found in Appendix B.5

Delivery through ACCHS was successful because of existing trusted relationships.

The Program was delivered by both ACCHS and state/territory health services. The delivery at sites run by ACCHS in 55 remote sites was an essential element to the uptake of testing and the provision of care following a positive test. The ACCHS model of care provides tailored and holistic care to First Nations people, meaning they are deeply trusted by community members in remote communities.

ACCHS staff members reported that community members were more likely to get tested and follow health guidelines (for example isolation) because of the strong relationships that they had developed. One ACCHS staff member reported that experiences of racism at the local hospital in their community meant First Nations people were less likely to attend the hospital for COVID-19 testing, however they would attend the ACCHS clinic. Gaining the trust of First Nations patients was particularly important due to the high prevalence of fear associated with COVID-19, which sometimes deterred people from getting tested.

They trusted us, and they trusted the machine, and they came in when they otherwise wouldn't [have] Case study site interviewee

I'm so proud of our community, our staff, and the network we built ACCHS staff member

Finally, staff members at ACCHS went above and beyond the call of duty to provide care to their communities before and after testing (see section 5.2). Nearly all (91%) survey respondents reported that the Program made a positive or very positive difference to the community members that use their service.

Building the Community-Controlled Sector is Priority Reform 2 from the National Agreement on Closing the Gap, with governments committing to increase funding provided for First Nations programs and implementing measures to increase the proportion of services delivered by First Nations organisations. Although POCT Program funding was not directly provided by the Department to ACCHS, the Program demonstrates clear alignment to this Priority Reform.

There were challenges in reporting requirements between state/territory health systems and Program delivery teams.

Reporting COVID-19 cases has been an important feature of the management of the pandemic. The POCT Program was subject to national reporting requirements, and health services had to discuss all positive results with the POCT operators for quality (validation of results). In the initial phase of the Program, notifications were not automated, and the Kirby Hotline emailed results to all relevant stakeholders to facilitate a rapid public health response. The large amount of reporting requirements contributed to the heavy workload associated with the Program.

Greater integration with state/territory health systems and ACCHS would have reduced some of this burden. Each jurisdiction also had their own reporting infrastructure, with different platforms and limited technical capacity to adapt. The Kirby Institute worked with jurisdictions to facilitate electronic integration with notification databases. One ACCHS indicated there was some integration later in the Program, which helped reduce the reporting workload and eased client and systems management. Representatives from state/territory health departments reflected that automating the Kirby Institute's positive reporting systems with those of state/territory governments could have saved a lot of time. Representatives from health departments also reported that this would have improved the consistency of information between the Kirby Institute and the state/territory governments.

Standardising data reporting can increase the quality of data available for decision-makers and Program participants. This is in line with Priority Reform Four from the National Agreement on Closing the Gap, which aims to deliver shared access to data and information at a regional level.

Lessons

- Reporting is a key part of pandemic management, and duplication of data entry was time consuming for staff, adding to an already large workload.
- Effective system integration would enable automated reporting, saving time for staff and increasing data quality.

Site selection criteria excluded small health services.

The Program's site selection criteria were set at the beginning of the roll-out, and for a considerable time there was little flexibility for services to be included if they did not meet the three selection criteria (see section 4.1). Later in the Program, some sites were included that were initially deemed as not meeting the initial criteria (i.e., within 2 hours drive of a laboratory) but, during the pandemic some of these laboratories did not offer COVID-19 testing, so they could be reclassified as being eligible. Based on this information and guidance from the Advisory Group, the sites were determined to have significant need and benefits from involvement in the Program. Another consideration was the worldwide shortage of cartridge stock which limited the number of clinics the Program could be offered to.

Some services did not meet the minimum eligibility requirements by being too small, as part of the inclusion criteria was that each service at least three clinical staff members. Smaller ACCHS by their nature offer limited services and operate from small and typically old clinics that depend on minimal staff and would be unlikely to meet infection control protocols. Services were evaluated to meet site requirements needed for safety and device operation.

This is a vulnerability for the Program, as the inclusion criteria favoured larger clinics, which had more physical space and more people to deliver the Program. Small services may have struggled with the capacity to deliver the Program given the high volume of testing required. The Department did not provide funding for resourcing as part of the Program, but this highlights a potential vulnerability as part of the rollout of health services in extremely remote communities.

RECOMMENDATIONS: Program Design

- First Nations groups need a seat at the main tables where key decisions impacting the health of First Nations people occur.
- 2. Where possible, remote communities more than 1.5 hours' drive away from testing sites should have their own testing machine.
- 3. Use the ACCHS sector as a key delivery partner in pandemic management wherever possible.
- Reporting requirements need to be automated between the managing organisation and states/territories health systems.

5 Program implementation

This section outlines the implementation of the Program by each element, including training, staffing and resources. Each section includes an overview of the element, the strengths, the potential opportunities for Program improvement, lessons, and recommendations.

5.1 Training

A total of 908 people located in remote regions all over Australia were trained as point-of-care testing operators. This gives a sense of the scale and complexity of the task, which was central to the success of the whole Program.

The Program delivered a wide range of training modules and support to staff to ensure competence and adherence with the guidelines for point-of-care testing provided by the National Pathology Accreditation Advisory Council. This included the delivery of theoretical training, practical competence assessments, unique operator logics, competence expiry dates, and ongoing technical support. The Program training was delivered mostly online to overcome the barriers imposed by lockdowns and border closures. The training for the Program was coordinated and largely delivered by FUICPOCT. FUICPOCT engaged two trainers from within the ACCHS sector with significant experience with the GeneXpert machines.

To be eligible for training, nominated test operators had to complete online pre-requisite training modules in PPE donning and doffing, hand hygiene and infection control. Training resources were available via the Program's website, and additional re-training sessions and troubleshooting support were provided to test operators via the Program helpdesk.

A rigorous approach to training ensured that test operators could conduct tests confidently and safely.

The training Program was effective in preparing test operators to conduct tests to the required quality standards. All ten survey respondents who were POCT operators agreed or strongly agreed that the training administered by FUICPOCT adequately prepared them to conduct COVID-19 testing safely.

However, one state/territory health department representative reported that training around cycle thresholds was unclear, which caused some operators to report results incorrectly. Cycle thresholds refer to the number of cycles it takes for a PCR test to detect a virus in a sample. A lower cycle threshold indicates that the virus was easier to identify and may mean a person is more infectious.

The non-success rate (proportion of tests which were not successful, including errors, invalid, or no results) across the Program was 2.6%. Of those, 71.3% were successful when repeated. **This equates to an overall non-success rate of 0.7%**. This is similar to the non-success rate observed in a laboratory, despite the staff not being laboratory-trained technicians.²⁷ **This demonstrates that the rigorous training resulted in testing that mirrors laboratory quality.**

²⁷ Aboriginal and Torres Strait Islander COVID-19 Point-of -Care Testing Program Outputs Report, Kirby Institute, 30 September 2022, p. 13.

The analytical quality was managed through regular internal quality control and external quality assurance tests leading to a testing non-success rate of just 0.7%.

Every month, health services were required to test one positive and one negative quality control sample; failed results necessitated troubleshooting with the help desk. To ensure the cold chain was maintained while transporting quality control swabs to remote locations, routine postal services were used, and samples were refrigerated upon arrival.

External quality assurance specimens were manufactured specifically for this Program by the Royal College of Pathologists of Australasia Quality Assurance Program. Two external quality assurance deactivated respiratory specimens were dispatched to each participating service five months apart. Testing was done by competent GeneXpert operators with a blind sample format, and results were returned and reviewed for acceptable test results on quality management.

This rigorous quality control was essential to the Program's success as it maintained the accuracy of the testing which was key to achieving intended outcomes. Feedback from some services indicated that these processes were time consuming and added to their workload. However, they understood the need for it given the need for accurate results.

Some test operators reported that training was too time-consuming and that it was difficult to schedule time with instructors.

Test operators took on average six hours to complete the pre-requisites and point-of-care testing training.²⁸ It took an average of three hours to complete the online pre-requisites, two hours to complete the theoretical component, and one hour to complete the practical training and competency assessment.²⁹ Many staff members in ACCHS and representatives from peak bodies felt that the training was too time-consuming, especially for operators who had prior experience with the GeneXpert machines. Some staff members also expressed that the training was difficult to engage with and overly reliant on theory rather than practical demonstration.

The training was too extensive; it was hard to get everyone trained Case study site interviewee

Staff members reported that it was sometimes difficult to schedule time with instructors. This was especially important given the high turnover of test operators throughout the Program, meaning that the need for training was ongoing. As qualified staff left the clinics it was necessary for other staff members to complete the required training. Representatives from one state/territory health department reported that at one point there were not enough trained staff to operate the machines, meaning testing could not be performed. Representatives from one health department also reported that a lack of internet coverage was a significant barrier to training, preventing test operators from connecting to video conferences.

Other feedback commented that the training could have been modified to reflect the clinical experience of the trainee. A wide range of people undertook the testing with varying levels of clinical training – from Aboriginal Health Practitioners to doctors. However, they all did the same training. Some doctors interviewed commented that it was difficult to find the time, and that they spend considerable time going over things they already knew well.

Many staff members in ACCHS and representatives from state/territory health departments commented that a more widely available 'train the trainer' model could have supplemented the supply of available

²⁸ Most clinical staff would already have been required by employers to complete the pre-requisites as required for routine health services (e.g., hand hygiene), and essential clinical training during the pandemic (e.g., PPE donning and doffing).

 ²⁹ Aboriginal and Torres Strait Islander COVID-19 Point-of -Care Testing Program Output Report, Kirby Institute, 30 September 2022, p.
 13.
trainers and created the possibility of face to face training to reduce the reliance on virtual training. However, representatives from the Kirby Institute and FUICPOCT explained this was difficult to achieve due to the short-term contracts received, but possible in the future.³⁰ Such a model may reduce the reliability of the operators and consequently the test results. A further limitation on the train-the-trainer model was POCT device complexity with unknown assay field performance in an emergency response. While the rigorous training requirements caused challenges, they also ensured the high quality of test results.

