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Abstract

Objectives:	To examine barriers and facilitators to sustaining a sexual health continuous quality improvement (CQI) program in clinics serving remote Aboriginal communities in Australia.
Design:	Qualitative study.
Setting:	Primary health care services serving remote Aboriginal communities in the Northern Territory, Australia.
Participants:	Seven of the 11 regional sexual health coordinators responsible for supporting the Northern Territory Government Remote Sexual Health Program.
Methods:	Semi-structured in-depth interviews conducted in person or by telephone; data were analysed using an inductive and deductive thematic approach.
Results:	Despite uniform availability of CQI tools and activities, sexual health CQI implementation varied across the Northern Territory. Participant narratives identified five factors enhancing the uptake and sustainability of sexual health CQI. At clinic level, these included adaptation of existing CQI tools for use in specific clinic contexts and risk environments (e.g. a syphilis outbreak), local ownership of CQI processes, and management support for CQI. At a jurisdictional level, factors included the positive framing of CQI as a tool to identify and act on areas for improvement, and regional facilitation of clinic level CQI activities. Three barriers were identified, including the significant workload associated with acute and chronic care in Aboriginal primary care services, high staff turnover, and lack of Aboriginal staff.
Conclusions:	This study contributes to the growing evidence on how CQI approaches may improve sexual health in remote Australian Aboriginal communities. Enhancing sustainability of sexual health CQI in this context will require ongoing regional facilitation, efforts to build local ownership of CQI processes, and management of competing demands on health service staff.
Key words:	sexual health, Aboriginal, Australia, continuous quality improvement, primary health care, remote

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Using in-depth interviews with sexual health coordinators working in the Northern Territory, Australia, we examine barriers and facilitators to sustaining a sexual health continuous quality improvement (CQI) program in clinics serving remote Aboriginal communities.
- Participant narratives suggest adaptation of existing CQI tools for use in specific clinic contexts, local ownership, management support for CQI, positive framing of CQI as a tool to identify and act on areas for improvement, and regional facilitation of clinic level CQI activities are facilitators of sexual health CQI. Barriers are the significant workload associated with acute and chronic care in Aboriginal primary care services, high staff turnover, and lack of Aboriginal staff.
- Our study adds to existing research on sexual health and CQI in remote Australian settings.
- The authors of this paper all have ongoing involvement in Aboriginal health, sexual health and CQI in Australia, as researchers, service providers, managers and policy makers.
- A limitation of our study is that we could only speak to sexual health coordinators employed by the Northern Territory government health sector. Findings therefore cannot be generalised to the Aboriginal community-controlled health sector.

FUNDING STATEMENT

COMPETING INTEREST STATEMENT

None declared.

AUTHOR CONTRIBUTIONS

PG, GS, JB and SB designed the study. PG, JB and SB conducted data collection. PG and JB undertook analysis of the data and PG, GS and SB led on drafting of the manuscript. All other authors (LM, RB, JW, RG, AR, NR, CKF, BD, LM, JK) assisted with interpretation of data and review of successive drafts of the manuscript. All authors read and approved the final manuscript.

DATA SHARING STATEMENT

NA

INTRODUCTION

Residents in remote Aboriginal and Torres Strait Islander (hereafter referred to as 'Aboriginal') communities in Australia experience high rates of sexually transmissible infections (STIs), estimated in one large, multi-community study at 10%, 11% and 18% respectively for gonorrhoea, chlamydia and syphilis (1). Clinical guidelines for these communities recommend at least annual STI testing, timely treatment, partner notification and regular re-testing, particularly those under 35 years old (2, 3). However, recent estimates indicate that annual STI testing coverage in remote communities is still only 20%, with lower rates in men than in women (4).

Since the 1990s, continuous quality improvement (CQI) approaches – typically consisting of 'plan-do-study-act' cycles to monitor the functioning of organisational systems and identify and implement improvements (5) – have been used to improve health care quality and outcomes associated with, for example, chronic disease (6-10). In Australia, Aboriginal Community Controlled Health Services (ACCHS) and government-run health services providing primary health care to Aboriginal communities have used CQI extensively to make evidence-based improvements in clinical care (11-13).

Between 2011-2014, the STRIVE (STIs in Remote communities, ImproVed and Enhanced primary care) trial was conducted in 67 remote communities in the Northern Territory (NT), Queensland and Western Australia (14). STRIVE demonstrated that a clinic level sexual health CQI program supported by regional dedicated sexual health coordinators (14-16) could improve STI testing rates (15), with aspects of the CQI program becoming normalised in clinical practice (16). However, testing increases were from a low baseline and did not lead to lower STI prevalence over the time frame of the trial (15).

Elements of the STRIVE CQI approach were incorporated into the NT Government Remote Sexual Health Program (3). The program employs regionally-based sexual health coordinators to work with government-run primary care services to improve STI testing and treatment. Their roles include providing feedback on STI control through audits and review of clinical data; annual discussions with staff to assess and make recommendations for improving clinic-wide systems that support STI control (systems assessments); and sexual health education and staff training (3).

To gain insight into CQI practice for STI control in the NT since the STRIVE study finished in 2014, and to explore factors affecting the long-term sustainability of this approach in government-run health services, we conducted qualitative interviews with sexual health coordinators. Data were collected as part of a new study called STRIVEplus – a long-term observational study of sexual health CQI in the NT between 2015-2019.

METHODS

Setting

The NT of Australia covers 1.4 million square kilometres, with an estimated resident population of 230,000, of whom 26% are Aboriginal (compared to 3% nationally) (17). Most (79%) Aboriginal residents in the NT live in remote areas (18), and are served by two types of primary care services – ACCHS or NT government health services. Remote clinics are primarily staffed by Aboriginal health workers or registered nurses (often on short-term fly

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in-fly out contracts) with support from resident or visiting general practitioners and other specialist or allied health providers (19).

The setting for this study was the NT government health service sector, specifically the NT Government Remote Sexual Health Program. This program coordinates support for sexual health service delivery across both the Top End Health Service (covering approximately 35% of the geographic area and 80% of the population) and Central Australia Health Service (65% of the geographic area and 20% of the population) (18).

