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Title

Using quality improvement strategies to strengthen regional systems for Aboriginal and Torres Strait Islander eye health in the Northern Territory

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Funding

This research was funded under the Australian Government's Cooperative Research Centres initiative.

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/AJR.12575](https://doi.org/10.1111/AJR.12575)

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Article type : Quality Improvement Reports

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Title

Using quality improvement strategies to strengthen regional systems for Aboriginal and Torres Strait Islander eye health in the Northern Territory.

Abstract

Problem: In the Katherine region, Northern Territory, barriers to eye care for Aboriginal and Torres Strait Islander people include unclear eye care referral processes, challenges coordinating patient eye care between various providers, complex socioeconomic determinants, and a lengthy outpatient ophthalmology waiting list.

Design: Mixed methods participatory approach using a regional needs analysis, clinical file audit and stakeholder survey, to develop, implement, and monitor quality improvement strategies.

Setting: Collaboration with Aboriginal Community Controlled Health Services (ACCHS) and regional eye care stakeholders in the Katherine region.

Key measures for improvement: Clinical audit data captured frequency and rates of primary eye checks, ophthalmology referrals and spectacle prescriptions. A survey was developed and applied to assess stakeholder perspectives of regional eye care systems.

Strategy for change: Quality improvement strategies informed by regional data (clinical audits and survey) included increasing service delivery to match eye care needs, primary eye care training for ACCHS staff, updating ACCHS primary care templates, and forming a regional eye care coalition group.

Effects of change: Post implementation, rates and frequency of recorded optometry examinations, number of spectacles prescribed, and rates of annual dilated fundus examinations for patients with diabetes increased. There was a decrease in the number of patients with diabetes who had never had an eye examination. Eye care stakeholders perceived a marked improvement in the effectiveness of the regional eye care system.

Lessons learned: Our findings highlight the importance of engaging services and stakeholders to ensure a systems approach that is evidence-informed, contextually appropriate, and reflects commitment to improved eye health outcomes.

What is already known about the subject?

- Aboriginal and Torres Strait Islander Australians experience higher rates of preventable blindness than non-Indigenous Australians
- High rates of diabetes among Aboriginal and Torres Strait Islander adults aged 40 years or older increases risk of diabetic retinopathy
- Annual retinal screening of patients with diabetes is key to preventing diabetes related eye diseases
- Eye care systems are not well integrated into existing health systems
- Complex sociocultural factors impact eye care accessibility for Aboriginal and Torres Strait Islander patients

What this paper adds

- An outline of participatory multi-stakeholder strategies that contributed to quality improvement in the delivery of eye care to Aboriginal and Torres Strait Islander patients with diabetes ≥ 40 years of age in the Katherine region, Northern Territory
- Based on regional data a novel approach was used to develop methods that informed implementation of quality improvement strategies
- Clinical data showing changes in eye care delivery in the Katherine region, Northern Territory, associated with quality improvement strategies
- A Regional Eye Care Systems Assessment Tool (RECSAT) was developed and used as a strategy to promote discussion and change, which was an innovative approach to engaging stakeholders in a change process

Context

The Katherine region, Northern Territory (NT), is a geographic area classified as both remote and very remote with a population of approximately 19,000 people of which 49% identify as Aboriginal and/or Torres Strait Islander.¹ Primary health care is predominantly provided by or in partnership with, Aboriginal Community Controlled Health Services (ACCHSs). This study aimed to demonstrate improved accessibility of eye care services for Aboriginal and Torres Strait Islander patients (≥ 40 years) in the Katherine region, NT, using quality improvement strategies informed by regional data and perspectives (Figure 1).

Problem

The leading causes of vision loss among Aboriginal and Torres Strait Islander Australians nationally are uncorrected refractive error (60.8%), cataract (13.2%) and diabetic retinopathy (5.2%),² the latter of which is associated with a high prevalence of diabetes among Aboriginal and Torres Strait Islander people (38% in adults over 55 years).³ Issues related to the wide variation in delivery of services,⁴ the availability of visiting eye care practitioners in rural and remote areas,⁵ integration of eye care into primary care,⁶ and surgical coverage rates,⁷ suggests the need for continued improvements to enhance accessibility of eye care services.