Although rare, false positive test results could have a significant impact on the Program.

PCR amplicon contamination (referenced in the evaluation by participants as a 'false positive') is not expected to occur with the GeneXpert device used in the POCT Program as it is a closed system with single-use cartridges. However, there were isolated incidents of amplicon contamination identified by the Program's robust quality management systems. PCR amplicon contamination in laboratories is known to occur from time to time. To further minimise the risk of PCR amplicon contamination, existing risk protocols were reinforced including reiteration of key messages such as placing used cartridges in two specimen bags, and sealing before disposal, called 'double bagging'. Some laboratories in Australia who used the GeneXpert technology, implemented 'double bagging' around the same time to minimise amplicon contamination risk. The double bagging recommendation has since been fully implemented across the POCT Program.

Following a positive result, a rapid public health response was carried out to limit the spread of COVID-19 and protect community members. This response could include lockdowns, isolation and the rapid testing of close contacts and family members. Due to the significant implications of a positive result, it was important for the test results to be accurate to minimise false positives.

In one case a false positive test event arose from contamination, most likely caused by problems with cartridge disposal and/or cleaning. A public health response was mounted in response to the false positive results, which then had to be wound back. This was a serious incident that could have threatened the veracity of the Program. However, the Department reported that this was handled well overall and ultimately provided a good test for how the Program manages false positive results. Since implementation of enhanced risk procedures, no new PCR amplicon incidents have occurred.

Lessons

- The POCT Program showed that complex procedures, specific handling requirements and quality assurance can occur safely and to an acceptable standard in remote communities where the clinic has acceptable infrastructure and training.
- The testing quality was a key component underpinning the success of the Program in limiting the impact of COVID-19 in remote First Nations communities.
- Some participants found it hard to access training. Some participants reflected that it could have been more tailored to reflect their pre-existing clinical knowledge.
- The disposal of cartridges and inadequate cleaning practices are a source of risk, particularly when conducting testing outside a laboratory setting.

5.2 Staff

Staff delivering care in ACCHS and state/territory health services included Aboriginal Health Workers/ practitioners, nurses, and doctors trained in theory and practical components to become point-of-care

³⁰ There were two local train-the-trainer programs, one in NT and WA with Ngaanyatjarra Health Service, and one in North Queensland provided by a trainer who had previously worked with the TTANGO 2/3 Program.

testing operators. Point-of-care testing operators were responsible for conducting all COVID-19 testing, device maintenance, and results checking and confirmation.³¹

Point-of-care testing operators responsible for administering the Program went above and beyond the call of duty to deliver high-quality services and support their communities.

Point-of-care testing operators worked intensely to deliver the Program. The Kirby Institute, FUICPOCT, ACCHS staff members, and representatives from state/territory health departments reported that staff members worked long hours, often up to 16 hours a day, to deliver the Program in addition to providing regular services to the community. This included driving significant distances to transport samples from spoke sites to hubs. Further, staff members in ACCHS took an active role in supporting the community to ensure that COVID-positive households could isolate by delivering food and supplies during their isolation periods. The commitment of health services staff members to support the community throughout the pandemic was a significant enabler that contributed to the success of the Program.

Staffing was a significant challenge throughout the pandemic.

Health staffing in remote areas is a perennial issue. Access to people and consumables was extremely limited during the delivery of the Program, presenting a key challenge. Staff shortages in clinics, combined with the fear of COVID-19 – which reduced willingness to be involved in the delivery of the Program – meant services relied on small teams. This created a significant vulnerability in an environment with high turnover due to burnout and instances of staff travelling interstate to visit family not being able to return due to border closures. This vulnerability was heightened by requirements of the Program such as rigorous and time-consuming training. However, the evaluation acknowledges that these features of training were important as they contributed to a high-quality and successful Program.

Almost all evaluation participants reported that a lack of staff to administer testing and care was a significant barrier to delivering the Program. Some sites received funding from PHNs, NACCHO and other avenues than the Program to employ additional staff. Despite this many ACCHS had no additional staff to administer the Program, which ran alongside the clinics' regular services.

Staff involved in the delivery of testing indicated that the required processes and protocols were highly time and labour intensive, which meant their ability to perform their regular roles was limited at certain stages of the pandemic. For example, the end-to-end testing process included reporting, safety and quality protocols, testing, and donning and doffing PPE. This intensive process was mitigated to some extent by opportunistic provision of health care: people entering health services for COVID-19 testing could be treated for other illnesses in addition to COVID-19.

Short funding cycles contributed to resource challenges.

Some evaluation participants reported that the short-term cycles of funding that were part of the administration of the COVID-19 response hindered the Program's ability to plan and commit Program support resources. This was particularly challenging for the Program; in an environment of extreme uncertainty some staff preferred consistent employment arrangements to navigate their own financial situations, and six-month contracts led to some staff turnover and difficulties supporting train-the-trainer modalities in a larger number of ACCHS. However, the staged approach to funding reflected funding practices across the whole Australian emergency response used for the pandemic.

³¹ Aboriginal and Torres Strait Islander COVID-19 Point-of -Care Testing Program Outputs Report, Kirby Institute, 30 September 2022, p. 13.

Lessons

- Staffing was a significant challenge for many of the services due to high turnover and border restrictions
- The dedication of staff contributed significantly to the success of the Program.

5.3 Resources

This section refers to the availability and management of testing materials, clinic infrastructure and communication materials.

5.3.1 Testing infrastructure

The Program was initially able to secure approximately 50 new GeneXpert machines. However, as described in section 4.2.1, the Program was able to repurpose 33 existing GeneXpert machines being used for the TTANGO2/3 programs. Within three months, 25 services had commenced testing. Additional machines were purchased over the course of the Program bringing the total to 120; at various stages of the Program some sites had more than one machine. An increase in the supply of machines enabled the Program to be rolled out in additional locations, increasing the coverage of the Program across remote Australia. In some cases, machines were re-distributed between services as the location of positive COVID-19 cases changed.

Existing GeneXpert machines enabled early mobilisation and the widespread roll-out of the Program.

Repurposing existing GeneXpert machines enabled some services to begin testing within two months of the formal commencement of the Program. Representatives from state/territory health departments reported that clinics with existing GeneXpert machines and an existing relationship with the TTANGO2/3 programs were able to easily transition to COVID-19 testing. The rapid roll-out prepared communities for the rapid spread of COVID-19 and allowed timely testing arrangements to be in place.

Despite a global shortage, the management of GeneXpert cartridges enabled the Program to have wide coverage across remote Australia.

Key consumables such as PPE and cartridges were subject to worldwide shortage, which impacted the decision making on how to prioritise people for testing. Due to strong existing relationships and the Advisory Group's status in pandemic management, Program leaders were able to secure approximately one-third of the cartridges delivered to Australia for use in this Program, which mitigated the shortage of cartridges. Similarly, the supply of PPE to Program sites was prioritised to ensure health staff could stay safe while testing and maintain coverage of care in remote communities.

In May 2020, on advice from the Advisory Group the AHPPC established the Virtual Working Group (VWG) to undertake an ongoing and dynamic assessment of cartridge allocation across the Program based on need. The VWG met weekly to readjust the allocation of cartridges across different testing sites throughout Australia and to the Program. The Program then managed their allocation across the Program sites. This ensured that cartridges were distributed to services who needed them most. Participants in this group reported that decision making was highly collaborative and transparent, with jurisdictions and sites considering their need and volunteering to re-distribute their cartridges according to the need of others.

At times the demand for tests exceeded the supply of cartridges. At the beginning of the Program, there was a limited national supply of cartridges. This required the Department to develop guidelines for prioritisation of cartridges across the Program in consultation with the Advisory Group.

Examples of who to prioritise for testing included symptomatic clients, those vulnerable because of other illnesses, and elderly clients. Services consulted for the evaluation commented that this created a challenge for delivery teams in prioritising who should be tested using the POCT machine.

Participating services commended the VWG and Program staff on their management of cartridge supplies and said that additional supplies arrived when they were needed most. It is important to note that that health services were willing to reallocate their unused cartridges to those more in need. Some staff members of ACCHS reported that they were unaware of cartridge shortages or felt no impact from shortages. This is a testament to the effective management of the cartridge shortage.

Clinics with separate rooms with external access were better able to provide safe testing conditions.

Some services had existing infrastructure which facilitated the safe roll-out of testing. A room with external access meant that people could be tested without walking through the clinic, which functioned to limit potential transmission. One ACCHS interviewed for the evaluation already had a respiratory clinic and staff trained in respiratory medicine. This was an enormous advantage and facilitated safe and rapid uptake of the Program.

Most testing sites were not designed to accommodate respiratory testing.

Many services selected for the Program were not designed to accommodate testing of highly infectious material. The layout of these sites sometimes created a risk of transmitting COVID-19 during the testing process. Some state/territory health department representatives reported that swabbing would take place at the front of the clinic while the machine was in a back room. This required the sample to be transported through the clinic, increasing the risk of exposure to staff and patients. To overcome this potential risk, the Program identified, evaluated, and provided molecular transport medium for the swabs, which inactivated the virus rendering the sample non-infectious to staff when transporting the sample, and conducting the point-of-care test. The risk to patients and staff is heightened by the sampling process which is a potentially aerosol generating procedure, and minor risks related to running the test. Staff members in ACCHS reported that many sites did not have appropriate and safe places for people to wait for their results to return. Despite this, the Program was conducted safely and there were no reports of transmission as a result of testing.

Lessons

- The Program received priority access to scare supplies of cartridges, which was a result of the recognition of the need in remote First Nations communities, and the status of the Advisory Group and their access to key decision makers.
- Active redistribution and reprioritisation of the supply of cartridges enabled the Program to mitigate against the global scarcity.
- Adequate resourcing of equipment underpinned the successful delivery of the Program. Services needed testing equipment, cartridges, PPE, and sufficient infrastructure to reduce the risk of the testing Program causing transmission.

