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Short report

A low burden of severe illness: the COVID-19 Omicron outbreak in the remote Torres and Cape region of Far North Queensland

Caroline Taunton, Leanne Hawthorn, Rittia Matysek, Marlow Coates, Emma Pickering, Johanna Neville, Josh Hanson, Simon Smith, Allison Hempenstall

Abstract

A coronavirus disease 2019 (COVID-19) outbreak was declared in the remote Torres and Cape region of Far North Queensland soon after the Queensland border opened for quarantine-free domestic travel in December 2021, with a total of 7,784 cases notified during the first ten-month outbreak period. We report a crude attack rate among residents of 25.6% (95% confidence interval [95% CI]: 25.1–26.1%), a hospitalisation rate of 1.6% (95% CI: 1.3–1.9%) and a crude case fatality rate of 0.05% (95% CI: 0.01–0.13%). Hospitalisation and case fatality rates were similar among First Nations and non-Indigenous people, with double dose COVID-19 vaccination rates higher among First Nations than non-Indigenous people by the end of the outbreak period. We attribute the low burden of severe illness to local community leadership, community engagement, vaccination coverage and recency, and community participation in a local culturally considered COVID-19 care-in-the-home program.

Keywords: COVID-19; Torres Strait Islands; Cape York; First Nations; Omicron

Background and methods

Introduction

The arrival of the highly transmissible Omicron variant in Australia reignited concerns that outbreaks of coronavirus disease 2019 (COVID-19) could have devastating consequences for Aboriginal and Torres Strait Islander (respectively hereafter First Nations) Australians living in rural and remote communities.¹ The remote Torres Strait and Cape York areas of Far North Queensland are home to approximately 28,000 people, of whom 68.8% identify as First Nations Australians.² There are 33 discrete First Nations communities in the region, which covers an area of 130,000 square kilometres and which stretches north of Cairns to the northernmost Torres Strait Islands between mainland Australia and Papua New Guinea.³ Several factors place the region's population at risk of experiencing poor health outcomes from COVID-19, including a

high prevalence of pre-existing chronic comorbidities, overcrowded housing in remote areas, limited access to healthcare and socioeconomic disadvantage.^{4–6} The Torres and Cape Hospital and Health Service (TCHHS) delivers most health services in the region and operates in partnership with local Aboriginal Community Controlled Health Organisations and emergency retrieval services.⁷ Cairns Hospital is the region's tertiary referral centre, with flight times from local communities to Cairns ranging from 45 minutes to 4.5 hours.

Outbreak preparation

To prepare for an impending COVID-19 outbreak, TCHHS (in partnership with local First Nations councils and healthcare partners) undertook extensive outbreak preparation, including: the establishment of a dedicated COVID-19 public health team; the delivery of a logistically complex outreach vaccination

service; and the design of a culturally considered COVID-19 care-in-the-home program. The region remained effectively COVID-free throughout 2020 and 2021 with only a handful of cases identified among interstate and overseas visitors. On 13 December 2021, the Queensland border opened for quarantine-free domestic travel and a TCHHS COVID-19 outbreak was declared soon after, with the first case in the region testing positive on 24 December 2021. Here we describe COVID-19 vaccination rates, the epidemiology of the outbreak, and the public health response during the first ten-month Omicron outbreak period from 24 December 2021 to 14 October 2022.⁸

Methods

COVID-19 vaccinations were recorded on local Queensland Health electronic medical records (EMRs) and coverage rates calculated using EMR patients as population denominators at three time points (prior to the outbreak, on 1 September 2021; at the start of the outbreak, on 24 December 2021; and at the end of the reported outbreak period, on 14 October 2022). Confirmed cases were those testing positive to SARS-CoV-2 by laboratory or point-of-care polymerase chain reaction (PCR) test; probable cases were those testing positive by clinician-performed or self-reported rapid antigen test (RAT) between 24 December 2021 and 14 October 2022, by date of specimen collection. Cases comprised all notified cases testing positive in the TCHHS region, including residents and visitors. Positive COVID-19 test results were notified to the TCHHS public health team by telephone, email, electronic laboratory message or via the Queensland COVID-19 RAT registration portal and all relevant case clinical and treatment information recorded on the Queensland Health Notifiable Condition System. Hospitalisation details were collected through daily telephone calls to local hospitals. PCR-positive specimens were genomically sequenced by Queensland Health Forensic and Scientific Services opportunistically and upon request by the TCHHS public health team. Crude attack rates were calculated

among residents of the TCHHS region using Queensland Health estimated First Nations and non-Indigenous resident populations from the Australian Bureau of Statistics,² with crude hospitalisation and case fatality rates calculated from all COVID-19 cases notified. Two sample Z tests of proportions were employed for statistical comparison and to calculate 95% confidence intervals (95% CI), with *p* values below 0.05 considered statistically significant. Microsoft Excel 2016 was used to calculate proportions and to create the outbreak epidemic curve, and Stata 17.0 was used for statistical analysis. An ethics exemption was granted by the Far North Queensland Human Research Ethics Committee under reference EX/2022/QCH/85537 (Mar v2).