Study participants

All sexual health coordinators working in the NT Department of Health (n=11) in 2016 were approached up to three times and invited to participate in an in-depth qualitative interview. This resulted in seven sexual health coordinators providing informed consent to be interviewed between March 2016 and January 2017. Of the seven, three worked in Central Australia and four in the Top End; six were women; six had worked in their current role for more than one year, while one had started the role eight months prior to the interview but had previously worked in a specialist sexual health clinic for more than one year. Coordinators worked with between 4 to 11 services, and one also had a region-wide function. None were Aboriginal.

Data Collection

A semi-structured qualitative interview guide was developed to explore participants' understandings of CQI for sexual health; the post-STRIVE trial transition; factors influencing the uptake and sustained application of CQI approaches; and perceptions of the impact of CQI on sexual health service provision. Interviews lasted between 25-80 minutes and were conducted by three interviewers (JB, PG, SB) in person (n=2) or by telephone (n=5).

Data analysis

Interviews were audio-recorded and transcribed verbatim before uploading into QRS NVivo version 11 for analysis (QRS International Pty Ltd, Melbourne, Australia). A thematic analysis approach (20) was used by two team members (PG and JB). First, we familiarized ourselves with the data through reading and re-reading of transcripts, noting down initial thematic ideas and 'theoretical memos' (20) as analytical reminders for making links between different findings. Second, a codebook consisting of parent and child nodes was developed using inductive (codes from initial reads of the interview data) and deductive (codes from existing literature and the discussion guides) data categorization techniques. Third, all transcripts were coded systematically, whilst reviewing and editing the codebook according to the data.

Ethics

Approval was obtained from Central Australian Human Research Ethics Committee (HREC 15-298) and the Human Research Ethics Committee of the NT Department of Health and the Menzies School of Health Research (HREC 2015-2374).

RESULTS

Understanding of sexual health CQI

Participants consistently described CQI for improved sexual health service delivery as an iterative, ongoing process used to assess current performance of a service, identify strengths and weaknesses, design strategies to improve performance, and review data to evaluate the impact of those strategies.

> You make a plan, you do the intervention, then you review what you've done, and then you act and improve the deficiencies, or you go with the strengths and try and address the weaknesses. (SH3, Central Australia)

All participants felt that CQI activities could lead to a higher quality of sexual health care by helping staff to understand who is at risk and to identify gaps in service delivery. They also felt that the data collected for sexual health CQI could drive improvements by allowing services to see how they compare and to gauge their performance independent of targets.

> The clinics don't know the other clinics on [the list]. They just see where they rank and it makes it pretty evident of how well they're doing… and just focusing the discussion on missed opportunities. (SH2, Central Australia)

Current sexual health CQI practice

Sexual health coordinators reported varying levels of sexual health CQI engagement and capability in the services they worked with. At one end of the spectrum were services which regularly reviewed data and deployed strategies to address gaps and improve key indicators, such as STI testing. For these services, capability in sexual health CQI appeared to be part of a broader capability and interest in improving performance across different aspects of care:

> [Certain services are] always working to their performance indicators… they're always checking on the traffic light reports to see whether they've got their adult health checks done… we just recently realised there was a gap between the 15 to 24 year olds so we've gone through the communities and done some targeted screening. (SHC7, Top End)

In contrast, other services were perceived as undertaking less sexual health CQI activity, or as requiring support from a sexual health coordinator to do so.

> They need constant prompts, because what you find is if you go out there, their rates of testing have picked up. That's what happens, when you go out and give them some education, their testing will pick up. You can't take your eye off the ball. (SHC5, Top End)

Higher levels of sexual health CQI capability were attributed to greater managerial support, and CQI data and activity being used to identify and act on areas for improvement.

> The two [clinics] that I'm thinking of that do well is because their clinic manager is really onto it and made it a priority. They've been around for a while, those clinic managers. (SH2, Central Australia)

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CQI activities, tools and related actions for STI control

Incorporation of the STRIVE CQI approach into the sexual health coordinators' roles included the use of specific tools – described in detail elsewhere (14, 19) – particularly in relation to increasing testing. In summary, these tools included audits, systems assessments, data review and action plans to identify specific activities to improve gaps in service delivery. In addition, 'traffic light reports' is a management tool used by the NT government which draws automated extraction of data from the Primary Care Information System (PCIS) used by government services to report quarterly on selected clinical performance indicators. One participant noted that visual data reports were particularly appreciated by clinic staff.

> I've done the stats, my system assessments tools … that's a very powerful tool because the clinic will sit back and go, 'oh, wow'… They'll look at the spider graphs and they really get into that visual stuff to find out their strengths and weaknesses and how they can improve. (SH5, Top End)

Participants felt the CQI process should identify simple but reproducible actions to improve care. To increase testing and re-testing, some participants cited specific actions including integration of sexual health into routine adult health checks, the use of recalls and reminder cards, and prompts embedded in the electronic health information system.

> Now that sexual health is integrated into the adult health check, through the men's and women's checks, that has been the single most [important change]. Putting in recalls for sexual health in PCIS has actually improved it. Making sure that I'm auditing so that we know if somebody's not being followed up. Then we ask the hard questions why and follow that through. (SH7, Top End)

> There's things like putting recalls on for test for re-infection, using the STI template which is embedded in PCIS and things like that as a prompt to help better sexual health delivery. (SH4, Top End)

One participant reported that services engaged in activities such as regular monitoring of individual migration within and between communities, in order to be more responsive to their clients' needs for sexual health care. While this element of patient-centred care does not fit the definition of CQI, the co-ordinator considered this to be closely related to a CQI activity that helps to identify gaps in service delivery.

> [Service staff] know to keep an eye out for those people that have been out in the long grass [away from community for a period of time] and coming back to community. That's that undercurrent of stuff that goes on that we talk about and make sure you're checking, that sort of non-documented CQI that you do without doing CQI. (SH7, Top End)

Some participants reported that tools such as the STRIVE systems assessment required adaptation for ongoing use. One co-ordinator noted the increased demand for this type of assessment across different aspects of care, and reluctance among clinic managers to allow staff to participate in what, during the STRIVE trial, were perceived to be lengthy assessment meetings.

