

# A mixed-methods evaluation: COVID Care in the Home, a public health response to the first omicron wave across the Torres and Cape region, Queensland

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## Abstract

**Objective:** The purpose of this article is to evaluate the COVID-19 Care in the Home (CCITH) program during the first COVID-19 omicron wave across Torres Strait and Cape York region of Far North Queensland in 2022.

**Methods:** A mixed-method study: An online survey and semi-structured interviews of CCITH internal and external stakeholders and participants was utilised to develop a greater understanding of perspectives of the program.

**Results:** Survey participants n=140. Most survey respondents did not attend hospital, emergency, or primary healthcare centre during isolation for medical assistance (82%, 115/140) and most strongly agreed/agreed (87%, 122/140) that the CCITH program cared for their health needs. Interview participants n=14. Thematic analysis of interviews verified survey responses and identified successes of this program including improved community relationships and primary healthcare centres and community members felt supported. Limitations included rapid changes to policies and roles and limited food availability during isolation.

**Conclusions:** The CCITH program highlights the resilience and self-determination of First Nations communities and primary health staff across the Torres Strait and Cape York throughout the first COVID-19 outbreak in the region.

**Implications for Public Health:** This virtual model of care could be employed in similar settings to improve service provision in both primary and public health to increase community safety and achieve good health outcomes.

**Key words:** COVID-19, indigenous health, public health, primary care, remote health

## Background

The declaration of the COVID-19 pandemic during 2019 raised widespread fear for the well-being and its implications for Aboriginal and/or Torres Strait Islander People (hereafter respectively referred to as First Nations People) living in regional and remote communities of Australia.<sup>1</sup> There was considerable concern that COVID-19 outbreaks would have significant devastating effects on vulnerable communities living in remote areas with limited health services. It is well established that First Nations People experience a greater burden of chronic disease, with this rate being higher still in remote locations.<sup>2</sup>

The Torres Strait Islands, Cape York and Northern Peninsula Area in Far North Queensland are a remote part of Australia, home to a population of approximately 25,000 people spanned across more than 130,000 square kilometres of remote land and islands. Approximately 16,000 of these residents identify as First Nations (64% of the population) with both Aboriginal and Torres Strait Islander Peoples living in discrete First Nations communities across a vast geographical and culturally diverse area.<sup>3</sup>

The Torres and Cape Hospital and Health Service (TCHHS) is a state-run health service within Queensland and services this unique region. It comprises thirty-one primary health care centres and four rural

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hospitals that are required to service all health needs of these discrete remote communities, including primary, emergency and inpatient care. For some parts of this region, such as Saibai Island in the far northern cluster of the Torres Strait, situated four kilometres from the Papua New Guinea border, access to the closest tertiary referral hospital in Cairns is over 1000 km away.<sup>3</sup>

As COVID-19 spread across Australia from 2020 onwards, Queensland maintained state border closures until mid-December 2021 when state border controls were eased and the first case of COVID-19 in the Torres and Cape region tested positive on the 24 December 2021. This marked the beginning of the first COVID-19 outbreak in this remote, geographically isolated region of Australia. TCHHS was responsible for managing the COVID-19 public health response to this outbreak.<sup>4</sup>

The TCHHS public health response involved implementing a culturally influenced and appropriate COVID-19 Care in the Home (CCITH) program (Figure 1). This included strong representation within our team from First Nations staff to guide cultural sensitivity and safety of the CCITH program design and delivery. This was a virtual model of care (via telephone) intended to support COVID-19 cases and their families to isolate safely at home with daily phone calls to check their well-being. This model deviated from the state-adopted virtual ward model of care which only provided text-message updates to COVID-19 patients to better address the specific needs of the community including understanding geographical and resource challenges, socioeconomic disparities and diverse cultural needs.<sup>5</sup> TCHHS clinical and administrative staff were re-assigned to support the CCITH program. Staff worked remotely via Microsoft TEAMS to perform virtual well-being checks on cases and household contacts during their isolation and quarantine periods. The CCITH program was led by a public health medical officer, senior medical officer and four clinical nurse consultants with, at its peak over 108 clinical and non-clinical team members providing daily well-being calls. All TCHHS seconded staff were given initial orientation and training and were supported to deliver this program.