Results

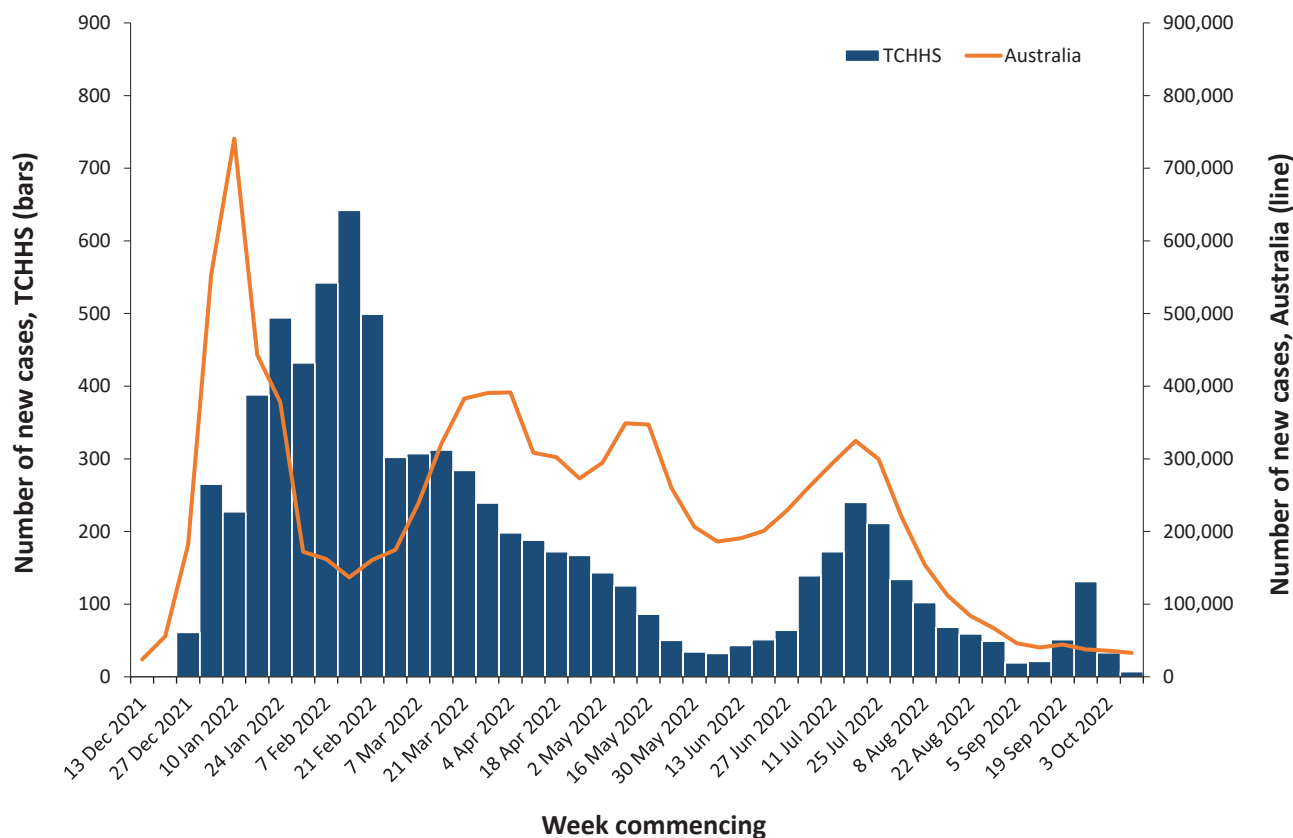
Vaccine uptake

The COVID-19 outreach vaccination campaign commenced in mid-February 2021 and was ongoing when mandatory isolation ceased in Queensland on 14 October 2022. During this period, 615 outreach vaccination clinics were delivered at 39 locations across the region. At the start of September 2021, 19.5% of First Nations residents and 22.4% of non-Indigenous residents aged ≥ 12 years had received two or more COVID-19 vaccination doses, with these rates climbing to 61.7% and 59.2% respectively when the outbreak was declared in late-December 2021. By the end of the outbreak period on 14 October 2022, double dose vaccination rates were higher among First Nations residents (78.3%; 95% CI: 77.6–79.0%) than among non-Indigenous residents (64.0%; 95% CI: 63.0–65.0%) ($p < 0.001$).