Now every program in the NT has a systems assessment attached to it. When we went to do it [systems assessment] last year my boss said to me 'No, we're not', they kept cancelling it. And I said 'Look, why don't we do it, why don't you allow us to have half an hour?' And they said 'Yeah, alright, we can let you have half an hour'. And in that time we did the system assessment. It was quick and really targeted. (SH7, Top End)

Current challenges to implementation of CQI for sexual health

Prioritisation of sexual health CQI

The significant workload associated with acute and chronic conditions in the patient population (5, 21-23) meant primary care staff were not able to prioritise sexual health. This impacted both on sexual health activities within daily clinic practice, and on the time available for CQI during sexual health coordinator visits.

Clinics are bombarded by everything. …STIs, I mean it's mostly asymptomatic, probably not going to cause too much trouble… it's not a huge priority in engagement in Indigenous people. (SH2, Central Australia)

When I'm out in the community I'll give a talk, depending on how much time I have. Sometimes I'm really pressured for time, they'll only allocate me so much time depending what's going on in the community or in the clinic. (SH5, Top End)

Some participants reported the substantial work in surveillance and response as a result of an outbreak of infectious syphilis, ongoing since 2013 in remote communities in the Northern Territory (24). However, one participant felt the outbreak increased the perceived importance of sexual health and the use of CQI to drive STI testing and follow up.

We have … reports where we can pull out who in the community hasn't had an STI check in the last 12 months, and who hasn't had a syphilis check. Those have been extremely valuable… It gives [clinic managers] a focus, like it gives them people that they can actually go and [test], rather than saying, 'Look, you've only tested 40% of your people' (SH2, Central Australia)

Lack of staff and staff turnover

Staff shortages and high staff turnover were mentioned by most participants as presenting a significant challenge to ongoing quality sexual health CQI.

I will go [to a clinic] and do the action plan, and then I'll go back the next time and there'll be new staff, and they won't know what you're talking about. (SH5, Top End)

One participant reported that the lack of Aboriginal health staff increasingly affects the ability to provide high quality, culturally appropriate health services. It was perceived as important to recruit, train and support younger Aboriginal community members to work in health services, particularly as community members who have been performing these functions retire.

You're finding less and less Indigenous staff in the health centres. Less [Aboriginal] health practitioners. New [non-Aboriginal] staff, even if they're good and conscientious and want to do everything right, still have difficulty with communication, going to different areas. They don't know the people. Some of them aren't there long enough to build up that rapport with people and get their trust. (SH6 Top End)

Future considerations in sexual health CQI

Local ownership of CQI processes

Some participants believed that, while coordinators facilitated the process, sexual health CQI processes should ultimately be owned by staff and managers at primary care services; and could be used to advocate for additional resources to improve sexual health service delivery.

[Our role is] a facilitation role. You're allowing that information and asking the right questions to draw out more answers, being a bit directive but allowing the clinicians to come up with it themselves so they have ownership of it. (SH4, Top End)

If sexual health isn't a priority because they've only had one staff and they're doing emergencies all day, they can turn around to management and say, 'Yeah, sure, give me more bloody staff', and it's a tool for them too. (SH3, Central Australia)

The level of facilitation required from sexual health coordinators to sustain sexual health CQI was perceived by some participants as dependent on the clinic and clinic manager.

For some communities [clinics] I don't think they need it [facilitation and support to conduct CQI] as much as others, and again, I think that's really dependent on the actual community [clinic] and on the clinic manager. (SH2, Central Australia)

Competing CQI demands

Participants discussed the tension between maintaining sexual health-specific CQI efforts or integrating them into broader CQI practices (13, 25).

Everyone works and audits and does their quality improvement in such silos that there really seems to be no integration of services talking to each other. (SH2, Central Australia)

Some participants reported that separating sexual health CQI from broader CQI efforts creates confusion and increases the burden on services involved in multiple systems and processes. However, most participants also felt that sexual health-specific CQI, integrated within existing primary care systems and processes, was critical to ensure sexual health is addressed. Without specific processes, sexual health could easily be overlooked due to other service priorities, and because of patient and health worker discomfort.

I do think having a dedicated sexual health team looking at CQI does bring it into focus and I think certainly does engage practitioners to reflect on, you know, how well they do incorporate sexual health practices into their everyday practice. (SH1, Central Australia)

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> …it's like a big shame job for everyone. Like clinicians are uncomfortable to do it, patients are uncomfortable, so I think it needs to be highlighted … (SH4, Top End)

Information systems and CQI

Understanding and communicating service activity data was perceived by participants as central to motivating action to improve service delivery. The current patient information management system used by government health services in the NT was perceived to have improved, particularly with respect to automated reporting. However, some participants suggested that the system could be simpler and more responsive to changes in clinical guidelines.

> I mean health nowadays is so changeable, you know we're coming up with different testing abilities, different… I think you have to have an information system that can keep up, be flexible and that can change. PCIS was a bit difficult at times to navigate around and get things changed. (SH1, Central Australia)

One participant stressed that information management systems should not just produce aggregated reports but also have capacity to be used to support clinicians in individual patient management, by allowing clinic staff to identify which patients were not being followed up for treatment or recalled for re-testing, for example.

> You can turn around and you can say, 'Right, well this is the reason that we're not performing because half the people aren't actually living in the community'… we should be able to get a list of the patients easily and be able to go out to the clinics and give them information, and if need be, do the targeted quality audits that can actually drill in and make clear changes. (SH3, Central Australia)

DISCUSSION

Our study contributes to existing research on sexual health and CQI in remote Australian settings (11, 19, 21, 26, 27) by identifying factors at clinic and jurisdictional levels that both improve and impede the uptake and sustainability of sexual health CQI practices.

At the clinic level, an important factor perceived as enhancing the uptake and sustainability of sexual health CQI was the adaptation of STRIVE CQI tools and reports for use in specific clinic contexts, and for responding to a risk environment such as the syphilis outbreak. The need for adaptation of CQI activities to ensure they are continually fit for purpose has been documented elsewhere (7, 28). This study also identified activities that are not traditionally defined as clinical CQI, such as monitoring movement between and within communities, but which assisted service practitioners with monitoring progress and implementing new strategies to improve sexual health outcomes.