5.3.2 Communication materials

The Program distributed several updates and newsletters to staff members of participating services. Updates and newsletters largely contained information to remind staff members of best practice regarding testing, quality control and hygiene, as well as updates on the status of the Program through the public dashboard.

Communication materials distributed by the Program were comprehensive and helpful for ACCHS staff members.

Given its national view, the Program could identify the most important reminders, tailor communication materials accordingly, and distribute information nationally. ACCHS staff members reported that the communication materials distributed by the Program were helpful and thorough.

The Hotline for reporting positive cases was well-received.

Staff members of health services gave positive reports of their experiences with the Program Hotline. Services reported that Hotline staff were always supportive, helped to alleviate the panic surrounding a positive test, and provided clear and detailed instructions. They were always responsive, providing 24/7 support. Services reported feeling that the Program 'had their backs', and were never judgemental in the support they gave. They saw the support provided by the Program as a foundational element to its success.

Broader COVID-19 communication could be overwhelming and confusing because it was coming from many sources.

The management of the pandemic had many different agencies, all of whom had responsibilities to inform constituents of changing guidelines as the pandemic evolved. The Program, NACCHO, the Australian Government Department of Health, state/territory health departments, and PHNs all distributed communication materials to services. This amounted to many emails, particularly at times of peak case load. Many ACCHS staff members and state/territory health department representatives reported being overwhelmed by the amount of communication materials that they received. One state health department representative reported that each week they were having five separate meetings, each with a different person, regarding the administration of the Program.

Some ACCHS reported experiencing confusion in the processes following tests, especially with positive results. This challenge was more prevalent for services who had long periods between positive cases, which reduced their familiarity with the relevant protocols.

Lessons

- Positive feedback for the Kirby Institute and FUICPOCT reflected good practice in working in partnership with services. This included active listening, rapid response, and being deeply supportive of staff.
- The Kirby Institute's 24 hour Hotline was key to underpinning the quality of testing and interpretation and essential to the successful implementation of the Program.
- The range of sources of communication materials generated overload and is likely to have resulted in confusion at some sites.

RECOMMENDATIONS: Program Implementation

- ^{5.} Expand training to relevant staff to include cartridge disposal and cleaning practices.
- 6. Responses to future pandemics need to consider the capacity of services to deliver testing and how to best support increases in capacity when needed.
- Communication to participating health services should be streamlined where possible, particularly when guidance changes.

6 Program outcomes

This section reports Program outcomes and external factors that influenced the Program.

6.1 Overall summary of outcomes

The Program was successful in supporting remote First Nations communities to have timely access to test results, which enabled a rapid public health response and decreased transmissions.

Both quantitative and qualitative data indicate that delays in testing and receiving the results of testing would have increased cases exponentially. The Program achieved its overarching goal to protect remote First Nations communities from the potentially severe health impacts of COVID-19 through the provision of timely and accurate testing, leading to faster detection of positive cases. This enabled a rapid public health response including lockdowns, vaccination drives, treatment, and supported isolation, and played a crucial role in limiting the transmission of COVID-19 in remote First Nations communities. The impact of the Program became less crucial in the latter stages of the pandemic when the higher infectivity of the Omicron variant meant initiatives aimed at suppressing community transmission were not feasible, hence the reliance on early testing was lessened, and RATs became widely available. Many people were also vaccinated by this stage, reducing the severity of COVID-19 infections.

The Program saved lives and reduced potential costs.

Described in section 6.3 below, modelling estimates that due to the POCT Program **between 23,000 and 122,000 infections were averted within 40 days of detection of a first case** within remote First Nations communities.³²

Additionally, described in section 6.4 below, modelling estimates that **between \$337 million and \$1.8 billion in health costs were avoided in the first 40 days**, with more savings accruing over the life of the Program.³³

The pandemic created a constantly shifting environment, including changing guidelines and restrictions for testing, treating and protecting against COVID-19.

The unpredictability of the pandemic and the required response created confusion and added to the complexity of Program delivery. Analysis of qualitative and quantitative data indicate that point-of-care testing increases in value as a disease's infectiousness rises and as communities become increasingly remote. The need for rapid results increases with infectiousness because it is important to identify the first case early. The need for point-of-care testing increases with remoteness as the time to the nearest laboratories and hospitals increases. The POCT machines were especially important in remote communities before the introduction of RATs. The Program maintained value after this point but changed focus to and testing priority patients (e.g., healthcare workers) and validating RATs in specific circumstances (e.g., symptomatic people with a negative RAT).

³² See section 6.4 for detailed assumptions.

³³ Ibid.

6.2 Testing delivered

By August 2022, the Program had reported that a total of 72,624 patient tests³⁴ had been conducted in six jurisdictions, with 37,702 unique patients tested. Caution must be taken when interpreting these numbers, as they do not necessarily provide a meaningful metric for understanding the epidemiological situation and assessing the effectiveness of the Program. This is because they do not account for the population demographics in each jurisdiction. It is also not an accurate indicator of the prevalence of COVID-19 in each jurisdiction, as it only reflects the number of people who have been tested through the Program. Finally, it ignores the temporal nature of testing, as a population may be tested more or less frequently depending on the number of cases in their local area.

The Kirby Institute has retrospectively divided the transmission and frequency of COVID-19 in remote Australia into three epidemiological phases to gain a better understanding of how the virus has spread in this region. This information is shown in Table 4.

Phase	Definition	Time period
Phase 1	The start of the Program until the first cases of community transmission	May 2020 – July 2021
Phase 2	The establishment of community transmission in two jurisdictions	August 2021 – December 2021
Phase 3	The establishment of community transmission throughout the national network	January 2022 – August 2022

Table 4 | Epidemiological phases of COVID-19 in remote Australia

Figure 9 overleaf gives an indication of the activity in the Program across the three epidemiological phases described above by presenting how many people were tested and what percentage came back positive. It presents a 4-week backward rolling mean of both the weekly GeneXpert COVID-19 testing rate (per 10,000) and the positivity rate (per 100 test), by jurisdiction from June 2020 to August 2022. The graphs show the different shape of the pandemic in different locations, and that despite smaller numbers at the start of the Program, there was still a need for testing throughout the pandemic.

³⁴ This excludes quality control tests, error tests and invalid tests. This also excludes laboratory tests.



Figure 9 | 4-week backward rolling mean on the weekly GeneXpert COVID-19 testing rate (per 10,000) and positivity rate (per 100 test), by jurisdiction, from June 2020 to August 2022

6.3 Analysis of health impacts

Access to rapid test results and community engagement in the prevention and control of COVID-19 significantly reduced infections.

Minimising the delay in getting test results helps to reduce the spread of COVID-19, as infected people can isolate earlier after receiving a positive test result. As well, quick results minimise the risk that a person is falsely reassured by a negative test result, when in fact they have become infected during the lag time between test and result. This is valuable in the early stages of the COVID-19 pandemic, as vaccination and treatment options were not available.

A model was developed by the Kirby Institute and Doherty Institute early in the pandemic to provide information on the number of infections, so that participating health services could estimate the resources needed to contain the spread (mainly through isolation and quarantine). The model demonstrates the vital importance of rapid, accurate testing in limiting transmission in remote First Nations communities. The model results should be interpreted in light of the assumptions made and the context of the time in which it was developed. The model was developed during the initial stages of the COVID-19 pandemic, when no vaccines or treatments were available. As such, the model does not account for advances in treatment and vaccination options. The model assumed that only the index case was infected with SARS-CoV-2 at day 0, and that re-infection would not occur. This was a reasonable assumption given that much was not yet known about re-infection at the time of this modelling.

Figure 10 overleaf illustrates the simulated number of infections (over 200 days, after first case identification) across 32 scenarios, in a mid-sized³⁵ remote First Nations community.³⁶ Each scenario is represented by a boxplot and there are 100 simulations in each scenario. Each scenario is simulated under the same assumptions but with different days of delay in getting test results (0 day, 1 day, 2 days, 4 days) and one of the following:

- Compliance level with community lockdown (0%, 50%, 80%, 100%), while fixing the proportion of infected individuals seek testing.
- Proportion of infected individuals seek testing³⁷ (25%, 50%, 75%, 100%), while fixing the compliance level with community lockdown.

The selection of 100 simulations over a period of 200 days was selected by the Kirby Institute based on two key reasons. Firstly, the trade-off between the runtime and file size to maximise the accuracy of the results. Secondly, the duration of 200 days was chosen as it typically reflects the duration of the flu season, and thus provides a useful reference point for the length of the simulations.

Figure 10 demonstrates that scenarios with longer delays in test results (two and four days) usually lead to significantly higher infection numbers, compared to those with no or one-day delays. The results support the benefit of rapid and accurate testing in reducing transmission.

It is important to note that the results do not accurately reflect the exact situation as the data used to build the model reflects a certain point in time. Furthermore, the results are dependent on the assumptions made during the modelling and may not hold in other conditions. Further modelling to be conducted by the Kirby Institute after Nous' evaluation will examine the impacts of vaccination. It will include more detailed information (including actual hospitalisations and vaccination coverage for each community) which may provide more insight into hospitalisations and mortality.

³⁵ The modelling in the research paper considers communities of size 100, 500, 1,000 and 3,500 individuals. Each represents small, mid, large and very large remote First Nations communities, respectively.

³⁶ Similar figures were produced for community of size 1,000 and 3,500. These figures are available in Appendix D on page 78.

³⁷ The modelling assumed only individuals with symptoms will seek testing, with half of the infections being symptomatic.



Figure 10 | Simulated number of infections (over 200 days, after first case identification) across 32 scenarios, in a mid-sized remote First Nations community (Delta variant)

Health services that were able to influence testing numbers and compliance with isolation reduced infections.