All notified COVID-19 cases were phoned and invited to participate in the CCITH program, at that time they were screened for relevant comorbidities, socioeconomic vulnerability and COVID-19 antiviral eligibility.<sup>6</sup> Each household received a pulse oximeter delivered from the local primary healthcare centre to measure heart rate and oxygen saturations daily. The CCITH program phoned cases daily and assessed for physical and mental well-being and abnormal observations were escalated to the clinical nurse consultant and local

primary healthcare centre for clinical review through internal clinical escalation pathways. Primary healthcare staff worked closely with and liaised regularly with the CCITH team nurse leaders via phone and were strongly supported to assist in coordinating outreach care as required, this included attending overcrowded houses to test close contacts for COVID-19. Non-medical needs were facilitated by external stakeholders including local councils and Aboriginal Community Controlled Health Organisations (Apunipima and Northern Peninsula Area Family and Community Services). They assisted in delivering regular medications, dropping off food parcels and supplying power cards (a plastic card to add credit to card-operated electricity meters) to enable continued supply of electricity to homes.

There were 5457 COVID-19 cases reported across the Torres Strait and Cape York area during first omicron wave from 13 December 2021 to 19 April 2022 (study period). Fifty-eight cases were hospitalised (1.1%), and two deaths were reported. A total of 3496 cases (64.1%) enrolled in the CCITH program during this time period with a higher proportion of those participants identified as First Nations Peoples.

The aim of this study was to evaluate the CCITH program during the first COVID-19 omicron wave across the Torres Strait and Cape York in 2022 using a mixed-method study design. We sought to explore CCITH service recipients, CCITH staff and key stakeholder experiences of the program, areas of success and areas of improvement.

## Methods

### Study Design

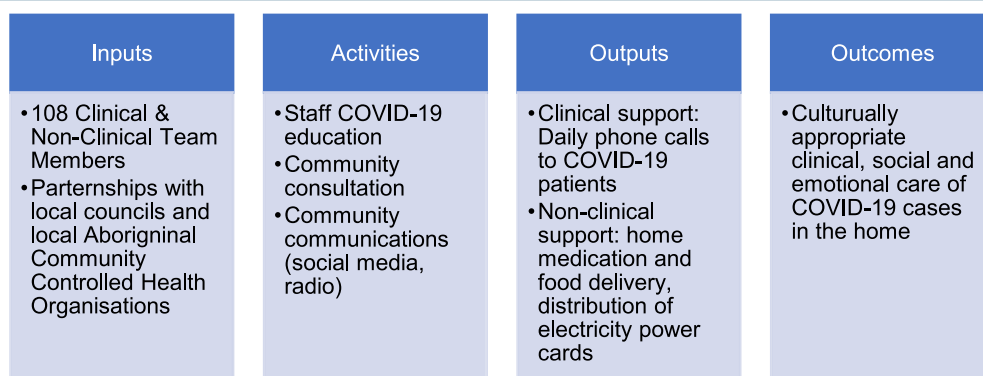
We conducted a multi-method study using an online-survey and semi-structured interviews. We employed a phenomenological approach to develop a greater understanding of internal and external stakeholder perspectives of the CCITH program.

### Online survey data collection and analysis

An online survey was created using Microsoft Forms, and an invitation was sent to email addresses on record for cases testing positive for COVID-19 and participating in the CCITH program. The email included project information. Survey eligibility criteria included.

- Participants with a COVID-19 positive test date between 24 December 2021 and 19 April 2022
- Participants assigned to TCHHS in Notifiable Conditions Register (NOCS) and
- Did not opt out of CCITH Program.

Figure 1: COVID-19 Care in the Home Program Logic.