Outbreak epidemiology

A total of 7,784 COVID-19 cases were notified across the region during the outbreak period, with the first wave peaking in mid-February 2022 and a second wave peaking in mid-July 2022 (Figure 1). Cases were notified among residents of all towns, remote mainland

Figure 1: COVID-19 outbreak curve for the Torres and Cape region (TCHHS), with Australia overlay^a



a Weekly case numbers for Australia from Our World in Data.⁹

communities and Torres Strait islands in the region. Of notified cases, 5,098 (65.5%) were First Nations people, 4,288 (55.1%) were females and 704 (9.0%) were aged ≥ 60 years (Table 1). The 7,784 cases occurred in 7,578 people, with 198 individuals (2.6%) reporting two or more infections. Seven hundred and thirty-two cases (9.4%) were confirmed by PCR, with the remainder testing positive only by RAT and reported as probable cases. The PCR testing rate during the outbreak period was higher among non-Indigenous residents (109.6 per 1,000 population; 95% CI: 103.1–116.1) than among First Nations residents (87.5 per 1,000 population; 95% CI: 83.5–91.5) ($p < 0.001$); however, a greater proportion of First Nations cases tested positive only by RAT (92.1%; 95% CI: 91.4–92.9%) than non-Indigenous cases (87.5%; 95% CI: 86.3–88.8%) ($p < 0.001$).

A total of 7,267 cases (95.9%) were resident in the TCHHS region, suggesting a crude region-wide attack rate among residents of 25.6% (95% CI:

25.1–26.1%). The attack rate was lower among First Nations residents (24.2%; 95% CI: 23.6–24.8%) than non-Indigenous residents (28.1%; 95% CI: 27.2–29.0%) ($p < 0.001$). Genomic results were available for 213 specimens (29.2% of confirmed cases), with all identified as Omicron or subvariants.

Sixty-four cases were admitted to hospital for COVID-19 and 57 with a positive COVID-19 test were admitted for another condition, totalling 121 hospitalised cases (1.6%; 95% CI: 1.3–1.9%). The hospitalisation rate was similar among First Nations (1.7%; 95% CI: 1.3–2.0%) and non-Indigenous people (1.3%; 95% CI: 0.9–1.8%) ($p = 0.33$). Overall, 77 cases (63.6%) were admitted only to a regional TCHHS hospital, and 44 cases (36.4%) were transferred to a tertiary referral hospital, with one transferred case admitted to an intensive care unit (ICU). Median length of hospital stay was two days (interquartile range, IQR: 1–6 days). Four deaths attributable to COVID-19 were reported,

Table 1: Characteristics of COVID-19 cases in the Torres and Cape region, 24 December 2021 to 14 October 2022

	Cases (n) ^a	Cases (% of total)
By age		
Under 5 years	613	7.9
5 to 11 years	1,005	12.9
12 to 17 years	648	8.3
18 to 34 years	2,299	29.5
35 to 59 years	2,515	32.3
60 years and over	704	9.0
Total	7,784	100.0
By sex		
Female	4,288	55.1
Male	3,484	44.8
Other / unknown	12	0.2
Total	7,784	100.0
By First Nations status		
Aboriginal	1,986	25.5
Torres Strait Islander	2,228	28.6
Aboriginal and Torres Strait Islander origin	884	11.4
Non-Indigenous	2,646	34.0
Unknown	40	0.5
Total	7,784	100.0
By residence		
TCHHS resident ^b	7,451	95.7
Non-TCHHS resident	327	4.2
Unknown	6	0.1
Total	7,784	100.0
By Omicron variant type^c		
B.1.1.529	58	27.2
BA.1 (including BA.1.1)	99	46.5
BA.2	29	13.6
BA.4	4	1.9
BA.5	19	8.9
Unassigned (Omicron)	4	1.9
Total	213	100.0

a Cases testing positive to COVID-19 between 24 December 2021 and 14 October 2022.

b TCHHS: Torres and Cape Hospital and Health Service region.

c Specimens with a variant result available. Genomic sequencing was attempted but unsuccessful for an additional 35 specimens. No Omicron BA.3 sequences were identified.

resulting in a crude case fatality rate (CFR) for the region of 0.05% (95% CI: 0.01–0.13%), with no difference in the CFR among First Nations (0.06%; 95% CI: 0.04–0.11%) and non-Indigenous people (0.04%; 95% CI: 0.00–0.12%) ($p = 0.70$).

Public health response

Walk-in fever clinics were established at 28 facilities. Twelve point-of-care GeneXpert PCR machines were utilised throughout the outbreak period, with each able to process four specimens concurrently and return results within 45 minutes.¹⁰ RATs were provided free-of-charge from mid-January 2022 and were the predominant diagnostic test used throughout the outbreak period. Public health messaging and outbreak communication was disseminated using several channels. Weekly meetings took place between the public health team and local councils, who then informed each community using existing networks, local notices and social media. This was augmented by region-wide print, radio broadcast and social media information led by the public health team, local Aboriginal Community Controlled Health Organisations and the Queensland Government.