In the Katherine region, key barriers to eye care include complex sociocultural determinants, unclear eye care referral processes, lengthy ophthalmology waiting lists, and challenges coordinating patient eye care between various providers, including ACCHSs, hospitals, and non-government organisations.^{8,9} These factors contribute to suboptimal eye care service delivery, resulting in sustained poor eye health outcomes for Aboriginal and Torres Strait Islander people in the region.¹⁰

Strategy for change

We aimed to support quality improvements to Aboriginal and Torres Strait Islander eye care by using a mixed methods participatory approach to improve regional eye care systems. This approach involved implementing a series of evidence-informed¹¹ quality improvement strategies, and fostering collaboration between various stakeholders and organisations involved in delivering eye care to Aboriginal and Torres Strait Islander patients in the Katherine region. Participating services were three ACCHSs comprising nine clinic sites, and two hospitals offering mainstream secondary and tertiary ophthalmology services. Non-government stakeholders from the Aboriginal and Torres Strait Islander eye health sector, and policy makers in the broader arena of Aboriginal and Torres Strait Islander health were also integral to the project. Ethics approval was obtained from the Menzies School of Health Research, Human Research Ethics Committee (HoMER-2012-1712).

Key measures for improvement

We aimed to ensure that quality improvement strategies were evidence-informed and appropriate to the regional context and needs of services providing eye care to Aboriginal and Torres Strait Islander patients. Subsequently, the project was conducted in three stages comprising a situational analysis (Stage 1), implementation of quality improvement strategies (Stage 2), and evaluation (Stage 3), which occurred over a period of three years (2012-2015) (Figure 1). The key measures for improvement included a clinical audit of ACCHS primary care data, and a survey of regional eye care stakeholder perspectives, both of which were conducted before and after the implementation of quality improvement strategies.

Process of gathering information

Situational analysis (Stage 1)

The situational analysis stage occurred between 2012 and 2013. During Stage 1 (Figure 1) regional eye care services were mapped against population-based needs, and an eye and vision care audit tool was developed to capture key measures for quality improvement, at the primary health care level. Key measures were developed using a review of clinical guidelines and best practice recommendations for eye and vision care service delivery in Australian primary health care settings, adapting templates from the Audit and Best Practice for Chronic Disease (ABCD) project.¹² Using this tool, a retrospective clinical audit of patient record data preceding 2012 was conducted at the three participating ACCHSs between April and June 2013. Baseline clinical audit data were used to assess the system of primary eye care delivery for patients with diabetes (≥ 40 years) in ACCHS settings, including frequency and rates of primary eye checks and optometry examinations, referrals to ophthalmology, and spectacle prescription.

In addition, a Regional Eye Care Systems Assessment Tool (RECSAT) was developed to collect stakeholder perspectives on eye care system performance adapted from the Assessment of Chronic Illness Care tool,¹³ the RECSAT considers five key priority areas of a regional eye care system⁹ including: organisation of the regional eye care delivery system, community and patient linkages, referral pathways and continuity of care, clinical information systems, and integration of eye care with primary health care. Within each of these priority areas, participants are asked to consider detailed sub-components of the eye care system. In 2013, a participatory workshop was held with 12 stakeholders involved in regional eye care, including regional eye care coordinators, ophthalmologists, optometrists, academics, and non-government organisation and ACCHSs representatives. Prior to this workshop, stakeholders used the RECSAT to rank each eye care system component using an 11 point Likert scale to indicate its 'strength' with a score of 11 indicating an

ideal system. Stakeholder perceptions captured with the RECSAT were used to guide discussion at the stakeholder workshop, which focused on working collaboratively towards improvements in each of the identified priority areas.

Implementation (Stage 2)

The implementation stage occurred between 2013 and 2014. Pre-implementation data from the clinical file audit (2012) and the RECSAT (2013) collected during Stage 1, were used to devise key strategies to improve access to eye care and its integration with regional health systems. These strategies were actioned during Stage 2, with a strong focus on early detection and prevention of diabetic retinopathy associated with high rates of diabetes among Aboriginal and Torres Strait Islander Australians.³ Implementation activities included three in-service training sessions (targeting primary eye care exams and referral pathways) to ACCHS primary health care teams; documentation of referral processes; updating e-record templates to include primary eye care examinations; and increasing visiting optometry and ophthalmology services to more closely match estimated population-based needs. Various advocacy activities also provided a key mechanism by which services could be increased and strengthened; including informing decision makers within government of workforce and service delivery gaps, and collaborating with the peak body for eye and vision care in Australia in their lobbying of government agencies for required increases in outreach eye care service delivery funding. A regional collaborative coalition for eye care was formed, and workshops held to gain consensus on key areas for collective effort towards improved service delivery and patient outcomes. These processes were underpinned by a participatory learning approach, whereby stakeholders in Aboriginal and Torres Strait Islander primary health care and eye care were collectively engaged in structured conversations to develop a shared work plan aimed at improving eye care in the region.