Participation was voluntary and consent obtained at the commencement of the survey. Carers of cases were self-identified from survey responses. Survey questions included demographics, type of CCITH recipient (i.e., COVID-19 cases, carer for a case of COVID-19, both) and healthcare attendances. Four questions with a 5-point Likert response scale (strongly disagree, disagree, neutral, agree and strongly agree) explored participant experiences of the CCITH program (see Appendix A). Results were de-identified, aggregated and descriptively analysed. Statistical comparisons were made using proportion tests with 95% confidence intervals to assess whether survey respondents were representative of those who participated in the program and who were sent the survey and to compare Likert responses among survey respondents by First Nations status, age and sex (see Table 1 & Appendix B).

### Semi-structured interviews data collection and analysis

To examine experiences in more depth and explore perceptions for improvements, we conducted semi-structured interviews with CCITH recipients, local government area council representatives, TCHHS executives and CCITH team members. Interview participants were purposively selected from those invited (n=32), to provide balanced representation from TCHHS organisational staff, external stakeholders and participants. Interviews were conducted and recorded online through Microsoft Teams and undertaken by CCITH staff. Peer checking and external review of methods and results were

conducted to mitigate potential bias. Participation was voluntary and informed consent obtained.

Thematic analysis of transcriptions was conducted through an inductive, iterative process until saturation achieved by two investigators who coded independently. Microsoft Excel was employed to import, organise and explore data for analysis. An external experienced researcher assisted as a peer-checker to assist in coding process. Regular group discussions occurred to reduce internal bias and ensure quality assurance. Participants were emailed a summary of themes identified as part of the iterative process to ensure their views were accurately represented.

### Positionality statement

The authors acknowledge that their cultural, political, social and ideological values differ from the perspectives and voices of participants in this study. Respecting these differences was central throughout the completion of this study. The investigators involved in thematic analysis and interpretation of the results were at the time Torres and Cape Hospital and Health Service employees and health staff within the public health team.

## Results

### Online Survey

Email invitations with a link to the online survey were sent to 1474 distinct email addresses for 1893 eligible participants. Two reminder emails were sent, with a total of 140 responses received over the four-week survey response period (7.4% response rate). Characteristics of survey respondents are shown in Table 1. Survey respondents were generally representative of CCITH participants by isolation location and age; however, females, non-Indigenous people and those aged 41–50 years were over-represented among survey respondents while males, First Nations People were under-represented among respondents.

Of those who responded to the survey, 61% (85/140) were a COVID-19 positive case, 31% (43/140) were both a COVID-19 case and a carer for positive COVID-19 case, and 9% (12/140) were a carer for a COVID-19 case. Most participants (82%, 115/140) did not attend a hospital, emergency department or primary healthcare centre for medical assistance during their isolation period, while 17% (24/140) sought in-person health care during their isolation period. Sub analysis of these responses by ethnic background, age and gender can be found in Appendix B (Table 3).

Overall, survey respondents considered their experiences positive (Figure 1). The majority of respondents (86%, 95%CI 79–91%) strongly agreed or agreed they felt safe being cared for in the CCITH program, while 87% (95%CI 80–92%) strongly agreed or agreed that the CCITH program cared for their health needs (i.e. concerns about symptoms, socioemotional well-being, medications and medical certificates). Around half of respondents (47%, 95%CI 39–56%) strongly agreed or agreed that the CCITH program provided for their non-health needs (i.e. needs associated with food, power cards and phone credit). Overall, the majority of survey respondents (67%, 59–75%) strongly agreed or agreed that the CCITH program improved their isolation experience. There were no significant differences identified in any of the four survey respondent experience ratings by First Nations status, age (<50 years, ≥ 50 years) or sex (Appendix B Table 3).

Table 1: Survey demographics table.