Contact tracing commenced when the first case was notified, but ceased in mid-January 2022 with case numbers growing rapidly and the public health team prioritising follow-up of cases in preference to close contacts. The public health team continued to contact cases by telephone throughout the outbreak period. Calls were made to confirm positive test results; to undertake general health screening checks; to triage cases for monoclonal antibody and antiviral treatment eligibility; to provide education and information; and to offer participation in the culturally considered COVID-19 care-in-the-home program (the program). Program participants then received regular telephone calls for wellbeing support throughout mandatory isolation, with clinical concerns escalated to a clinical nurse consultant or medical officer within the program team for follow-up. Clinical

program staff also liaised with local healthcare providers to coordinate treatment for eligible cases and to facilitate face-to-face clinical assessments where indicated.¹¹ A total of 3,749 cases (48.2%) took part in the program, with a greater proportion of First Nations cases (57.7%; 95% CI: 56.3–59.0%) participating than non-Indigenous cases (30.4%; 95% CI: 28.6–32.2%) ($p < 0.001$). At its peak, there were 108 program staff involved and 452 active cases participating in the program. Program staff comprised both First Nations and non-Indigenous staff, many of whom were reassigned from other roles within TCHHS to support the local COVID-19 response.

While the public health response had limited capacity to address the long-term structural factors associated with household overcrowding and home health hardware in remote First Nations communities in the region, local councils and the Hospital and Health Service worked together to identify alternative accommodation sites in each community to allow cases to isolate early in the outbreak period. Alternative accommodation included commercial properties, mine camps and construction worker camps, and was able to be identified in most communities. Once the outbreak commenced, family groups in several communities identified their own isolation houses ('sick houses') for extended family members to isolate together after testing positive. Additional supports such as power cards, prepaid mobile vouchers and food delivery services were made available to cases and their families to support home isolation in some communities, though these services were provided at the discretion of the local council and non-governmental organisations and were not available at all locations.

Discussion

The COVID-19 Omicron outbreak in the Torres and Cape region resulted in a far lower burden of severe illness than originally anticipated, with the overall and First Nations case fatality and ICU admission rates similar to those reported nationally for the Omicron wave.^{12,13} This was

a remarkable outcome for a remote population with limited access to health services and at increased risk of severe disease. Local councils worked closely with TCHHS during both the preparation and responses stages of the outbreak, and the COVID-19 outreach vaccination program was strongly supported by community leaders. While vaccination coverage rates were somewhat lower than those reported across the general Australian population, the outreach vaccination program led to similar double dose vaccination rates among First Nations and non-Indigenous residents at the start of the outbreak and the rate among First Nations residents exceeded that of non-Indigenous residents by the end of the outbreak period. This reflected local leadership in advocating for vaccination and ongoing community engagement across remote communities prior to and throughout the outbreak period and contrasted other parts of Australia where vaccination rates among First Nations people were lower than those of non-Indigenous people. The steep climb in vaccination rates between early September 2021 and the start of the outbreak in late December 2021, and continuation of outreach vaccination visits throughout the outbreak period, likely resulted in high population immunity during the outbreak and likely also somewhat accounts for the low burden of severe disease reported in the region.

We believe overall COVID-19 testing rates were similar among First Nations and non-Indigenous residents during the outbreak period, however as over 90% of cases tested positive only by RAT (with negative RATs not notified to the public health team), a complete analysis of testing rates was not possible. While the PCR testing rate (with negative tests notified to the public health team) was higher among non-Indigenous residents than First Nations residents, more First Nations cases tested positive only by RAT, suggesting that the PCR testing rate was not indicative of overall COVID-19 testing rates with RATs included. The higher rate of First Nations cases testing positive only by RAT reflects the reliance on RAT testing among residents of the more

remote discrete First Nations communities in particular, where there was limited access to rapid point-of-care PCR machines and long distances over which to coordinate transport of specimens to laboratory testing facilities. Our experience aligns with other reports from parts of Australia early in the pandemic, where both low case numbers and low rates of severe illness among First Nations people were attributed to outstanding Indigenous leadership.^{6,14,15} In addition to Omicron variant's milder phenotype and vaccination coverage, we also credit the low burden of severe illness in the TCHHS region to community leadership in promoting vaccination, to councils' facilitation of localised outbreak messaging, to community engagement in testing and isolation, to the establishment of a local public health team and to widespread participation in a culturally considered care-in-the-home program.

Acknowledgement

We extend our respect to all traditional owners of our culturally rich and diverse region, and warmly thank all stakeholders for their involvement in the local Torres and Cape COVID-19 response.

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