Modelling on Figure 10 demonstrates the impact of having the Program implemented by services with strong and trusting relationships with their communities. As described in section 4.2.1, residents are more likely to seek testing and comply with isolation requirements in health services that are well-embedded in the community. Scenarios with high compliance levels (80% and 100%) where a high proportion of infected individuals seek testing (75% and 100%) usually lead to lower infection numbers, compared with low compliance levels and proportion of infected individuals seeking testing. This suggests that access to rapid test results, combined with community engagement in prevention and control are highly likely to have reduced the negative health impacts of COVID-19 in remote First Nations communities.

Public health measures were instrumental in reducing transmission.

Modelling predicted that delayed public health responses (due to a delay in identifying the first cases due to delayed test result) could lead to a substantial and rapid increase in the proportion of infected individuals in a short period of time. The Kirby Institute (based on analysis of point-of-care positive data) and peak bodies have advised that many services in the Program described experiencing only small clusters of cases, as public health responses were implemented quickly due to a fast turnaround between testing and result. This is in contrast to the massive spikes predicted in the modelling in the absence of the Program and related public health responses.

Reduced transmission means reduced risk of health complications.

The pandemic has demonstrated that COVID-19 can have serious health consequences, particularly for the elderly and those with chronic health conditions. The burden of chronic disease in remote First Nations communities is high. The Australian Burden of Disease Study: *impact and causes of illness and death in First Nations people, 2011*³⁸ demonstrates that overall, First Nations people experience a burden of disease that is 2.3 times the rate in the non-First Nations community. This rate rises with remoteness, with 'remote' and 'very remote' community areas having the highest burdens. This means that reduced transmission in remote First Nations communities can be expected to have a considerable impact on avoided hospitalisations and impact on quality of life.

The modelling consistently shows that the scenarios with the highest number of infections occur in those circumstances where there are delays of more than four days between testing and result, and low compliance with public health measures.

6.4 Analysis of financial impacts

The Program avoided costs in the short and long term.

The avoided health impacts also result in reduced costs of hospitalisation and the additional costs and resources required to support ad-hoc health care needs. While this evaluation does not include a costbenefit analysis, it is important to highlight the costs avoided through reducing admissions and hospital stays.

The Kirby Institute has formulated a preliminary framework to estimate the approximate cost impact of rapid detection of the first case and public health action, in terms of adverse health outcomes averted and costs avoided. This framework was then updated by Nous, with inputs from the Department and analysis of the NNDSS COVID-19 data.

³⁸ Australian Institute of Health and Welfare, 2016, The Australian Burden of Disease Study: impact and causes of illness and death in Aboriginal and Torres Strait Islander people, 2011.

Figure 11 illustrates an example of the cost impact in the first 40 days after the identification of the first case with 100% compliance level with community lockdown.

40 days was chosen for this modelling because it was determined that within 40 days, under conditions of a 6-day delay in lab results and 70% of the community in lockdown, 87% of the community were likely to have acquired COVID-19. Note that further extension beyond this 40-day period was not necessary as 84% of the community is close to the full population. While the model could be applied over longer periods, such as three to six months, this stretches into a time where re-infections occur.



Figure 11 | An example of the cost impact of rapid detection in the first 40 days after the appearance of the first case (100% compliance level)

The modelling, under the 40-day scenario, predicted that about 21% of the community could be infected, following the appearance of the first case. This is with a 100% compliance level with community lockdown and six days of delay between testing and result. The Kirby Institute reported, with inputs from health services, that it could take about six days between specimen collection and receipt of the lab result to the health services during peak PCR testing periods.

With an estimated population size of 150,123³⁹, this equates to 31,526 infections within 40 days. The Kirby Institute had reported that there were 1,413 infections notified through the Program in a 40-day period. Assuming there were six times⁴⁰ more infections notified through other mediums in these 40 days, this equates to 8,478 infections. That equates to an estimate of 23,048 infections averted within 40 days.

Note that due to a lack of access to site-specific data, it is not possible for Nous to determine the actual number of infections across all sites through the NNDSS COVID-19 data. As such, an estimation has been used to calculate the total number of infections.

With a hospitalisation rate of 19.8%⁴¹, this equates to approximately 4,564 hospitalisations averted. With an ICU admission rate of 7.6%⁴², this equates to about 346 ICU admissions averted. Assuming a medivac rate of 5% (provided by the Kirby Institute) among the non-hospitalised patients, this equates to about 924 medivacs averted.

Assuming each hospitalisation conservatively costs \$62,670⁴³ and each ICU admission costs \$15,230⁴³, these amount to approximately \$286 million and \$5 million costs avoided in health system, respectively. Further assuming each medivac conservatively costs \$50,000⁴⁴ (including accommodation, food, and staff), this equates to about \$46 million saved due to avoided medivacs.

Note that the costs avoided only relate to the first 40 days following the appearance of the first case across all communities in Australia. This excludes deaths and other costs associated with supporting nonhospitalised patients. This equates to an estimated \$337 million health costs avoided in the first 40 days, with more savings accruing over the life of the Program.

If the lockdown was only partially implemented, with about 70% compliance level, then the infection rate is estimated to be much higher: about 87% of the community could be infected within 40 days. This equates to an estimate of 122,129 infections averted within 40 days, with an estimated \$1.8 billion in health costs avoided in the first 40 days.

It is estimated that between 23,000 and 122,000 infections were averted within 40 days, with between \$337 million and \$1.8 billion in health costs were avoided in the first 40 days.

³⁹ This is the expected number of people, including First Nations people and non-Indigenous people, that the Program is servicing across Australia. The Kirby Institute requested that all health services provide the number of First Nations clients currently registered with their service. Approximately five health services were unable to provide this data, so the First Nations population data from the ABS were used instead.

⁴⁰ The Kirby Institute obtained data from 24 POCT sites, where there was an average of one positive point-of-care test to six total notifications. This ratio was calculated using the actual number of notifications (through laboratory testing, molecular POCT (RAT) in four jurisdictions.

⁴¹ This was calculated using the NNDSS COVID-19 data up to 31 August 2022. Out of 43,637 First Nations patients with available data on hospitalisation status, 8,641 of them reported having been hospitalised due to COVID-19. ⁴² This was calculated using the NNDSS COVID-19 data up to 31 August 2022. Out of 33,218 First Nations patients with available data

on ICU status, 502 reported being admitted to an ICU, constituting 7.6% of those who were hospitalised.

⁴³ \$62,670 = \$48,767 emergency evacuation cost + \$13,403 hospital costs + \$500 non-emergency return flight cost; \$15,230 intensive care unit costs. B A Spaeth, B Kaambwa, M D S Shephard, R Omond, Economic evaluation of point-of-care testing in the remote primary health care setting of Australia's Northern Territory, Clinicoecon and Outcomes Research: COER, 2008; J B Foster, D Judge, D Mendez, B Marais, D Peniyamina, E McBryde, Cost of tuberculosis-related aeromedical retrievals in the Torres Strait, Australia, medRxiv, 2022; B Liu, P Spokes, M Alfaro-Ramirez, K Ward, J M Kaldor, Hospital outcomes after a COVID-19 diagnosis from January to May 2020 in New South Wales Australia, Communicable Diseases Intelligence, 2018; A J Burrell, B Pellegrini, F Salimi et al., Outcomes for patients with COVID-19 admitted to Australian intensive care units during the first four months of the pandemic, Medical Journal of Australia, 2021; Independent Hospital Pricing Authority, National Hospital Cost Data Collection Report: Public Sector, Round 23 Financial Year 2018-19, Independent Hospital Pricing Authority, 2019; Reserve Bank of Australia, Inflation Calculator Sydney, Australia, Reserve Bank of Australia, 2019.

⁴⁴ Financial Counselling Australia, Quarantine Fees and Hardship Summary Jan 2021 Quarantine Fees and Hardship – States/Territory Breakdown. Melbourne: Financial Counselling Australia, 2021.

6.5 External influencers on outcomes

External factors refer to external events or elements that were outside of the control of the Program but had significant impacts on implementation.

RATs significantly changed the approach to point-of-care testing.

The Therapeutic Goods Administration approved some brands of RATs for supply on 1 November 2021, but individual jurisdictions such as South Australia had subsequent approval processes that created further delays.⁴⁵ Despite being approved, RATs were not widely available until significantly later because of supply shortages. They did not become commonly available across Australia until early/mid 2022.

Once RATs were approved and widely available, they added significant value to the COVID-19 testing process in remote First Nations communities. In addition to boosting testing capacities, staff members in services reported that the burden of testing was alleviated due to the ability for patients to self-administer RATs.

RATs were a lifesaver. ACCHS staff member It reduced the need for a [POCT] machine once RATs became widely available. ACCHS staff member

The availability of RATs further changed the criteria for the use of the GeneXpert machines. Guidance was developed for the use of the GeneXpert machine in circumstances when there was no or low community transmission, compared to when there was established community transmission.

During periods of established community transmission, GeneXpert machines were used to test:

- Symptomatic patients who were considered high priority who had tested negative via RAT.
- Asymptomatic patients who tested positive on a RAT, where the consequences of a false positive would be high (such as health centre staff).
- Patients who were being admitted to hospital or medically transferred.
- Patients eligible for antiviral treatment where local guidelines require a PCR test.

The changing guidelines demonstrated flexibility of the Program as RATs became available and contexts changed. In this way, the use of different testing methods became complementary. Evaluation participants reported that the primary value of the GeneXpert machines is in detecting the first cases in communities, while RATs were more useful after community transmission was present as ACCHS were overwhelmed by testing volumes. However, one representative from a state/territory health department reported that the use of GeneXpert machines was especially valuable because it provided a level of accuracy and confidence in testing that RATs did not.

⁴⁵ https://www.tga.gov.au/products/covid-19/covid-19-tests/covid-19-rapid-antigen-self-tests-home-use/covid-19-rapid-antigen-self-tests-are-approved-australia.

Changing government guidelines on the pandemic created confusion among health services.