	Sent survey		Responded to survey		p-value
	n 1893		n 140		
	n	% (95%CI)	n	% (95%CI)	
<b>Age</b>					
0–10 years	342	18% (16–19%)	0		
11–20 years	340	18% (16–19%)	6	4% (1–9%)	0.37
21–30 years	359	19% (17–20%)	23	16% (10–23%)	0.72
31–40 years	348	18% (16–20%)	28	20% (13–27%)	0.79
41–50 years	237	13% (11–14%)	36	26% (18–33%)	0.04
51–60 years	157	8% (7–9%)	23	16% (10–23%)	0.21
61–70 years	78	4% (3–5%)	17	12% (7–18%)	0.18
71–80 years	24	1% (<1–1%)	6	4% (1–9%)	0.60
81+ years	8	<1% (<1–<1%)	1	1% (<1–3%)	0.84
<b>Sex</b>					
Female	1062	56% (53–58%)	108	77% (69–83%)	<0.05
Male	827	44% (41–45%)	32	23% (16–30%)	0.01
Unknown	4	<1% (<1–<1%)	0		
<b>First Nation status</b>					
Aboriginal	427	23% (20–24%)	16	11% (6–17%)	0.25
Aboriginal and Torres Strait Islander	263	14% (12–15%)	14	10% (5–16%)	0.67
Torres Strait Islander	717	38% (35–40%)	32	23% (16–30%)	0.08
Other	483	26% (23–27%)	78	56% (47–64%)	<0.05
Not stated	3	<1% (<1–<1%)	0		
<b>Location</b>					
Cape York	877	46% (44–48%)	66	47% (38–55%)	0.87
Northern Peninsula Area	294	16% (13–17%)	12	9% (4–14%)	0.51
Torres Strait Islands	717	38% (35–40%)	45	32% (24–40%)	0.42
Other	5	<1% (<1%)–<1%)	15	11% (6–17%)	0.44
Unknown	0		2	1% (<1–5%)	

## Semi-structured Interviews

Fourteen participants (5 external stakeholders, 6 CCITH team members and 3 CCITH participants) participated in the semi-structured interviews. Initial themes were broadly grouped into perceptions of successes and limitations of the CCITH program. Successes of the program included successfully managing the COVID-19 outbreak, improved relationships with the community, supporting primary healthcare centres, the community feeling supported, positive communication, client reassurance and a rewarding role for team members. Limitations of the program included a heavy workload for team members, occasional confusion within the team due to rapid policy changes, problems with information sharing and consistency of information shared to the wider community, limited food availability for cases and technical difficulties. These and exemplar quotes are reported in Table 2.

## Discussion

This multi-method evaluation suggests that the CCITH program was supportive of both community needs during home isolation and health staff to manage the infectious disease outbreak during the first COVID-19 omicron outbreak across the Torres and Cape York area of Far North Queensland. Community members completing home isolation and primary healthcare centre staff reported feeling reassured and supported by the CCITH program. It appeared community members felt safe and supported isolating at home with regular phone calls to check on their well-being. Similar virtual health care supports were widely adopted in a variety of forms across Australia during this time, and evaluations of this health model have demonstrated this care is highly accepted by patients, provides reassurance and identifies clinical deterioration early.<sup>7,8</sup>

**Table 2: Perceived successes and limitations of the CCITH program semi-structured interviews.**

### Perceived success

Theme: The CCITH program was successful in managing the COVID-19 outbreak

*The CCITH was a good concept to manage and control outbreak...I think it would have taken a huge load off the clinic, surely. And it would've certainly you would have thought reduce the spread. Overall, I thought it was well accepted by the community. (S3).*

Theme: The CCITH program improved and strengthened relationships with the community

*I don't think this could have been possible without us already having relationships or being able to build those relationships with the local council. I think that's going to be an ongoing must for our public health team and as a [health service] to continue engaging with councils to get the right messaging out. (S4)*

*I was so pleased with the multidisciplinary approach all around and everyone [in the CCITH program] ... From the initial stages in meetings, the communication was clear. The Commonwealth agencies that needed to be there, that oversee our operations were also present and invited to those. (ES6)*