Two other clinic-level factors that support sexual health CQI included local ownership of, and management support for, these processes. However, these were enabled by two jurisdictional level factors. The first was regional facilitation of ongoing clinic-level sexual health CQI by sexual health coordinators which helped to raise the profile of sexual health within services, including with managers. Previous research has illustrated the pivotal role of a regional sexual health coordinator function in effective STI interventions in remote Aboriginal communities (19, 29). The second was the positive framing of CQI as a tool to

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identify and act on areas for improvement. At the jurisdictional level, ongoing general CQI implementation in the NT is attributed to high levels of policy support compared to other jurisdictions in Australia (28).

Our study also identified factors that impede the implementation and sustainability of sexual health CQI. As identified in other Australian studies (5, 21-23), participants described how the significant demands of acute and chronic care on Aboriginal primary care services render sexual health CQI a relatively low priority. As has occurred with chronic disease (30), targets could be used to encourage a greater focus on sexual health. Exploring team structures and workflow strategies which allow sufficient focus on preventive care (31) to reduce the likelihood of sexual health being continually overshadowed by more immediate priorities has also been suggested as a strategy to deal with this challenge (32).

Workforce shortages and high staff turnover were also described as limiting ongoing staff participation in sexual health CQI activities. The lack of experienced Aboriginal health staff was highlighted as particularly problematic, due to the strength of community relationships and trust that Aboriginal health workers and practitioners can build (23, 32). These issues have been documented elsewhere as barriers to the provision of quality care in services that provide health care to Aboriginal populations (19, 21, 22, 26, 32), and may be particularly important in delivery of quality sexual health care. Strategies to address barriers to Aboriginal workforce participation have the potential to have positive effects on sexual health CQI in these communities and should be supported.

Finally, our findings indicate three considerations affecting the sustainability of sexual health CQI. First, while coordinators explained that sexual health-specific CQI ensured a focus on this difficult health area (5, 21-23), they acknowledged the need to reduce the burden on clinics from multiple CQI programs. Ongoing monitoring of recently available jurisdiction-wide sexual health indicators will help understand if this type of measure is sufficient to increase the perceived importance of sexual health and STI control within primary health care clinics. However, there is also a need to identify which specific CQI tools and activities could be incorporated into generic CQI processes to ensure that sexual health is not overlooked.

Second, findings stress the important contribution of regional sexual health coordinators and support structures to ongoing service improvements and CQI participation in the NT, particularly in the context of high staff turnover. Re-assessment of how support for sexual health CQI is funded and managed may be indicated, and whether this is incorporated within infectious disease surveillance and response, as is largely the case now, or more broadly as part of primary care service development.

Third, access to, and use of, high quality information systems and data was seen as a major strength of sexual health CQI. The use of benchmarking to motivate action and improvement by allowing services to compare themselves to others is similar to findings from other research (6, 11, 19, 32, 33). The current information system used by government clinics was perceived to be largely supportive of CQI efforts, including the regular review of data, though simplification and ongoing flexibility were recommended. This points to the need for an evolving and responsive health information system.

In interpreting our findings, it must be noted that only seven of the eleven sexual health coordinators employed by the NT government were interviewed, others may have provided different perspectives. Perspectives on sexual health specific versus broader CQI were also

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influenced by the role of participants to provide the former. Also the data collection strategies – involving three interviewers, and conducting interviews both in person and by telephone – may have increased the variation among individual responses. Findings may not be generalisable to ACCHS, given this focus on government-run services. As part of STRIVEplus, further qualitative research focused on jurisdiction-level key informants and health service staff, across both the government and the community-controlled sectors, will address these gaps.

CONCLUSION

CQI is only one of several strategies needed to reduce high STI incidence and prevalence among Aboriginal Australians in remote communities. To ensure sustainability at the service and state level, sexual health CQI activities require responsive and efficient information systems, and, in the context of high staff turnover, a regional coordination function. Strategies to address barriers to the uptake and sustainability of sexual health CQI must be developed and evaluated, to reduce the high burden of disease associated with STIs in this population.

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Reporting checklist for qualitative study.

Based on the SRQR guidelines.

Instructions to authors

Complete this checklist by entering the page numbers from your manuscript where readers will find each of the items listed below.

Your article may not currently address all the items on the checklist. Please modify your text to include the missing information. If you are certain that an item does not apply, please write "n/a" and provide a short explanation.

Upload your completed checklist as an extra file when you submit to a journal.

In your methods section, say that you used the SRQR reporting guidelines, and cite them as:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. Acad Med. 2014;89(9):1245-1251.

		Reporting Item	Page Number
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	2
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	2
Problem formulation	#3	Description and signifcance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	4
Purpose or research question	#4	Purpose of the study and specific objectives or questions	4
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and	5

guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.

Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	5
Context	#7	Setting / site and salient contextual factors; rationale	4-5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	5
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	5
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	5
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of	5

participation (could be reported in results)

Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	5
Data analysis	#14	Process by which inferences, themes, etc. were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale	5
Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	5
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6-10
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6-10
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	10-12
Limitations	#19	Trustworthiness and limitations of findings	11-12
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	11-12
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	3

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Qualitative perspectives on the sustainability of sexual health continuous quality improvement in clinics serving remote Aboriginal communities in Australia

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Qualitative perspectives on the sustainability of sexual health continuous quality improvement in clinics serving remote Aboriginal communities in Australia

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Abstract

Objectives:	To examine barriers and facilitators to sustaining a sexual health continuous quality improvement (CQI) program in clinics serving remote Aboriginal communities in Australia.
Design:	Qualitative study.
Setting:	Primary health care services serving remote Aboriginal communities in the Northern Territory, Australia.
Participants:	Seven of the 11 regional sexual health coordinators responsible for supporting the Northern Territory Government Remote Sexual Health Program.
Methods:	Semi-structured in-depth interviews conducted in person or by telephone; data were analysed using an inductive and deductive thematic approach.
Results:	Despite uniform availability of CQI tools and activities, sexual health CQI implementation varied across the Northern Territory. Participant narratives identified five factors enhancing the uptake and sustainability of sexual health CQI. At clinic level, these included adaptation of existing CQI tools for use in specific clinic contexts and risk environments (e.g. a syphilis outbreak), local ownership of CQI processes, and management support for CQI. At a regional level, factors included the positive framing of CQI as a tool to identify and act on areas for improvement, and regional facilitation of clinic level CQI activities. Three barriers were identified, including the significant workload associated with acute and chronic care in Aboriginal primary care services, high staff turnover, and lack of Aboriginal staff. Considerations affecting the future sustainability of sexual health CQI included the need to reduce the burden on clinics from multiple CQI programs, the contribution of regional sexual health coordinators and support structures, and access to and use of high quality information systems.
Conclusions:	This study contributes to the growing evidence on how CQI approaches may improve sexual health in remote Australian Aboriginal communities. Enhancing sustainability of sexual health CQI in this context will require ongoing regional facilitation, efforts to build local ownership of CQI processes, and management of competing demands on health service staff.