Differing standards and directions across jurisdictions resulted in inconsistent practices or services being delivered. Some of these include:

- One jurisdiction experienced delay in the approval of POCT machines by the state/territory
 government, which meant the Program was rolled out much later there than in other jurisdictions. One
 evaluation participant from this jurisdiction reported that there was a much lower level of awareness
 of point-of-care testing due to this delay.
- Some jurisdictions experienced delays in the approval of RATs due to concerns over test sensitivity and specificity. As discussed above, RATs had a significantly positive impact on the testing capacity in remote communities and was complementary to the use of point-of-care testing.
- In one jurisdiction, police officers went in full PPE into a community where a patient was symptomatic to transport samples as the ACCHS did not have sufficient resources. This was not the role of police officers or part of the transport protocol.
- There was some variation across jurisdictions regarding how the limited point-of-care testing cartridges were prioritised after COVID-19 was widespread in the community.

Border restrictions added to the complexity of managing COVID-19 in remote communities.

Changing border restrictions created some challenges for ACCHS, particularly for communities near state borders such as Mount Gambier, the Ngaanyatjarra lands and Moree. In these communities, border restrictions had two primary impacts:

- Relaxing border restrictions was anecdotally correlated with high volumes of cases, adding to pressure on services, who were already dealing with staff shortages. Positive cases were also brought into communities near borders due to people crossing borders illegally.
- There were higher testing volumes because essential workers such as truck drivers needed tests to cross borders. Their ability to continue to travel was important for services who were close by as some of the essential workers were delivering resources to the services to enable Program delivery.

Lessons

- The Program was effective in reducing COVID-19 infections and associated health impacts.
- In avoiding COVID-19 related mortality and morbidity the Program has resulted in substantial benefit to remote First Nations communities.
- The Program avoided considerable health costs through enabling the prevention of infections that would have needed medivacs, hospitalisation and associated health costs.
- The Program was still important when RATs were commonly available, however its use changed to confirm positive results in specific circumstances for priority patients with more accuracy than can be delivered through RATs.
- Point-of-care testing delivers the highest value in the following circumstances: remote settings, highly infectious diseases and when other methods of rapid testing are not available.

6.6 Unforeseen impacts

This section considers elements of the Program that have played out in unforeseen or unexpected ways. Some unforeseen impacts – including those that are positive – are to be expected of an innovative Program which was rolled out rapidly.

Some people in temporary accommodation were left homeless after positive or suspected positive results.

An unintended consequence related to the complex issues surrounding the pandemic was that it sometimes led to homelessness. People who tested positive and were living with community members on a short-term basis (often because they were travelling to another place and staying with family on a temporary basis when a lockdown was announced) were most likely to face homelessness if they returned a positive test or were suspected of having COVID-19. Communities were uncertain and scared of the potentially lethal consequences of catching COVID-19 and made strong efforts to reduce their risk of exposure, even if that meant telling a person to stop living with them. This type of response was heightened for households who had elderly family members or family members who had other health issues. This was one of the few negative outcomes from the community and public health response.

There were opportunities to provide other health care after people arrived for COVID-19 testing.

A positive outcome of rapid point-of-care testing was that health staff were able to provide other health care to patients. The guidelines for clinics meant staff tested patients for COVID-19 when they were symptomatic or met other criteria. If patients returned a negative test result staff reported that it was a great opportunity to give them more general care, including testing and treating other illnesses such as Flu or RSV. Similarly, healthcare staff made home visits to check on regular clients who returned a positive test or were symptomatic and met the criteria for testing. During home visits, staff were able to deliver medications and provide general health care for those who were isolating or who had other illnesses.

When the practitioner went to the home, they were able to do some opportunistic healthcare and [provide] lifelines of food and shelter ACCHS staff member

Rapid results supported the high mobility lifestyle of some remote First Nations communities.

Residents of many remote First Nations communities travel extensively to meet cultural obligations, staying with family in a wide range of communities. The rapid results provided by the GeneXpert machines supports transient residents to act swiftly by halting their travel and isolating or, if the result was negative, enabling them to continue their travel without isolating unnecessarily.

Lessons

• Point-of-care testing is extremely valuable for sites that have highly mobile populations and could be key points for transmission.

RECOMMENDATIONS: Program Outcomes

 Point-of-care testing should continue to be considered as part of the response to infectious diseases in remote First Nations communities.

Appendix A Engagement

A.1 Interview guides

A.1.1 Evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program – Case Study, POCT site - Interview Guide

Thank you for agreeing to participate in a consultation as part of Nous Group's (Nous) evaluation on the Point-of-Care testing (POCT) Program in First Nations communities. The findings from these consultations will inform case studies for sites that participated in the Program.

More broadly, the evaluation is exploring how POCT programs improve access to testing and contribute to improving health and wellbeing outcomes in First Nations communities.

Outcomes of consultation

- Get your views on the appropriateness, implementation and effectiveness of the POCT Program, including cultural considerations.
- Understand the effectiveness of training and confidence in individual ACCHS settings in using the POCT technology.
- Understand the impact of POCT on health outcomes of patients in their communities.

A question guide has been provided below:

Topics	Description
Introduction (5mins)	Acknowledgement of Country Introductions of people in the virtual room Overview of the evaluation and obtaining consent – note, you must gain consent (either written or verbal) before commencing the interview
Timeline of involvement with POCT	Can you tell us a bit about how you got involved with the Point of Care Testing Program and when this was? How many FTE the Program supported What were the resourcing arrangements for the respiratory clinic and existing programs
Communicating Program	How did you communicate having this Program to the community? Who did you test in the community? Pre-existing clients, new clients, First Nations/non- First Nations?
Training	What was your experience of the training provided by Kirby?
The POCT process end-to-end	What is the process for you when you administer a POCT from start to finish? Length of time that this takes Do you service any other clinics or sites? Can you describe how this differs including the timing of testing and results. For a positive case, what is this process including timing.

Topics	Description
	False positives from Kirby How was staff safety maintained and managed in terms of getting sick?
Flow-on effect of Program to clinic	How did the POCT Program effect the rest of the services you offer at your clinic?
Rate of cases	What was the rate of your cases When was the peak of cases for your clinic? When were RAT tests available in your community? How did this effect your community?
Impact of the Program	How did the Program effect your community? How did it impact medical evacuations, hospitalisations, if you are aware of this? (if known ask how it differed relative to normal number of evacs and hospitalisation)
Relationships	What was your experience with Kirby, Commonwealth Health? Did they provide any support to you or funding outside of the Program that supported you relative to COVID-19.
Program improvement	Could the Program have been better?
Additional questions	Did you have access to another POCT machine? What happens to your respiratory clinic moving forward? Do you currently use the POCT machines to test for other diseases? Did you resort to PCR testing in any circumstances?
Wrap-up	Wrap up meeting and describe the next steps We will provide them an overview of the insights from the case study for their input We will share the final case study back with them for their own use Thank stakeholders for their time.

A.1.2 NACCHO and State Peaks Interview Guide

Topic (project)	Evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program
Objectives	To understand the perspectives of NACCHO and State Peaks on the POCT Program.

Nous Group (Nous) has been engaged by the Department of Health and Aged Care to conduct an evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program (POCT Program). The purpose of this engagement is to understand the perspectives of NACCHO and state peaks on the appropriateness, implementation, and effectiveness of the Program. This will help to get an overarching understanding of the roll-out and impact of the Program across Australia.

Торіс	Description	Who?
1 Introduction	Acknowledgement of Country	Nous

Торіс	Description	Who?
(5mins)	Brief introductions of Nous team	
2 Context (2 mins)	What are the key challenges with COVID-19 outbreaks and testing across remote First Nations communities?	
	Has the POCT Program been delivered as intended?	
3 Implementation	Are there factors that have made the roll-out easier?	Open discussion led by Nous
(10 mins)	Have there been any barriers to the roll-out of the Program?	
(10 111113)	What are the key lessons learned for the future roll-out of similar programs in First Nations communities?	
	Has the Program improved the access to testing?	
4 Effectiveness	Has the Program improved health and wellbeing and reduced the burden of disease associated with COVID-19?	
(10 mins)	Has the Program improved the effectiveness of resource utilisation and saved costs, including by reducing medical evacuations?	
3 Wrap-up (3 mins)	Wrap up meeting and describe the next steps	Nous

A.1.3 PHN and State Health Government Interview guide

Topic (project)	Evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program
Objectives	To understand the perspectives of PHN and State Health government on the POCT Program.

Nous Group (Nous) has been engaged by the Department of Health and Aged Care to conduct an evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program (POCT Program). The purpose of this engagement is to understand the appropriateness, implementation, and effectiveness of the Program. This will help to get an overarching understanding of the roll-out and impact of the Program across Australia.

Our understanding of PHNs

- A Commonwealth geographical entity to support primary care with roles including
- Supporting general practices, ACCHS, allied health
- Commission services via the Cth (e.g., aged care, mental health, etc.)
- Integration with local health services
- Played a big role in COVID response PPE, vaccination clinics, education, support

Торіс	Description
1 Introduction	Acknowledgement of Country
(5mins)	Brief introductions of Nous team

Торіс	Description
2 Your role in the Program (15 mins)	What is your awareness of and involvement with the POCT Program What role did you play in the roll-out of the POCT Program? For example, encouraging communities to get tested What role did you play following testing? Are there any alternatives or similar Program to the POCT Program?
3 Interaction and Integration of the Program (15 mins)	What role did you play in supporting ACCHOs? For example, support, logistics, local coordination? How did the POCT Program fit in with everything else that was happening with COVID? How do you support culturally appropriate services – is there anything that can be shared with Kirby, Commonwealth?
4 Learnings (5 mins)	What would you do differently to support the roll-out of the Program and the engagement with ACCHOs, Kirby and/or FUICPOCT?

A.1.4 Department of Health and Aged Care interview guide

Topic (project)	Evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program
Objectives	To understand the perspectives of the Department on the POCT Program.