Evaluation (Stage 3)

The evaluation stage occurred between 2014 and 2015. Using the same methods outlined in Stage 1, post-implementation data from the clinical file audit (2014) and the RECSAT (2015) were collected during the evaluation stage; and compared with pre-implementation data to assess the impact of strategies implemented as part of the project.

Analysis and interpretation

Statistical analyses of clinical file audit data were conducted with STATA (Version10, StataCorp, Texas, USA). Descriptive statistics were applied to summarise demographic characteristics and delivery of eye care services pre- and post-implementation. To assess the difference between pre-

and post-implementation data, chi-squared and McNemar's tests were applied for independent and dependent categorical data, respectively. As individual data were collected within the ACCHSs using multi-stage sampling, potential clustering effects were accounted for in the statistical analysis. The level of statistical significance was set at 5%. With regards to the RECSAT, a mean score (between 1 and 11) was calculated for each of the identified priority areas. Pre and post-implementation mean scores for each priority area were plotted on a radar chart (Figure 2) to visually represent change over the project period (2013-2015).

Effects of change

Demographic data of patient files collected during the clinical audit are outlined in Table 1. Table 2 shows pre-implementation and post-implementation clinical audit data for patients with diabetes ≥ 40 years, demonstrating significant increases in the rate and frequency of recorded: optometry examinations, recalls and referrals for optometry consultations, spectacles prescribed, and annual dilated ocular fundus examinations. Rates of recorded near vision examinations also increased significantly, as prior to the implementation of quality improvement strategies these were not included in routine primary care check recording templates. Additionally, there was a significant decrease in patients with diabetes who had never had an optometry examination. The changes associated with the implementation of quality improvement strategies align with best practice guidelines from the National Health and Medical Research Council¹⁴ and the National Aboriginal Community Controlled Health Organisation,¹⁵ which recommend Aboriginal and Torres Strait Islander Australians with a diagnosis of diabetes undergo an eye and vision assessment annually. The results also show a significant reduction in referrals to ophthalmology, which may suggest that the in-service training targeting primary eye care combined with increased access to optometry consultations, may have resulted in a reduction of inappropriate referrals to ophthalmology, given the preferred pathway is via optometry first for all non-urgent eye care cases.

Pre and post-implementation data from the RECSAT indicated that eye care stakeholders perceived an improvement in the strength and effectiveness of the regional eye care system, compared with the pre-implementation scores (Figure 2). Key areas of improvement included overall organisation and clarity about the structure of the regional eye care system, including its goals and strategies; enhanced integration of eye care into ACCHS primary care; increased access to patient information and promotion of visiting eye care services; and clearer definition of referral pathways. Several mechanisms implemented as part of the project are still ongoing (2019). These include: the continued and expanded operation of the regional coalition for eye care, who collaboratively strategise improvements in the regional eye care system through quarterly meetings; permanent

integration of eye care into primary care through the updated e-record template within ACCHSs; optometry service provision by a regionally-based team; and an improved balance between regional needs and service delivery through cross-organisational communication and sharing of information.

Lessons learnt

A participatory multi-stakeholder approach to implementing quality improvement strategies has proven useful in strengthening eye care systems in the Katherine region. While improvements were observed for primary eye care, further improvements to tertiary care (ophthalmology) such as decreasing cataract surgery waiting lists, are still required. Our findings recognise the importance of engaging services and stakeholders to ensure a systems approach that is evidence-informed, contextually appropriate, and reflects commitment to improved eye health outcomes. In addition to improvements in clinical service delivery, the participatory process used to implement quality improvement strategies were associated with an overall strengthening in the functioning of the regional eye care system according to stakeholders' perspectives. It is vital that non-government organisations or other external stakeholders who intend to support health care improvements within Aboriginal and Torres Strait Islander communities work in a way that enhances trust, supports genuine participation, and demonstrates commitment to working in the region long term.

Tables

Table 1: Clinical file audit - Demographic characteristics of patients with diabetes aged ≥ 40 years pre- and post-implementation.