Theme: The CCITH program provided support to primary healthcare centers

*[The CCITH program] also took out of the equation [health staff] needing to physically go and see all the people that had COVID, which was pretty resourceful. Because at the same time as the community getting COVID, our staff start getting COVID as well. We had less personnel as well, so it was really good to be able to access that service...that was a huge weight off our service as well, just something that simple, was good. (S9).*

Theme: Cases and their families felt supported by the CCITH program

*Like when you people [CCITH] ring me...to see how I was going, they were ringing everybody, and it was good...I believe that, talking to people it took my mind off that anxiety. (P13)*

Theme: Individual medical equipment provided in the home provided client reassurance

*I think the idea of sending positive cases home with an oximeter and kind of having some control over their health...I think it's very clever when you've got people in public health ringing up people at home, ... to do something as simple as putting an oximeter on their finger to highlight any red flags.... I think that that was something incredibly invaluable. (S11)*

Theme: CCITH program team members found role rewarding

*I think the most impressive thing was the willingness and camaraderie between the team members itself. To me, that was outstanding, absolutely outstanding. (S10)*

*I did find it very personally rewarding...I felt good at the end of each day because I felt like I'd answered people's questions and I felt like I had done the right thing. (S12)*

### Perceived limitations

Theme: Heavy workload for CCITH program team members

*There was stresses in the [CCITH] public health team...everyone was very busy. So, I think [the CCITH program] probably did rely more on the fact of the staff numbers. You know, if we had a few more people, we might not have been so under the pump if you like. (S1)*

Theme: Rapid changes in policy and procedures created confusion for team members and stakeholders

*I think what happened was there was change after change, which creates impact. There was probably too much change that happened instead of let's stop, let's sit and allow this to settle on in. From my understanding the upsets that occurred were based on that constant change and getting to a place where people were able to settle into their functions and actually do their tasks. As opposed to, I've got this task today but we're changing this tomorrow to do something else. That was the landscape though of COVID as a whole. (S4)*

Theme: More consistency in communication and information sharing required

*I think in such a complex situation and the information is changing so rapidly, it's just how do you disseminate that to community, or to the family? Sometimes we got mixed messages which made it a bit more stressful and confusing. (S8)*

*I think linking multiple family members to one case manager would be better. We had three different case managers calling us regarding my positive daughters. Things had to be repeated constantly. Case workers were unaware we had so many positive cases in our house at once. We had multiple calls daily. (P2)*

Theme: Limited availability of food and supplies was frustrating for clients and community stakeholders

*Council was ready to go...but no one else was prepared that's my honest opinion here. I can't understand why the [food] care packages took so long to get sorted. It should have been happening from the day one the person was asked to go and [isolate] at home. In our [community] that did not happen ... because of the red tape... I actually got my [food] vouchers the day before I came out of isolation. (P3)*  
*We had no idea and when we found out about the food vouchers, they were all gone. We were isolating in January and did not hear about the food vouchers through Council until April. (P8)*

Theme 5: Technical difficulties contacting cases was a limitation to the CCITH program

*I was fortunate that I had [CCITH] ringing me, asking are you ok.... not everyone had a phone. Or if they had phones.... the issue is nobody has credit. Children use phones to play games, family share one phone amongst them. [We had to] go around and actually do the visits because not everyone had a phone (S10)*

S=staff, P=participant, ES=external stakeholder.

This study suggests that a virtual model of care can be adopted safely in a geographically isolated area with vulnerable communities and can be well received by these communities. Most CCITH participants were safely managed at home with virtual health care support delivered by the CCITH program.<sup>9</sup> The program not only provided a mechanism to identify deteriorating patients, it also appeared to reduce unnecessary primary health care and hospital presentations. Robust internal clinical escalation pathways in collaboration with primary health care centres were critical in this success.