Nous Group (Nous) has been engaged by the Department of Health and Aged Care to conduct an evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program (POCT Program). The purpose of this engagement is to understand the perspectives of the Department on the appropriateness, implementation, and effectiveness of the Program. This will help to get an overarching understanding of the roll-out and impact of the Program across Australia.

Торіс	Description	Who?
1 Introduction (5 mins)	Acknowledgement to Country Brief introductions of Nous team	Nous
	Can you briefly describe the inception of the POCT Program at the start of the pandemic?	
2 Context (10 mins)	What was the Department's involvement across different stages of the POCT Program?	Open discussion led by Nous
	Can you briefly describe the approach for funding, including administration costs, Program costs, personnel, equipment, etc.?	
3 Logistics (5 mins)	Can you briefly describe the governance structures for the Program, including setting up the Program and the business-as-usual Program elements?	

Торіс	Description	Who?
	How were culturally specific considerations or concerns met? For example:	
	First Nations data sovereignty	
	First Nations representation in governance structures	
	How did the POCT Program interact with other health initiatives targeted towards COVID-19 in these communities?	
4 Learnings	What are your takeaways as to the overall efficacy of the POCT Program?	
(IU MINS)	What were the key enablers and barriers for the Program?	
	What lessons have been learned from the POCT Program?	

A.1.5 Kirby Institute and Flinders University International Centre for Pointof-Care Testing (FUICPOCT) interview guide

Topic (project)	Evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program
Objectives	To understand the perspectives of Kirby and FUICPOCT on the POCT Program.

Nous Group (Nous) has been engaged by the Department of Health and Aged Care to conduct an evaluation of the Xpert COVID-19 POCT in Aboriginal Communities Program (POCT Program). The purpose of this engagement is to understand the perspectives of Kirby and FUICPOCT on the appropriateness, implementation, and effectiveness of the Program. This will help to get an overarching understanding of the roll-out and impact of the Program across Australia.

Торіс	Description	Who?
1 Introduction (5mins)	Acknowledgement to Country Brief introductions of Nous team	Nous
2 Context (10 mins)	What did the roll-out of the POCT Program look like from start to present? How did Kirby and FUICPOCT interact with the Program once it was up and running?	
(10 11115)	How did Kirby and FUICPOCT utilise existing infrastructure from the TTANGO Program?	
3 Training	Could you please describe the training framework provided to healthcare workers?	Open discussion led by Nous
(10 mins)	What challenges did you have with training?	
	What worked well?	
	What are your takeaways as to the overall efficacy of the POCT Program?	
4 Learnings	What would you do differently next time?	
(5mins)	What were the enablers and barriers for the Program overall (for both Kirby and FUICPOCT aspects of the Program)?	

A.2 Letters

A.2.1 Letter to all participating ACCHS

Dear Aboriginal Community Controlled Health Services (ACCHS),

We are contacting you to inform you that the Department of Health and Aged Care has engaged Nous Group (Nous) to undertake an evaluation of the Aboriginal and Torres Strait Islander COVID-19 Point of Care Testing (POCT) Program.

The evaluation will commence in early September over an 8-week period and will include a combination of quantitative data analysis, a **survey** and consultations.

Nous will be distributing a survey to communities that have engaged with the POCT Program. This survey is an important, anonymous opportunity for those administering the Program to have their voice heard. We would greatly appreciate you taking the time to respond.

Nous will also conduct **consultations** with a small group of POCT sites. We may reach out to you in the next week or so to ask for your (optional) participation in consultations. This is an opportunity to provide your confidential views on the POCT Program and contribute to the evaluation.

Background

In April 2020, the Department of Health and Aged Care contracted the Kirby Institute and the International Centre of Point of Care Testing to provide the COVID-19 POCT Program in remote First Nations communities with the goal of ensuring access to SARS-Cov-2 testing be no more than 2 to 3 hours away from those in remote Australia, and that primary care services are no more than 2 to 3 hours away from testing sites. So far, the POCT Program has been implemented at 86 active sites and 67 spoke sites, across New South Wales, Queensland, Western Australia, South Australia, Victoria, and the Northern Territory.

Evaluation Aims and Objectives

The purpose of this evaluation includes:

- Assessing the appropriateness, implementation, and effectiveness of the POCT Program in remote communities, focussing on improved health outcomes for First Nations people due to improved access to testing.
- Understanding lessons learned through implementation of the Program.
- Building an evidence base to inform the decision-making on a potential broader roll-out of the Program.

If you have any questions about the evaluation process or objectives, please contact Melissa Lyngstad at melissa.lyngstad@health.gov.au or by phone on 02 6289 1308.

Kind regards,

Indigenous and Remote Policy and Implementation Branch

National COVID Vaccine Taskforce

A.2.2 Letter to case study sites participating in the POCT Program

Dear <Point of Care Testing site>

We are contacting you to inform you that **you have been nominated as a case study site** as part of the evaluation of the Xpert COVID-19 Point of Care Testing in Aboriginal Communities Program (POCT Program). Nous Group (Nous) is developing several case studies to support the qualitative findings on the POCT Program as part of this evaluation. Participation as a case study site is **optional**; please let us know if you would like to be involved or would prefer not to be. If you agree to participate, Nous will be in contact shortly to arrange interview times.

Your involvement

As a case study site, Nous would like to conduct interviews with site staff, who are over 18 years of age, who were involved in the implementation of the POCT Program for COVID-19. This includes:

Clinicians administering COVID-19 Point of Care tests (including Aboriginal Health Workers).

Registered GPs in communities participating in the POCT Program.

Aboriginal Liaison Officers of clinics that are in the POCT Program.

Other staff members who were closely involved in the roll-out of the Program.

Interviews will be **approximately 30 minutes - 1 hour** in duration, with shorter times for one-on-one interviews and longer times for group interviews where appropriate. The consultation period will occur between **21 September and 12 October** and all consultations will be held virtually via Microsoft Teams. Nous understands the pressures on availability of staff and can be flexible with booking in consultation times. Findings from the interviews will be deidentified and grouped, so individuals will not be named in the case studies.

At the end of the evaluation, case study sites will be provided with a brief summary (one-to-two-pages) of the descriptive data that Nous receives on your site and a high-level summary of the evaluation findings. This information will be yours to distribute should you wish too.

What will be included in the case studies?

The aim of the detailed case studies is to provide in-depth, descriptive insights into the appropriateness, implementation and effectiveness of the POCT Program. It is anticipated these case studies will include:

- An overview of the communities and region in the case study including key demographic and epidemiological information.
- An overview of the First Nations communities and existing health services in the region.
- Details on how COVID-19 testing worked before the POCT Program was rolled out in the region.
- Details on implementation, including roll-out timelines, training, and insights on overall effectiveness. This includes factors that supported the implementation and any barriers that may have created challenges.
- Your views on Program appropriateness, particularly the adequacy of training arrangements to support high quality and accurate testing.

More broadly, the evaluation is exploring how POCT programs improve access to testing and contribute to improving health and wellbeing outcomes in First Nations communities.

Who is Nous?

Nous is the largest Australian-founded management consulting firm. Clients from government, business and the community sector contract Nous to undertake research, analysis, evaluation and provide advice on how to improve services.

If you have any questions about the evaluation process or objectives, please contact Melissa

Lyngstad at <u>ORT@health.gov.au</u> or Gill Shaw, the Principal Researcher for this evaluation, at <u>gill.shaw@nousgroup.com.au</u>.

Kind regards,

Indigenous and Remote Policy and Implementation Branch

National COVID Vaccine Taskforce

A.2.3 Letter to the case study site not participating in the POCT Program

Dear <ACCHS comparator site>

The Department of Health and Aged care has engaged Nous Group (Nous) to undertake an evaluation of the Xpert COVID-19 Point of Care Testing in Aboriginal Communities Program (POCT Program).

The evaluation will commence in early September over an 8-week period and will include a combination of quantitative data analysis, a survey and consultations.

Nous is developing several case studies to support the qualitative findings on the POCT Program as part of this evaluation. We are contacting you to inform you that **you have been nominated as a case study site**. Participation as a case study site is **optional**; please let us know if you would like to be involved or would prefer not to be.

Your insights will help us to understand the appropriateness and effectiveness of COVID-19 testing in sites that **were not part of the POCT Program**. If you agree to participate, Nous will be in contact shortly to arrange interview times.

Your involvement

As a case study site, Nous would like to conduct interviews with site staff, who are over 18 years of age, to understand how COVID-19 testing and identification of cases occurs. This includes:

- Clinicians administering COVID-19 tests (including Aboriginal Health Workers).
- Aboriginal Liaison Officers involved in supporting COVID-19 testing.
- Any other staff closely involved with the implementation of COVID-19 testing.

Interviews will be **approximately 30 minutes - 1 hour** in duration, with shorter times for one-on-one interviews and longer times for group interviews where appropriate. The consultation period will occur between **21 September and 12 October** and all consultations will be held virtually via Microsoft Teams. Nous understands the pressures on availability of staff and can be flexible with booking in consultation times. Findings from the interviews will be deidentified and grouped, so individuals will not be named in the case studies.

At the end of the evaluation, case study sites will be provided with a brief summary (one-to-two-pages) of the descriptive data that Nous receives on your site and a high-level summary of the evaluation findings. This information will be yours to distribute should you wish too.

What will be included in the case studies?

The aim of the detailed case studies is to provide in-depth, descriptive insights into the appropriateness, implementation and effectiveness of the POCT Program. It is anticipated these case studies will include:

- An overview of the communities and region in the case study including key demographic and epidemiological information.
- An overview of the First Nations communities and existing health services in the region.
- Details on how COVID-19 testing works in your community or region.
- Details on implementation of COVID-19 testing, including timelines, training, and insights on overall
 effectiveness. This includes factors that supported the implementation and any barriers that may have
 created challenges.