Section	Pre-implementation (2012) n (%)	Post-implementation (2014) n (%)	p value
Gender			
Male	152 (37.7%)	170 (40.6%)	0.231
Female	251 (62.3%)	249 (59.4%)	
Age			
40-49	172 (42.7%)	151 (36%)	0.119
50-59	114 (28.3%)	150 (35.8%)	
60-69	74 (18.4%)	76 (18.1%)	
70-79	31 (7.7%)	29 (6.9%)	
80-90	12 (3%)	13 (3.1%)	
Indigenous status			
Aboriginal	382 (95%)	415 (99%)	0.006

Torres Strait Islander	4 (1%)	2 (0.5%)
Both	1 (0.2%)	2 (0.5%)
Neither	15 (3.7%)	0 (0%)
Total	402	419

*significant at 0.05 level

Table 2: Clinical file audit - Vision and eye health service outcomes for patients with diagnosed diabetes aged ≥ 40 years, pre- and post-implementation.

Section	Pre-implementation (2012) n (%)	Post-implementation (2014) n (%)	p value
Eye care attendance			
Client is on a recall for optometry			
Yes	192 (47.6%)	373 (89%)	<0.001*
No	211 (52.4%)	46 (11%)	
Date of last optometry exam			
Within past year	161 (40%)	259 (61.8%)	<0.001*
Between 1-2 years	53 (13.2%)	59 (14.1%)	
Between 2-5 years	59 (14.6%)	38 (9.1%)	
More than 5 years	8 (2%)	11 (2.6%)	
Never	122 (30.3%)	51 (12.2%)	
No record	0 (0%)	1 (0.2%)	
Client is on a recall for ophthalmology	31 (7.7%)	77 (18.4%)	0.017
Primary eye care checks			
Distance vision check recorded	285 (76%)	266 (81.1%)	0.160
Near vision check recorded	0 (0%)	23 (7%)	<0.001*
Trichiasis check recorded	126 (33.6%)	149 (45.4%)	0.037
Basic external eye exam recorded	199 (53.1%)	208 (63.4%)	0.037
Refractive error			
Were spectacles required			
Yes	136 (48.1%)	254 (69%)	<0.001*
No, not prescribed	61 (21.6%)	34 (9.2%)	
No, patient already has spectacles	23 (8.1%)	48 (13%)	
No record	63 (22.3%)	32 (8.7%)	
Diabetes eye care			
Ocular fundus exam			
Yes (dilated)	111 (27.5%)	238 (56.8%)	<0.001*
Yes (not dilated)	84 (20.8%)	19 (4.5%)	
No/No record	208 (51.6%)	162 (38.6%)	
Cataract eye care			
Was client referred to ophthalmologist [#]			
Yes	62 (50.4%)	49 (11.7%)	<0.001*
No	48 (39%)	370 (88.3%)	
No record	13 (10.6%)	0 (0%)	

Of clients referred to ophthalmology for cataract, was surgery required

Yes	40 (65.6%)	20 (87%)	0.186
No	14 (23%)	2 (8.7%)	
No record	7 (11.5%)	1 (4.3%)	

Cataract surgery completed (of clients requiring surgery)

Yes	24 (60%)	10 (50%)	0.491
No	16 (40%)	10 (50%)	

Client still on waiting list (of clients requiring surgery)

Yes	12 (30%)	7 (35%)	0.730
No	4 (10%)	3 (15%)	

Where cataract surgery was completed, was cataract surgical report present

Yes	18 (52.9%)	1 (10%)	0.051
No	16 (47.1%)	9 (90%)	

#in the past two years; *significant at 0.05 level; ^ Not included in primary care examination template at baseline

Figures

Figure 1: Project stages implemented in the Katherine region to improve the quality of eye care systems and associated outcomes.

Figure 2: Pre-implementation and post-implementation data from the RECSAT shows stakeholder perceptions of the performance of priority areas within the regional eye care system. A score of 1 would indicate a weak, fragmented system, while 11 would indicate a strong, cohesive system. Scores indicate a mean average of the total participant score.

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Title:

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Date:

2020-01-22

Citation:

Yashadhana, A., Morse, A., Tatipata, S., Lim, N., Rogers, A., Lee, L. & Burnett, A. M. (2020). Using quality improvement strategies to strengthen regional systems for Aboriginal and Torres Strait Islander eye health in the Northern Territory. AUSTRALIAN JOURNAL OF RURAL HEALTH, 28 (1), pp.60-66. <https://doi.org/10.1111/ajr.12575>.

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