Key words: sexual health, Aboriginal, Australia, continuous quality improvement, primary health care, remote

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STRENGTHS AND LIMITATIONS OF THIS STUDY

- This is the first qualitative study to document clinic- and regional- level factors influencing uptake and sustainability of a sexual health continuous quality improvement (CQI) program in government-run primary care services serving remote Aboriginal communities in the Northern Territory (NT), Australia.
- Using in-depth interviews with 7 of the 11 sexual health coordinators employed to improve testing and treatment for sexually transmissible infections (STIs) in government-run primary cares services elicited rich data about the challenges influencing sustained use of a sexual health CQI approach to improve STI testing and treatment rates.
- This is a qualitative study with a small, non-random sample size, and as such findings should not be viewed as generalizable to other settings.

FUNDING STATEMENT

COMPETING INTEREST STATEMENT

The authors have ongoing involvement in Aboriginal health, sexual health and CQI in Australia, as researchers, clinicians and policymakers.

AUTHOR CONTRIBUTIONS

DATA SHARING STATEMENT

No additional data are available.

INTRODUCTION

Residents in remote Aboriginal and Torres Strait Islander (hereafter referred to as 'Aboriginal') communities in Australia experience high rates of sexually transmissible infections (STIs), estimated in one large, multi-community study at 10%, 11% and 18% respectively for gonorrhoea, chlamydia and syphilis (1). Clinical guidelines for these communities recommend at least annual STI testing, timely treatment, partner notification and regular re-testing, particularly those under 35 years old (2, 3). However, recent estimates indicate that annual STI testing coverage in remote communities is still only 20%, with lower rates in men than in women (4).

Since the 1990s, continuous quality improvement (CQI) approaches – typically consisting of 'plan-do-study-act' cycles to monitor the functioning of organisational systems and identify and implement improvements (5) – have been used to improve health care quality and outcomes associated with, for example, chronic disease (6-10). In Australia, Aboriginal Community Controlled Health Services (ACCHS) and government-run health services providing primary health care to Aboriginal communities have used CQI extensively to make evidence-based improvements in clinical care (11-13).

Between 2011-2014, the STRIVE (STIs in Remote communities, ImproVed and Enhanced primary care) trial was conducted in 67 remote communities in the Northern Territory (NT), Queensland and Western Australia (14). STRIVE demonstrated that a clinic level sexual health CQI program supported by regional dedicated sexual health coordinators (14-16) could improve STI testing rates (15), with aspects of the CQI program becoming normalised in clinical practice (16). However, testing increases were from a low baseline and did not lead to lower STI prevalence over the time frame of the trial (15).

Elements of the STRIVE CQI approach were incorporated into the NT Government Remote Sexual Health Program (3). The program employs regionally-based sexual health coordinators to work with government-run primary care services to improve STI testing and treatment. Their roles include providing feedback on STI control through audits and review of clinical data; annual discussions with staff to assess and make recommendations for improving clinic-wide systems that support STI control (systems assessments); and sexual health education and staff training (3).

To gain insight into CQI practice for STI control in the NT since the STRIVE study finished in 2014, and to explore factors affecting the long-term sustainability of this approach in government-run health services, we conducted qualitative interviews with sexual health coordinators. Data were collected as part of a new study called STRIVEplus – a long-term observational study of sexual health CQI in the NT between 2015-2019.

METHODS

This was a qualitative study using semi-structured, in-depth interviews. The design, data collection, analysis and reporting of this study were conducted in accordance with the Standards for Reporting Qualitative Research (SRQR) (17).

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Setting

The NT of Australia covers 1.4 million square kilometres, with an estimated resident population of 230,000, of whom 26% are Aboriginal (compared to 3% nationally) (18). Most (79%) Aboriginal residents in the NT live in remote areas (19), and are served by two types of primary care services – ACCHS or NT government health services. Remote clinics are primarily staffed by Aboriginal health workers or registered nurses (often on short-term fly in-fly out contracts) with support from resident or visiting general practitioners and other specialist or allied health providers (16).

The setting for this study was the NT government health service sector, specifically the NT Government Remote Sexual Health Program. This program coordinates support for sexual health service delivery across both the Top End Health Service (covering approximately 35% of the geographic area and 80% of the population) and Central Australia Health Service (65% of the geographic area and 20% of the population) (19).

Study participants

All sexual health coordinators working in the NT Department of Health (n=11) in 2016 were approached up to three times and invited to participate in an in-depth qualitative interview. This resulted in seven sexual health coordinators providing informed consent to be interviewed between March 2016 and January 2017. Of the seven, three worked in Central Australia and four in the Top End; six were women; six had worked in their current role for more than one year, while one had started the role eight months prior to the interview but had previously worked in a specialist sexual health clinic for more than one year. Coordinators worked with between 4 to 11 services, and one also had a region-wide function. None were Aboriginal.

Data Collection

A semi-structured qualitative interview guide was developed to explore participants' understandings of CQI for sexual health; the post-STRIVE trial transition; factors influencing the uptake and sustained application of CQI approaches; and perceptions of the impact of CQI on sexual health service provision. Interviews lasted between 25-80 minutes and were conducted by three interviewers (JB, PG, SB) in person (n=2) or by telephone (n=5).

Patient and public involvement

Patients and the public were not involved in this study.