More broadly, the evaluation is exploring how POCT programs improve access to testing and contribute to improving health and wellbeing outcomes in First Nations communities.

Who is Nous?

Nous is the largest Australian-founded management consulting firm. Clients from government, business and the community sector contract Nous to undertake research, analysis, evaluation and provide advice on how to improve services.

Background

In April 2020, the Department of Health and Aged Care contracted the Kirby Institute and the International Centre of Point of Care Testing to provide the COVID-19 POCT Program in remote First Nations communities with the goal of ensuring access to SARS-Cov-2 testing be no more than 2 to 3 hours away from those in remote Australia. So far, the POCT Program has been implemented at over 100 ACCHS sites, across New South Wales, Queensland, Western Australia, South Australia, Victoria, and the Northern Territory.

The purpose of this evaluation includes:

- Assessing the appropriateness, implementation, and effectiveness of the POCT Program in remote communities, focusing on improved health outcomes for First Nations people due to improved access to testing.
- Understanding lessons learned through implementation of the Program.

If you have any questions about the evaluation process or objectives, please contact Melissa

Lyngstad at <u>ORT@health.gov.au</u> or Gill Shaw, the Principal Researcher for this evaluation, at <u>gill.shaw@nousgroup.com.au</u>.

Kind regards,

Indigenous and Remote Policy and Implementation Branch

National COVID Vaccine Taskforce

A.3 Information sheets and consent forms

A.3.1 Participant Information Sheet

Invitation

You are invited to take part in an interview as part of the evaluation of the COVID-19 Point of Care Testing (POCT) in Aboriginal Communities Program.

You are being invited to take part in this evaluation because you are involved with the delivery of COVID-19 testing through an Aboriginal Community Controlled Health Service or other organisation.

This evaluation is being conducted by Nous Group (Nous) on behalf of the Department of Health and Aged Care (the Department). This document contains information about the evaluation and the interview.

What is the COVID-19 Point of Care Testing Program?

In April 2020, the Department contracted the Kirby Institute and the International Centre of Point of Care Testing to provide the COVID-19 POCT Program in remote First Nations communities with the goal of ensuring access to COVID-19 testing be no more than two to three hours away from those in remote Australia, and that primary care services are no more than two to three hours away from testing sites. The platform has the reliability of a PCR test and produces results within 45 minutes. This means that testing is accessible to remote communities with an almost immediate result. The Program aims to provide a means to improve public health responses and reduce transmission and morbidity in these remote communities.

What is the purpose of this evaluation?

The Department has engaged Nous to conduct an evaluation to assess the appropriateness, implementation and effectiveness of the Point of Care Testing Program in remote communities, focusing on improved health outcomes for First Nations people due to improved access to testing. The evaluation will also build an evidence base that may be used to justify a broader roll-out of the testing Program.

What am I being asked to do?

Nous would like to conduct interviews with people, who are over 18 years of age, who were involved in the implementation of the POCT Program for COVID-19. The interviews will be an opportunity to share your feedback on the experiences of COVID-19 testing, whether you were part of the Point of Care Testing Program or not. The interview will focus on:

- Assessing the appropriateness, implementation and effectiveness of the POCT Program in remote communities, focusing on improved health outcomes for First Nations people due to improved access to testing.
- Understanding lessons learned through implementation of the Program.

Your responses will be used to inform the Xpert COVID-19 Point of Care Testing in Aboriginal Communities Program evaluation. Your responses will be confidential.

How will my information be stored?

The Nous evaluator will take notes during the interview, and these notes will be typed up and used by the Nous evaluation team to help us write our report. The notes and typed transcript won't be given to anyone outside of the evaluation team. Your comments and direct quotes might be included in the report we write for the Department, but we will make sure to remove your name or any other information that might identify you. The Department will not have access to your individual data. Your information will be deleted from Nous systems after three months following the completion of the evaluation.

Who is Nous Group?

Nous is the largest Australian-founded management consulting firm. Clients from government, business and the community sector contract Nous to undertake research, analysis, evaluation and provide advice on how to improve services.

How will the results of this evaluation be published?

The full report and detailed de-identified findings will be for the internal use of the Department of Health and Aged Care, who may publish, or circulate to relevant stakeholders, a summary of the evaluation findings and recommendations.

What if I have questions about this evaluation?

If you have any questions about this evaluation, you may contact the Lead Evaluator, Gill Shaw, at gill.shaw@nousgroup.com.au.

Thank you for taking the time to consider this evaluation. This information sheet is for you to keep, but we will also you give you a consent form to return to the evaluators to show that you consent to participating in the evaluation.

Thank you for considering this information.

A.3.2 Participant Consent Form

Contact and project details

Evaluation title: Evaluation of the Xpert COVID-19 Point of Care Testing Program in First Nation communities

Evaluation team: The evaluation will be conducted by Nous Group. Gill Shaw (<u>gill.shaw@nousgroup.com.au</u>) is the lead evaluator.

Participant certification

In signing this form, I confirm that:

I have read the Participant Information Sheet and the nature and purpose of the evaluation has been explained to me. I understand and agree to take part.

I understand the purpose of the evaluation and my involvement in it.

I understand that my interview responses are confidential.

I understand that my participation is voluntary and that I am free to end the interview at any time without explanation or prejudice. If I stop the interview, I understand I am able to request my responses be deleted, and they will not be included in the evaluation.

Participant's signature: ______

Printed name: _____

Date: _____

If you experience any discomfort or inconvenience during the course of participating in this evaluation, the interview can be stopped, postponed or can proceed onto a different discussion topic.

Evaluator declaration

I have given a verbal explanation of the research project; its procedures and risks and I believe that the participant has understood that explanation.

Printed name: _____

Date: _____

Appendix B Survey method and questions

B.1 Survey participant information sheet

Invitation

You are invited to take part in a survey as part of the evaluation of the COVID-19 Point of Care Testing in Aboriginal Communities Program.

You are being invited to take part in this evaluation because you are involved with the delivery of COVID-19 testing through an Aboriginal Community Controlled Health Service or other organisation.

This evaluation is being conducted by Nous Group on behalf of the Department of Health and Aged Care. This document contains information about the evaluation and the survey.

2. What is the COVID-19 Point of Care Testing Program?

In April 2020, the department contracted the Kirby Institute and the International Centre of Point of Care Testing to provide the COVID-19 POCT Program in remote First Nations communities with the goal of ensuring access to COVID-19 testing be no more than 2 to 3 hours away from those in remote Australia, and that primary care services are no more than 2 to 3 hours away from testing sites. The platform has the reliability of a PCR test and produces results within 45 minutes. This means that testing is accessible to remote communities with an almost immediate result. The Program aims to provide a means to improve public health responses and reduce transmission and morbidity in these remote communities.

3. What is the purpose of this evaluation?

The department has engaged Nous Group to conduct an evaluation to assess the appropriateness, implementation, and effectiveness of the Point of Care Testing Program in remote communities, focusing on improved health outcomes for First Nations people due to improved access to testing. The evaluation will also build an evidence base that may be used to justify a broader roll-out of the testing Program.

4. What am I being asked to do?

Your participation in this evaluation involves the completion of a short, 10-15 minute survey.

This survey is an important, anonymous opportunity to share your feedback on the experiences of COVID-19 testing, whether you were part of the Point of Care Testing Program or not. The survey is focussed on:

- How First Nations people in the community you serve accessed testing for COVID-19
- The consequences of any poor access to COVID-19 testing
- Any suggestions you have for improving the testing and management of COVID-19 in your organisation.

By completing the survey, your responses will be used to inform the Xpert COVID-19 Point of Care Testing in Aboriginal Communities Program evaluation. Your responses are anonymous and confidential.

6. How will my information be stored?

All survey results will be stored in a password protected electronic storage folder that can only be accessed by members of the evaluation team from Nous. The Department of Health and Aged Care will not have access to your individual data. Your information will be deleted from Nous systems after three months following the completion of the evaluation.

7. Who is Nous Group?

Nous is the largest Australian-founded management consulting firm. Clients from government, business and the community sector contract Nous to undertake research, analysis, evaluation and provide advice on how to improve services.

8. Can I withdraw my consent?

Once you have submitted the survey you will not be able to withdraw your consent, or the data you have provided. This is because once submitted no survey response will be identifiable in the data set. This means you will need to provide consent before you can start the survey.

9. How will the results of this evaluation be published?

The full report and detailed de-identified findings will be for the internal use of the Department of Health and Aged Care, who may publish, or circulate to relevant ACCHS, a summary of the evaluation findings and recommendations.

What if I have questions about this evaluation?

If you have any questions about this evaluation, or the survey, you may contact the Lead Evaluator, Gill Shaw at <u>gill.shaw@nousgroup.com.au</u>.

Thank you for taking the time to consider this survey.

B.2 Survey introduction

Thank you for taking part in the evaluation of the COVID-19 Point of Care Testing (POCT) in Aboriginal Communities Program.

Your participation in this evaluation will involve completing a short, anonymous, online survey about your experience testing for and managing COVID-19. This information will enable us to compare findings from ACCHS participating in the Program with those of ACCHS not participating in the Program. The survey will take **approximately 10-15 minutes** and is focused on:

- How First Nations people in the community you serve accessed testing for COVID-19.
- The consequences of any poor access to COVID-19 testing.
- Any suggestions you have for improving the testing and management of COVID-19 in your organisation.

We are seeking to understand your personal experiences and perceptions. There is no need to seek additional information.

If you would like additional information about the evaluation or the confidentiality of your response, please read the information provided in the survey participant information sheet

The survey will be open from 26 September to 10 October 2022.