The close partnership between the CCITH public health team and TCHHS primary healthcare centres was a unique feature of this virtual program and to our knowledge is the first during the Australian COVID-19 outbreak. The CCITH team case-managed all cases isolating at home reducing the workload of primary healthcare centres as they were not required to manage individual COVID-19 cases but could be called upon for support as required. Stakeholder and healthcare staff reported that the CCITH model highlighted the important role of both public health and primary healthcare teams and staff in these facilities reported feeling supported. This is upheld by previous research demonstrating collaboration between these teams improves health outcomes.<sup>10</sup>

In addition to increasing collaboration between public health and primary healthcare, the CCITH model prioritised using the local workforce. Most staff in the CCITH program had been seconded from other roles throughout the TCHHS health service, by utilising local staff this evaluation suggested that pre-existing relationships with communities and significant local cultural understanding was beneficial to the delivery of this program in this region. It is well established that First Nations healthcare delivery must be culturally acceptable, flexible and holistic, fostering self-determination and empowerment throughout a community.<sup>12</sup> The CCITH program reinforced the importance of local staff engaging and collaborating with communities and developing locally appropriate flexible solutions for healthcare delivery. CCITH team members acknowledged the heavy and at times confusing workload, however overall they reported it was a rewarding experience delivering the program to the community. This is particularly interesting considering burnout was a major occupational issue amongst healthcare providers globally during the COVID-19 pandemic.<sup>11</sup> Burnout was not identified as an issue by participants in this study.

A key component of the CCITH program was to enable Torres Strait and Cape York residents to remain in isolation if tested positive. A challenge identified in the study was limited access to food and supplies for cases completing isolation and highlights the broader issue of food security in remote First Nations communities. Food insecurity is contributed to by a range of socioeconomic, environmental, systemic, and cultural factors and is a leading cause of chronic disease.<sup>13</sup> Communities across the Torres Strait and Cape York heavily rely on regular food gathering practices such as fishing and hunting, which was halted during isolation periods. Despite considerable planning and preparation by communities to best equip themselves for the COVID-19 outbreak, many communities were unable to have adequate food supplies for a household to complete a seven-day isolation period. This is a long-standing issue in First Nations communities globally.<sup>14</sup> While food security is not a Public Health or Primary Healthcare objective, community-led planning for similar circumstances such as mandatory isolation would be advantageous in future.

The evaluation has reinforced that communication, policy updates and roles and responsibilities can fluctuate rapidly in an outbreak setting. Clear, consistent, and timely communication and planning are imperative to effective outbreak management particularly in geographically isolated areas.<sup>15</sup> This limitation found in the CCITH program is consistent, with similar challenges experienced across health services globally through the COVID-19 pandemic and is an area for greater investigation into improvements in public health responses more broadly.

There were several limitations to this study. First, the two lead interviewers also completed the data analysis and therefore have the potential to introduce bias into the data analysis. Regular peer-checking, external review, and reflective practice was undertaken to mitigate this risk. Secondly, a degree of response bias was present in the characteristics of those responding to the email survey, with males, Aboriginal People and Torres Strait Islanders in particular under-represented. This has likely limited the generalisability of survey results and responses should be interpreted with this limitation in mind. Future research could consider in-community visits to undertake interviews, rather than remote interviews to overcome this limitation.

Our study demonstrates the CCITH programs effectiveness and efficiency through a centralised coordinated effort, utilising local resources in managing the first COVID-19 wave throughout the Torres Strait and Cape York. This was despite initial concerns related to community geographic remoteness, higher burden of chronic disease and socioeconomic disadvantage. The CCITH program highlights the tenacity, resilience and self-determination of First Nations communities and primary health staff across the Torres Strait, Cape York and Northern Peninsula Area and reinforces this program was safe and culturally appropriate. This virtual model of care should be considered in other areas where remote health care is provided.

## Conflicts of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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There is no funding for this research.

## Ethical approval

An ethics exemption was granted by the Far North Queensland Human Research Ethics Committee under reference EX/2022/QCH/85537 (Mar v2).

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## Appendix A Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.anzjph.2024.100147>.