Research team and reflexivity

Interviews were conducted by PG, JB and SB, who had no prior relationship with interviewees in this study. With extensive qualitative research experience, these researchers were able to build rapport and conduct semi-structured interviews with health professionals to elicit deep insight from research participants. The make-up of the research and authorship team also enhanced the credibility of the findings. For instance, all interviewers (PG, JB, SB) conducted rigorous qualitative analysis to ensure that agreement was sought on the main findings from the analysis. All other authors have career experience in research and clinical practice focussing on sexual health CQI in diverse Australians settings, which ensured

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interpretation of data informed by current and historical sexual health CQI practice and policy in the Northern Territory.

Data analysis

Interviews were audio-recorded and transcribed verbatim before uploading into QRS NVivo version 11 for analysis (QRS International Pty Ltd, Melbourne, Australia). A thematic analysis approach (20) was used by two team members (PG and JB). First, we familiarized ourselves with the data through reading and re-reading of transcripts, noting down initial thematic ideas and 'theoretical memos' (20) as analytical reminders for making links between different findings. Second, a codebook consisting of parent and child nodes was developed using inductive (codes from initial reads of the interview data) and deductive (codes from existing literature and the discussion guides) data categorization techniques. Third, all transcripts were coded systematically, whilst reviewing and editing the codebook according to the data.

Ethics

Approval was obtained from Central Australian Human Research Ethics Committee (HREC 15-298) and the Human Research Ethics Committee of the NT Department of Health and the Menzies School of Health Research (HREC 2015-2374).

RESULTS

Understanding of sexual health CQI

Participants consistently described CQI for improved sexual health service delivery as an iterative, ongoing process used to assess current performance of a service, identify strengths and weaknesses, design strategies to improve performance, and review data to evaluate the impact of those strategies.

> "You make a plan, you do the intervention, then you review what you've done, and then you act and improve the deficiencies, or you go with the strengths and try and address the weaknesses." (SH3, Central Australia)

All participants felt that CQI activities could lead to a higher quality of sexual health care by helping staff to understand who is at risk and to identify gaps in service delivery. They also felt that the data collected for sexual health CQI could drive improvements by allowing services to see how they compare and to gauge their performance independent of targets.

> "The clinics don't know the other clinics on [the list]. They just see where they rank and it makes it pretty evident of how well they're doing… and just focusing the discussion on missed opportunities." (SH2, Central Australia)

Current sexual health CQI practice

Sexual health coordinators reported varying levels of sexual health CQI engagement and capability in the services they worked with. At one end of the spectrum were services which regularly reviewed data and deployed strategies to address gaps and improve key indicators,

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such as STI testing. For these services, capability in sexual health CQI appeared to be part of a broader capability and interest in improving performance across different aspects of care:

> "[Certain services are] always working to their performance indicators… they're always checking on the traffic light reports to see whether they've got their adult health checks done… we just recently realised there was a gap between the 15 to 24 year olds so we've gone through the communities and done some targeted screening." (SHC7, Top End)

In contrast, other services were perceived as undertaking less sexual health CQI activity, or as requiring support from a sexual health coordinator to do so.

> "They need constant prompts, because what you find is if you go out there, their rates of testing have picked up. That's what happens, when you go out and give them some education, their testing will pick up. You can't take your eye off the ball." (SHC5, Top End)

Higher levels of sexual health CQI capability were attributed to greater managerial support, and CQI data and activity being used to identify and act on areas for improvement.

> "The two [clinics] that I'm thinking of that do well is because their clinic manager is really onto it and made it a priority. They've been around for a while, those clinic managers." (SH2, Central Australia)

CQI activities, tools and related actions for STI control

Incorporation of the STRIVE CQI approach into the sexual health coordinators' roles included the use of specific tools – described in detail elsewhere (14, 16) – particularly in relation to increasing testing. In summary, these tools included audits, systems assessments, data review and action plans to identify specific activities to improve gaps in service delivery. In addition, 'traffic light reports' is a management tool used by the NT government which draws automated extraction of data from the Primary Care Information System (PCIS) used by government services to report quarterly on selected clinical performance indicators. One participant noted that visual data reports were particularly appreciated by clinic staff.

> "I've done the stats, my system assessments tools … that's a very powerful tool because the clinic will sit back and go, 'oh, wow'… They'll look at the spider graphs and they really get into that visual stuff to find out their strengths and weaknesses and how they can improve." (SH5, Top End)

Participants felt the CQI process should identify simple but reproducible actions to improve care. To increase testing and re-testing, some participants cited specific actions including integration of sexual health into routine adult health checks, the use of recalls and reminder cards, and prompts embedded in the electronic health information system.

> "Now that sexual health is integrated into the adult health check, through the men's and women's checks, that has been the single most [important change]. Putting in recalls for sexual health in PCIS has actually improved it. Making sure that I'm auditing so that we know if somebody's not being followed up. Then we ask the hard questions why and follow that through." (SH7, Top End)

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"There's things like putting recalls on for test for re-infection, using the STI template which is embedded in PCIS and things like that as a prompt to help better sexual health delivery." (SH4, Top End)

One participant reported that services engaged in activities such as regular monitoring of individual migration within and between communities, in order to be more responsive to their clients' needs for sexual health care. While this element of patient-centred care does not fit the definition of CQI, the co-ordinator considered this to be closely related to a CQI activity that helps to identify gaps in service delivery.

"[Service staff] know to keep an eye out for those people that have been out in the long grass [away from community for a period of time] and coming back to community. That's that undercurrent of stuff that goes on that we talk about and make sure you're checking, that sort of non-documented CQI that you do without doing CQI." (SH7, Top End)

Some participants reported that tools such as the STRIVE systems assessment required adaptation for ongoing use. One co-ordinator noted the increased demand for this type of assessment across different aspects of care, and reluctance among clinic managers to allow staff to participate in what, during the STRIVE trial, were perceived to be lengthy assessment meetings.

"Now every program in the NT has a systems assessment attached to it. When we went to do it [systems assessment] last year my boss said to me 'No, we're not', they kept cancelling it. And I said 'Look, why don't we do it, why don't you allow us to have half an hour?' And they said 'Yeah, alright, we can let you have half an hour'. And in that time we did the system assessment. It was quick and really targeted." (SH7, Top End)

Current challenges to implementation of CQI for sexual health

Prioritisation of sexual health CQI

The significant workload associated with acute and chronic conditions in the patient population (5, 21, 22) meant primary care staff were not able to prioritise sexual health. This impacted both on sexual health activities within daily clinic practice, and on the time available for CQI during sexual health coordinator visits.