B.3 Initial survey questions

KLE category	#	Question	Response type	Response options
A	A	ELECTRONIC CONSENT: Please select your choice below. Clicking on the "agree" button below indicates that: you have read the participant information you voluntarily agree to participate you are at least 18 years of age.	Discrete choice	Agree Disagree
		If you do not wish to participate in the evaluation, please decline participation by clicking on the "disagree" button. Note: if you do not provide consent and disagree, you will be exited from the survey.		
	В	Does your organisation have a COVID-19 Point of Care Testing machine?	Discrete choice	Yes No
	С	Is your organisation's Point of Care Testing machine funded by the Australian Government Department of Health and Aged Care? Only appears if answers yes to B. If answers Yes to B and C, the survey logic will send respondents to the POCT Site survey questions.	Discrete choice	Yes No

B.4 POCT site survey questions

KLE Category	#	Question	Response type	Response options
	A	 Are you: An employee of a health service (such as an Aboriginal Community Controlled Health Service) that is participating in the COVID-19 POCT Program, including Aboriginal Health Workers? A staff member of a health service that is participating in the POCT Program? An Aboriginal Liaison Officers in communities participating in the POCT Program? None of the above. Note: This survey is only intended for the above groups.	Discrete choice	Same as question If the respondent answers none of the above, the survey will be ended with the explanation from the Question column in this row.
	В	I understand the information provided in the Participant Information Sheet. Note: if you do not understand the information provided, you will be exited from the survey.	Discrete choice	I understand the information I do not understand the information
	C	I understand my responses will be used to inform the Xpert COVID-19 Point of Care Testing in Aboriginal Communities Program evaluation. I understand that my responses are anonymous and confidential. I understand that after I submit my responses, I can no longer withdraw my consent for them to be used in the evaluation, as they are anonymous and therefore cannot be identified to be removed. <i>Note: if you do not provide consent, you will be exited from the survey.</i>	Discrete choice	I provide consent for my survey responses to be used in the COVID-19 POCT Program evaluation I do not provide consent for my survey responses to be used in the COVID-19 POCT Program evaluation
	1	Which location are you administering Point of Care testing from? Please indicate if your organization runs multiple clinics that use Point of Care testing.	Free text	Free text

KLE Category	#	Question	Response type	Response options
	1b	At which location are you a staff member involved in the Point of Care Testing Program?	Free text	
	1c	In which community are you an Aboriginal Liaison officer?	Free text	
Lessons	2	Overall, what sort of difference do you think the Point of Care Testing made to the community members who use your service?	Discrete choice, Likert scale	Very negative Negative Neither positive nor negative Positive Very positive Don't know
Lessons	2b	Optional: Please explain why you described the difference made by the Point of Care Testing Program as positive / negative.	Free Text	
Appropriateness	3	To what extent do you agree with the following statement: The training for Point of Care testing administered by the Kirby Institute adequately prepared me to confidently conduct SARS-CoV-2 testing.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Appropriateness	4	To what extent do you agree with the following statement: The training for Point of Care testing administered by the Kirby Institute and ICPOCT adequately prepared me to safely conduct SARS-CoV-2 testing.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know

KLE Category	#	Question	Response type	Response options
Appropriateness	5	To what extent do you agree with the following statement: The SARS-CoV-2 standard operating procedures (SOPs), reference posters, PowerPoint presentations and other training resources that are available via the Participants Area of the COVID-19 Point of Care Testing website are useful in informing and refreshing staff of the best practices for administering COVID-19 Point of Care tests.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Appropriateness	6	To what extent do you agree with the following statement: The Point of Care Testing Program (including the training I received) helps me to deliver care in a culturally appropriate way.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Appropriateness	6a	Optional: Why or why not?	Free Text	
	7	To what extent do you agree with the following statement:	Discrete choice, Likert	Strongly disagree
Implementation	,	The Point of Care Testing Program was rolled out in my organisation in a way that was easy to engage with and did not waste my time. <i>Note: This question is trying to understand your experience while the POCT</i> <i>Program was being introduced.</i>	scale	Disagree Neither agree nor disagree Agree Strongly agree Don't know
Implementation	7 7a	 The Point of Care Testing Program was rolled out in my organisation in a way that was easy to engage with and did not waste my time. Note: This question is trying to understand your experience while the POCT Program was being introduced. Optional: What worked well in the way it was rolled out and what could have been improved? 	scale Free Text	Disagree Neither agree nor disagree Agree Strongly agree Don't know

KLE Category	#	Question	Response type	Response options
				Strongly agree Don't know
Implementation	8a	Optional: Please describe the barriers to the delivery of the Point of Care Testing Program in your organisation.	Free Text	
		Note: we are interested in hearing about how the delivery might have been easier in some clinics than others.		
		Only displayed if answer to 7 was agree or strongly agree		
Implementation	8b	Optional: Were there any factors that made the delivery of the Point of Care Testing Program in your community easier?	Free Text	
		Note: we are interested to hear about how the delivery might have been easier in some clinics to others.		
Effectiveness	9	To what extent do you agree with this statement:	Discrete choice, Likert	Strongly disagree
		The Point of Care Testing Program has increased the accessibility of SARS-CoV-2 testing in my community.	scale	Disagree
				Neither agree nor disagree
				Agree
				Strongly agree
				Don't know
Effectiveness	10	To what extent do you agree with this statement:	Discrete choice, Likert	Strongly disagree
		The Point of Care Testing Program has decreased the spread of COVID-19 through my community.	scale	Disagree
				Neither agree nor disagree
				Agree
				Strongly agree
				Don't know
Effectiveness	10a	Optional: How did the Program decrease the spread?	Free Text	

KLE Category	#	Question	Response type	Response options
Effectiveness	11	To what extent do you agree with the following statement: The Point of Care Testing Program has reduced the number of medical evacuations related to COVID-19 from my community.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Effectiveness	12	Optional: Is there anything else you would like to add regarding the Point of Care Testing Program?	Free Text	
Lessons	13	Optional: What, if any, changes would you like to see implemented to the Point of Care Testing Program?	Free Text	
Lessons	14	To what extent do you agree with the following statement: Point of Care testing should be expanded to include testing for other types of diseases in remote communities.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Lesson	14a	Optional: Which other types of diseases do you think Point of Care testing would be appropriate for?	Free text	

Thank you for taking the time to complete this survey.

Nous is also interested to speak with the survey respondents who are willing to speak about their experiences with the POCT Program. If you are willing to participate in a confidential 30-minute consultation, please follow this link to provide your contact details and a researcher from Nous will be in contact.

We ask you to submit your details in a separate survey so that the information you have already provided remains anonymous.
B.5 Non-POCT site survey questions

KLE category	#	Question	Response type	Response options
	1	 Are you: (1) An employee of a health service (such as an Aboriginal Community Controlled Health Service), including Aboriginal Health Workers, responsible for administering COVID-19 tests? (2) A staff member of a health service that involved with the management of COVID-19 testing? (3) An Aboriginal or Indigenous Liaison Officer? (4) None of the above. 	Discrete choice	Same as question If the respondent answers none of the above, the survey will be ended with the explanation from the Question column in this row.
		If you respond none of the above you will be exited from the survey.		
	1a	In what location(s) have you administered COVID-19 tests? If you service multiple sites please include list them all.	Free text	Free text
	2	How is COVID-19 testing mainly conducted in your organisation?	Multiple choice (select all that apply)	Swabbing for a PCR test Rapid Antigen Testing Both Other
	3	On average when swabbing for PCR tests , how long did it take to get results after the swabbing had taken place?	Discrete choice	Less than one hour Between one hour and six hours Between six hours and one day Between one day and two days Between two days and four days

KLE category	#	Question	Response type	Response options
				Longer than four days
				Don't know
	4	Did the time taken for test results to return make it hard for patients to commence treatment?	Discrete choice	Yes
				No
				Don't know
	5	Did the time taken for test results to return make it hard for patients to isolate?	Discrete choice	Yes
				No
				Don't know
	6	Did the time taken for test results to return increase the spread of COVID-19 within the community?	Discrete choice	Voc
				No
				Don't know
	7	Did the time taken for test results to return make it hard to test family members and close contacts?	Discrete choice	Yes
				No
				Don't know
	7a	Please describe any other impacts caused by delays.	Free text	
		Only displayed if response to 4 is significant or some challenges.		
	8	How did the testing methods decrease the spread of COVID-19?	Free text	
Implementation	9	To what extent do you agree with this statement: At times, it was difficult to carry out COVID-19 testing in my organisation.	Discrete choice, Likert scale	Strongly disagree
				Disagree
				Neither agree nor disagree
				Agree
				Strongly agree
				Don't know

KLE category	#	Question	Response type	Response options
Implementation	9a	Optional: Please describe what difficulties you had in testing.	Free text	
		Note: we are interested in hearing about how and why it may have been harder in some locations than others.		
Effectiveness	10	To what extent do you agree with this statement: In my community, people could access COVID-19 testing.	Discrete choice, Likert scale	Strongly disagree Disagree Neither agree nor disagree Agree Strongly agree Don't know
Effectiveness	10a	Optional: Please explain why/why not?	Free text	
Lessons	11	Optional: If your organisation had access to a Point of Care Testing machine, what difference could this make to testing for COVID-19 or other diseases?	Free text	
Lessons	12	Optional: Is there anything else you would like to add regarding COVID-19 testing in your organisation?	Free text	
Lessons	13	Optional: What, if any, changes would you like to see in the way COVID-19 is tested for and managed in your organisation?	Free text	

Thank you for taking the time to complete this survey.

Nous is also interested in speaking with survey respondents who are willing to speak about their experiences testing for and managing COVID-19. If you are willing to participate in a confidential 30-minute consultation, please follow this link to provide your contact details and an evaluator from Nous will be in contact.

We ask you to submit your details in a separate survey so that the information you have already provided remains anonymous.

Appendix C Simulation outputs

C.1 Large communities (1,000 individuals)

Figure 12 | Simulated number of infections (over 200 days, after first case identification) across 32 scenarios, in a large-sized remote First Nations community (Delta variant)



C.2 Very-large communities (3,500 individuals)

Figure 13 | Simulated number of infections (over 200 days, after first case identification) across 32 scenarios, in a very-large-sized remote First Nations community (Delta variant)