"Clinics are bombarded by everything. …STIs, I mean it's mostly asymptomatic, probably not going to cause too much trouble… it's not a huge priority in engagement in Indigenous people." (SH2, Central Australia)

"When I'm out in the community I'll give a talk, depending on how much time I have. Sometimes I'm really pressured for time, they'll only allocate me so much time depending what's going on in the community or in the clinic." (SH5, Top End)

Some participants reported the substantial work in surveillance and response as a result of an outbreak of infectious syphilis, ongoing since 2013 in remote communities in the Northern

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Territory (23). However, one participant felt the outbreak increased the perceived importance of sexual health and the use of CQI to drive STI testing and follow up.

> "We have … reports where we can pull out who in the community hasn't had an STI check in the last 12 months, and who hasn't had a syphilis check. Those have been extremely valuable… It gives [clinic managers] a focus, like it gives them people that they can actually go and [test], rather than saying, 'Look, you've only tested 40% of your people'" (SH2, Central Australia)

Lack of staff and staff turnover

Staff shortages and high staff turnover were mentioned by most participants as presenting a significant challenge to ongoing quality sexual health CQI.

> "I will go [to a clinic] and do the action plan, and then I'll go back the next time and there'll be new staff, and they won't know what you're talking about." (SH5, Top End)

One participant reported that the lack of Aboriginal health staff increasingly affects the ability to provide high quality, culturally appropriate health services. It was perceived as important to recruit, train and support younger Aboriginal community members to work in health services, particularly as community members who have been performing these functions retire.

> "You're finding less and less Indigenous staff in the health centres. Less [Aboriginal] health practitioners. New [non-Aboriginal] staff, even if they're good and conscientious and want to do everything right, still have difficulty with communication, going to different areas. They don't know the people. Some of them aren't there long enough to build up that rapport with people and get their trust." (SH6 Top End)

Future considerations in sexual health CQI

Local ownership of CQI processes

Some participants believed that, while coordinators facilitated the process, sexual health CQI processes should ultimately be owned by staff and managers at primary care services; and could be used to advocate for additional resources to improve sexual health service delivery.

> "[Our role is] a facilitation role. You're allowing that information and asking the right questions to draw out more answers, being a bit directive but allowing the clinicians to come up with it themselves so they have ownership of it." (SH4, Top End)

> "If sexual health isn't a priority because they've only had one staff and they're doing emergencies all day, they can turn around to management and say, 'Yeah, sure, give me more bloody staff', and it's a tool for them too." (SH3, Central Australia)

The level of facilitation required from sexual health coordinators to sustain sexual health CQI was perceived by some participants as dependent on the clinic and clinic manager.

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"For some communities [clinics] I don't think they need it [facilitation and support to conduct CQI] as much as others, and again, I think that's really dependent on the actual community [clinic] and on the clinic manager." (SH2, Central Australia)

Competing CQI demands

Participants discussed the tension between maintaining sexual health-specific CQI efforts or integrating them into broader CQI practices (13, 24).

"Everyone works and audits and does their quality improvement in such silos that there really seems to be no integration of services talking to each other." (SH2, Central Australia)

Some participants reported that separating sexual health CQI from broader CQI efforts creates confusion and increases the burden on services involved in multiple systems and processes. However, most participants also felt that sexual health-specific CQI, integrated within existing primary care systems and processes, was critical to ensure sexual health is addressed. Without specific processes, sexual health could easily be overlooked due to other service priorities, and because of patient and health worker discomfort.

"I do think having a dedicated sexual health team looking at CQI does bring it into focus and I think certainly does engage practitioners to reflect on, you know, how well they do incorporate sexual health practices into their everyday practice." (SH1, Central Australia)

"…it's like a big shame job for everyone. Like clinicians are uncomfortable to do it, patients are uncomfortable, so I think it needs to be highlighted." (SH4, Top End)

Information systems and CQI

Understanding and communicating service activity data was perceived by participants as central to motivating action to improve service delivery. The current patient information management system used by government health services in the NT was perceived to have improved, particularly with respect to automated reporting. However, some participants suggested that the system could be simpler and more responsive to changes in clinical guidelines.

"I mean health nowadays is so changeable, you know we're coming up with different testing abilities, different… I think you have to have an information system that can keep up, be flexible and that can change. PCIS was a bit difficult at times to navigate around and get things changed." (SH1, Central Australia)

One participant stressed that information management systems should not just produce aggregated reports but also have capacity to be used to support clinicians in individual patient management, by allowing clinic staff to identify which patients were not being followed up for treatment or recalled for re-testing, for example.

"You can turn around and you can say, 'Right, well this is the reason that we're not performing because half the people aren't actually living in the community'… we should be able to get a list of the patients easily and be able to go out to the clinics and

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give them information, and if need be, do the targeted quality audits that can actually drill in and make clear changes." (SH3, Central Australia)

DISCUSSION

Our study contributes to existing research on sexual health and CQI in remote Australian settings (11, 16, 21, 25, 26) by identifying factors at clinic and Territory levels that both improve and impede the uptake and sustainability of sexual health CQI practices.

At the clinic level, an important factor perceived as enhancing the uptake and sustainability of sexual health CQI was the adaptation of STRIVE CQI tools and reports for use in specific clinic contexts, and for responding to a risk environment such as the syphilis outbreak. The need for adaptation of CQI activities to ensure they are continually fit for purpose has been documented elsewhere (7, 27). This study also identified activities that are not traditionally defined as clinical CQI, such as monitoring movement between and within communities, but which assisted service practitioners with monitoring progress and implementing new strategies to improve sexual health outcomes.

Two other clinic-level factors that support the implementation and sustainability of sexual health CQI included local ownership of, and management support for, these processes. However, these were enabled by two regional level factors. The first was regional facilitation of ongoing clinic-level sexual health CQI by sexual health coordinators which helped to raise the profile of sexual health within services, including with managers. Previous research has illustrated the pivotal role of a regional sexual health coordinator function in effective STI interventions in remote Aboriginal communities (16, 28). The second was the positive framing of CQI as a tool to identify and act on areas for improvement. At the Territory level, ongoing general CQI implementation in the NT is attributed to high levels of policy support compared to other states in Australia (27).

Our study also identified factors that impede the implementation and sustainability of sexual health CQI. As identified in other Australian studies (5, 16, 21, 22), participants described how the significant demands of acute and chronic care on Aboriginal primary care services render sexual health CQI a relatively low priority. As has occurred with chronic disease (29), targets could be used to encourage a greater focus on sexual health. Exploring team structures and workflow strategies which allow sufficient focus on preventive care (30) to reduce the likelihood of sexual health being continually overshadowed by more immediate priorities has also been suggested as a strategy to deal with this challenge (31).

Workforce shortages and high staff turnover were also described as limiting ongoing staff participation in sexual health CQI activities, which in turn inhibits the sustainability of sexual health CQI at a regional level. The lack of experienced Aboriginal health staff was highlighted as particularly problematic, due to the strength of community relationships and trust that Aboriginal health workers and practitioners can build (22, 31). These issues have been documented elsewhere as barriers to the provision of quality care in services that provide health care to Aboriginal populations (16, 21, 25, 31), and may be particularly important in delivery of quality sexual health care. Strategies to address barriers to Aboriginal workforce participation have the potential to have positive effects on sexual health CQI in these communities and should be supported.

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Finally, our findings point to three considerations affecting the future sustainability of sexual health CQI. First, while coordinators explained that sexual health-specific CQI ensured a focus on this difficult health area (5, 21, 22), they acknowledged the need to reduce the burden on clinics from multiple CQI programs. Ongoing monitoring of recently available Territory-wide sexual health indicators will help understand if this type of measure is sufficient to increase the perceived importance of sexual health and STI control within primary health care clinics. However, there is also a need to identify which specific CQI tools and activities could be incorporated into generic CQI processes to ensure that sexual health is not overlooked.

Second, findings stress the important contribution of regional sexual health coordinators and support structures to ongoing service improvements and CQI participation in the NT, particularly in the context of high staff turnover. Re-assessment of how support for sexual health CQI is funded and managed may be indicated, and whether this is incorporated within infectious disease surveillance and response, as is largely the case now, or more broadly as part of primary care service development.

Third, access to, and use of, high quality information systems and data was seen as a major strength of sexual health CQI, which in turn increases the sustained use of sexual health CQI into the future. The use of benchmarking to motivate action and improvement by allowing services to compare themselves to others is similar to findings from other research (6, 11, 16, 31, 32). The current information system used by government clinics was perceived to be largely supportive of CQI efforts, including the regular review of data, though simplification and ongoing flexibility were recommended. This points to the need for an evolving and responsive health information system.

Study limitations

There are several limitations to this study. First, this is a qualitative study with a small, non-random sample size, and as such findings should not be viewed as generalisable to all remote settings. Despite the small sample size, 'external validity' (33) – the degree to which findings can be generalized across diverse settings within the Northern Territory – was enhanced by interviewing the majority (7 of 11) of employees responsible for supporting sexual health CQI within government-led primary health care services in this region. It was also enhanced through data interpretation processes that involved researchers and clinicians with ongoing involvement and interest in CQI, who were able to reflect critically on the findings in the context of current and historical sexual health CQI practice and policy in the Northern Territory and other settings in Australia.

Second, the data collection strategies – involving three interviewers, and conducting interviews both in person and by telephone – may have increased the variation among individual responses. However, 'internal reliability' (33) was enhanced by interviewers working together to ensure rigour and consistency in data analysis and agreement about the presentation of research findings. Third, given the focus on government-run services, findings may not be generalisable to ACCHS. As part of STRIVEplus, further qualitative research focused on Territory-level key informants and health service staff, across both the government and the community-controlled sectors, will address these gaps.

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CONCLUSION

CQI is only one of several strategies needed to reduce high STI incidence and prevalence among Aboriginal Australians in remote communities. To ensure sustainability at the service and state level, sexual health CQI activities require responsive and efficient information systems, and, in the context of high staff turnover, a regional coordination function. Strategies to address barriers to the uptake and sustainability of sexual health CQI must be developed and evaluated, to reduce the high burden of disease associated with STIs in this population.

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Reporting checklist for qualitative study.

Based on the SRQR guidelines.

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		Reporting Item	Page Number
	#1	Concise description of the nature and topic of the study identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended	2
	#2	Summary of the key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results and conclusions	2
Problem formulation	#3	Description and significance of the problem / phenomenon studied: review of relevant theory and empirical work; problem statement	4
Purpose or research question	#4	Purpose of the study and specific objectives or questions	4
Qualitative approach and research paradigm	#5	Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenolgy, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist / interpretivist) is also recommended; rationale. The	4/5

rationale should briefly discuss the justification for choosing that theory, approach, method or technique rather than other options available; the assumptions and limitations implicit in those choices and how those choices influence study conclusions and transferability. As appropriate the rationale for several items might be discussed together.

Researcher characteristics and reflexivity	#6	Researchers' characteristics that may influence the research, including personal attributes, qualifications / experience, relationship with participants, assumptions and / or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results and / or transferability	5
Context	#7	Setting / site and salient contextual factors; rationale	4-5
Sampling strategy	#8	How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale	5
Ethical issues pertaining to human subjects	#9	Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	6
Data collection methods	#10	Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources / methods, and modification of procedures in response to evolving study findings; rationale	5
Data collection instruments and technologies	#11	Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection; if / how the instruments(s) changed over the course of the study	5
Units of study	#12	Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	5
Data processing	#13	Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymisation / deidentification of excerpts	5
Data analysis	#14	Process by which inferences, themes, etc. were identified and	5/6

developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale

Techniques to enhance trustworthiness	#15	Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale	12
Syntheses and interpretation	#16	Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6-11
Links to empirical data	#17	Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6-10
Intergration with prior work, implications, transferability and contribution(s) to the field	#18	Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application / generalizability; identification of unique contributions(s) to scholarship in a discipline or field	10-12
Limitations	#19	Trustworthiness and limitations of findings	12
Conflicts of interest	#20	Potential sources of influence of perceived influence on study conduct and conclusions; how these were managed	3, 5,12
Funding	#21	Sources of funding and other support; role of funders in data collection, interpretation and reporting	3

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